

**DEVELOPMENT OF AN APPROPRIATE MODEL FOR
WATER SUPPLY AND SEWERAGE SERVICES IN
TANZANIA**

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Abstract

Existing water service concepts and practice within the Sub Sahara African region, including Tanzania, Kenya, Uganda, Zambia, Somalia, Ghana, Senegal, Malawi, Gambia and Cote d' Ivoire, has demonstrated that, the absence of Sustainable capital funds and appropriate water management models are the major obstacles for water development in this region.

This thesis has critically evaluated a number of different capital funding methods, including loans from the World Bank, to formulate an ideal theoretical solution for water services in Tanzania. The concept of establishing capital funds from local financial institutions, proposals for the control of capital funds, and the provision of special training before and during implementation are key aspects of a new approach. The research has successfully developed a new water management model, which is sustainable and appropriate for water problems in Tanzania (sub-Sahara African countries)

The model newly established methods for generating capital funds from local sources including tariffs review and mass contribution has been critically evaluated for assurance of its sustainability in practice, to protect the affordability to all water users and assessing the value of willingness to pay when the model is adopted.

However, the localisation through structured systematic participation and greater recognition of water users in the model has been evaluated and identified as a new significant bond for making collective and effective decisions in water services.

Furthermore, based on the designed research objectives, this research has evaluated the differences and contributions of the new developed model in comparison with previous practiced models (privatisation and public services) in Tanzania to develop conclusions and recommendations for future studies.

Contents

Acknowledgements	ii
Abstract.....	iii
Contents	iv
Figures	xiv
Tables	xv
ACRONYMS.....	xvi
CHAPTER ONE: INTRODUCTION.....	1
1.1 Overview	1
1.2 Tanzania	3
1.3 Aim and Objectives	4
1.5 Original Contribution of the Research.....	5
1.6 The Thesis Structure	6
1.6.1 Chapter One: Introduction	6
1.6.2 Chapter Two: DAWASA and Privatisation	6
1.6.3 Chapter Three: Water Services in Developing Countries.....	6
1.6.4 Chapter Four: Methods for Funding Water Projects	6
1.6.5 Chapter Five: Management of Water Services	7
1.6.6 Chapter Six: Evaluation of Water Services and Model Formulation	7
1.6.7 Chapter Seven: Research Methodology.....	7
1.6.8 Chapter Eight: Field Results and Model Development.....	8
1.6.9 Chapter Nine: Validation of the New Model (POCO)	8
1.7.0 Chapter Ten: Conclusion and Recommendations.....	8
CHAPTER TWO: DAWASA AND PRIVATISATION	9
2.1 Introduction.....	9
2.2 Privatisation in Tanzania	9

2.2.1	DAWASA Background.....	10	
2.2.2	DAWASA Existence and its Functions	11	
2.2.3	DAWASA Privatisation	12	
2.2.4	Process of DAWASA Privatisation	13	
2.2.5	Sources of Funds for DAWASA Privatisation.....	14	
2.2.6	Contractual Obligations on Rental and Equity Payments.....	15	
2.2.6	DAWASA Privatisation Structure.....	15	
2.3	Change in the Roles and Functions of DAWASA (DAWASA PGA).....	16	
2.3.1	DAWASA PGA.....	17	
2.4	City Water Services (The Operator).....	19	
2.4.1	Role and Duties of City Water Services (CWSL).....	20	
2.4.2	Operator's (CWSL) Technical Responsibilities	20	
2.4.3	Commercial Management Duties	20	
2.4.4	Administrative and Financial Management.....	21	
2.4.5	The Power and Rights of City Water Services (the Operator).....	21	
2.5	The Energy Water Utilities Regulatory Authority (EWURA).....	22	
2.6	Privatisation Implementation, Performance and Monitoring	23	
2.6.1	Comparison on Performance	24	
2.6.2	Outcomes and Failure of Privatisation of Water Services in Tanzania.....	25	
2.7	Summary.....	27	
CHAPTER THREE: WATER SUPPLY AND SEWERAGE SERVICES IN AFRICAN DEVELOPING COUNTRIES.....			29
3.1	Introduction.....	29	
3.2	Water Supply and Sewerage Services in Uganda.....	30	
3.2.1	Background	30	
3.3.2	Management of Water Services for Kampala Water.....	31	
3.3.3	Duties and Responsibilities.....	33	
3.3.4	Current Situation of Water Services in Uganda	34	
3.3.5	Appraisal for Uganda Water Supply and Sewerage Services	35	

3.4	Water Supply and Sewerage Services in Kenya	37
3.4.1	Background	37
3.4.2	Management of Water Services in Kenya.....	37
3.4.3	The Current Situation of Water and Sewerage Services in Nyeri (Kenya).....	38
3.4.4	Appraisal for water services in Nyeri (Kenya).....	39
3.5	Water Supply and Sewerage Services in Cote d'Ivoire	40
3.5.1	Background	40
3.5.2	Current Water Supply and Sanitation Services in Cote d' Ivories	41
3.5.3	Appraisal for Water Services in Cote d' Ivories.....	42
3.7	Water Supply and Sewerage Services in Gambia.....	42
3.7.1	Background	42
3.7.2	Outcomes and Situation of Water Services in Gambia.....	43
3.7.3	Appraisal of Gambia for Water Services in Gambia....	44
3.8	Water Supply and Sewerage Services in Senegal.....	45
3.8.1	Background	45
3.8.2	Current Situation in Senegal.....	46
3.8.3	Appraisal for Water Supply and Sewerage Services in Senegal	46
3.9	Water Supply and Sewerage Services in Ghana.....	47
3.9.1	Background	47
3.9.2	Appraisal for Water Supply and Sewerage Services in Ghana	49
3.9.3	Conclusion for Chapter Three	50

CHAPTER FOUR: SOURCES FOR FUNDING WATER

DEVELOPMENT PROJECT	53	
4.1	Introduction.....	53
4.1.1	Sources for Funding Capital Water Projects	53
4.2	Methods of Property Value in the Market.....	53
4.2.1	Equity-based Methods.....	54
4.2.2	Method of Debt/Equity Swap.....	55
4.2.3	Privatisation Methods for Capital Funds Development.....	55

4.2.4	Appraisal on Capital Funds from Property Value and Equity Methods	61
4.4	Part 2: Establishing Capital from Tariffs Review.....	62
4.4.1	Water Tariffs	62
4.4.2	Formulating (Designing) Water Tariffs.....	62
4.4.3	Sustainability Tariff.....	63
4.4.4	Social Tariffs	63
4.4.5	Objectives of Water Tariffs	64
4.4.6	Sustaining of Revenue Sufficiency.....	65
4.4.7	Part 2: Appraisal for Tariffs Review Methods	66
4.5	Part 3: Loans as funds for Water Development.....	67
4.5.1	Introduction.....	67
4.6	The World Bank.....	68
4.6.1	Background	68
4.6.2	IBRD loans and IDA Credits Conditions.....	68
4.6.3	The World Bank Lending Instruments	69
4.6.4	The World Bank Operational Model.....	70
4.6.5	Business Objectives in the Loans.....	70
4.6.6	Policy for Lending Development.....	70
4.6.7	Implementation Structure.....	70
4.6.8	The Bank Loans with the Condition of Privatisation.....	71
4.6.9	Management Contracts Method	71
4.7.0	Affermage-leases	72
4.7.1	Concessions and Divestitures.....	73
4.7.2	Loans with Privatisation.....	74
4.8	Advantages and Disadvantages of World Bank Loans	74
4.8.1	Advantages.....	74
4.8.2	Disadvantages of the World Bank Loan Conditions to Developing Countries.....	76
4.8.3	Criticisms against the World Bank and Other Financial Institutions Methods.....	77
4.9.4	Appraisal on World Bank Loans	78
4.9.5	Summary.....	79

CHAPTER FIVE: MANAGEMENT OF WATER SERVICES	81
5.1 Introduction.....	81
5.2 Section 1: Water Services under Public Management	82
5.2.1 Introduction.....	82
5.2.2 Public Water Management Style (Public Water Services).....	84
5.2.3 Public Water Services in Developing Countries.....	85
5.2.4 Criticism of Public Water Services	87
5.2.5 Appraisal for Public Water Management Style.....	87
5.3 Section 2: The Private Management of Water Services (Privatisation).	88
5.3.1 Overview	88
5.3.2 Structure of Private Management in the Water Sector	89
5.3.3 Effectiveness of Private Management Water Services	90
5.3.4 Worries of Private Services in Water sector	91
5.3.5 Benefits of Private Management in Water Services.....	92
5.3.6 Disadvantages of Private Management (Negative Effects).....	93
5.3.8 Appraisal for Private Water Services	95
5.3.9 Summary.....	95
5.4 The Commercialisation of Water Services.....	97
5.4.1 Introduction.....	97
5.4.2 The Process of Commercialisation, and Reasons for Adoption	97
5.4.3 Advantages of the Commercialisation of Public Services	99
5.5 Experiences of Commercialisation from Various Projects	100
5.5.1 Commercialisation of Water Services in Zambia.....	100
5.5.2 Commercialisation Process in Somalia	104
5.5.3 Summary	107
5.6 Regulatory Authority in Water Services.....	109
5.6.1 Evidences of Differences in Structure, Function and Power.....	110

5.6.2	Appraisal for Gambia Regulatory Authority	111
5.6.3	Water Regulatory Authority in South Africa	112
5.6.4	Critical Appraisal for South Africa Water Regulator Authority.....	113
5.6.5	Water Regulations in Egypt.....	113
5.6.6	Critical Appraisal for Egypt Water Regulatory Authority.....	115
5.6.6	Summary.....	115
5.8	Willingness and Ability to Pay for Water Services.....	116
5.8.1	Overview	116
5.8.2	Assessing of the Willingness to Pay in Developing Countries.....	117
5.8.4	Motivation for Willingness to Pay.....	119
5.8.5	Appraisal for Willingness to Pay for Water	120
5.8.6	Summary.....	121
CHAPTER SIX: EVALUATION AND MODEL FORMULATION.....		123
6.1	Overview.....	123
6.2	Privatisation.....	123
6.2.1	Definitions of Privatisation.....	123
6.5.3	Critical Appraisal for Privatisation.....	125
6.6	Comparison and Evaluation on Water Services Experiences ...	126
6.7	Combined Discussion on Case Studies	128
6.7.1	Why Privatisation?	128
6.7.2	Driving Forces for Privatisation	129
6.7.3	Adaptation of Method and Approach	130
6.7.4	Possible Lessons from Failure	131
6.7.5	Operating Structure of Private Water Entities	133
6.7.6	The role and function of regulatory authority.....	134
6.7.7	Role and Functions of private operator	135
6.7.8	Performance contract in water services	137
6.7.9	Source of finance for the project.....	138
6.8.0	Commercialisation of water services and tariffs review	139
6.8.1	Appraisal for combined case studies	140

6.9.0 The concepts used for the ideal model framework.....	143
6.9.1 The model.....	143
6.9.2 Composition and operating structure of the model.....	143
6.9.4 Role and function of the government.....	145
6.9.5 The asset holding company.....	147
6.9.6 Regulatory authority.....	147
6.9.7 The services provider (operator).....	149
6.9.9 Summary	150
CHAPTER SEVEN: METHODOLOGY.....	152
7.1 Introduction	152
7.2 General Philosophy of Research	152
7.2.1 Reasons for executing research	152
7.2.2 Formulation of the Research Topic.....	152
7.2.3 Nature of research problem and approach for research method	153
7.3 The research structure.....	154
7.3.1 Theoretical Development Stage	154
7.3.2 Field Work and Documentation (Implementation Stage).....	155
7.3.3 Documentation Stage.....	155
7.4 Research Methods and Application.....	156
7.4.1 Quantitative Research Methods	156
<i>i. Advantages and Disadvantage of the Quantitative Method.....</i>	<i>157</i>
7.4.2 Qualitative Research Methods.....	158
7.4.3 Appraisal for quantitative and qualitative methods.....	161
7.6 Mixed Research Method (Triangulation).....	161
7.6.1 Overview	161
7.6.2 Application of the Mixed Research Method	162
7.6.3 Advantages and Disadvantages of Adopting a Mixed Research Method	163
7.7 Selection of Research Method	164
7.7.1 Adaptation to Survey Method.....	165
7.8 Primary and Secondary data	166

7.8.1 Secondary Data.....	166
7.8.2 Contribution of secondary data to this research.	167
7.8.3 Disadvantages of Secondary Data.....	168
7.8.4 Primary data.....	168
7.8.5 Targeted Information and Sample Sizes (primary data)....	168
7.8.6 Sampling and Sample Size	170
7.8.7 Approach for secondary data collection	172
<i>i. Expected information from each sample group for analysis</i>	<i>173</i>
7.8.8 Strategic approach for Primary data collection	174
7.8.9 Responses on Data Collection Compared to Targets.....	176
7.9 The interview structure and contents	178
7.9.1 The questionnaire structure and content.....	179
7.9.2 Data Analysis and the Adopted Concepts	180
7.9.3 Analysis of quantitative data (questionnaires).....	182
7.9.4 Triangulation in Data collection and analysis	183
7.9.6 Model Development procedure.....	185
7.9.1 Summary	186
CHAPTER EIGHT: FIELD RESULTS AND MODEL DEVELOPMENT.....	188
8.1 Introduction	188
8.2 Section 1: Systematic analysis to each sample group.....	189
8.2.1 Detail process of primary data analysis.....	189
8.2.2 DAWASCO Employees.....	189
8.2.3 Summary from the table no.8.1	194
8.2.3 Summary on DAWASA and DAWASCO employee's concepts.....	195
8.2.4 Results from Customer Survey	196
8.2.5 Summary of Customers Contribution.....	200
8.2.6 Findings from the senior government and Parastatal Officers.....	201
8.2.7 Summary From the interviews answers	207
8.3 Part 2: Concepts adopted from secondary data (Covered discussion).....	209
8.3.1 Commercialisation of water services	209

8.3.3 Sources of funds for water development.....	210
8.3.5 Structure and composition of the services provider.	211
8.3.6 Conclusions.....	212
8.4 Part 3: Solution for water management in Tanzania	213
8.4.1 Background	213
8.5 POCO	214
8.5.2 Originality and Structure composition	214
8.5.3 Part one: Ownership and management structure of POCO	215
8.5.4 Part two: Commercial sustainability of POCO.....	222
8.5.5 Capital funds from daily water operation business	224
8.5.6 Existing DAWASCO water charges	227
8.6.0 Acceptability of Tariff review method	233
8.7 Capital funds from Mass Contribution.....	236
8.7.1 Overview.....	236
8.7.3 Current position of basket funds.....	243
8.7.5 Effects of the model POCO in Practice	246
8.7.6 Uniqueness of the POCO	247
8.7.7 Appraisal of the model POCO.....	248
8.7.9 Disadvantages of the POCO	251
CHAPTER NINE: VALIDATION OF THE NEW MODEL (POCO).....	253
9.1 Introduction	253
9.1.1 Approach to Validation of Model.....	253
9.1.2 Summary of the validation interviews	254
9.1.3 Summary of concepts from validation exercise.....	257
9.3 Validation on POCO financial part.....	259
9.3.2 Summary	264
9.4 Validation on Mass Contribution method.....	264
9.4.1. Workers contribution from the salaries.....	264
9.4.2 Summary of validation in commercial sustainability of POCO.....	266
9.4.3 Concepts adopted directly to POCO.....	267
9.5 The revised POCO model.....	268

9.5.1 Noted concepts but not adopted in POCO	270
9.5.3 Discussion on new water management model.....	271
CHAPTER TEN: CONCLUSION AND RECOMMENDATION	285
10.1 Conclusions.....	285
10.2 Original research contribution	292
10.2.1 The theoretical contribution of the POCO.....	292
10.3.2 The practical contribution of the POCO	294
10.3.3 Appraisal of the POCO's contribution.....	296
References	299

Figures

2.1 DAWASA structure during privatisation	16
2.2 DAWASA PGA organisation structure.....	19
3.1 Structure of water management in Uganda.....	33
5.1 Effects of Public water management.....	86
7.1 Triangulation of data collection.....	183
7.2 Adopted research approach.....	185
8.1 Main input for POCO development.....	188
8.2 Causes for privatisation failure.....	194
8.3 The POCO structure.....	215
8.4 Sources for capital funds.....	222
8.5 Categories of DAWASCO water customers.....	229
8.6 Mass contribution method.....	236
8.7 Flow chart for basket funding.....	241
9.1 Private services in POCO.....	258
9.2 Control of local capital funds.....	268

Tables

Table 1.1: Global Picture on lacking Improved Water Supply and Sanitation Source: WHO/UNICEF (2000).....	2
Table 2.1: Total donor contribution for DWSSP	14
Table 2.2: Comparison on revenue collection	24
Table 2.3: City Water Contact Schedule of Reports	26
Table 6.1: Comparison on water services from different countries.....	127
Table 7.1 Information targeted for analysis	174
Table 7.2: The response areas for primary data.....	178
Table 8.1: Comparison of working environment.....	194
Table 8.2: Existing Water Tariffs [8].....	228
Table 8.3: DAWASCO Revenue collection for year 2007/2008.....	229
Table 8.4: Combination of existing and reviewed water tariffs	230
Table 8.5: Gross National Income per Capital.....	233
Table 8.6: Purchasing Power Parity.....	233
Table 8.7: 2008/2009 Government Budget allocation for MOWI.....	243
Table 8.8: Current donors of Basket for basket funding: (Source: MOWI and regional MTEF 2008/2009).....	244
Table 9.1: Systematic and volumetric increase of water sells	261
Table 9.2 Annual revenue increase due to volumetric water increase	261
Table 9.3: Annual revenue collection with reviewed tariffs.....	262
Table 9.4 Annual increases in expenditure.....	263
Table 9.5: Employee contributions as per Income	265

ACRONYMS

ADF.....	African Development Fund
ADB.....	Asia Development Bank
AFDB.....	African Development Bank
CWS.....	City Water Services
CCP.....	Corporate Planning Cycle
DAWASA.....	Dar-es-salaam Water Supply and Sewerage Authority
DAWASCO.....	Dar-es-salaam Water Supply and Sewerage Company
DA.....	Director of Administration
DF.....	Director of Finance
DSSD.....	Dar-es-salaam Sewerage and Sanitation Department
DTS.....	Director for Technical Services
DWSSP.....	Dar-es-salaam Water Supply and Sanitation
EIB.....	European Investment Bank
EWURA.....	Energy and Water Utility Regulatory Authority
IDA.....	International Development Association
IDB.....	International Development Bank
NUWA.....	National Urban Water Authority
PPRSC.....	Presidential Parastatal Sector Reform Commission
PGA.....	Public Grant Authority
MOF.....	Ministry of Finance
MOW.....	Ministry of Works
MoWI.....	Ministry of Water and Irrigation
NEMC.....	National Environmental Management
NGOs.....	Non-Governmental Organisations
NWSC.....	National Water and Sewerage Corporation
POCO.....	Public Ownership Commercial Operation
SWOT.....	Strengths Weakness Opportunity, Threats Analysis
UfW.....	Unaccounted for Water
WTP.....	Water Treatment Plant
TSH.....	Tanzanian Shillings
USH.....	Ugandan Shillings.

CHAPTER ONE: INTRODUCTION

1.1 Overview

'The Earth is a unique planet in our solar system; no other planet has liquid water and that is why there is no life on Mars' [1].

According to the report published by the Population Reference Bureau [2] and the work of Lenntech [3], the whole of the earth's surface is surrounded by 70% of water, whilst the total volume of water is 1.4 billion km³. However, only 35 million km³—equivalent to 2.5% of the whole water volume—is fresh water. Coleridge [4] adds that the greatest percentage (68.7%) of fresh water is in the form of ice and permanent snow, whilst the remaining 29.9% exists as ground water, with only 0.26% surface water in the form of rivers, lakes, streams and others. This evidence suggests that the natural geographical reserve of available fresh water is an obstacle, which therefore reflects the reality and the necessity for technological advancements and funds investment—especially for poor developing countries.

Notably, however, the development of the Water sector has been widely hindered or impaired by three major factors: the unequal distribution of various water sources, including (surface water, underground water and others), the inability to establish sustainable water and sewerage projects owing to capital problems (funds) and technology limitations, and the inability to sustain and develop the limited existing water and sewerage services.

