

Yohane Tembo

A Look at Zambia's Road Financing Strategies

The Impact of Incongruent Policies and Budgets



Anchor Academic Publishing

disseminate knowledge

Tembo, Yohane: A Look at Zambia's Road Financing Strategies: The Impact of Incongruent Policies and Budgets, Hamburg, Anchor Academic Publishing 2015

Buch-ISBN: 978-3-95489-351-5

PDF-eBook-ISBN: 978-3-95489-851-0

Druck/Herstellung: Anchor Academic Publishing, Hamburg, 2015

Bibliografische Information der Deutschen Nationalbibliothek:

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

Bibliographical Information of the German National Library:

The German National Library lists this publication in the German National Bibliography. Detailed bibliographic data can be found at: <http://dnb.d-nb.de>

All rights reserved. This publication may not be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.

Das Werk einschließlich aller seiner Teile ist urheberrechtlich geschützt. Jede Verwertung außerhalb der Grenzen des Urheberrechtsgesetzes ist ohne Zustimmung des Verlages unzulässig und strafbar. Dies gilt insbesondere für Vervielfältigungen, Übersetzungen, Mikroverfilmungen und die Einspeicherung und Bearbeitung in elektronischen Systemen.

Die Wiedergabe von Gebrauchsnamen, Handelsnamen, Warenbezeichnungen usw. in diesem Werk berechtigt auch ohne besondere Kennzeichnung nicht zu der Annahme, dass solche Namen im Sinne der Warenzeichen- und Markenschutz-Gesetzgebung als frei zu betrachten wären und daher von jedermann benutzt werden dürften.

Die Informationen in diesem Werk wurden mit Sorgfalt erarbeitet. Dennoch können Fehler nicht vollständig ausgeschlossen werden und die Diplomica Verlag GmbH, die Autoren oder Übersetzer übernehmen keine juristische Verantwortung oder irgendeine Haftung für evtl. verbliebene fehlerhafte Angaben und deren Folgen.

Alle Rechte vorbehalten

© Anchor Academic Publishing, Imprint der Diplomica Verlag GmbH
Hermannstal 119k, 22119 Hamburg
<http://www.diplomica-verlag.de>, Hamburg 2015
Printed in Germany

PREFACE

Investments in transport infrastructure have massive economic benefits, leading to a vibrant and efficient transport system. In Zambia, where a disproportionate distribution of freight between road and rail exists, with road transport carrying over 85% of freight, the significance of road investments cannot be emphasized. To remain competitive, the country must prioritize sustainable road maintenance on her road network, and ensure that a decent balance is maintained between investments in maintenance and those aimed at new construction.

Insufficient budgetary allocation to road maintenance normally results in road deterioration that significantly reduces the utility of the existing roads. This makes it expensive and more difficult to move products and services from producers to consumers or inputs to designated industrial centers. Construction of new roads is deterred due to lack of funds, which entails that many areas which have the potential to trigger economic growth would remain unnecessarily inaccessible for far too long. The alternative is to seek political interference in the budgeting process in order to skew the fiscus towards road construction and development, rather than routine and periodic road maintenance which, purposefully, extend the service life cycle of existing road infrastructure through effective and efficient road asset management. Naturally, maintenance is rarely seen as important and it hardly attracts appropriate funding from the fiscus.

For many years, it has been observed that Zambia's road asset has been wasting away at an accelerated rate due to the preference of reactive, rather than preventive, road maintenance strategies. New road construction is believed to have also contributed to the neglect of maintenance. This book, therefore, presents an analysis of Zambia's incongruent road financing strategies which have led to inefficient road asset management over the past decades. Endogenous deficiencies which tend to exhibit themselves in a road network that is grossly in a state of disrepair are exposed and discussed in the context of optimized and sustainable road network and budgetary allocations as a cure going forward. However, the final decision about which policies and strategies should be adopted to address the vexing problem, has been left entirely in the hands of political office holders, in whom the people of Zambia have had to vest their power to legislate and manage the affairs of the country.

It is a key element of this book to demonstrate of originality in tackling the road asset management problem in Zambia and thereby create a platform for extending such knowledge for use on the global stage.

DEDICATION

This book is particularly dedicated to all colleagues who have spent a substantial amount of their effort towards the improvement of the road transport system in Zambia, as well as across the African continent, in pursuit of sustainable solutions to our economic growth and the general well-being of our citizens.

ACKNOWLEDGEMENT

First and foremost, there are many people from whom I obtained much assistance in the course of preparing this book of which it would be impossible to chronicle all of them, but who I still owe my sincere gratitude. My biggest appreciation goes to the academic staff and management of Atlantic International University for their critical, but awesome support.

Secondly, I wish to express my gratitude to all the Zambian institutions, agencies, and ministries which assisted in a special way by providing information which I consider vital for the completion of my manuscripts. These institutions primarily include the National Road Fund Agency, the Road Development Agency, and the Road Transport and Safety Agency. I also received assistance from the Ministry of Local Government and Housing, Ministry of Transport, Works, Communication, and Supply and the Ministry of Finance, for which I am very grateful.