The rise in water consumption and waste water discharge also poses a threat; the quantity of water used for all purposes exceeds 3,700 km³ per year. Agriculture is the largest user, consuming almost two-thirds of all water drawn from rivers, lakes, and groundwater. Whilst irrigation has undoubtedly remarkably contributed to world agricultural production, it is nevertheless extremely water intensive. Since 1960, water use for crop irrigation has risen by 60–70%. Moreover, industry uses approximately 20% of available water, and the municipal sector uses approximately 10%. The increased water consumption owing to population growth—especially in urban areas and due to industrialisation—has considerably affected the natural use of water by opening other extra water needs for both domestic use as well as surrounding development, whilst the available small amount (2.5%) of the world's fresh water is decreasing [4] [5].

The African Medical Research Foundation (AMREF) [6] argues that the most affected areas are developing countries, specifically Sub-Sahara African countries,

where almost 1.1 billion people have inadequate access to proper drinking water and sanitation. Moreover, other regions, such as North America and Europe, have a high standard of best water and sanitation services; however, Oceania, Latin America and the Caribbean are situated in problematic locations in terms of providing urban water services in comparison to Africa and Asia. Table 1.1 below provides a comparison of satisfaction.

Table 1.1: Global Picture on lacking Improved Water Supply and Sanitation

Source: WHO/UNICEF (2000)

SN	REGION	Lacking Improved Water Supply		Lacking Improved Sanitation	
		RURAL	URBAN	RURAL	URBAN
1	North America	0%	0%	0%	0%
2	European	13%	0%	26%	1%
3	Oceania	37%	2%	19%	1%
4	Latin America and Caribbean	38%	7%	51%	13%
5	Asia	25%	7%	69%	22%
6	Africa	29%	6%	62%	14%

Gadgil [7] notes that poverty in developing Africa countries is a huge obstacle for water services improvement, and that the available poor water services has a direct impact on the spread of water-borne diseases, with increases average death cases of approximately 1.8 million people per annum. UNHCR [8] states that, 'It was estimated that 88% of that burden is attributable to unsafe water supply, sanitation and mostly affects children's hygiene. UNICEF [9] further argues that the situation is critical to the 2.5 billion people who are still lacking access to improved sanitation, including 1.2 billion who have no facility at all. The message is clear that 'we need to greatly accelerate progress in drinking water and sanitation particularly in Sub-Saharan African countries and Southern Asia' [9].

According to African Medical Research Foundation, the current water situation in Sub-Sahara African countries is the worst to the extent that almost 2 in every 5 people have some degree of domestic safe water shortage. In comparison with Europe, babies in the Sub-Saharan region are 520 times more likely to die from water-borne diseases than those born in Europe. This is further emphasised

by the statement, 'Developing more sustainable water supply services in this region will help reduce almost all water-borne diseases and reduce by up to 25% diarrhoea related deaths, and improved sanitation reduces death rates by 32%' [6].

1.2 Tanzania

Tanzania is a developing country currently struggling to reach the goal of quality, quantity, affordable and environmentally sustainable water. Being an equatorial country, with a population of approximately 40 million people, Tanzania has a total area of 94.5 million hectares. Moreover, almost 5.2% (5.5 million hectares) of the total area is covered by surface fresh water. The country has a reserve of 40 million km³ of underground fresh water; unfortunately, however, the country has managed to supply clear and safe water to only 55.7% of the total rural population and only 78% of its urban citizens [10].

The first president of Tanzania, Julius K. Nyerere, advocated and always insisted that, 'MAJI NI UHAI' water is life, and it is therefore the government's responsibility to ensure that every Tanzanian enjoys clean and safe water. Since Tanzania gained independence in 1961, the government has been struggling to develop a water sector with the motto of MAJI NI UHAI. Unfortunately, funds and technology, affordability and poverty problems have all been the major obstacles when striving to deliver the best water services to all of Tanzania [11].

Dar-es-salaam—the commercial and former capital city—has a population of approximately 4.5 million people with approximately 32.5% of the current population not supplied with safe domestic water. The city supply from Dar-es-salaam Water Supply and Sewerage Authority (DAWASA) is only 70% of its total production of 63 million m³ per annum. The increase in Unaccounted for Water (UFW) is caused by existing old-aged water supply networks and a city population increase of approximately 4% annually. Such issues form the major causes of water unavailability in Dar-es-salaam (Tanzania). There is a serious water shortage in other areas, such as the poorest district of Mkuranga, which is located 50km south of Dar-es-salaam and which had a population of approximately 175,000 people in the 1990s, with only 25% of all households enjoying access to safe domestic water and less than 5% of rural households able to use latrines. According to AMREF [12], during this time, most of the Mkuranga households used unsafe water with a high risk of contamination by wild animals sharing such sources. As a result, diarrhoea and water-related diseases, such as eye infections and malaria, were permanently a threat.

Essentially, this existing problem concerning water supply and sanitation services in Tanzania has acted as the driving force for this research; therefore, it is hoped that this thesis may devise an appropriate (in the context of reliability, quality, quantity and affordability) solution for Tanzania water services, which ultimately acts as the motivation of this research. With this in mind, it is considered that the following questions need to be asked:

1. How can Tanzanians be provided with the best quality but affordable water supply and sewerage services?
2. How can water supply and sanitation services in Tanzania be self-sustainable?
3. How can Tanzanians participate fully for their own betterment in water sector development?

1.3 Aim and Objectives

This thesis comprises the aim of 'developing a sustainable financial and operational model for water and sewerage services in Tanzania'. With this in mind, the objectives are set as follows:

1. To review the delivery of the service provided by DAWASA and the privatisation of DAWASA;
2. To review and identify the problems of water and sewerage services in Tanzania;
3. To critically review how water and sewerage services are delivered in developing countries;
4. To evaluate the funding methods in water projects and assessing the potential value of existing commercialisation in water services;
5. To review the existing water services model for developing new framework suitable for Tanzania;
6. To develop a theoretical water services model and Testing; and
7. To develop an appropriate funding and management model for Tanzania water services.

1.4 Scope and Limitations of the Research

The research scope is no more than a critical study of the existing water problems in Tanzania with the overriding aim of establishing an appropriate and sustainable solution for the current Tanzania water services issue. Secondly, within the country's available and limited local resources, the research scope is concerned

with developing sustainable capital funds for the Tanzanian water supply and sewerage services; thus, the study focuses mainly on experiences from Sub-Saharan African countries.

1.5 Original Contribution of the Research

The original practical and theoretical contributions of this study can be summarised as follows:

- i. The research introduced a new locally developed water management style that is recognised as efficient and reliable for water services in Tanzania;
- ii. The increase of water production and supply—owing to the adaptation of a newly developed model—will act as a catalyst for social and economic development owing to the fact that water will be used for other economic development, i.e. crop production (agriculture) and industrial development, within the country;
- iii. The availability of water will increase land value and attract more investors;
- iv. The researched local capital funding model will fasten the expansion of water supply and sanitation services in Tanzania; therefore, funds will be available under local management within local conditions;
- v. The application of a newly developed model will improve sewerage services in the country, and so the existing poor sanitation and pollution in the city will therefore be no more, which will keep the city (Dar-es-salaam) cleaner, more attractive, and environmentally friendly;
- vi. The new model introduces commercial types of services, all of which have greater focus on the sustainability of the delivery of services and not the maximisation of profit—a vision which has a greater benefit in terms of the affordability of water services; and
- vii. The successful application of this new model in relation to the eradication of water supply and sewerage services in Tanzania will bring about new challenges for other Sub-Saharan African countries aiming to create and adopt their own style of best water management within their respective countries, which therefore means that this induces other challenges and questions so as to facilitate opportunities of investigation in similar areas, i.e. water supply and sanitation, for future betterment.

1.6 The Thesis Structure

The structure and arrangement of the chapters in this thesis have been designed systematically in order to fulfil the aim and objectives of this research.

1.6.1 Chapter One: Introduction

This chapter provides the general introduction of the study, its aim, objectives, scope and limitations, and further describes the source, research questions and original contribution of the thesis. Furthermore, this chapter also provides the structure and composition of the entire thesis.

1.6.2 Chapter Two: DAWASA and Privatisation

Chapter Two discusses the provision of water supply and sewerage services in Tanzania. It is structured so as to provide practical experience of water management history in the country. The areas covered include a critical discussion on public water services in Tanzania, the privatisation of DAWASA, the driving forces for privatisation, private water management, and the failure of private water services and the effects.

1.6.3 Chapter Three: Water Services in Developing Countries

This chapter is structured so as to provide different knowledge of experiences in water services from other African developing countries. Water services experiences are acquired sourced of learnt from countries, such as Uganda, Kenya Senegal, Somali, Zambia, Guinea, Ghana, and Cote de Ivore. Moreover, issues of the change of water management style, process, adaptation and effects are widely covered. With this in mind, the adopted concepts are compared with the conclusions drawn from Chapter Two for the purpose of scrutinising a step towards drawing answers to the research questions.

1.6.4 Chapter Four: Methods for Funding Water Projects

This chapter provides a discussion on the different methods of funding water projects development and loans (as a source for capital funds) from financial institutions, whilst the conditions for loans are also critically assessed. The difficulties and rationale surrounding the loans are also covered, in addition to the effects of the World Bank procurement procedures for country borrowers. However, other methods—including capital from property value and equity-based methods—are also scrutinised. Generally, the chapter focuses on the generation of capital for

water projects, which is noted as being a major obstacle to achieving better water services in Sub-Saharan African countries.

1.6.5 Chapter Five: Management of Water Services

This chapter is formulated so as to discuss common methods for water services management, including public water services, private water services, and THE commercial services of public entities. The role and functions of regulatory authorities in water services, and willingness to pay, has also been discussed; this is based on an analysis of evidence from Sub-Saharan African countries in comparison with various local evidences captured in the field. The adopted concepts are compared with actual experiences of Tanzanian water services before, during and after the DAWASA privatisation. The proportional services, costs and efficiency are also measured. Furthermore, the differences between commercialisation and privatisation are widely discussed.

1.6.6 Chapter Six: Evaluation of Water Services and Model Formulation

The chapter is structured to evaluate, link, and accordingly consolidate various water management models adopted from the (discussion covered in chapters 1, 2, 3, 4 and 5) Sub-Saharan African countries. A framework for the research question and the formulation of the basic format of required data to be collected from the field are provided. The discussed areas include definition of privatisation, evaluation of different water services model within Sub-Saharan African countries, combined discussion on case studies, funding sources and effects, World Bank loans, the role and functions of private water services providers and regulatory authorities, and the setting of water charges. However, the detailed procedure for ideal water management model (framework) has been critically discussed.

1.6.7 Chapter Seven: Research Methodology

The research methodology chapter of this thesis discusses the way in which this study has been designed and implemented, i.e. data collection and analysis, and the way in which the research answers were achieved. In relation to the aim and objectives of the study, the chapter critically examines the research methods in terms of selecting the best method to be adopted for this research. The chapter also covers evidences associated discussions concerning how the study was carried out, its results, the method utilised, the procedure of data analysis, and also how the process of validation was executed.

1.6.8 Chapter Eight: Field Results and Model Development

The field work chapter in this thesis is dominated by a discussion on the process, approach, and the results of field work implementation—particularly during the period of data collection, gathering, conceptualisation, and analysis. The interpretation of data collected in relation to the actual noted problems of water services in Tanzania and the development of a proposed solution according to the need are discussed. The reasons for field ground data collected in Tanzania and a detailed discussion of the sources for data collection is also carried out. The advantages and disadvantages of development—originality and potentialities of the model (POCO)—are also discussed in this chapter.

1.6.9 Chapter Nine: Validation of the New Model (POCO)

This chapter provides detailed information as feedback of the model (POCO) test, which has garnered criticism several comments from the field discussed, and has further encountered a number of challenges. The model testing (validation) was executed according to the study needs in seven different water authorities: MWAUWASA, IRUWASA, Mbeya UWASA, MORUWASA, MUWASA, ARUWASA and Tanga UWASA. Moreover, the method adopted for the validation and process of implementation and the adaptation of the concept from the given comments for strengthening the model (POCO) are discussed. In addition, financial models evidence how the tariff review and mass contribution methods are realistic, opportunistic and practical as substitutes for loans, with financiers' tough conditions also covered.

1.7.0 Chapter Ten: Conclusion and Recommendations

This chapter draws the conclusion of the research findings, and subsequently opens new challenges of the possible areas for future. The conclusions, contributions and recommendations are critically presented based on the captured developed research evidences. The reasons for supporting the research conclusions are widely described as having the capacity to give opportunities for general adaptation and good practice, and as well challenges for future research development. The conclusions presented are from the summarised analysis of the concepts, there are detailed systematically guided by the research objectives. The detail provided discussion on the model analysis was a strategy guiding to provide a strong conclusive research vision. Furthermore, strong reasons justifying POCO being the only choice for Tanzanian water problems were also discussed.

CHAPTER TWO: DAWASA AND PRIVATISATION

2.1 Introduction

This chapter is structured to provide the experiences of water services in Tanzania.

Notably, Tanzania is amongst the Sub-Sahara African countries that has a poor economy and critical water problems. The country is taking keen steps to improve its economy for the betterment of Tanzanians; however, water supply and sewerage services are seen as a major source of social and economic development in the country. With this in mind, this chapter provides a critical examination of water services in Tanzania in an attempt to identify problems as well as the causes.

In this chapter, focus is placed on Dar-es-salaam Water and Sewerage Authority (DAWASA), which is the largest water service provider operating in the city of Dar-es-salaam and coastal region. It is from an examination of DAWASA's performance that the research aims are developed. In this chapter, various issues—including the establishment of DAWASA, its role and functions, and its performance during the periods both before and after privatisation, organisation structure, effects of privatising water services, driving forces for DAWASA privatisation, the aim and objectives of DAWASA privatisation, the source of funds for privatisation and the implementation of Dar-es-salaam Water Supply and Sanitation Projects (DWSSP)—are all critically discussed.

2.2 Privatisation in Tanzania

Both prior to and following the independence of Tanzania in 1961, almost all enterprises in the country were managed privately by individuals and organised groups. For the purpose of widening and maintaining job opportunities for local Tanzanians, the government nationalised and placed all enterprises under state ownership and management up to the mid-1980s. Accordingly, water services were owned and managed by the government. Up to 1990, almost 400 state-owned enterprises had accumulated commercial losses of US\$100 million, as well as US\$352 million as loans, all of which were guaranteed by the government. This

was a significant burden upon the government and, as a result, the government made a deliberate withdrawal from direct involvement in the business as a way of devoting its scarce resources to its core responsibilities, including governance, policy issues, taxations, security issues and capital investments [34].

According to Mapunda [35], the government embarked on economic reforms in the form of privatisation as a way of enabling parastatals to attract strategic investors who would inject requisite capital for the purpose of rehabilitation and expansion, thereby introducing new and cost-effective production and service technologies, sound management, marketing expertise, and subsequently produce quality goods and better services. In an attempt to ensure commitment, in November, 1993, the government of Tanzania amended the existing Public Corporations Act so as to define the institutional framework and procedures for divestiture. As a result, the privatisation in the country was deliberately focused on transferring the ownership, operational and investment obligations in the parastatals from the government to the private sector.

2.2.1 DAWASA Background

Kawambwa [39] argues that, following the independence of Tanzania in 1961, water and sewerage services under the Ministry of Works was managed by the department of Public works (PWD). Subsequently, during the early 1970s, Dar-es-salaam—being the capital city of Tanzania and the fastest developing business centre in the country—was separated from the government's central water management system. An independent water corporation (Dar-es-salaam Water Corporation Sole) was formed in an attempt to deal with water supply services only within the region. At this time, the population of Dar-es-salaam was less than 3 million people, and there was only one source of water the Mtoni treatment plant. As a result, in 1981, the rapid population increase caused the government to establish the National Urban Water Authority (NUWA) and charged it with the responsibility to develop and manage the urban water supply on the mainland of Tanzania. However, the major objective of the new authority was to address the deteriorated state of water supply systems. NUWA subsequently became operational in 1984 with the objective to take over and reform the water supply services in all urban areas. NUWA failed to achieve its target [37].

In 1997, the Government reorganised NUWA by amalgamating the National Urban Water Authority [NUWA] and the Dar-es-Salaam Sewerage and Sanitation Department [DSSD] to form the Dar-es-Salaam Water and Sewerage Authority (DAWASA) [4]. DAWASA was officially established in April, 1997, by Act No. 8 by merging the water supply operations of the defunct National Urban Water Authority

(NUWA) and the sewerage activities of the defunct Dar-es-Salaam Sewerage and Sanitation Department. Subsequent amendments were made to the Act in 1999 to allow for the privatisation of DAWASA, and further amendments in 2000 allowed for the creation of the Regulatory Authority EWURA. All amendments to the Act were amalgamated into the main Act, thereby resulting in the Dar-es-Salaam Water and Sewerage Authority Act 2001. At this time, DAWASA was operating as a service provider, and did so up until 2003, privatising its operational duties to City Water Services owing to a lack of funds for services maintenance and development. However, DAWASA continued to shoulder specific duties, such as the supervision of capital development projects and acted as an asset holder. In 2004, however, the government of Tanzania terminated its ten-year City Water Services lease contract owing to poor performance, which automatically led to material breach of contract. The government formulated a local company, DAWASCO, with the aim of conducting all responsibilities left by the private operator City Water Services. Notably, DAWASA is still in place as an asset holder and capital project implementer on behalf of the Tanzanian government [42].

2.2.2 DAWASA Existence and its Functions

The Dar-es-salaam Water and Sewerage Authority (DAWASA) is licensed in accordance with the Energy and Water Utilities Regulatory Authority (EWURA) to carry out all responsibilities for providing, planning, developing, and managing water supply and sewerage services in the city of Dar-es-salaam, Urban Coast region areas, and all areas along transmission from upper Ruvu, lower Ruvu and Mtoni treatment plants to Dar-es-salaam water reservoirs located at Kimara, Chuo cha Ardhi and Mtoni.

The efforts of DAWASA to fulfil the city's water demands with a population of more than 4.5 million are limited to a maximum water production of 272,000 m³/day from three water production facilities, two of which are on the Ruvu river, Upper Ruvu WTP (81,000 m³/day) and Lower Ruvu WTP (182,000 m³/day). The third smallest water production facility, Mtoni WTP (9,000 m³/day), is located on the Kizinga river, which is situated only 7km south of the city. Kizinga River, with its poor water quality owing to high contamination from residential encroachment, has been proposed for abandonment. Moreover, the Ruvu River, which is located approximately 80 km north-west of the city of Dar-es-salaam, is the main source of water, but has one major problem: the high pumping energy costs.

From 1997, DAWASA developed a number of boreholes in an attempt to alleviate the impact of droughts; the ground water was developed as a supplementary source on an emergency basis during the drought years. However,

owing to a short supply, it has continued to be used during normal years. Ground water quality is generally good and within acceptable standards, although various boreholes are showing signs of becoming saline, and there is also an increasing incidence of elevated values of nitrates and faecal bacteria in some areas. Nevertheless, the total production capacity from all three surface facilities is 272,000m³/day and approximately 36,000m³/day from ground water, which is barely sufficient for current and short-term demands [36; 37].

Irrespective of such efforts, however, Dar-es-salaam's citizens are only supplied with 30% less than the actual demand, with a permanent timetable for water rationing. As a result, some areas, such as Kimara, Kamanyola, Temboni and Mbezi, are supplied only once a week, whilst Tabata, Ukonga and Pugu are now removed altogether from the DAWASA water supply. Essentially, the 4% population increase on each year poses further evidence in terms of the urgency of implementing a sustainable water solution [42].

2.2.3 DAWASA Privatisation

By the late 1990s, it became evident that DAWASA was unable to respond quickly enough to meet increasing customer demands for water, and it was also unable to raise finance for network repair and to replace its aging assets. In 1995, through Japan International Cooperation Agency (JICA), the Japanese government assisted the Tanzania government in carrying out the study for the improvement of water services in Dar-es-salaam city and various coastal regions. The same exercise was carried out again by the German Company Gauff Ingenieure with the aim of rehabilitating DAWASA water infrastructures, and carrying out the expansion and repair of the water supply network, meter installation, improvement of the database and billing system, and the establishment of extra water sources in order to sustain the fluctuating water demand in the city.

Subsequently, the Tanzanian government acted to establish solutions for the urgent repair and rehabilitation of the existing aged water infrastructure. As a result, all aged water networks and other technical problematic areas were combined in order to formulate Dar-es-salaam Water Supply and Sanitation Project (DWSSP). In this regard, the problem was from where funds could be garnered for the DWSSP implementation. The Tanzanian government was unable to fund the development due to economic problems, and so they subsequently went to the World Bank for assistance.

In August, 1997, the African Development Bank (AfDB) proposed that the Dar-es-salaam Water Supply and Sanitation Project should focus on rehabilitating

and improving operations and facilities, with DAWASA acting as the service provider and operator. AfDB put on hold project processing pending the outcome of the consultations of 1997/98 between private operators and the Government of Tanzania (GoT) for a long-term 'concession'. Under the proposed arrangements, the concessionaire was to be responsible for financing the investment programme, as well as for the operation and maintenance activities estimated to cost approximately US\$250 million.

Later the following year, in November, 1998, it became clear that this approach was not going to succeed: private investors were unwilling to finance such a venture in Dar-es-salaam given the state of the water supply and sewerage (WSS) operations and the overall infrastructure. This situation necessitated Tanzania remaining with the World Bank option. The World Bank loan was available with the condition that private operations and public financing would be combined. With no choice, Tanzania accepted the loan with the attached privatisation condition, and the process for implementation was subsequently initiated [42].

2.2.4 Process of DAWASA Privatisation

In 2000, the DAWASA Act was amended so as to allow the operation and maintenance functions to be undertaken under contract by a private operator and to thereby allow for service regulation by an independent entity. Thereafter, the GoT, through the Presidential Parastatal Sector Reform Commission [PPSRC], began the process to establish new arrangements for the delivery of services involving private sector participation. The bidding process began; unfortunately, however, the only bidder was Bi Water, an English company. In 1999, the World Bank lodged no objection for the lease contract. The City Water Services Ltd., a joint venture company between Bi Water International, Gauff Ingenieure and local company Supper Doll Ltd., officially signed the lease contract in February, 2003. In March, 2003, DAWASA completed the preparation of the Dar-es-salaam Water Supply & Sanitation Project (DWSSP) in keeping with the suggested scope defined by the World Bank. The World Bank, African Development Bank, and the European Investment Bank appraised the project and commenced negotiations for financing. DAWASA and City Water Services Ltd. met all the required conditions for external financing by IDA, AfDB, and EIB by the end of July, 2003, and the project and lease contracts came into effect, subsequently commencing on August 1, 2003.

2.2.5 Sources of Funds for DAWASA Privatisation

The need for DAWASA privatisation originated from the deteriorated Dar-es-salaam water infrastructure, which urgently required special attention for both rehabilitation and repair. This was recommended by the Japan International Cooperation Agency (JICA) in Dar-es-salaam water improvement report of 1995. The study was carried out by a German company, Gauff Ingenieure, which also recommended the repair and rehabilitation of the existing aged DAWASA water infrastructure. The two studies concluded that the formulation of Dar-es-salaam Water Supply and Sanitation Project (DWSSP) could provide a solution for water problems in the city. However, the implementation required capital funds, which the government could not afford, and as a result, the government requested loans from various international institutions the World Bank being one. Initially, the estimated total project costs were approximately \$149 million—equivalent to 138 million Euros—which were to be financed from the following international institutions (as a loan to the GoT), all of whom notably agreed to fund the project (see Table 2.1).

Table 2.1: Total donor contribution for DWSSP

SN	Financier	Amount in EUR Millions
1	International Development Association (IDA)	50
2	African Development Bank (AfDB)	32
3	Government of Tanzania (GoT)	15
4	Private Operator Equity (CWSC)	5
5	SUB- TOTAL	103

In order to ensure the total estimated fund required for the project was achieved, the Tanzania government (the borrower) requested that the World Bank subsidise a loan from the bank's risk capital for an amount equivalent to 35 million Euros. Finally, the amount concluded as an estimate for the total project (DWSSP) was 138 million Euros.

On January 23, 2003, the Tanzanian government borrowed close to US\$160 million for a credit period of 5 years, disbursed in up to 15 instalments of not less than 2 million Euros each, for the DWSSP; this comprised the condition of privatising DAWASA. The loan had an applicable annual interest rate of 11.5%,

with the interest capitalised during a grace period of 25 years, according to the condition of the loan (see Appendix S in the CD).

The credit was available at the request of DAWASA from November 15, 2003. Upon receipt of the bank's written request, no disbursement was to be made after September 15, 2008 [43; 45]. Therefore, as indicated in Table 2.1, the DWSSP funds were raised by the bilateral institutions, including IDA, AfDB and EIB. Notably, Tanzania as the borrower, contributed Tsh. 750 million as a counterpart contribution in order to fulfil conditions for project funding.

2.2.6 Contractual Obligations on Rental and Equity Payments

According to the DAWASA/City Water lease contract, page 77, Section 39.4, the private operator, City Water Services Ltd., was obligated to pay DAWASA monthly rental fee in advance, stipulated in three different categories on the basis of monthly payments: Contract Year 1 was Tsh. 50 million; Contract Year 2 was Tsh. 75 million; Contract Year 3 to 10 was Tsh.100 million. However, in the same section, it was clearly stated that, 'the operator City water shall be liable for the payment of a financial penalty in the event of failure to pay the monthly instalments of the rental fee'. Another payment obligation in the DAWASA/City Water lease contract was equity, whereby City Water services Company Limited (CWSL) was contracted to operate water supply and sewerage services in the city for a period of ten years, with an equity contribution of \$8 million per annum. Notably, the CWSL equity contribution was a part of the capital funds for development and sustainability of the DAWASA infrastructures; therefore, this equity contribution was clearly described in the lease contract. Equity contribution was a part of the contract conditions, which brought greater worries to bidders; this situation may have therefore limited the number of bidders during the contract procurement, simply owing to the fact that it had higher investment costs. This occurred during the DAWASA privatisation procurement procedure. Notably, during the second round of bidding, only one contender (CWSL) was made apparent.

2.2.6 DAWASA Privatisation Structure

According to a lease contract [41], the new arrangement for the delivery of water supply and sewerage services comprised DAWASA as a Public Granting Authority [PGA] and the private operator, City Water Services Ltd., as the main actors. As a result of the legislation passed in April, 2002, a third group, Energy and Water Utilities Regulatory Authority [EWURA], was assigned with the authority

and power to regulate the activities of DAWASA and City Water Services Ltd. These arrangements enabled proper separation of the roles of Regulator, Assets Manager and Service Provider, which provided greater efficiency, transparency and accountability for water supply and sewerage services in Dar-es-salaam. Markedly, what has been executed thus far in terms of implementing privatisation in the country can be summarised and presented in the figure form as follows (see Figure 2.1).

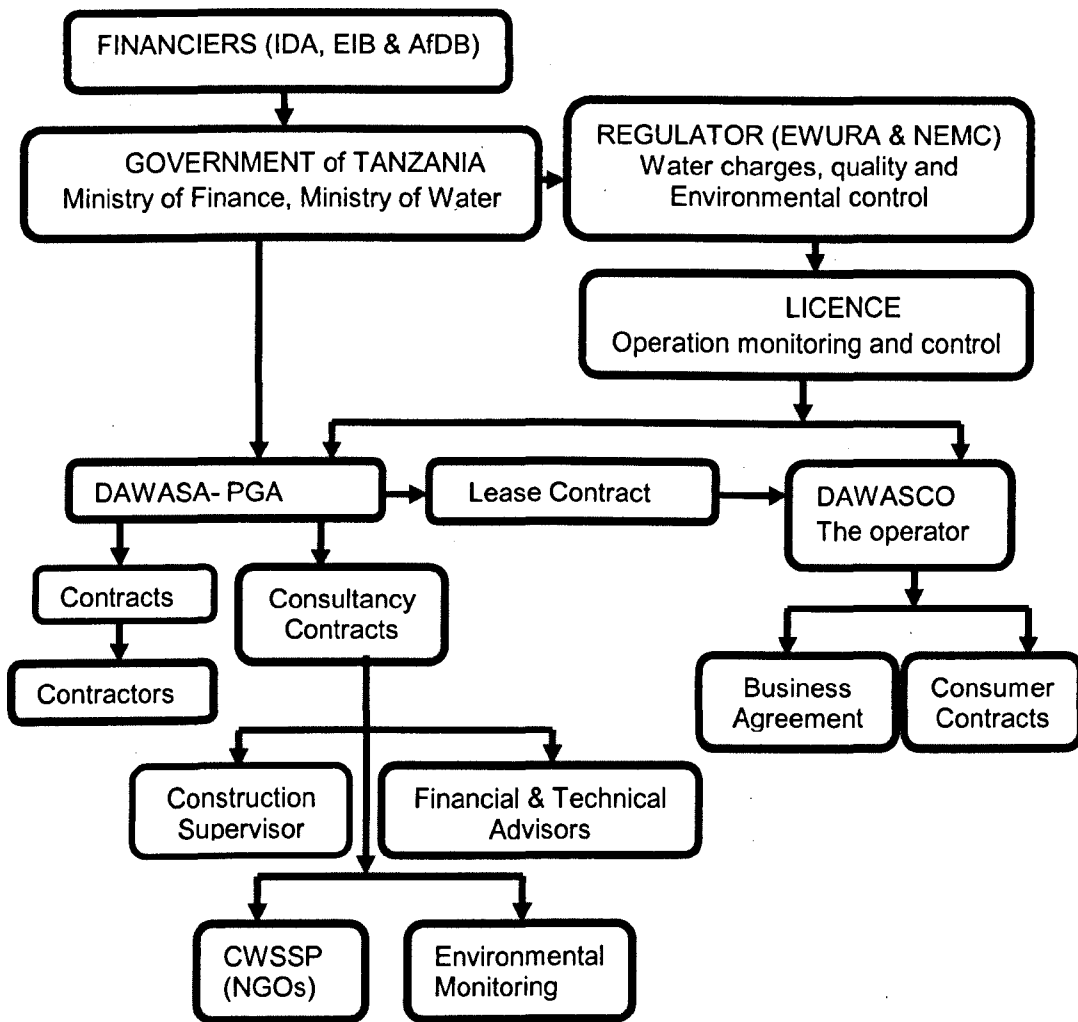


Figure 2.1: DAWASA structure during the privatisation period

2.3 Change in the Roles and Functions of DAWASA (DAWASA PGA)

The privatisation of DAWASA aimed to deliver quality water to all Dar-es-salaam and the coastal region citizens. In order to fulfil this objective, the

organisation structure was changed, subsequently affecting the duties and responsibilities of each distinct organ. Therefore, DAWASA PGA, City Water and EWURA—the key organs of the privatisation—were each structured to perform specific duties (roles and functions), as detailed in the following sections.

2.3.1 DAWASA PGA

According to the DAWASA Act [3; 4], which was amended in 2001, the roles and functions of DAWASA were changed to DAWASA Public Grant Authority (DAWASA PGA). Restructuring was implemented in order to ensure the following four major functions could be performed. Firstly, on behalf of the Tanzanian government, DAWASA PGA was the owner and manager of the water supply and sewerage services assets, and was making the assets available to the operator. Secondly, DAWASA PGA was the implementer and manager of the projects funded by the World Bank, including the Dar-es-salaam Water Supply and Sanitation Projects (DWSSP) and Community Water Supply and Sanitation Projects (CWSSP). Importantly, the projects involve the rehabilitation and upgrading of old existing infrastructures, including water networks, waste water networks, oxidation ponds, sewers, the rehabilitation of the ocean outfall screening chamber plants, and water storages. The cost for this component totalled US\$18.20 million. The entire World Bank loan was structured for the implementation of DWSSP only: for example, the total sum of US\$86.99 million—which is almost 51% of the total World Bank loan—was invested into just one component (Water Supply Rehabilitation & Extension) of the DWSSP. The ongoing DWSSP will provide the much-needed improvements to the water supply and sewerage services in Dar-es-salaam. Such improvements are designed so as to be completed within the five-year period by a strategy involving elements, including replacement and/or repair of water supply and sewerage assets; however, the implementation of a commercial policy that ultimately favours connection to the water supply system and the reduction of physical and commercial Unaccounted for Water (UfW) will increase the correction of water bills, and will base bills on actual rather than assessed water use [48].

Thirdly, DAWASA PGA is the supervisor of the Private Operator's operations, and the main duties therefore include co-operating with the operator (City Water Services) in all appropriate and necessary respects so as to procure the execution of any capital works for which the operator may be responsible, and to enter into any such funding agreement as that, which includes the responsibility to assist the operator in obtaining from the government, local government or statutory bodies,

and subsequently securing all necessary contents and permits, as required by the law, in order to enable the operator to perform his/her obligations under the contract [40]. Finally, there is the Community Water Supply and Sanitation Programme which, according to Mutalemwa [49], required a total of US\$3.20 million to be invested in a community water supply and sanitation (CWSS) programme. This component was required to include the construction of approximately 50 CWSS sub projects, and has been implemented by DAWASA with the assistance of Specialist International NGOs. Moreover, under technical studies for the medium-term investment programme, a total amount of US\$5.50 million will be invested in order to undertake four studies so as to prepare for a medium-term water supply as well as sanitation extension programme. The studies include the selection of a future raw water source for Dar-es-salaam, strategic plan, and feasibility studies for the expansion of water supply services and sewerage services in Dar-es-salaam. Moreover, national urban water supply and sanitation strategy will be considered for improving water supply and sanitation (WSS) services in urban areas, which are the tasks to be performed by DAWASA under WSS and DWSSP (long-term investment programme). Therefore, in order to facilitate DAWASA PGA, and to also ensure that all the responsibilities are implemented, the new organisational structure was formulated and kept in operation [45]. However, the function and composition of the new management organisation structure can be summarised and presented as follows (see Figure 2.3).

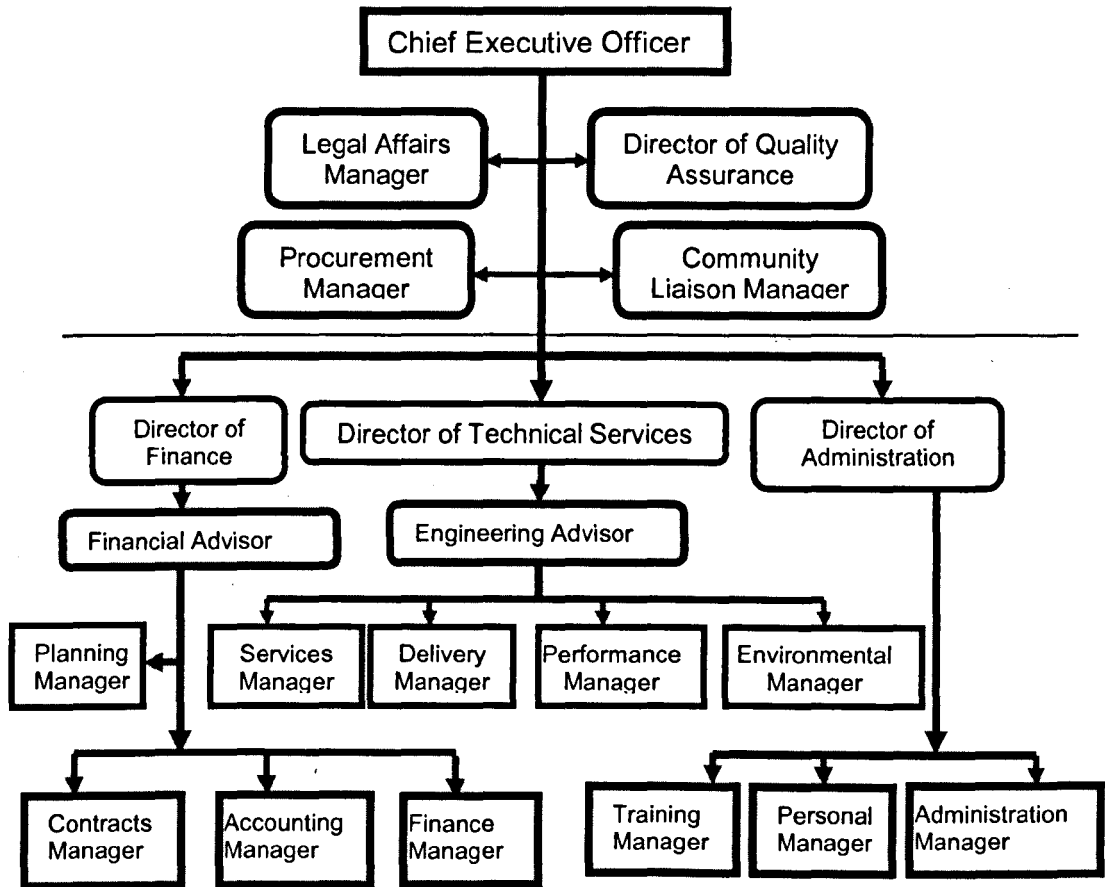


Figure 2.2: DAWASA PGA Management organisation structure

2.4 City Water Services (The Operator)

City Water Services Ltd. (CWS) is a private limited company established under the law of Tanzania, the company shareholders of which are Bi water, Gauff Ingenieure and Super Doll (Tanzania) Limited. A Tanzanian joint-venture company was set up by Bi water International Ltd. UK and H. P. Gauff Ingenieure GmbH, which together hold 80% and 20% of its share capital respectively. Moreover, as 49% was held by Super Doll Trailer Manufacturing Company Ltd. with the exception of the operational duties, there are capital works to be implemented by the operator (The City Water Services), which were directly delegated to, and carried out under, the responsibility of CWS (the delegated works). Therefore, under this project, the private operator was responsible for the operations and maintenance duties, as well as the delegated capital works [38].

2.4.1 Role and Duties of City Water Services (CWSL)

The duties performed by the operator CWSL can be categorised into three types of duty: technical, commercial, and administrative.

2.4.2 Operator's (CWSL) Technical Responsibilities

According to the lease contract, the defined operators (CWSL) technical duties included the operation and maintenance of networks, equipment and plants, the procurement and supply of chemicals and energy, and customers' water supply connections, including water meters. Other duties comprised surveying and quantifying of the assets in order to prepare and implement a maintenance plan which was updated on an annual basis, leakage detection and control, the implementation of a capital investment programme, and the planning and covering of the rehabilitation and renewal of assets. Moreover, the management of the implementation of delegated capital works and the implementation of priority works were also to be carried out. However, according to the DAWASA V/S City Water Ltd. contract [41], the technical role and duties performed by the private operator, were as follows:

1. To provide the services required in accordance with the contract in an efficient, effective and economical manner; to ensure quality control according to the International Standards Organisation so as to ensure the quality of the provision of services, and to maintain and repair assets [44]; and
2. To meet and fulfil the performance targets as set in this contract (Appendix N). In the event of the operator not meeting such key performance targets, they shall be held liable for the penalties, as set out in this contract (Appendix N in the CD).

2.4.3 Commercial Management Duties

1. The company also had to deliver the management of the customers' accounts, including billing and the reading of customer meters, in addition to revenue collection, the management of customers' complaints, and the timely updating of a list of all services supplied by the operator to government institutions;
2. The establishment of various mechanisms for the promotion of customer relations, including the development of contracts with customers, and the publication of such customer contracts. In the opinion of the operator, this would secure adequate publicity for customers; and

3. To provide all necessary and adequate working capital and other finances at all times during the period of the contract in order to facilitate the fulfilment of all its obligations, and to provide the services in the operators' area.

2.4.4 Administrative and Financial Management

The operator's responsibilities in relation to the administration and financial management include the following considerations:

1. To sustain all existing employees, training and the development of personnel, as well as to create a sustainable Information Technology system and database, establish account procedures, prepare and submit reports to DAWASA (the Lessor) and prepare the Codes of Practice and final budgets, strategic plan and business plan;
2. To develop and manage the programmes for the advancement of the skills and competencies of persons employed within the water and sewerage sector within the areas; and
3. To ensure that all the operators' personnel remain employees of the operator or an affiliated company for all salary and benefit purposes, and that such staff are compensated in accordance with the normal policies of the operator, as may be amended from time to time.