My workmates at the National Road Fund Agency were phenomenal throughout the period, without whose input I couldn't have made it this far. Friends and colleagues, too numerous to mention, rendered their support of a diverse nature in ensuring the success of my works. Their criticism and contributions were of great help in refining my book.

Specific mention must be made of engineers Grace Mutembo and Kapembwa Sikazwe, who took some time out of their busy schedules and regularly called on me to encourage me in my work and took time to also assist with editing.

Further, I recognize and commend the people who participated in the survey by completing the questionnaire. Admittedly, the response was phenomenal and helpful. Their great enthusiasm was evident in their contributions, and in turn, they took my work as their own. I will remain forever indebted to them.

But most importantly, my dear wife Joyce, and my two daughters, Jessica and Audrey, then and now Prudence, for their enduring love and care during the period I had to spend lengthy hours at my study desk. "*Good night, see you tomorrow*", Joyce would sometimes say as she went to bed.

Finally, I wish to thank my publishers, Diplomaca Verlag GmbH for the immeasurable support and guidance in finalizing the manuscript, without of course forgetting the help which I received from Grin Publishers and their encouragement in making an author of global repute.

LIST OF TABLES

Table 1: Project Title Definition	24
Table 2: Global Outlook Human and Vehicular Demographics (2010-2012).....	27
Table 3: Road Sector Financing Matrix.....	40
Table 4: Examples of Research Methodologies.....	54
Table 5: Sample of Likert Scale.....	62
Table 6: Year-end Foreign Exchange Mid-Rates in Analysis	67
Table 7: Zambia’s Road Network.....	69
Table 8: Trends in Road Fund and Maintenance Gap in Zambia	70
Table 9: Optimized Budget Run Using HDM IV: TMD Alternative Funding Requirement (2012-2016).....	70
Table 10: Optimized TMD Kilometres of Roads Maintained (2012 – 2016).....	71
Table 11: PFR/Urban Funding Requirements (2012 – 2016).....	71
Table 12: Combined Outputs (Km) for CRN (2012 – 2016).....	71
Table 13: Updated PFR/Urban Funding Requirements (2012 – 2016)	72
Table 14: Upgrading to Bituminous Standard: Analysis of Projected Needs versus Budget. 72	72
Table 15: Planned versus Projected: Financial Needs and SNDP/MTEF Budget.....	73
Table 16: Computations for Maintenance and Total Road Expenditures.....	73
Table 17: Budget Expenditure as per AWP’s (2012 – 2014).....	74
Table 18: Zambia’s Road Expenditure vs. Gross National Product	74
Table 19: Annual Work Plan Proportional Expenditure (2006 – 2014).....	74
Table 20: Self-administered Adapted Asset Management Policy Framework	76
Table 21: Likert Scales used in the Analysis	77
Table 22: Summary of Survey Results	78
Table 23: Estimate of 2012 Upgrading Kilometers	100
Table 24: Annual Budget Analysis (2006 – 2014)	101
Table 25: Status of Resource Mobilization.....	102
Table 26: Comparative Analysis of Unit Rates	103
Table 27: Trends in Diesel Pump Prices.....	104
Table 28: Trends in Zambia’s Inflation Rate.....	104
Table 29: Foreign Exchange Rates	104
Table 30: Rates Analysis on some Selected Link Zambia 8000 Projects.....	105
Table 31: Rates Analysis on Routine Maintenance Contracts under Lusaka City Council (2013).....	106
Table 32: Comparative TMDs and Urban Unit Rates for Seals and Asphalt on Running Contracts	107
Table 33: Unit Rates Development for Urban Roads on Running Contracts	107
Table 34: Unit Rates Development for TMDs on Running Contracts.....	108
Table 35: Rates Analysis on Periodic Maintenance Unpaved Roads (2013)	109
Table 36: Rates Analysis on Rehabilitation Unpaved Roads (2013).....	110
Table 37: Rates Analysis of Upgrading Projects (2012 – 2013)	111
Table 38: Worksheet: Current Unit Costs for Asphalt and Surfacing Seals on TMD Roads	112
Table 39: Worksheet: Current Unit Costs for Asphalt and Surfacing Seals on Urban Roads	113
Table 40: Worksheet: Current Unit Costs for Asphalt and Surfacing Seals on TMD Link Zambia 8000 Roads	113

Table 41: Raw Data: Category 1 and 2 Questions	116
Table 42: Raw Data: Category 3 and 4 Questions	117
Table 43: Analysis of Category 1 Questions.....	117
Table 44: Analysis of Category 2 Questions.....	118
Table 45: Analysis of Category 3 Questions.....	119
Table 46: Analysis of Category 4 Questions.....	119
Table 47: Weighted Mean for Category 1 and 2 Questions	120
Table 48: Weighted Mean for Category 3 and 4 Questions	120