2.4.5 The Power and Rights of City Water Services (the Operator)

The operator is required to perform all the water service functions within the DAWASA operating area according to the contract, and for the sole purpose of carrying out and implementing the provisions of the contract include specific powers conferred on the operator elsewhere, as described in DWSSP financial contract [43]. In order to reinforce the operator's performance, the following rights were granted:

- Rights of disconnection of services to properties for non-payment of charges for water and sewerages;
- Rights of entry to premises and properties, the right of control, and the right to discharge to sewers, the right to manage, use and operate the assets;
- The right to take legal action for the breach of obligations by customers, and the operator's obligations to obtain and keep in force all necessary and appropriate licenses, permits and warranties for the provision of services and the carrying out of works; and
- For the first five years, the operator is required to provide a Managing Director from the staff or officers of its majority shareholder.

2.5 The Energy Water Utilities Regulatory Authority (EWURA)

The authority was established under the EWURA Act 2001 in order to maintain the balance between utilities services providers and consumers. According to the presidential sector reform commission report [38], quality water for all is the government's primary objective; however, Water Act No. 20 of 2001 details targets associated with the supply of quality water to more than 75% of all villagers by 2025, which is also an evidence of the government's focus on affordability. Establishing EWURA in order to balance and control water charges is another way of ensuring affordable water services to all; such a service will ultimately ensure the use of safe water by all, and will therefore accelerate social and economic developments within the country [51]. The main duties of the authority were:

1. To promote effective competition and the economy;
2. To protect the interest of all costumers and the service providers;
3. To promote the availability of regulated services to all customers, including low-income, rural and disadvantaged consumers;
4. To enhance public knowledge and awareness of the regulated sector, including the right and obligations of consumers and regulated suppliers, and the ways in which complaints and disputes may be initiated and resolved; and
5. To ensure the protection of the environment.

Furthermore, the most important function of the Authority is legislation:

1. To issue, renew and cancel licenses;
2. To establish standards for goods and services;
3. To establish standards for the terms and conditions of the supply of goods and services;
4. To regulate rates and charges; and
5. To form rules and policies.

Moreover, there was also the requirement to monitor the performance of the regulated sector in relation with level of investment, availability, quality and standard of services, cost of services, efficiency of production and distribution of services. In the case of the DAWASA privatisation, EWURA was directly responsible for the legislation issues of DAWASA PGA and City Water Services'

duties, as well as for the monitoring of the performance in relation to the level of investment status, quality and standard of services, costs and general services performance [50; 51]; however, during the process of privatisation, EWURA was not in place; EWURA was established when City Water Services was approximately 5 months into its operations. This has a greater risk in the entire set up of DAWASA and City Water Services, whereby rules and control for the fair operation of each organ against water users were not in place at the right time.

2.6 Privatisation Implementation, Performance and Monitoring

The assessment in terms of performance has been monitored periodically according to the agreed and contractual performance set indicators of every specific job in a fixed particular time. With this in mind, according to Mutalemwa [49], an on-going and annual monitoring programme was carried by DAWASA (the lesser) based on routine returns made by the operator in key performance. The set targets for performance in accordance with the contract were independently checked and audited by DAWASA PGA. The monitoring programme—which includes the agreed performance indicators—identified all the failures made by the operator in terms of failing to achieve key performance targets. However, it was a contract obligation that the operator should make use of Good Industry Practice so as to comply with all performance targets in order to obtain the required standards. When not achieving the targets, financial penalties were set. In practice, DAWASA-PGA used two major methods, including periodic reports submitted by the private operator and the auditing of both technical and financing issues.

According to DAWASA City Water Lease Contract, Good Industry Practice (GIP) means the exercise of the degree of skill, diligence, prudence, and foresight that could be reasonably expected from a skilled, experienced and prudent person engaged in the provision of services, and the carrying out of operations, maintenance and administration pursuant to the lease contract from time to time. However, all the performance target indicators of each described work were set referring to the volume of work carried out (Volume and Quality) against its completion time. Therefore, the conclusion from this comparison (work performed against time) was analysed and adopted as an operator's performance.

The key performance targeted areas were drinking water, effluent quality, customer water meter installation, new domestic water supply connection, transmission main losses, water distribution losses, revenue collection, repair time of burst water pipes, repair time of background losses of supply pipes, data collection, percentage of customers receiving less than 5m pressure at the tap, and

those receiving less than 10m pressure at the tap (see attached table in Appendix N in the CD). The other performance targets were not subject to financial penalties.

2.6.1 Comparison on Performance

The comparison discussed in this section is focused on revenue collection during all the three different periods, including DAWASA prior to privatisation, the City Water Services period, and the period following the termination of the private services. However, a comparison in other areas of services, including water production, connection for new customers, water meter installation and quality in services, were not covered owing to a comparison in revenue collection being decided as the benchmark of all services performance. Other areas of services performance can be indirectly reflected in total revenue gain. Essentially, the revenue collection prior to the privatisation amounted to Tsh.14, 087.00 million per annum, which was higher by almost 9% when compared with the revenue collected during the private water services period (City Water Services), including the tariff increase, which occurred just after the privatisation had started. DAWASCO were collecting almost 10% more than the City Water Services collected. The expenditure during the City Water Services period was not available and therefore induced difficulties in terms of comparing others expenditures incurred during DAWASA and DAWASCO periods. The expenditure comparison was set in order to provide level of efficiency in finance management within all three (CWS, DAWASA and DAWASCO) periods, which intended to open up a discussion on the possibility of fund-serving. The summary of the total revenue collected in the three different periods can be presented in a table format, as clearly shown below concerning what amount of revenue was collected during each period (see Table 2.2).

Table 2.2: Comparison on revenue collection

COMPARISON OF FINANCIAL PERFORMANCE				
Institution	Description	Financial Year	Revenue Collection TZS 'Million	Expenditure TZS 'Million
DAWASA	Pre-lease	2002/2003	14,087.00	17,983.00
CWS	2003 Lease	2003/2004	12,903.00	
DAWASCO	2005 Lease	2005/2006	14,600.47	17,776.00

2.6.2 Outcomes and Failure of Privatisation of Water Services in Tanzania

i. The Failure and Termination of Lease Contract

The poor performance of the private water services under the operator City Water Services included the major cause of financial losses. The loss of almost Tsh. 1,697.47 million per annum was evidenced in Table 2.2, which therefore provides a clear indication of the operator's failures and poor performance in revenue collection. This was considered to be a Material Breach of Contract.

According to the DAWASA City Water Lease contract, 'a material breach of contract may lead to the termination of the contract'. Material breach of contract means when there is a serious material breach like non-compliance with obligations, or the violation of rights established in the lease contract occurring in serious and repeated forms which subsequently cause financial losses. Moreover, the material breach of contracts occurs when the operator or leaser commits material breach of the lease contract and does not take responsibility for the breach, or otherwise fails to correct or take substantial steps to correct a situation of non-compliance or defective compliance with its obligations, within a maximum period of 30 days. The injured party deserves the right to terminate the contract; therefore, having this contract power, with clear evidences of financial losses owing to the operator's poor performance, the government of Tanzania terminated the DAWASA City Water lease contract.

ii. Unpaid Equity Contribution

According to the DAWASA City Water lease contract, the operator CWS was to pay an equity contribution of a minimum of twenty-five% (25%) of the total subscribed share capital, and that the total subscribed share capital shall was not less than ten million US dollars (US\$10,000,000.00). Notably, as of May, 2005, the amount had not been paid in full [41].

iii. Unpaid Rental Fee

According to the lease contract agreement, a rental fee shall be paid by the operator to the leaser monthly in advance, and the amount of the rental fee payable to the leaser was Tsh. 50 million per calendar month; however, up to May, 2005, the amount was not fully paid, although by how much has not been disclosed. Markedly, the payment of electricity bills was problematic, and sometimes was not possible owing to lessor's revenue collection.

Such facts amounted to, were concluded and grouped together as performance failure by the private operator; therefore, the appropriate action was to terminate of the lease contract.

iv. Reporting Modality

Table 2.3: City Water Contact Schedule of Reports

Title	Timing
Annual Operating Budget, Annual Detailed Investment Plan, Strategic business Plan, and Five Years Rolling Investment Budget	Three (3) months prior to the commencement of the Operator's Financial Year
Annual Reports	Three(3) months after the end of the Operator's Financial Years
Collection and cost summary tables	Quarterly
Financial Statements	Quarterly

According to the lessor contract [41], the private operator should perform all described duties and report to leaser in a timely fashion (see Table 2.3).

Furthermore, in the view of Nyamajeje [50], Table 2.3 was a part of the contract agreement on the lease contract, which the operator CWS was to follow. The detailed components to be reported include the quantity of leakage control, new connections and water meter installations, water production, services and repair of the water pipes, detecting illegal connection, revenue collection, billing, and waste water services in areas of leakage control. In reality, this reporting timetable was not followed. City Water Services expenditure was not reported at all, which is why the comparison for the total annual expenditure of the figures from City Water was not available (see Table 2.2). Notably, this was amongst the difficulties experienced during the privatisation period, which may be one of the driving forces for the contract termination [50]. With this in mind, the Minister for Water and Irrigation, Lowassa [52], stated that, 'In May, 2005, DAWASA acting on behalf of the Government of the United Republic of Tanzania terminated the lease contract with CWS for non-performance and material breach of contract'.

2.7 Summary

The experiences on water services in Tanzania has been widely discussed in this chapter, along with the failure of public water services, driving forces for privatisation, and their effects, which together provided the major focused areas of the discussion. Considering the contents in the covered discussion, a number of conclusions were drawn as follows.

i. Driving Forces for DAWASA Privatisation

It was concluded that the privatisation of water services in the country was not the government's choice; rather, Tanzania urgently needed capital funds (approximately US\$149 million) for the rehabilitation, repair and development of the deteriorating Dar-es-salaam water infrastructures, with such investment considered able to improve and provide better water supply and sewerage services to Dar-es-salaam and coastal region citizens. The urgently needed amount was vast, and Tanzania was not able to raise such amount. The government approached the World Bank for a loan, which was available to provide a loan with the condition that, under international competitive tender bidding, DAWASA should be privatised. Tanzania, with no other viable option, accepted the loan with the privatisation condition. With limited knowledge and a lack of experience in water privatisation, Tanzania implemented the World Bank condition quickly in order to qualify for the loan. The loans came with many other conditions, including highly paid experts from the World Bank, no objection, and other World Bank procurement procedures. Such conditions have direct effects on the actual loaned sum, as well as the implementation procedure, which together all reflect in the form of higher water charges. Therefore, getting out of these conditions, the developing countries should come up with an alternative local capital funding method.

ii. Private Operation of Water Services

The discussion evidenced that the need for capital funds was the cause of private water services in the country. However, private water services, which took over from public management, could not deliver as well. The failure of private water services in the country left behind a number of unanswered questions, including: What is next step for Tanzania water services? And which water management model would work in country? Moreover, how could it be developed? This research adopted such questions as a challenge for the way forward, and therefore drew the conclusion for a takeover for developing the appropriate solution concerned with

solving the existing water problems in the country; therefore, the need for an appropriate water management model in the country was concluded from the effects left behind as a result of the failure of private and public water services.

Therefore, if the idea of establishing local capital funding method was from the effects of unfavourable loan conditions from international institutions, and the idea of developing appropriate water management model was from the failure of both public and private water services in the country, then the appropriate solution for Tanzania water services is to develop a model with the ability to solve both of the two aforementioned problems (the appropriate management model for services and operations, and, at the same time, a model able to generate funds for sustainability and capital development). However, the knowledge of experiences from neighbouring regions and Sub-Sahara African countries will add value in terms of the entire exercise concerning comparing local Tanzanian experience, which may then possibly result in a realistic water services model for Tanzania (Sub-Sahara African Countries).

CHAPTER THREE: WATER SUPPLY AND SEWERAGE SERVICES IN AFRICAN DEVELOPING COUNTRIES

3.1 Introduction

Kerf [24] notes that, in developing and developed countries, there are continuous problems to solve. Essentially, the magnitude of struggle and the nature of the problems are different, as developing countries face the worst conditions with approximately 884 million people in the region experiencing inadequate access to safe drinking water, whilst only approximately 2.5 billion people in the same region have inadequate access to water for sanitation and waste disposal. Poverty, poor economy, unstable political governance and the rapid growth of population are all factors for consideration. This chapter focuses on experiences concerning water services from a number of Sub-Saharan African countries. The focus is on the process that has led to success and failure in various operations of water and sewerage services within the region. The Sub-Sahara Africa countries have involved geographical, cultural, social, traditional and economical similarities with Tanzania. Sustainable water services have similarities in terms of problems in most of the Sub-Saharan countries.

Tatlock [211] argues that, 'while water stress occurs throughout the world, no region has been more afflicted than Sub-Sahara Africa', and further adds that, 'water stress refers to economic, social or environmental problems caused by unmet water demand'. Essentially, water services in Sub-Sahara African countries including Kenya, Uganda, Senegal, Gambia, and Cote d Ivoire and Ghana have been critically discussed. Issues including the type of management and the effects, funding for water projects, and overall affordability of services have been examined in-depth. The captured concepts will be compared with the experiences learnt from Chapter Two (Tanzania) for a further step towards reaching the best solution for Tanzania's water problems.

3.2 Water Supply and Sewerage Services in Uganda

3.2.1 Background

The struggle for water services improvement in Uganda began from the time of the country's independence in 1962. Water services in the country have been managed and controlled by the government. A step-by-step restructuring of water policies, as well as management organisation, have been implemented. Nevertheless, success and failures were all part of the process. Initially, water services were managed under the Ministry of the Local Government. During this period, Ggabba was the only water production plant in Uganda with a maximum production capacity of 50,000m³/day. Water produced from the Ggabba water treatment plant was supplied to Kiruba Island, Central Kampala industrial areas, and colonial residential areas (Muzungu). In the 1970s, Uganda water services were transferred to the Ministry of Mineral and Water Resources. In 1976, National Water and Sewerage Services (NWSC) were in place, with only three areas of operation: Kampala, Entebbe and Jinja. Under the World Bank funding project, in 1989, the Ggabba water treatment plant was successfully rehabilitated, with its capacity of water production upgraded to 80,000m³/day [13].

Sekayizzi [13] adds that the expansion of Ggabba II Water Treatment Plant went together with upgrading other water sources and the expansion of the water distribution network in Kampala and other areas. The improvement resulted in the necessary change of the NWSC structure to accommodate new larger operational areas, such as Barara, Masaka, Tororo and Mbara. However, following the commissioning of the Ggabba II expansion water works project, the Kampala operation area was divided into five service zones: City centre, Uwaise, Najja, Ntinda and Kansagwa. This change was adopted in order to enhance the water management system in Kampala for services improvement in an attempt to meet the new designed targets. According to Kaggwa [14], during the period 1980–1997, the Uganda water sector was under the management of many different ministries, including Ministry of Natural Resources, Ministry of Water, Ministry of Energy, Ministry of Environment, and Ministry of Metrology, etc. Water services were still in a poor state. Notably, the current time, the management water and sanitation sector is under the Ministry of Water and Environment, and the operations of services were contracted to a parastatal organisation (NWSC).

Subsequently, in the late 1990s, the operation and performance of NWSC was deteriorating owing to over-employment, which was approximately 3 to 1 (1

employee serving 3 customers only). However, a lack of commitment from employees resulted in a bureaucratic system of performance. As a result, water services performance declined, and there were subsequently low operational and financial efficiencies, poor quality of services, with general performance extremely bad to the extent that NWSC could not meet its debt services obligation. Furthermore, the debt stock of NWSC went up to Ushs.100 billion, thereby requiring an annual service obligation of about Ushs. 23 billion. The situation was so severe that even striving to meet the day-to-day operational expenses was tremendously difficult, and the entire urban area subsequently had a very low coverage of water supply and sanitation services [15]. As a result, this situation forced the Uganda government to take necessary measures for water betterment in the country.

In 1997, the Cabinet, under minute 139 (CT 1997), directed the Ministry of Water and Environment to develop a comprehensive policy framework for water resources management plan. Part of this task was to prepare a development plan and to accordingly reform the water sector. A team of officers from the Ministry of Water were provided assistance from consultants Ms Thelma Triche and Price Water House Coopers, which managed to review the organisational structure of National Water Supply and Sewerage Corporation. An outcome of the government (Cabinet) directives and consultancies contribution in 1998 witnessed the new board and management team for NWSC installed. A change of organisational structure and management team [16].

3.3.2 Management of Water Services for Kampala Water

In relation to the Kampala Water Improvement Project (KWIP), Kaggwa [14] argues that, since 1998, the management and operation of Kampala water services was officially under Gauff Ingenieure Consultancy for two years in the form of an operational contract, by which time the entire Kampala City was divided into five water services zones. The German company completed the first term of the contract period in March, 2000; unfortunately, however, they could not qualify for the second term for reasons associated with general performance and difficulties relating to poor revenue collection. The National Water Policy under minute 131 (CT1999) was aimed towards strengthening the reform in the water sector in order to ensure that the services were provided with increased performance and cost-effectiveness with the expansion of coverage. In 2000, the Uganda government intervened in NWSC operations by freezing the debt service obligation and maintaining the corporation under its performance contract for the first time (PC1),

which was to act as a transitional measure to improve the performance of the corporation and as a part of executing institutional reforms.

Following this, the German company (Gauff Ingenieure Consultancy) ended its first term of the contract in March, 2000. In April, 2000, the new French company (ONDEO) was selected and awarded with a new two-year contract as a substitute to Gauff Ing. The company, with top executive French management staff, was unable to improve the revenue collection in such a way to reach the target of 85% of the total water supplied. According to the contract, water leakages were to be reduced up to or less than 20%, with new customer connections down by up to two connections per week. Importantly, there was no significant expansion of the water supply network, and water meter installation was less than almost 70% of the total water supply connections, therefore being 10% less than the target. The rising water demand, owing to commercial development and population growth in Kampala City, also posed a problem. The operator ONDEO could not manage the situation, which subsequently resulted in poor performance in terms of revenue collection, poor water leakage control, and poor water pressure in the network when the network was not expanding.

Internal pressure was increasing from the government to the private operator owing to underperformance. In February, 2002, the French company pulled out and left the Kampala City without management, claiming that performance targets were unfairly raised. This was the end of the foreign private company providing services in Kampala City, and was actually the end of private water services in Uganda.

According to Muhairwe [17], NWSC took over the operational duties by nominating local staff to take control of Kampala water duties. In February, 2004, the government reformed NWSC activities and officially transformed the entity into an Asset Holding Authority, and all other technical, regulation responsibilities were sent to Department of Water Development (DWD) under the Ministry of Water and Environment. The summary of the structure and division of responsibilities are as shown in Figure 3.1 below.

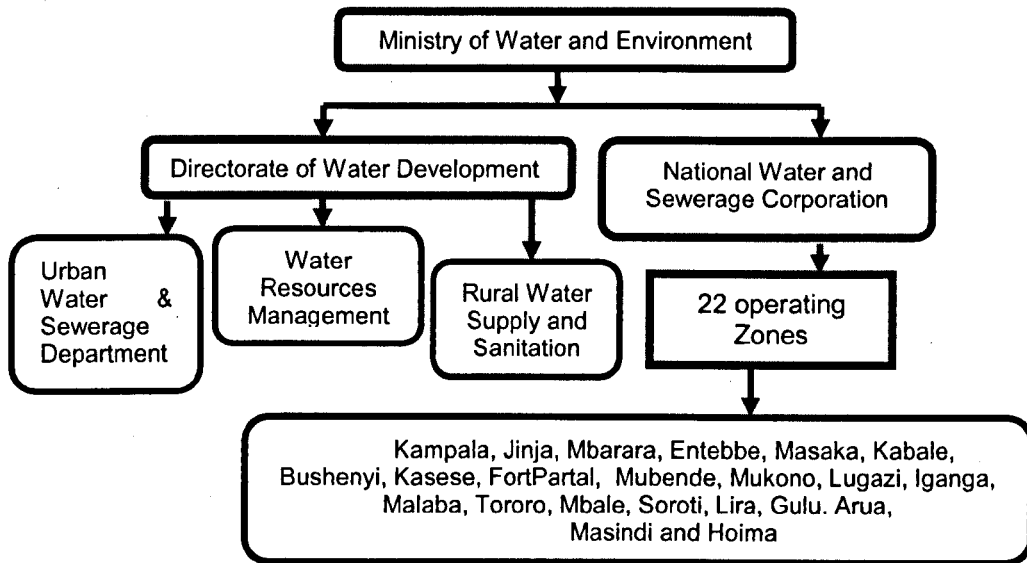


Figure 3.1: Structure of water management in Uganda

3.3.3 Duties and Responsibilities

The division of labour within water sector management was one of the proposals made by consultancies Triche and Price Water House Coopers in 1997 during the review of water master plan, as directed by cabinet under minute 139. The objective was to create quality management, which would enhance the entire performance. However, understanding the boundaries of responsibilities, i.e. where responsibilities lay for certain tasks, would ensure accountability. Therefore, the duties and responsibilities in the Uganda water sector were divided as follows:

- **Ministry of Water and Environment (MWE):** The Ministry of Water and Environment has an overall responsibility of water services and environment in the country, mainly dealing with policy issues (formulating and supervising during the implementation), issuing national standards, ensuring regulation regarding tariffs, and performance contract management especially with Kampala Water.
- **Directorate of Water Development:** The directorate of water development in the Ministry of Water and Environment is working under the Ministry's permanent secretary, and therefore the directorate main responsibilities are Managing Water resources, Policy Guidance, Coordination between the Ministry and NWSC and other external and internal organisations, Technical Regulation and service support to local government authorities, and other services providers.

- **National Water and Sewerage Corporation (NWSC):** The National Water and Sewerage Corporation, as an autonomous public corporation, is a water services provider responsible for all large urban centres in Uganda. The company's duties and responsibilities are to supply water for domestic use and other purposes, and sewerage management in 21 large urban areas and big national institutions throughout the country. Notably, an asset-holding authority, setting the internal management contract, and the performance of monitoring internal local delegated areas, and setting the incentive for local internal delegated areas.

This new sector structure and dividing the responsibilities of performance to each organ in sector is a strategy to encourage efficiency and good services performance. This is one solution for water services improvement, which is actually without expense. In fact, the most encouraging factor in such a change is the openness for building trust and increasing commitment. These are the core functions necessary for performance improvement and accountability—especially when the system of division of labour goes to each individual employee.

3.3.4 Current Situation of Water Services in Uganda

The capital city Kampala is the biggest populated area in the country. The largest part of water supply and sanitation services are provided by NWSC; however, 75% of the total NWSC revenue collection is contributed by Kampala water. The successful performance of NWSC depends on the performance of Kampala area of service. The improvement of NWSC services is presented as summary of water services in Kampala City (Table 3.1) [17].

Table 3.1: Summary of performance of Kampala water for about five years up to 2006

Years	2002 to 2003	2003 to 2004	2004 to 2005	2005 to 2006	2006 to 2007	Percentage
New Connection	6,821	8,720	12,174	19,908	13,087	192%
Sold Water Million m3	20.3	21.3	24.4	26.5	6.2	30.5%
Water Production Million m3	36.5	38.5	41.2	41.2	4.7	12.5%
Installation of water meters	48,952	59,022	72,231	93,305	44,353	90.6%

Moreover, NWSC water services coverage has expanded to cover almost 90% of all large urban areas in the country within the period of five years from 2002. Annual turnover has increased from 37,140 in 2003 to 58,540 in 2006. Moreover, water production has increased from million 51.4m³ to million 58.1m³, water transmission mains has been extended from 2,170km to 2,868km length within the same period of three years (2003–2006), water sales have increased from million 31.2m³ to million 40.8m³, and new water connections have increased from 700 to 2,256 per month. These are a few additional evidences which show that NWSC performance has improved, and that the current management system is performing better than Gaff Ingo. and ONDEO. However, Muhailwa [17] notes that, for the development and protection of water sources for the benefit of all, the best and affordable water and sewerage services must be provided to all NWSC operational areas in order to build a stable and good relationship with other sector members. The current NWSC system requires necessary improvements in terms of capacity building, the decentralisation of administrative power, and bid evaluation in order to provide more power to structure operating zones [18].

The current water operating system in Uganda is contract-based, whereby the management of NWSC has to sign a performance operational contract of no more than a two-year period to run NWSC based on the agreed performance indicators, and terms of conditions. At the end of the contract period, the Ministry of Water and Environment examines the NWSC management performance. Depending on the performance against agreed performance targets, operational contracts may or may not be renewed. The internal performance operation contract is also executed between NWSC management and the branches management team, whereby branch managers are bound to comply with all the contract terms of performance as well as other conditions. At the end of the contract period, the performance of branch management is examined against the agreed terms for necessary action. This system can be defined as an operational under-performance monitoring contract [13].

3.3.5 Appraisal for Uganda Water Supply and Sewerage Services

During the period following the Uganda independence, i.e. 1962–1998, water supply and sewerage services were provided by the government. The service situation was limited and very poor. In 1998, the government decided to contract the services to a private company Gauff Ingenieure. Importantly, the private company did not perform well, and water services in Kampala city deteriorated with a limited water services network. In 2000, the operation of water supply and

sewerage services in Kampala was contracted to another foreign private company, ONDEO, which did not improve the situation, claiming that the performance targets set to them by the owner, NWSC, were not practical (see Section 3.3.2). Under the same performance targets, the Uganda government went for an internal performance contract with a local parastatal organisation under the periodic management contract. The outcome was good and encouraging, which provides evidence for the belief that private water services were not able to work in Uganda, predominantly owing to the government change of organisation and management structure which has introduced various differences. However, the strategy of the approach of the division of labour normally has a greater contribution in terms of accountability, especially when considering the set-up includes each individual person in the system. Furthermore, the performance contract between the individuals and the service provider is a motivation in nature, with targets set as a catalyst to service improvement. This, however, depends on the nature of the contract and the set targets. Nevertheless, it is considered that contract target-setting and indicators should be more realistic so as to encourage contract performance.

- i. Engaging contract performance in water services can be one of the catalysts for the performance improvement in the sector; however, the system should allow for the measuring of the performance of each individual. Restructuring the organisation and changing the management team can impose new ideas which are necessary for development and services improvement.
- ii. We have also witnessed that the German company Gauff Ingenieure and the French company ONDEO took operations for the private water service in Kampala, but the private water supply and sewerage services failed to work. Therefore, neither private nor public water management are considered an appropriate approach for water services in Uganda. Importantly, this necessitated the government to restructure NWSC to perform commercial water services style under performance contract.
- iii. The local parastatal management style under special performance contract was the only solution for Uganda to achieve better water services. As we have seen, there was improvement under the management of NWSC (see Section.3.3.2).

3.4 Water Supply and Sewerage Services in Kenya

3.4.1 Background

One of the practical examples of non-public water supply and sewerage services is the two towns of Kenya (Nyeri and Eldoret). The 1998 Kenyan water policy declared that it would increase the community and private sector participation. The emphasis is placed on enabling a government institutional framework, which will automatically encourage the autonomy of local authorities in the management of water resources. The government initially provided water services through municipalities. The trend of new policy of local authorities on water supply and sewerage services—a more commercial approach—was implemented. Water services have subsequently followed commercial services principals, focusing on sustainability and managing the available water resources.

According to K'akumu [19], initially, the government aimed to privatise the services, but the ceding of water supply services to private enterprises has been opposed by various perturbed groups claiming that poor people or those people with low incomes would not be able to settle their water bills, and would therefore remain without this basic service. However, local authorities are convinced that privatisation will ensure the efficient provision of water at an affordable price [19].

Sammy [20] argues that there is the need for building a good and stable government and economy, and that the benefits of privatisation were considered as the major objectives for the adoption of the reform to public water entities in Kenya. However, other factors, such as the phenomena of population growth and environmental degradation, have markedly challenged concepts of water services being owned and provided by the government (as has been proven that water services are no longer being better managed under a public system). Water is an expensive commodity—especially in capital investment (plants and networks); therefore, this should be operated with focus on cost in order to ensure the balance between sustainability and affordability [20].

3.4.2 Management of Water Services in Kenya

In 1996, the Nyeri Municipal Council in Kenya, together with other Kenyan towns, Kericho and Eldoret, requested that the German Agency for Technical Cooperation (GTZ) consult and support its mission of adopting a non-governmental programme in setting up water supply and sewerage services. Through the assistance of GTZ's technical expertise and the commitment of Nyeri Municipality, the Nyeri Water Supply Corporation (Nyewasco) was established and began to

operate in 1998. Nyewasco took over all water responsibilities in the Nyeri region. Moreover, in order to empower Nyewasco with these new responsibilities, Nyeri municipal transferred all water infrastructures with a value of almost Ksh, 716,093.00 to Nyewasco—including the working force from municipal water department. No capital funds were invested for the establishment of Nyewasco. However, following the formulation of the executive management team of (Nyewasco) on behalf of the Kenya government, Nyeri Municipal remains with the power of policy issues only [20]. Therefore, the operation issues were handled by the management of Nyewasco whilst the policy issues were executed by the government; this provides evidence of the division of labour for better services, and also to show that it was not necessary for the government to provide water services to Nyeri municipal. This means that water services could be provided independently from government interference, although the government should remain as overseers and policy makers.

3.4.3 The Current Situation of Water and Sewerage Services in Nyeri (Kenya)

Since Nyewasco began its operations in 1998, the new management has been successful and has shown good performance in various areas. For example, the production capacity of Kamakwa Water treatment plant has improved from 6000m³/day to 9000m³/day, water turbidity problems have been eliminated, reported water pipe problems are attended to promptly 24 hours a day, connections for new customers have increased from 6,596 in 1999 to 8,318 in 2003, metered connections have increased, retail water kiosks for poor people have been established (but in areas where tariffs were introduced), new jobs were created owing to the expansion, stable and fair water rates were guaranteed for public institutions, and the company pursued need-driven commercial policies. The company has cut down water losses from 55% to 36–40%, with Nyewasco subsequently pumping a surplus of 1000m³. Revenue collection is approximately Ksh. 8 million per month, which is earned from serving 50,000–60,000 people, and Nyewasco has expanded to parts of Nyeri town not previously served, thereby replacing submersible pumps by giving people of this area normal pumped surface water from the Kamakwa water treatment plant. This shows that more people of Nyeri municipal are now supplied from the Kamakwa source. Markedly, submersible pumps are not used.

The company management set-up and the Board are now directly responsible to Nyeri citizens, with the majority of Board members local citizens from Nyeri town,

with a guiding policy stating that revenues collected are to be re-invested into improving water and sewerage services. This system is functioning well because the Nyewasco management is achieving full support from their customers, which results from the fact that customers have a feeling of owning the company, They form the Board of the company, and customers' ideas can be immediately taken and implemented; therefore, customers are closer to the service. This type of water supply management of forming an agency under the municipal council with full power of planning and operation has proven to be a very successful method in Kenyan towns [9].

3.4.4 Appraisal for water services in Nyeri (Kenya)

If the assessment of success is based on the differences between the previous situation (as detailed in Section 3.4.3) of water services in Nyeri and current performance, Nyeri water services has witnessed a real improvement in relation to water services. Therefore, the poor water services situation of limited quantity of water, which had a high turbidity problem with dilapidated water network owing to the government lacking capital funds, for repair and rehabilitation prior to the establishment of Nyewasco, was the driving force for change.

The restructuring of the water system in Nyeri was initiated, designed and implemented locally without cost. The local citizens being members of the Nyewasco Board is a sound strategy for building good relations between the company and its customers. The management model was developed locally in order to solve local water problems, and has a greater acceptance as customers are considered important stakeholders. Therefore, the communication between the service provider and consumers is easier, which has a greater contribution in terms of performance. The government role is restricted to policy issues, which is done independently—especially if customers are a part of the management team of the entity. This type of organisation structure can work better, not only in Kenya but also anywhere in Sub-Sahara Africa countries, provided they are similar conditions. However, when considering the focus on performance contract between Nyewasco and government, the author concludes that the performance contract system guarantees quality and a period of work performance; therefore, it can be adopted in the research process for developing sustainable solution for Tanzania.

Another lesson to be learned here is that it is not always the case that good structured change should come from a foreign country or from a foreign private company; in actual fact, structures developed locally have proven to be acceptable and more efficient (for example, Nyewasco). The municipality of Nyeri enabled the

agency Nyewasco to be formulated with its own capacity and with the use of all local workers from the municipal council's water department. The local agency brought in better water services; therefore, local changes, plus empowerment, can be one of the solutions for better water services. This approach should be adopted as a concept and platform for building the ideal solution for Tanzania water problems, but also as a new challenge for devising or developing appropriate solutions considered suitable for each country.

3.5 Water Supply and Sewerage Services in Cote d'Ivoire

3.5.1 Background

Since independence in 1960, water services in Code d'Ivoire have been under public management. From the early 1980s, the government of Code d'Ivoire began the process of the water services reform. The driving forces for reform were serious, with public financial crisis experienced throughout the whole water sector. The government water development plan for investment (extension of services, maintenance and repairs) was critically affected by a lack of funds. Ambitious projects which were designed in 1980 also failed to anticipate the extent to which they would be affected by the crisis. Kerf [24] added that various factors, such as the increase of water tariffs implemented in 1981 and 1984, depressed the larger consumers' demand. As a result, many opted for other alternatives of water supply, including the drilling of private bore holes and shallow wells. Subsequently, large water consumers, paying the highest rates, sharply reduced their water consumption, and the water network and rate of connection progressively fell to approximately 70% in 1987.

During this year, the government of the Cote d'Ivoire began to implement investment for water services improvement, as designed by the directorate of water in 1980. In order to ensure that investment would be self-financed, the government decided to transfer the planning functions from the water directorate to a private company SODECI (formed by French company SAUR in 1974). The Cote d'Ivoire government agreed to transfer the whole operation of water services under a lease contract to SODECI, although comprising the condition that the government would commit its own resources to implementing the investment programme and to cover debt services charges. Therefore, on behalf of the Cote d'Ivoire government, the Fonds de Development de l'Eau (FDE) was responsible for the funding of water investment expenditures, whilst Funds National de l' Eau (FNE) was funding the debt services. However, the funds for the investment and debt services were sourced from different consumer tariffs and SODECI lease fees.

Officially in 1987, SODECI was leased to operate and maintain the water supply and sewerage services in Cote d'Ivoire. The lease contract ensured that any new extension in relation to water supply services made by SODECI will be compensated, as well as if the amount of water consumed fell below the capacity of the network. All water service operational responsibilities were contracted to SODECI. The water directorate, on behalf of the Cote d'Ivoire government, remained responsible for monitoring SODECI's contract and policy issues, and also for supervising the execution of new investments [24].

However, the condition surrounding the compensation in the contract terms was a heavy and a burden to the government if the operator underperforms owing to lack of full commitment to solving all field water problems. On the other hand, the maximum freedom given to the operator SODECI may also ultimately encourage the performance; however, the independence is one of the motivations for performance but ensures objectives are met; the clear targets for accountability should be in place.

3.5.2 Current Water Supply and Sanitation Services in Cote d' Ivories

The change in the management style of water services (by the government of Cote d'Ivoire in 1987 with the privatisation of the company SODECI) was generally successful. The quality of water improved and remained high, with all types of water losses low and labour productivity improving, with 3.8 employees per thousand connections (in 1996). However, since 1987, owing to the increase in the stability of water supply, there has been the constant flow of water as well as the successful expansion of the water supply network—both of which have caused water tariffs to increase more slowly than stipulated in the lease contract. However, this may also be one of the contract terms whereby tariff increases depend on the successful expansion of new connections; hence, the increase of the number of consumers, the bigger the revenue collection. The operator SODECI was in a difficult position owing to the fact that some of the public sectors had not paid their water bills, but SODECI were reluctant to disconnect them but rather withholds payments to FDE and FNE, which accordingly meant that funds transferred to such parties were insufficient to cover future investment and debt service needs owing to there being less unpaid public bills. However according to Baylist [181], 'the approval of regulation and tariffs adjustment which is under council ministers remain highly political and has therefore been more erratic and ad-hoc than might have been' [26].

3.5.3 Appraisal for Water Services in Cote d' Ivories

The discussion of this case necessitates the conclusion that a lack of government finance for water development projects has been a driving force for system change in water supply and sewerage services in Cote d'Ivoire. Other sources for funding water development projects can be established from the balance of customer tariffs and operator leaser fees; however, this should be researched so as to prevent customer burdens and affordability from higher water charges.

The changes from public to private operational water services by the government of Cote d'Ivoire acted as the solution for water problems in the country; private water operation services can work in various Sub-Sahara African countries. The approach adopted change with two steps: the first involved contracting SODECI as a consultant for planning water services development; the second comprised contracting the same company (SODECI) with a lease contract for maintaining and operating water services. It provided successful outcomes (as discussed in Section 3.5.1) for water sector performance as there was a good knowledge background and sound planning, which could therefore lead to better implementation performance.

In order to impress the operator SODECI, the government of Cote d'Ivoire took the responsibility of providing compensation for a new water supply extension if the amount of water consumed fell below the capacity of the network. This can be adopted as special gear for any good approach for best services delivery; however, on the other hand, this can be a good hiding place of less commitment in terms of dealing with field water problems on the operator's side, especially considering that the operator SODECI did not commit its own resources to implementing the investment programme or to covering debt service charges. In this case, the government of Cote d'Ivoire is at a higher risk of paying more to the operator, with such funds possibly coming from water customers—all of whom have worries concerning affordability.

3.7 Water Supply and Sewerage Services in Gambia

3.7.1 Background

In Gambia, since independence in 1965, water services were under public provision, AND the public management water services were not performing well. As such, in order to improve sewerage and water supply services in the country, in 1972, the government established a public water enterprise known as The Gambia

Utility Corporation (GUC). The GUC was formed in order to provide water supply and electricity distribution services to the capital city Banjul, as well as other provincial cities. The performance of GUC became extremely poor owing to a number of reasons, including water tariffs being set below cost, and the corporation management being extremely weak, with constant government interference in relation to day-to-day corporation activities. GUC was grossly over-staffed with more than 1,000 employees in charge of very small water and electricity systems (approximately 7,000 water connections and 12,000 electricity connections in 1986). GUC staffs were extremely low-skilled, with illiteracy rates of 50% amongst supervisory staff and 90% amongst lower level staff [12]. The corporation's weak management, owing to government interference, as well as the low skills in the majority of staff, caused the GUC to fail in performance. Water demand was increasing rapidly, supported by population growth and urbanisation, and the quality of the network deteriorated, with UFW levels subsequently reaching at least 40%, water quality being poor and uncollected bills increasing to reach an estimated 40% of receipts toward the end of the decade. In an attempt to solve the problem, the government decided on a contract performance regime with GUC in 1988, and moved to restructure the GUC's board in 1990.

Following considerable intervention, the GUC was still unable to perform, and subsequently completely failed to change the situation; water services were still in a poorer state than prior to restructuring. In 1992, the government of Gambia contracted its water supply, sewerage services and electricity sector to foreign private operator Management Services Company (MSC) owned by the French enterprises SOGEA. However, the financial responsibility for capital investment and debt services all belonged to the government of Gambia [24].

3.7.2 Outcomes and Situation of Water Services in Gambia

The commitment of the Gambia government to improve water supply services from 12 years of public water services since independence was executed as follows. Firstly, the government system was changed to parastatal management services under GUC for approximately 16 years from 1972, followed by the restructuring of the GUC organisation and the management team in 1990, which also failed. From 1993, the Gambian government introduced private services under Management Services Global (MSG) under a lease contract. Unfortunately, the lease contract between the Government of Gambia and MSG was terminated after three years of services in 1996 owing to poor performance. The public took over again, and accordingly formulated public enterprise (NAWEC), which has remained in place to date. Since NAWEC took over the situation, water services in Gambia

have improved and become even more stable. As a result, at the present time, total water production has increased by 20% to 620l/sec. NAWEC has also now secured a potential project funded by the Dutch Government under the Development-Related Export Programme grant for constructing 19 boreholes and a new treatment plant in Brakeman with a total capacity of 350l/sec. This means the total water production will be boosted to 970l/sec and will cover actual water demand up to 2015.

3.7.3 Appraisal of Gambia for Water Services in Gambia

The covered discussion evidences that the Gambian government was committed to improving its water services by changing the public management style to first parastatal organisation GUC, and accordingly restructuring the GUC organisation and management team, subsequently going to private water services under MSG. However, the private management in terms of water services was also not successful, and was therefore terminated in 1996. The government again formulated the public enterprise NAWEC in order to provide water services in Gambia. From this evidence, we can possibly conclude the following:

As evidenced in Section 3.7.1, with the exception of government experience in water services, for a 12-year period there has been no training for employees, and no study has been executed in an attempt to establish the real cause of water problems in the country, which is why the solution to the problem necessitated the government to go a long way before reaching the NAWEC. The private water services failed to work in Gambia, although this does not mean that it cannot work elsewhere. Nevertheless, the failure in Gambia has proved that privatisation is not a universal standard solution that can work everywhere in any water industry in the world.