LIST OF TEXT BOXES

Text Box 1: Case Study on Asset Management Challenge in North Dakota.....	38
Text Box 2: Adapted Asset Management Policy Framework.....	39
Text Box 3: Case Study on Challenges of Delayed Payments in Ghana	48
Text Box 4: Cover Note Accompanying Questionnaire	114
Text Box 5: Sample of Questionnaire used to collect Primary Data.....	115

LIST OF FIGURES

Figure 1: Pavement Performance Curve over Time	34
Figure 2: Balancing Maintenance and Capital Investments	46
Figure 3: The Conceptual Constructs Model	52
Figure 4: The Influence of Philosophical Assumptions on Research Process & Tasks.....	55
Figure 5: A Holistic (Cyclical) Approach to Research Tasks, driven by the CCM.....	56
Figure 6: Zambia’s Road Network Condition, 2012.....	69
Figure 7: Annual Work Plan Budget Trends (2006 – 2014)	75
Figure 8: Condition of Trunk Road T5 Chingola to Solwezi.....	100

ABBREVIATIONS AND ACRONYMS

AC	Asphalt Concrete
AWP	Annual Work Plan
BOT	Build Operate and Transfer
CPI	Consumer Price Index
CRN	Core Road Network
CSO	Central Statistics Office
DBST	Double Surface Treatment
DBSD	Double Surface Dressing
EU	European Union
GDP	Gross Domestic Product
GRZ	Government Republic of Zambia
HMS	Highway Management System
IRI	International Roughness Index
MLGH	Ministry of Local Government and Housing
MoF	Ministry of Finance
MTCWS	Ministry of Transport, Communication, Works and Supply
MTEF	Medium Term Expenditure Framework
NAR	Needs Assessment Report
NRFA	National Road Fund Agency
NTRC	National Toll Road Company
ORUCs	Other Road-User Charges
PBRCs	Performance Based Road Contracts
PFI	Private Finance Initiative
PFR	Primary Feeder Road
PM	Periodic Maintenance
PPP	Public Private Partnership
PMS	Pavement Management System
RDA	Road Development Agency
RMI	Road Maintenance Initiative
RMS	Road Management System
RoadSIP I	Road Sector Investment Plan Phase 1
RoadSIP II	Road Sector Investment Plan Phase 2
RRM	Routine Road Maintenance
RRU	Rural Road Unit
RTSA	Road Transport and Safety Agency
SNDP	Sixth National Development Plan
SPV	Special Purpose Vehicle
TAZARA	Tanzania-Zambia Railway Authority
TMD	Trunk, Main, and District Roads
US\$	United States Dollar
Veh/day	Vehicles per Day
WB	World Bank
WEI	Wider Economic Benefits
ZIPAR	Zambia Institute for Policy Analysis and Research

ZMK	Zambian Kwacha (old currency)
ZMW	Zambian Kwacha (rebased currency)
ZNS	Zambia National Service

TABLE OF CONTENTS

PREFACE	V
DEDICATION	VI
ACKNOWLEDGEMENT.....	VII
LIST OF TABLES	VIII
LIST OF TEXT BOXES	IX
LIST OF FIGURES.....	IX
ABBREVIATIONS AND ACRONYMS	X
EXECUTIVE SUMMARY.....	XV
1. INTRODUCTION.....	19
1.1 Introduction.....	19
1.2 Problem statement	20
1.3 Aims and objectives.....	21
1.4 Scope of the study.....	21
1.5 Significance of the study	22
2 REVIEW OF LITERATURE.....	23
2.1 Introduction.....	23
2.2 Analysis of the Study Title	24
2.3 The Economic Question of Road Investments	24
2.4 Legal and Institutional Framework.....	28
2.5 Maintenance Philosophies	32
2.6 Resource Mobilization.....	39
3 METHODOLOGY	50
3.1 Introduction.....	50
3.2 Theoretical Background.....	50
3.3 Presentation of the Methodology.....	62
3.3.1 Choice of Variables.....	63
3.3.2 Hypothesis.....	63
3.3.3 Data Collection	64
3.3.4 Analysis.....	65
3.3.5 Validation.....	67

4	RESULTS AND ANALYSIS.....	68
4.1	Introduction.....	68
4.2	The Process.....	68
4.3	Results from Analysis of Secondary Data.....	69
4.4	Results from Analysis of Primary Data.....	76
4.5	Analysis.....	79
5	CONCLUSION.....	92
5.1	Introduction.....	92
5.2	Main Conclusions.....	92
5.3	Summary.....	93
6	RECOMMENDATIONS.....	96
6.1	Introduction.....	96
6.2	Recommendations.....	96
7	BIBLIOGRAPHY.....	98
8	APPENDICES.....	100
	Appendix A: Data and Analysis for Secondary Data.....	100
	Appendix B: Data and Analysis for Primary Data.....	114