NAWEC was developed and formulated locally by the Gambian government following a great deal of experience in different water management practices in the country; these provided good experience in terms of establishing better solutions for water services in Gambia. NAWEC improved the water services in Gambia; this is further evidence that the local developed model works better within the developing country than any foreign imported style. Moreover, learning from this experience may lead to new experiences, which may show that it is not necessary to adopt the methods of the Gambians.

3.8 Water Supply and Sewerage Services in Senegal

3.8.1 Background

In Senegal, the provision of urban water services was privately managed since before independence. Soon after independence, in 1972, the service was nationalised, and was directly controlled by the government. During the 1980s, the government of Senegal invested substantially in order to improve the services in the water sector, but the quality of services nevertheless remained unchanged (low) owing to poor planning and excessive sophistication of various installations, which subsequently could not be maintained as required. However, in an attempt to stop direct government influence in relation to the management of the sector, all assets and related debt service obligations to the public enterprise were transferred to the Société Nationale d' Exploitation des Eaux du Sénégal (SONEES). SONEES concluded a contract-plan with the government in 1988, which was modified in 1990 in an attempt to take account of the experiences of the first two years. Under the terms of the contract, SONEES was granted primary responsibility for the operation, maintenance, and rehabilitation of the urban water supply sector, whilst the government undertook to review tariff price [12].

However, the Senegal government failed to manage non-payments by public authorities. As a result, SONEES's operations became more successful, and whilst labour productivity was high (rising to approximately 7 employees per 1,000 connections in 1994), revenue to cover the costs for the network were sustainability inadequate. Unaccounted for water (UfW) was approximately 30% in 1994, whilst water quality was inconsistent. This situation pushed and facilitated the government of Senegal to introduce private sector participation in water supply and sewerage services. In the mid-1990s, the private participation in the urban water sector was introduced. Notably, financial self-sufficiency was the major objective of the sector, and it was concluded that a private operator would be able to reap efficiency gains, which would accordingly limit the extent of the tariff increases required to meet the objectives.

In 1996, through the international bidding process, the water services in Senegal were leased to the Senegalaise des Eaux (SDE)—a private company originating in SAUR (a French company). The government also decided to form a 100% state-owned company. The Société Nationale des Eaux du Sénégal (SONEES)—which received the difference before total consumer tariffs and SDE's remuneration—would be responsible for owning infrastructure assets, planning,

and financing asset replacements and network expansion, regulating the activities of the private operator, and promoting the private sector in the provision of infrastructure services [28]. The lease contract type of private water services was to be adopted in Senegal, with the addition that the private operator was required to undertake various investments each year. This operator's investment tasks included the renewal of pipelines over a pre-specified distance, which varied depending upon the diameter of the pipes that the private operator chose to renew.

3.8.2 Current Situation in Senegal

In comparison with the situation of 1995, during which time more than half of the Senegal population lived in the capital city Dakar, water shortage was chronic, with leaks persistent, and only 58% of the population having access to safe pipe water. According to Afd Senegal [212], approximately 1.6 million people currently live in cities with access to safe water, which is part of 140,000 new connections at subsidised rates for low-income families and 400 public stand pipes. Individual water house connections increased to 76% in 1996, whilst total water leakages were controlled from approximately 32% from 20% in 1996, and tariffs increase for consumers but were kept at an annual average of 5%. However, according to Pambazuka [25], the private water services in Senegal has not solved the problem of water quality: 'The Aide Transparency report shows that consumers often complain about reduction of water quality and, from time to time consumers campaign for improving services. This shows that consumers do not have confidence in the quality of the water and services in general. Indeed, the use of bottled mineral water has never before been so common and widespread in Senegal. This indicates that privatisation improved the water services situation in Senegal, but it hasn't solved the entire problem; therefore, more efforts need to be directed towards coming up with a permanent and sustainable solution.

3.8.3 Appraisal for Water Supply and Sewerage Services in Senegal

According to the covered discussion, in the 1980s, the government of Senegal made a substantial investment in the water sector. Unfortunately, however, owing to improper planning, the poor situation of water services didn't change; this alone teaches the lesson that study and analysis should first be executed before any form of investment is implemented. Furthermore, the evidence from the covered discussion shows that the government's decision of engaging private services in the water sector provided substantial improvements in relation to water services. Notably, however, consumers complained regarding the reduction

of water quality, and the increasing usage of bottled mineral water provided an indicator that the water problem had not been completely solved. As a result, there was the need to consider a permanent and appropriate solution, with privatisation having solved only part of the issue, and more efforts are therefore needed.

However, it is noteworthy to state that consideration should be assigned to ensuring affordability for all—especially to those people with low incomes; therefore, the study should devise a solution not only concerned with solving water problems but also to cover price manageable to low income people.

3.9 Water Supply and Sewerage Services in Ghana

3.9.1 Background

Since 1965, water supply and sewerage services in Ghana have been provided by Ghana Water and Sewerage Corporation (GWSC), 100% of which was the government-owned. Under GWSC, water services were considered bad, with almost half of the population having difficulties securing a continuous supply of safe and reliable water. Most of the affected people were those living in the countryside, where two-thirds regularly took risks with unclean water. In the study carried out jointly by GWSC and UNDP in 1993, it was established that urban water supply coverage had dropped from 93% to 76%, whilst rural water supply had increased to cover needs of 46% of the total rural population owing to the interventions of NGOs in all ten regions of Ghana [214]. This situation obligated the government to consider a more appropriate solution—one of which was the possibility of adopting private water services. This idea was first introduced in the late 1990s. The privatisation of urban water services was been supported by the World Bank. As a result, since 1988, the World Bank has pushing decentralisation in Ghana; however, in 1999, the Ghana government restructured GWSC to form Ghana Water Company Limited (GWCL), which was a strategy towards privatisation. Furthermore, the study carried out by UK consultant Halcrow was commissioned and paid for by the World Bank, which subsequently concluded in favour of private water services for the country. Notably, the report insisted that the solution for the best water services in Ghana was private operations. The justification for this was that it would bring new money in to renew or expand services. Moreover, Ghana's privatisation would include no obligations for the company to invest, although it remained that the objectives of privatising Ghana water services were aimed towards increasing the access of water supply in the urban areas, with specific emphasis on the urban poor, and the restoration of a permanent, sustainable, financial operational system for GWCL.

In 2000, a ten-year lease contract between GWCL and the US Company Azurix failed owing to the accusation of corruption and public opposition, which consequently led to the formulation of the coalition against water privatisation. Local campaigners estimated that water price increases of 30–40% were necessary to repay the debts from the World Bank, whilst the private company would take its profits out of the country.

According to Mutumi [182], water would become unaffordable for many of the poor in Ghana, and subsequently insisted that, 'even before the privatisation taps were being turned off because a growing number of families cannot afford to pay'. Essentially, the privatisation of urban water services is divided between the profitable urban areas and the unprofitable poor rural areas, whereby urban water services have been subsidising the rural water services, and privatisation therefore means no more water subsidies for poor rural people. However, urban areas would ultimately face tariff increases until cost recovery had been achieved, whilst the number of employees at the GWCL would be reduced in order to make the company profitable. Furthermore, in typical local areas of Accra city—such as the Madina area, for example—it would cost a family 3,000 Cedis for 10 buckets of water per day, whilst the minimum wage per day is 7000 Cedis [182].

In May, 2001, a broad cross-section of Ghanaian civil society—including women's groups, teachers, trade unions, public health workers, environmental groups, disabled organisations and students—gathered under the banner of the Ghana National Coalition against Privatisation of Water (National CAP of Water) to oppose the World Bank's idea for water privatisation. The surge of resistance that subsequently developed led the government of Ghana to suspend privatisation in 2003 [29]. Following the resistance, the water services situations in Ghana worsened. According to Nyarko [213], since 2002, GWCL was more or less bankrupt, estimated as having debts of \$400 million and approximately 50% of water production unaccounted for. In 2003, losses in operations were of the order of US\$34 million. The company needed approximately US\$1.8 billion for extension, rehabilitation and system renewal. The World Bank was still backing the proposal to privatise the Ghana urban water supply, with the main objective being to privatise GWCL.

In 2004, the World Bank approved a credit of US\$103 million for an urban water project in Ghana with the condition of privatisation; however, the credit was turned to a grant. The other contribution of US\$5 million was from Nordic Development Fund, and the Ghana government contributed US\$12 million to form a total project sum of US \$120 million. Subsequently, in October, 2006, water

services in Ghana were officially provided privately under the management contract by joint venture Dutch company Vitens Rand water services BV and Aqua Vitra Ltd., which formulated Aqua Viten Rand Limited (AVRL) and was, contracted to manage GWCL for a period of five years. As a result, the roles of GWCL remained as a public grant authority and general state affairs of the sector whilst AVRL took over the operation duties.

Following the decision to privatise water in Accra, by 2008, water tariffs shot up by 67%. However, in March, 2008, severe water shortages faced the capital city Accra, and the situation forced the Minister for Water Resources in Ghana to review whether AVRL was working in compliance with the agreed contract. However, the reason for the water shortage was actually owing to outages at two water treatment plants in Weija and Kpong. Coincidentally, during the same period, the National Coalition against the Privatisation of Water (NCAP) called for the management contract termination due to low performance with a 'lack of performance' related to 'service standard', with reference to the contract. However, up to February 8, 2010, AVRL was in its third year of its management contract operating water services in Ghana [27; 28].

3.9.2 Appraisal for Water Supply and Sewerage Services in Ghana

The government's decision to suspend privatisation owing to demonstrations due to allegations of corruptions, and the water situation becoming worse, posed a greater weakness to the government. However, the entire preparation for the adoption of private water services in the country was not planned well enough so as to provide full participation to all stakeholders. Moreover, it was possibly carried out confidentially, which is why the allegations of corruption erupted. Widening participation to all stakeholders and ensuring transparency are foundational factors in the case of project preparation. With this in mind, on and off decisions in terms of privatisation evidenced that privatisation was not accepted by the people of Ghana.

The government decided to opt for privatisation, which was initially rejected by Ghanaians through the 2001 demonstrations; however, later in 2006, privatisation under the management contract for five years under the Dutch company 'Vitea and Aqua' was granted. The effects of privatisation can be measured by considering customers' complaints on low performance and higher water charges set by the private operator in 2008 only after one and half years of services; this is an indicator that the permanent solution for Ghana water services is not yet in place. Nevertheless, the government's decision for the privatisation was pushed by the

unaffordable and poor situation of water services in the country, which needed capital that the government simply couldn't afford. However, there were improvements in water quality and the extension of service, which reached 50% of the Ghana population. The World Bank assisted Ghana with various conditions, including private services engagement in Ghana Urban areas; this provides evidence that Ghanaians adopted privatisation owing to the World Bank's assistance. With this in mind, the base problem for Ghana is its lack of capital funds for water development and a good management model.

3.9.3 Conclusion for Chapter Three

The sustainability of water supply and sewerage services is a globally-challenging issue, and each and every individual country has its own duty to perform for the world in order to eradicate water problems. Each country is looking to add value through providing conveniences, quality and quantity, and affordable services to all. Each authority, agency or company providing water and sewerage services has its own challenges for better performance; however, from the discussion covered in this chapter, it can be concluded that there are several main obstacles when seeking to achieve good water services in most of the Sub-Sahara African countries. Public water services have demonstrated failure in all the discussed countries, whilst privatisation has been not successful in many Sub-Sahara African countries. Thus, the following conclusions were made.

i. Lack of capital funds for sustainability and development of water services

Most Sub-Sahara African countries are struggling to achieve economic development, and therefore do not have enough funds for capital development projects. Notably, most are suffering with the water sector. A lack of funding for capital investment in water development project has necessitated that poor African countries have no other option than to go to private water services owing to lack of funds for investing in water development projects, which subsequently forces Sub-Sahara African countries' water charges to rise. Moreover, a lack of funds for water project developments forces the increased use of bottled water by private individual companies in the region; this has been evidenced in the discussion, which shows that various countries—including Ghana, Gambia, Senegal, Guinea and others—opted for privatisation owing to not having enough of their own capital for funding water capital projects, including the improvement of water quality, the expansion of water networks, and the maintenance of other water infrastructures. In addition, the consequence of lacking capital funds resulted to private water services with unaffordable water charges in the region. Therefore, it has been concluded that

capital funds for water development project is a common problem for almost all Sub-Sahara African countries, and there is an obligatory need to establish a solution for capital funds.

ii. Appropriate management style for water services

The unavailability of an appropriate management style is a problem for almost all developing countries, which is evidenced in the fact that all public water management systems failed and were unable to create good, stable financial operations, had no commercially driven services, showed lesser accountability, and experienced a great deal of interference from political decisions. Moreover, public institutions were not paying their water bills. In Ghana, interference from public organisations caused the water privatisation process to stop; however, the collapse of the public water service style was mainly caused by a lack of necessary skill. In addition, a poor organisational structure is enemy number one, although a poor contract that may originate from corruption is an obstacle for water development. Furthermore, any change to the control of water tariffs should be well monitored, and so the conclusion is drawn that developing a local appropriate and sustainable model for managing water services is to be carried out now for the best of the future water services in Sub-Sahara countries

iii. Unreliable water sources

The availability of capital funds for water projects and sustainable management model is not adequate if water sources are not reliable. Notably, most poor and developing countries have no reliable water sources; however, the problem may fundamentally relate to financial resources. Notably, there are various factors to be addressed before this problem can be solved, namely geographical physical location, professional knowledge on how to use few available resources for balancing against the reliability of supply, agriculture, domestic and industrial needs, and the control of environmental destruction. Therefore, the study on the ways in which the available few resources can be controlled for balancing good use for all needs is obligatory.

Furthermore, the concepts adopted from the critical discussion covered in Section 3.9 emphasise that, in Sub-Sahara African countries, many different ways of managing water services exist, although establishing sustainable local sources for funding water development is the major problem, which was the cause of privatisation in the region. This has obligated the need for this study to devise a more sustainable water management style, which could potentially sustain and

facilitate its operations within a local capacity, i.e. commercial type of water services. Nevertheless, such evidences advocate that the appropriate way for improved management of water services in Tanzania would be self-sustainable, i.e. neither private management nor public services, but should be under the public ownership—Public Ownership under Commercial Operation (POCO).

CHAPTER FOUR: SOURCES FOR FUNDING WATER DEVELOPMENT PROJECT

4.1 Introduction

This chapter has been developed to discuss the different ways of establishing funds for water development. Thirquest [56] argues that, 'The continent and its people lack technical knowledge and financial resources needed to access their water supply'. Therefore, the discussion covered in this chapter is focused on the critical examination of various capital fund models, including a special water-funding project established by the Ministry of Water, whereby the country's friends, and international and local institutions are committed to contributing a certain amount every period (i.e. basket funding), loans from international financial institutions, local contributions, property value and tariff review methods. These methods can then be examined for their suitability in relation to the water services in Tanzania.

4.1.1 Sources for Funding Capital Water Projects

The common three major sources for establishing water capital funds in Tanzania and for other Sub-Sahara African countries are loans from financial institutions, property value method, and water tariff review methods. These will be discussed in the following sections.

4.2 Methods of Property Value in the Market

The method involves organising capital for funding water projects by selling asset shares through a competitive open (auction) or closed (individual closed bidding) market approach. In the case of the water industry, the evaluation of assets includes the value of infrastructures, plants, distribution networks and other registered company properties. The actual total property value is determined thus (total investment value plus services – estimated depreciation value per annum for x operated period – years) and changed into 100% shares. An agreed amount of shares are sold in the market (closed or open), with the sales going to the capital investment of the particular company (equity). However, in relation to public assets—especially in water industries—it is sometimes difficult to sell shares for

equity generation. Notably, this depends on the situation of the structure: if they are too old, they normally do not attract the market. Moreover, most of the investors are not interested in long-term returns—especially in Sub-Saharan Africa where political and economic situations are not stable. However, the objectives of the different approaches is to facilitate selling (full or part) of the property shares according to the market value, aiming to raise enough funds for rebuilding, maintaining or restructuring part or the whole operational functions of the property, and aiming to provide better, affordable and quality services [72]. However, the process should be profitable, meaning it accommodates the interests of all stakeholders [60]. With this in mind, the method of property value in the market is ideal for establishing the capital for water development funds; however, the disadvantage of the method is the price for sale, which is dictated by the market. Notably, the owner's challenge is focused on whether or not the decision should be made to sell but the price cannot be set; therefore, the price of sale is not predictable. However, there are other methods related to property value in the market, as elaborated below.

4.2.1 Equity-based Methods

i. Definition

The equity-based method is a process of trading company shares through exchanges or an over-the-counter market, which gives companies access to capital and investors a part of ownership with the potential to realise gains based on the company's future performance. As discussed in Chapter Two, Section 2.4.1, in some cases, equity can be a special amount of contribution under a special agreement, but the contributed amount is directed towards forming a capital for that particular company. In this situation, equity contribution as capital can be an agreement between the property owner and the contractor or the company operator (especially in the case of the water sector). This occurs when the privatisation of water services is taking place. Normally, an appointed contractor or operator is obligated to contribute to an agreed amount annually, and the contribution goes to the capital investment of the entity

However, equity conditions in contracts do not encourage bidders as they are viewed as a burden to them owing to the increase in the total initial and operational costs for project investment; therefore, the concern is on returns. The investment in the water sector takes a long period of time to mature, and the amount to invest is larger whilst political stability is questionable. Importantly, this may also limit the

number of bidders, which may cause less competition and may subsequently result in the selection of an operator or contractor who is not competent.

4.2.2 Method of Debt/Equity Swap

This process involves selling enterprise debts for equity. Normally, creditors of the enterprise offer a viable option, especially when they use agencies. The selected agency is empowered with certain control over the process, as it evaluates a submitted transformation plan, converting the entity to a different system of management. This method can be applied to any water parastatal organisation in a difficult situation concerning debt, or any other financial and economic problems. Cook [59] argues that the process applied for large enterprises is similar to the process applied to medium entities, with only slight differences, such as the amount of down payment or the value of shares. In this process the transformation of any larger enterprise, reconstitution of a transformation Board is required. Importantly, the Board will be formed by the representatives from the agency and the enterprise, whereby the Board's function is to control and monitor the transformation process in the enterprise [60]. However, the down payment will be taken straight as capital for the development and sustainability of the enterprise; in other words, the risk is greater and depends mainly on the situation of the organisation, as normal cash flow recovery may take longer than the expected time. In addition, the state of assets may also be too old for normal operation and production. All of these factors may ultimately lead to greater risk in terms of recovery time.

4.2.3 Privatisation Methods for Capital Funds Development

The privatisation method for capital development involves selling a part or full shares of a public entity to private individuals or organised groups with the aim of raising enough capital funds for the sustainability and development of the services provided by the entity. However, this involves a change of ownership from a public to private system. Nevertheless, in some cases, a public entity can be contracted to a private operator whereby the operator is obligated to pay a specified sum as a contribution to the capital of the public contracted company. The methods (approaches) for raising capital funds through privatisation are many, although the few covered in this section are described below.

i. Voucher privatisation method for capital funds

The voucher privatisation approach can be adopted as one of the funding methods for equity contribution. This is when the situation of the entity is bad, and

is therefore unable to support itself by generating enough funds for sustainability and development. As a result, the owner decides to change the ownership or management style with the intension of raising equity for capital development. In this instance, the property is transferred from the public management system to a private ownership, operation or management. The public-owned entity is evaluated, and the actual value or worth of the property is transferred to 100% shares. The equal value of each share voucher is determined; however, before the voucher books are prepared, the calculations are executed so as to precisely establish the number or units in order to identify how many vouchers are equal to one share. Subsequently, the owner (government) has to decide how many shares to be exposed with the intention of earning a specific amount as equity for the sustainability of the particular property. The objective is to raise capital funds for property sustainability and self-development.

The voucher privatisation method is a reliable, capital fund-generating method [55]. However, the method is easy to apply as a political platform in political campaigns; it requires early preparation as the selling process takes too long in comparison with other privatisation methods in raising capital funds.

Another way is to purchase shares through closed and open market, whereby ordinary and legal persons are able to purchase state property for cash. State property is sold through the open and closed subscription of shares, open and closed auctions, restitution, 'best business-plan' tenders, and also via other methods [76]. It is when governments realised the parastatal water services required capital for services sustainability that the government stated lack of funds. Therefore, the owner (government) decided to sell the parastatal water services through the open and closed voucher method, whereby vouchers are sold in open and closed market with condition that the buyers should keep, sustain and develop the normal services of the property (the buyer should have a good business plan for the property development); however, this ensures the owner has the capital funds from sales. The sold property is in good hands for future development; therefore, the government gains funds for capital investment and assurance of sustainable water services.

ii. Outright privatisation approach

The outright privatisation method is one of the common ways of creating equity for capital development; in this case, fixed equity contribution is part and parcel of the privatisation agreement. During such an instance, the original owner (public) sets a certain amount to be paid by the bidder as an equity contribution,

and this amount will be a part of the capital development funds; however, this is not necessarily the capital of the same company. The new private owner is required to pay a certain amount or the full amount at the beginning, and even systematically each year depending on the agreement. However, this method was adopted in the private sector participation of infrastructure provision, and was very common in the area of water supply, power generation, and telecommunication industries. However, from a financial standpoint, outright privatisation—with a total lack of reference on any public sector investment—is plainly the most desirable option for those governments embracing free market economics [71].

The outright privatisation method is the most successful way of self-capital generation in various industries, such as water companies, telecommunications and power companies, in which the service is provided at a comparatively low cost to a large number of consumers, and also where the market can be easily opened up to a large number of potential competitors [54]. The establishment of industrial regulations is concerned with protecting consumers, which is therefore still needed. The commercial nature of the outright privatisation model may limit the government's freedom in terms of influencing the way in which the industry develops and the extent to which services are made available to those sections of society where the social need and demand for service cannot be fulfilled at an economic price. However, the outright privatisation method has a much greater influence in terms of product market competition, which subsequently has a direct effect on higher product prices, which may accordingly lead to affordability problems. The increase of unemployment is also another factor; therefore, privatisation through such a method signals special requirements regarding the preservation of jobs and duration of investment. This situation notably occurred in Lithuania [71].

iii. Capital funds through a mass privatisation approach

Mass privatisation is the selling of the shares or part of works to individual employees or organised groups to provide managerial skills and capital for a long time. It is a process of organising sustainable property economy or building a stable capital funds for sustainability and development of a property. In this case, individual workers or a small team of workers conduct their own specific work, but out of what they earn they contribute a certain sum for the sustainability and development of the organisation [216].

Mass privatisation is the transfer of assets, carried out as quickly as possible, to private owners through open, fair and transparent methods. However, Handley

[65] argues that differences in process are between the owner and the agent/seller; however, the effects in relation to the mass privatisation method have been somehow overlooked in recent economic literature and the country economic policies of the countries in transition (country economy transition period). The originally mass privatisation model was adopted in those countries as being politically acceptable and practical solutions to justify privatisation of the entire enterprise sector. Nevertheless, Baldassari [55] notes that this method is considered successful in that temporary owners sell quickly and easily for capital collection, and successfully to the owners—primarily to strategic investors. The positive effects of mass privatisation are therefore not shown by companies remaining under the control of initial owners in comparison with the companies that have already gone through secondary transaction. The method was practiced much in Slovenia in the early 1990s following the disintegration of the former Soviet Union; however, mass privatisation forced the socially owned companies to either choose government restructuring before privatisation or a direct mass privatisation programme. Regardless, the government's restructuring plans were limited in the short-term owing to financiers' inadequacy. Moreover, over-employment issues and company debts was specifically supported by external financials; thus, mass privatisation had the effect of increasing unemployment and changing property-management styles to a private system, which has greater effects in terms of product affordability. Nevertheless, mass privatisation is considered to be one of the best ways of generating capital funds [55].

iv. Management-Employee Buyout Method (MEBO)

This approach is where the change of ownership or the management system is executed. Property assets are evaluated and the total actual value is changed into 100% shares. The value of each single share is then declared, and an amount of shares are agreed for sale to the current employers with the objective to earn a specific sum as a capital entity. Therefore, the employees retain ownership by holding the majority of shares whilst simultaneously gaining funds for capital. This method can be applied anywhere, specifically when establishing capital for development in the water sector. It is a method of transferring power and control to employees; however, the capital gained depends on the size and the current value of the shares in the market. It is only where employees cannot afford to acquire the shares that the remaining shares are exposed for open auction. It is important to note that, shareholding attractions may lead to restructuring which might contribute to potential positive effects necessary for the firm/entity performance [67; 73].

Workers becoming owners is a motivation for performance improvement, although in some cases management power is limited, owing to the fact that management teams may be formed from the election of general worker meetings.

v. Management Buy-out by Public Tender Method (MBPTM)

The company value is transferred to 100% shares. The company is subsequently organised in order to offer the shares through the open-tender bidding method for company management employees. The procedure involves all bids being collected and evaluated under the administration of the agency through the special committee formed for this particular purpose. According to Macedonia Privatisation Agency [57], the bidder that offers the most attractive programme may take control of the enterprise by providing a down payment of only 20% of its appraised value, but ultimately has the obligation to purchase at least 51% stake over a period of no more than an agreed number of years. There is the possibility of payment in five annual instalments with no interest charges. Furthermore, the bidder may be either an individual or a group, and once the tender is won, they, as a management team, are required to sign an agreement with the agency that gives them the right to control the enterprise as if they had 51%. In the meantime, however, the agency holds the shares that have to be paid by the management team, and they are treated as preferred, non-voting shares. However, if payment is not made or other agreed obligations are not fulfilled, the agreement may be terminated, with such automatically converted into common shares [57; 58]. Meanwhile, the payments from selling shares are returned to the entity as new capital.

Importantly, however, according to Cook [59], for larger enterprises in the case of management buy-out, the required down payment is 10% of the appraised value, or 15% if there is the need to raise additional equity. Nevertheless, if a large enterprise is raising additional capital, the value of the new issue must be at least 15% of the appraisal value.

Essentially, MEBO and MBPTM are similar owing to the fact that both originated from selling assets or property shares but ultimately comprise differences in procedure; however, the important common element is that all are applied for the generation of capital funds for water development [57]. These methods have more advantages as they involve a competitive bidding process for shares, with prices potentially becoming higher; the only disadvantage is that bidders with enough money, i.e. owners and management, will go to those with larger amounts of money; however, this is not the focus of this study.

vi. Sale by public auction

According to Targett [62], sale by the public auction method is mainly found in Western European countries: for example, in France the privatisation of water services, electricity, railways, television and telecommunications were sold through auction. The owner (government) can auction under open competition either a certain percentage of shares or 100%. Bidding is organised and the purchaser will be the highest bidder. The aim of the auction is to earn capital for development but not necessarily to that particular property, i.e. the auction can involve only a part of a company or service. The only advantage or disadvantage to this method is that the buyer can be anybody from anywhere.

vii. Direct negotiation approach

This method involves selling the water services entity through direct negotiation between the owner and respective buyer. The owner's objective is to raise funds for capital development, whilst the buyer looks for investment in the hope of securing a good for the future business. However, in order to participate in direct negotiations, a potential investor must fulfil special requirements (terms of contract) depending on the nature of terms prescribed by the state, such as being a citizen or resident. The negotiations are subsequently divided into two stages: during the first stage, the commission on direct negotiations lists the potential investors according to their proposed purchase price and amount of investments; during the second stage, on the other hand, the commission negotiates with these potential investors to amend their proposals. If, after the first stage, there are more than two potential buyers, the commission has the right to then select the two best offers and to thereby hold negotiations with these investors. The contract goes to the bidder who has offered the highest price and best service. It can be seen that this method is very simple in its application, and can also be adopted anywhere if the objective is to establish funds—whether to sustain the same property or earn funds for another project. However, the method can be easily adopted for establishing capital for water projects, but can also be applied to any entity provided the unique round table negotiation exists transparently and fairly for establishing a fair conclusion between a buyer and seller on purchasing price. It is a target based on much capital being available for water services investment. The potential danger of this method is that it opens direct negotiation and is attractive and conducive to corruption.

4.2.4 Appraisal on Capital Funds from Property Value and Equity Methods

The evidences from the discussion covered on generating capital funds through the property value and equity methods show that the methods do have potential but have greater challenges. Naturally, water infrastructures are very expensive and funds are therefore generated through the adaptation of either one of them or altogether. In many cases, this would not be sufficient in terms of covering the actual sum required for the sustainability and development of the services; moreover, it is even worse if the method adopted for capital-raising is the selling of assets or shares through action market. In this case, the prices are controlled by the market situation at that particular time; the low price may still command the market. In this instance, the available market and share sales may not cover the amount needed for service sustainability and project development. In some cases, the open competitive method has the possibility of raising a higher sum, which is more direct; in this instance, the open competitive method eliminates the possibility of corruption interference. However, the condition of asset, age, and the physical situation of the operation has greater contribution in attracting investors. Many investors are not attracted to old assets, and accordingly generate low prices. DAWASA infrastructures, for example, were very old and were therefore not considered to be attractive to investors. This forced the government to go to the World Bank for a loan, although one of the major conditions for loans is privatisation.

Markedly, privatisation has the risk of losing power of control or property ownership. Therefore, for the government—or other bodies that do not want to lose ownership of their entity—this method is not necessarily beneficial. Furthermore, capital funds for water development projects can be established by selling enterprise debt for equity (debt-selling method), as evidenced in (Section 4.3.5). Practicing the debt-selling method in the water services sector is highly recommended as a best solution for stubborn customers who fail to pay their consumed water charges.

However, the method is primarily a good source for generating capital funds, but it remains that such an approach should be supplemented with another method. The challenge is concerned with their being a little amount gain and the loss of ownership. Accordingly, there should be other ways of establishing enough capital funds from local sources, which will supplement the sum required by the project.

4.4 Part 2: Establishing Capital from Tariffs Review

4.4.1 Water Tariffs

According to the World Bank [80], 'Tariffs related to the costs for provision of services such as potable water and sanitation which intend to cover the operational and maintenance costs of such services and to provide an economic return to the invested capital while charges do not always relate to services or investments'.

The structure of realistic water tariffs has three major components: volumetric consumed water, actual cost, and other factors (sustainability and development). Tariffs can be structured with zero consideration of those factors: for example, water charges can be estimated based on property location within the water supply network in terms of each specific area, zone or block; if this method is applied, water charges will then have no relationship with volumetric consumed water. Water charges can also be set by multiplying the volume of consumed water in a certain period by a fixed price per unit; in this case, other factors (sustainability and development) are not considered. Tariffs are a flexible way of water charges, as these can be formulated or designed in different approaches. Marcelo [83] argues that, 'official policies often support tariffs covering operation and maintenance costs plus depreciation costs or debt serving (interest and capital repayment) and contribution to a new capital investment'.

Stieglitz [69] states that a good practical tariff structure should consider sustainability, including full-cost recovery (operational, investment and development). The billed price or water charges should reflect the set unit cost per cubic meter or gallon against the actual water consumed in the household, as shown by the water meter reading. The charges should be structured in order to cover all economic costs associated with the provision and additional supply for service improvement; importantly, this is a sustainable type of tariff. The tariff should ultimately accommodate the provision for additional future services whilst the required funds are collected automatically through daily water charges. In addition, the estimated additional amount from water charges will be accumulated as capital for sustainability and development. However, in normal cases, charges relate to the use or the rights of natural resources could also provide an economic return to natural capital; therefore, it is an incentive to rational use [82].

4.4.2 Formulating (Designing) Water Tariffs

Water tariffs can be formulated or designed from either inherited previous or existing periods if they are not controversial or no influence exists from the outside.

The tariff designers may decide to deal with existing needs and accordingly devise the lowest charges in the current structure. Moreover, tariffs can also be structured according to the regulations administered by the existing national legislations or national regulatory Board [70]. In Tanzania, for example, water tariffs are designed and proposed by regional water authorities, whereby each region has the power to propose tariffs according to their needs. All proposals should be approved and administered by Energy & Water Utilities Regulatory Authority (EWURA). Therefore, it is very common that, in one country, different water regions have different water tariffs. The tariff designs in Tanzania mainly deal with existing needs, understanding and categorising water customers' consumption, and the cost associated with production and transportation. Industries in specific areas consume X amount of water, and knowing the production and transportation costs, a water unit tariff for the area is calculated. Moreover, the structure components of setting water tariffs is the unit cost of water production and transportation and the volume of water consumed in the categorised area or group in water supply services. However, the major two groups of tariffs are Sustainable and Social Tariffs.

4.4.3 Sustainability Tariff

In this type of tariff, water utilities have all sorts of capital costs to meet; these can be, and are, implemented on an annual basis. To these annual capital costs, all operational costs are added, including material costs, labour, and other expenses. These results are a key focus for future estimations in order to cover all necessary aspects, i.e. economic, environmental, and development. Therefore, the rule concerning water charges for sustainability can be easily defined as the total water operational costs incurred in the water utilities production activities and the payment by customers through their periodic water bills [72]. It is under the principal of full-cost recovery. With this in mind, subsidies or loans are therefore not provided by the government or any financial institution. The sustainable tariff can also be decided and set according to the project objectives, and subsequently implemented on a stage-by-stage basis. This is only appropriate if a gradual approach to sustainability has been adopted, and if, at the outset, customers' demand responses can be predicted in relation to the price increase [71; 73].

4.4.4 Social Tariffs

Social tariffs are existing water tariffs with special application for domestic water supply services to individual water costumers. It is the fixed price tariff that

keeps costs the same for the entire year once the consumer signs up. However, the social tariffs exist in two major ways: passport tariffs and one size fit all tariffs [75; 77].

i. Passport tariffs

Passport tariffs are a special method established for water bills payment schemes, which may include amendments or refunds, discount or corrections, on the payment for water charges of a set existing scheme. The scheme was designed with specific objectives in mind in order to assist low-income people and perhaps other vulnerable households. The aim was concerned with significantly reducing the bills paid by such a group for a given water supply and sewerage services. For this reason, eligibility would have to be established for the scheme; therefore, the term 'passport tariff' is adopted to describe this type of social tariff. Negotiating with costumers regarding how much to be paid has the danger of losing entity revenue; however, the method can also be the source of corruption.

ii. One size fits all tariffs

The 'one size fits all' tariffs is 'a general tariff for households which, through its structure (normally referred to as an increasing block tariff) and through the actual tariff rates levied, the tariff has the effect of resolving, to a significant degree, affordability issues', whereby its success is measured by the reductions in the charging burdens of low-income and other vulnerable households. Importantly, it does not undermine the low-income water consumers, and there are no problems relating to the non-take-up from eligible households. Thus, social tariffs in developed countries, such as the UK, have almost invariably involved means-testing, whilst the 'one size fits all' tariff provides a universal approach, with charges rarely reviewed to meet the circumstantial needs of the material price rise [76].

4.4.5 Objectives of Water Tariffs

According to EIB [81], water tariffs are a focal point of water services costs (value for water) and as a measuring unit for economical checks on sustainability and expansion in providing water supply and sewerage services. Tariffs should be formulated with practical-based objectives; however, the fundamental focus of setting water tariff objectives is on sustainability, economics, affordability, and actual product value, with the basic objectives applied to all categories, as described below.

4.4.6 Sustaining of Revenue Sufficiency

From the service operator and service owner, the primary objective of setting water tariffs is to recover the total services costs and extra estimated amount for services development. The focus and decision is based on how much revenue is aimed to be collected from the set proposed tariffs. This process is a combination of bringing together the various costs and charges of the particular service to come up with a tariff at a level to meet the purpose (target). However, the driving force of this objective is, 'how much money is to be collected?' [73]. Accordingly, the tariff set should be fair to the operator, services owner and customers, which is a 'balance of consideration with positive effect on affordability' which is one major focus to the answer of the research question.

i. Economic efficiency

Herrington [75] insists that the structured and efficient water tariffs are automatically a catalyst to ensure that the available service costs for the customers have comparable benefit with good value (value for money). However, 'generations of economists have insisted on the importance of this objective and noted that, it can be achieved by setting all prices equal to their relevant marginal costs'. Therefore, customers benefit owing to the fact that the amount they have to pay is equal to the services provided, and is therefore a motivation to water consumers.

ii. Equity and fairness

Equity means treating stakeholders with balance and equal consideration. Normally, in public utilities, tariffs designs are focused on ensuring greater consideration to users paying a fair amount proportional to the provided service. Fairness is a general consideration of various opinions during the tariffs review. In Tanzania, for example, the condition for tariff review and approval involves a greater aspect of consumer opinion (Association of Water Consumers). In this regard, prior to EWURA approving implementation, there should be agreement that the water tariffs review is publicly acceptable. The political acceptance of water tariffs has its contribution; hence, the objections of a political leader may lead to losing political support, which may therefore cause political interference during implementation.

iii. Creation of revenue stability

Flat charges for all water users—without considering actual individual consumptions—may ultimately cause complaints for unfair charges from some

consumers; it may also lead to an instability situation, which may subsequently cause difficulties in performance and low revenues with poor cash flow and financing. Whilst the collection and implementation of the set tariffs will pose no barriers with fewer complaints after the approval by legal authorities, competence in supervision and processing of water bills nevertheless needs consideration.

4.4.7 Part 2: Appraisal for Tariffs Review Methods

The discussion indicates that the tariff review methods are practical and easier to adopt, aiming to generate capital funds for water service projects in any service system (private or public). The methods are reflected in the fact that each unit volume of water sold is the base of unit capital fund generation; however, the differences in terms of structure and the establishing of the tariff review method exist. This critically depends on the purpose of adaptation (influence of lending or local capital development), areas of application (industrial or domestic with low income people) and adopted design of originality (inherited from previous or existing actual need). The conclusion on the structured design of water tariffs is based mainly on such purposes; therefore, there is consideration regarding how much is expected to be generated from the new tariffs and for how long, as well as the overall affordability and fairness for all stakeholders. Essentially, the entire process of water tariff design and review requires close supervision and combination of various ideas from all stakeholders for the tariffs to be easily acceptable during practice.

The application of water tariffs review method necessitates the availability of the regulating authority to ensure the balance of price for both sides: one side to protect water customers from overcharging (affordability), and another to protect the service provider (undercharging). With a stable political system providing no opportunity for interference of the operation process, the approach can be practically adopted by both private service providers and also public service providers. The positive aspect of this method is the greater percentage of generated profit, which is distributed for the benefit of all customers (the profit is converted to a capital). The stability of water rates is guaranteed owing to the fact that, in most cases, all possible risks in terms of operation and production are considered during the restructuring or tariff-setting; therefore, it is a naturally convenient method [73; 60].

As a means of generating capital funds, the tariff review method is reliable and universal, and has proven to be a common practice in water service industries. However, the way in which it is defined, adopted and applied differs from one place

to another. The method is sustainable as it allows a constant defined amount per period; however, flexibility regarding how much is to be collected as capital ultimately depends on the size of the services (number of customers) and the calculated amount to be saved. This is the best local method for establishing capital funds for water development projects as a reviewed amount of money is collected from daily water services, and the collected amount constitutes capital which reinvested to sustain similar services.

The discussion in Section 4.4.6 concludes the basis for setting water tariffs, emphasising that water tariffs should be set fairly to all (the service provider, owner and water consumers), and only through this consideration will water services be affordable and sustainable. This has a greater impact on payment for the water charges owing to the fact that affordable water charges are a motivation for people to pay. In other words, affordable water charges drive willingness to pay.

4.5 Part 3: Loans as funds for Water Development

4.5.1 Introduction

Loans are the leading capital for the funding of water development in all developing countries; however, most water development projects in the Sub-Saharan African region depend on loans from international financiers. Within the region, there are very limited potential sources of capital funds for water projects apart from loans. The discussion on loans from international financiers is never complete without focusing on the World Bank which, along with other international funding institutions (including UNIDO, European Investment Bank, African Development Bank, Asian Development Bank, Islamic Development Bank and many others), are the significant donors for funding existing, on-going and new developing water projects in the region of Sub-Saharan African developing countries.

Almost all Sub-Saharan African countries depend on loans from the world's largest financial institutions. Such institutions have become very active in terms of funding water projects in the entire world. With this noted, the World Bank is currently the most popular international institution in terms of funding a number of water development projects in the region, with countries including Tanzania, Kenya, Uganda, Burundi, Congo, Egypt, Ethiopia, Ghana, Lesotho, Malawi, Morocco, and Mozambique all having benefited from various water development projects loans [86]. Thus, this section (capital funds from loans) critically reviews the World Bank Loan procedures and functions, conditions, methods, profit, loan interests, and advantages and disadvantages; importantly, however, other common international

funding institutions—including UNIDO, EIB, AfDB, IDB and ADB—have also been discussed critically with the aim of giving a give wider picture of comparison in regard to loans and their effects (see Appendix P in the CD).

4.6 The World Bank

4.6.1 Background

The World Bank is the world's largest international financier for funding water supply and sanitation (WSS) projects in Tanzania (Sub-Saharan African country). It is recognised as being a leading agency in terms of its operational coverage and the total amount of expenditure (lending) in the water sector. The World Bank has approved an average of US\$1.6 billion in new lending to client countries for the WSS sector each year. Lending projections show an upward trend of new commitments for the coming years [87]. According to the 2006 World Financial Report ending 2006, the International Development Association (IDA) lent to 167 projects worldwide in the year 2006, with gross disbursements of US\$8,910 million and the International Bank for Reconstruction and Development (IBRD) lent to approximately 112 projects in the year 2006 with gross disbursements of US\$11,833 million [88].

Moreover, the World Bank Loans Development Policy provides quick-disbursing external financing to support policy and institutional reforms, typically running for 1–3 years. Originally designed to provide support for macroeconomic policy reforms, including trade policy and agriculture, development policy loans have evolved in such a way so as to focus more on the structural, financial sector and social policy reforms, and also on improving the public sector resource management. All projects financed by the World Bank are conceived and supervised according to a well-documented project cycle. Below is a step-by-step guide to the project cycle, the documents produced as part of the process, and how these are accessed. However, it should be noted that the World Bank, as per any other financial institution, has various policies and procurement procedures applicable in all bank financing projects, thus giving guidance and instructions on carrying out all the procurement and consulting works.

4.6.2 IBRD loans and IDA Credits Conditions

According to the World Bank regulations [82], the loan agreement governs the legal relationship between the borrower and the bank, whilst the guidelines are made for the procurement of goods and implementation for all projects funded by

the IBRD and IDA (World Bank). The World Bank procedures and guidelines are compulsory and strictly for World Bank loans. However, the bank's interest is focused on giving all eligible bidders from developed and developing countries equal opportunity to compete for loans.

Furthermore, one of the major World Bank principal conditions in any approach of procurement is the adoption of International Competitive Bidding (ICB)—unless otherwise stated. For all works under prescribed conditions, the ICB method is the most appropriate method, and the bank requires its borrowers to obtain goods, works and services through ICB, all of which are open to eligible suppliers and contractors.

However, in practice, the bank's procurement rules and procedures—especially during the implementation process—depend on the circumstances of a particular case. In practice, the entire bank's largely funded project experts are provided by the bank as condition, whilst wages and working facilities for these experts are paid by the country borrowers deducted from loan, and in adherence with World Bank standards.

4.6.3 The World Bank Lending Instruments

According to the World Bank toolkit [89], the World Bank has two basic types of lending instruments: Investment Loans and Development Policy. The former provides financing for a wide range of activities aimed towards creating physical and social infrastructure considered necessary for poverty alleviation and sustainable development. Over the past two decades, investment lending has, on average, accounted for 75–80% of all bank-associated lending. The nature of investment lending has evolved over time. Originally focused on hardware, engineering services, and bricks and mortar, investment lending has come to focus more keenly on institution-building, social development, and building the public policy infrastructure required in order to facilitate private sector activity. Projects include water and sanitation (improving the efficiency of water utilities), and natural resource management (providing training in sustainable forestry and farming), with the World Bank development policy at a national level focused on the development of required approaches, access and mobility, the economy, and social and environmental sustainability.

Therefore, with the above taken into consideration, according to the World Bank structure, investment loans are available to the International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA) borrowers not in arrears with the banking group.

4.6.4 The World Bank Operational Model

The World Bank operation procedures are set according to the bank-lending and loaning policy [83]. In regard to World Bank Operation policy [83], whereby the country borrowers are obligated to submit a detailed request loan plan, which is concerned with evaluating and being reviewed before approval, the bank evaluation procedure is arranged strategically to ensure quality and funds security operations. Thus, the bank comprises powerful operating tools for loans control and monitoring, namely IBRD and IDA.

4.6.5 Business Objectives in the Loans

The business objectives can be covered in many different ways, provided the end results are earning profits for the benefit of owners (World Bank). The World Bank policy for loans is concerned with gaining no less than 15% interest for any loan [82]. However, IBRD and IDA are the tools of the bank for delivering loans to governments and public enterprises, with a government (or sovereign) guarantee of payment. Funds for lending come from the issuance of World Bank bonds on the global capital markets. Notably, IBRD can lend to countries with interest plus 1% for administration overheads. Markedly, the World Bank operates as any commercial institution; therefore, all loans are provided with interest.

4.6.6 Policy for Lending Development

The appropriateness of providing development policy lending to a country is determined in the context of the Country Assistance Strategy (CAS). The bank's decision to extend development policy lending is based on an assessment of the country's policy and institutional framework—including the country's economic situation, governance, environmental/natural resource management, and poverty and social aspects. The bank considers the strength of the programme and the country's overall commitment to and ownership of the programme in comparison with its track record. It also assesses the country's institutional capacity and ability to effectively implement the programme to be supported, and thus describes the country's capacity-building efforts [82].

4.6.7 Implementation Structure

The IBRD and IDA are the only tools associated with the bank's operations, with all bank strategic and implementation procedures accommodated and executed within the capacity of these two organs, as explained in Section 4.8.2.

IBRD and IDA exist with the objective to implement the World Bank procurement procedures and business banking policy. The current operating development policy has been strategically structured so as to promote competitive market structures (for example, legal and regulatory reform), correct distortions in incentive regimes (taxation and trade reform), to establish appropriate monitoring and safeguards (financial sector reform), to create environment conducive to private sector investment (judicial reform, adoption of a modern investment code), and subsequently to encourage private sector activity (privatisation and public-private partnerships) [90].

4.6.8 The Bank Loans with the Condition of Privatisation

Privatisation is strongly supported by the World Bank policy for lending its policy aims to improving the public sector resource management by developing and promoting the competitive market structure so as to create conducive environment for the private sector, and good governance (civil service reform). One of the World Bank's preferred methods in privatisation are lease support. The World Bank toolkit for loaning water supply sector clearly considers privatisation as the best way of achieving water services provision. The aim is to promote privatisation in the water sector in the hope that privatisation can develop better water services in developing countries

According to ICIJ [217], the World Bank serves its interest through its regular loan programme to governments, which often comes with conditions that explicitly require the privatisation of water provision. Furthermore, through this sector, the World Bank has been the principle financier of privatisation; however, according DOH [89], 'the toolkit focuses on the specific choices governments face when designing arrangements for private participation'. The World Bank's preferred methods for privatisation are contract management, leases, and concessions. The methods are well covered in the World Bank toolkit. Loans taken from the World Bank for the water supply and sewerage services are accompanied by conditions of privatisation.

4.6.9 Management Contracts Method

The management contract method of privatisation is also amongst the World Bank's preferences, with specific choices concerned with governments requesting loans for water projects. The method covers the total transfer of management responsibilities of a public utility property to a private operator for a certain period time, often from 3–5 years. The simplest management contracts pay a private

operator a fixed fee for performing managerial tasks. Other management contracts offer greater incentives for efficiency by defining performance targets and basing the fee, in part, on their fulfilment. One challenge in the design of management contracts is determining which targets are measurable and under the control of the operator, as well as how relative the operator's remuneration should be in relation to the achievement of such targets. Another challenge is determining what powers the operator should have over, for example, employment. Under many management contracts, the utility employs the staff except for a few top managers.

In management contracts, the operator's remuneration commonly does not depend on the customer tariff, and the government does not have to design an arrangement which protects the operator from tariff-related policy risk. This has low encouragement in relation to contractor performance as such income does not come direct from consumer charges. Conversely, management contracts do not offer the same potential as other arrangements to address the problem of paying for services: the government is not required to commit to a cost-covering combination of tariffs and external subsidies. Accordingly, less risk is transferred to the operator, and so large improvements in operating and investment performance are less likely than under other arrangements. Nonetheless, if the management contractor has the flexibility to change the way in which the business is run and has incentives to improve performance, it may improve operating performance. However, management contracts mainly have the advantage of transfer of management knowledge from the private operator to public local management team. A management contract can also serve as a transitional arrangement, during which the government can prepare for a more effective form of private participation [88].

4.7.0 Affermage-leases

Affermage is another type of privatisation, which is also considered in the World Bank toolkit in regard to water sector privatisation. Under this method, the operator is responsible for operating and maintaining the business, but not for financing investment. However, the difference between affermage and leases is technical: under a lease, the operator retains revenue collected from customers and makes a specified lease payment to the contracting authority, which the authority can then use to pay for investment; under an affermage, on the other hand, the operator and contracting authority share revenue from customers, and the operator pays the contracting authority an affermage fee, which varies according to demand and customer tariffs, and retains the remaining revenue.

Under both *affermages* and leases, the operator's profits depend on the utility's sales and costs, which typically give the operator an incentive to improve operating efficiency and increase sales. The contracting authority is usually responsible for financing investment in infrastructure assets under an *affermage-lease*; it must raise the finance and coordinate its investment programme with the operator. In some cases, the operator designs and manages the investment programme; on others, the contracting authority has this role. The distinction between investment and maintenance is not always clear: for instance, *affermage-leases* often place some degree of responsibility for investment on the operator (for example, for rehabilitation) [89]. *Affermage-leases* are usually more difficult to implement than management contracts, simply owing to the fact that the operator usually bears more risk. Under a lease, the operator's remuneration depends directly on customer tariff, and so the government is obliged to design an arrangement that protects the operator from tariff-related policy risk, and which is similarly considered legitimate. Under an *affermage*, the risk is lower as the operator tariff is different from the customer tariff. The operator will be more comfortable with an arrangement in which customer tariffs cover, on average, the operator's costs. Although they are more challenging, *affermage-leases* offer greater benefits. For example, they commonly require commitment and the contribution of government participation in all differing degrees during the implementation in order to confront the problems of customer tariffs, and usually give the operator incentives to improve operating performance. This has a great impact, as is reflected in the case of higher water charges.

4.7.1 Concessions and Divestitures

Another preferred method of the World Bank in regard to privatising water services is that of concession, which are typically used for introducing private participation in infrastructure. This type of privatisation provides all responsibility to the private operator. In this method, the nominated operator will not only be responsible for the operation and maintenance of assets, but also for the financing and managing of investment. In concessions, the asset ownership is under the government from a legal perspective; however, the rights of operating, using and managing remain with the operator. In addition, all the assets—including those created by the operator—typically revert to the government when the arrangement ends, often after a 25- or 30-year period.

Moreover, concession is a tool that can be used to induce competition for a market, when competition in the market is not operating. According to Klein [228], if

a water concession is awarded to the bidder offering to supply water at very low price to consumers, this encourages efficiency in two ways that parallel the effects of competition in the market. First, it leads the operating company to offer to sell water at a price that covers their costs but not much more. Pressures keep prices down and limit profits. In this situation, the government does not need to estimate the lowest profitable water price or regulate in order to prevent the monopoly supplied from changing higher price. Through competitive bidding, the bidders reveal the prices themselves. Furthermore, concession encourages bidders to produce water at very cheap prices as inefficient bidders cannot win the bidding and remain profitable. This is the most prominent advantage associated with the concession method. Depending on environmental circumstances and project objectives, any of the outlined methods of privatisation can be applied so as to sustain the World Bank loan's condition for project funding.

4.7.2 Loans with Privatisation

Owing to conditions set by the World Bank to its borrowers, some of the developing countries have been forced to adopt the alternative methods in order to qualify for assistance or loans. According to ICIJ [217], the analysis of 276 loans awarded by the World Bank between 1990–2002 shows that approximately one-third of the loan projects the World Bank required the countries to privatise its water operations before it received funds. The report added that between 1990 and 1995 there were 21 World Bank loans with privatisation as a condition. Furthermore, Senegal, Ghana (Ghana Water Corporation) and Tanzania (DAWASA) are cases of the World Bank loans with privatisation and other conditions, as detailed in Appendix Q in the CD.

However, aside from privatisation being a condition for a loan, loans have extra conditions, such as that all World Bank-funded projects are bound by World Bank procurement procedures, and there are also special guiding conditions for the selection of a contractor or an operator under the international competitive bidding (ICB). The World Bank loans with the condition of privatisation have a number for advantages and disadvantages.

4.8 Advantages and Disadvantages of World Bank Loans

4.8.1 Advantages

i. One of the remarkable advantages of the World Bank loans is that, in developing countries, tough loan conditions and strict procurement procedures

have not only helped to improve the quality for implementation, but also were the sources and catalytic for developing an alternative suitable ways for raising capital funds from local sources.

ii. The condition for international competitive bidding (ICB) is part and parcel of the World Bank loans whereby the country borrower should execute the loan within the World Bank procurement procedures. The condition requires all large projects funded by the World Bank to procure the contractor, operator or services provider through the International Competitive Bidding (ICD) method. Via ICB methods, world-class companies from all over the world are invited to bid on the tender. The competition is higher, and the most competent contractor or operator that promises the best performance with the highest skills and modern technology is then awarded the contract. The new contractor from foreign country brings in new technology, equipment, culture, and new management style, and sometimes capital. These are noted as World Bank loans advantages and benefits to developing African countries. The process is referred to as 'transfer of technology'.

According to DOH [42], the transfer of knowledge from a new successful contract or operator to the privatised company, with objectives of maximising the profit in the contractor's daily operational activities, means the new contractors usually conduct some degree of management restructuring, as well as the introduction of new equipment and training.

iii. The World Bank condition for ICB provides transparency and volume of work, procedure, and costs for the project implementation.

iv. In regard to stimulation for culture and economic development, World Bank loans for developing countries are considered stimulants and motivation which develop and facilitate the proper planning and implementation of the water development projects. The approach provides a positive contribution and challenges towards the necessary change for a better life and safe water, which has economic, political and social impacts for the country. The World Bank's existing tough conditions for loans are positive challenges for country borrowers to devise alternative ways of establishing capital funds from their own local sources for water development projects; hence, these are the only ways of achieving independent economies.

v. Concerning the process of replenishing loan, it is stated that the World Bank's stage-by-stage restricted process for replenishing loans to the country borrower has greater advantage for checking and control on good use of the loan, review of performed tasks and giving the clear picture of the project implementation. This is an advantage to both (borrower and donor).

4.8.2 Disadvantages of the World Bank Loan Conditions to Developing Countries

i. In comparison with its advantages the International Competitive Bidding method (ICB), there are also a number of disadvantages recognised throughout the process of adaptation, as well during implementation time. The adaptation of the method (ICB) requires compromise with local official procurement procedures, which, in most cases, is not similar to the World Bank procurement procedure.

In regard to implementation, the open international competition tender invites various large, world-class companies with different experience, equipment, expertise, technology and capital; this limits local indigenous poor contractors and businessmen in terms of competing equally. This results in all large water service projects funded by the World Bank being contracted to foreign companies from European or American countries. The situation of local companies being unable to win and execute large contracts within their own countries diminishes the true development of local business companies, which subsequently poses a further barrier to economic development.

ii. The World Bank condition of providing experts (financial and technical) in any large funding project is a significant unnecessary burden for country borrowers. The salaries and other needs for these World Bank-appointed experts are all paid by the countries from loaned funds. This has a greater impact on the total sum of the loan amount, as the difference between the loan figures and actual amount for project implementation is all paid to experts who sometimes are not needed. The salaries paid to these experts are, according to the World Bank standards, are 10% of the loan and this is burden to developing countries.

iii. According to The World Bank procurement procedure that, ***'The Bank does not finance expenditures for goods and works which have not been procured in accordance with the agreed provisions in the Loan Agreement and as further elaborated in the Procurement Plan'***. The World Bank conditions of project periodic review and approval at every stage of project implementation called approval for *no objection* is a part of project procedure that causes unnecessary complications in total project implementation.

iv. The World Bank loans with privatisation conditions have many disadvantages including, according to Public citizen [91], turning state enterprises from loss to profit by trimming the payroll, and failing to focus on overall efficiency. There is often minimum job protection, as employers can dismiss workers with little or no costs, and employees and customers are sometimes forced to adopt privatisation without enough knowledge or preparation.

4.8.3 Criticisms against the World Bank and Other Financial Institutions Methods

According to Stieglitz [69], the World Bank and International Monetary Fund (IMF) imposes a number of unnecessary privatisation conditions as opposed to providing immediate assistance.

Private services mostly impose higher services costs, which are not affordable to low-income people. For example, in the 1980s, Latin America was in difficulties with large economic deficit in the continent. Electricity and water supply services were in poor condition. The IFM imposed fiscal austerity (balanced budget) and tighter monetary policies, demanding that governments pursue privatisation policies as a precondition for receiving aid.

The World Bank, IFM and other financial institutions frequently encourage developing countries to privatise the public assets, such as forestland and government utilities, including water services, telephone, and electrical companies. In most cases, public property is sold off to foreign investors at rock-bottom prices. As a result, many effects are witnessed as a consequence of changes, which subsequently burden the country adopting such changes. One of these is growing unemployment owing to the restructuring and resizing of various services, assets and companies, which are transferred to the private sector. Another is the increase in the prices of services owing to changes in tariffs. Sometimes, supply becomes unaffordable to low-income people in a country owing to management change. As a result, those who cannot manage to pay will remain without basic service, such as water and electricity [69].

Brettonwoods [218] states that the World Bank needs to change its formerly dogmatic approach of forcing privatisation in water sector, and suggests that the World Bank may not be learning quickly enough when considering that the privatisation of water services is not a real solution for water service improvement, and further stating that, with the adoption of such an approach, the poor may be left both without any change to water supply and sewerage services improvement, and may ultimately be paying for botched privatisation.

Billegeya [219] adds that the failure of water privatisation in Tanzania should be a lesson to the World Bank's aid donors and governments, stating that the privatisation of water services is not a solution to problems in developing countries. In actual fact, the failure of DAWASA privatisation has added a burden to a country that is already struggling to reach its international poverty target in relation to access to water.

Another criticism of the World Bank privatisation condition relates to the water services in Latin America. The Bolivian Cochabamba Water Supply Projects, as funded by the World Bank, have a long and problematic record. The country's largest water system was forced by the World Bank to opt for a loan with privatisation conditions. When the private Cochabamba water supply was operated by US-based Bechtel Corporation, household bills rose by 200%, which subsequently sparked a civil uprising that forced the company to leave the country. The water system was put under public control. After the failure of the Cochabamba, the World Bank no longer used the word 'privatisation', but instead replaced it with terms such as 'concessions', 'decentralisation' and 'public participation'. However, the critics state that, whatever the euphemism, the end result is the same: higher rates, lower quality and less access [220].

4.9.4 Appraisal on World Bank Loans

The discussion on World Bank loans indicates that the institution gives loans and sometimes accompanies these with small grants under tough conditions of privatisation. This is particularly true in respect of capital for sustainability and development in water services. The World Bank loaned Tanzania US\$86.96 for the implementation of DWSSP under the condition of privatising DAWASA (see Chapter Two, Section 2.3.1). However, the effects of this condition are directly reflected in a number of areas, including water price rise, ownership, cultural change, and an increase in unemployment. The World Bank condition for privatisation has positive effects on improvement of efficiency in services, economy stimulants, and the overall availability of new technology. Nevertheless, the World Bank is a commercial and business-operating institution existing with the aim of implementing bank objectives, including profit-making, much like any other commercial institution.

The World Bank ideology, 'Privatisation can bring substantial gains, and more effectively than the public sector', is not always true owing to the fact that it is not provide an appropriate solution in every case; in particular are examples of Tanzania, Ghana, Zambia and Uganda's water privatisation. The World Bank's

behaviours in the use of a loan to drive and make a business profit from poor developing countries, and by imposing difficult conditions, should not be accepted. However, this should be taken as a positive challenge for poor developing countries to research the alternative capital funding solution for water development projects [40].

If World Bank loans are truly concerned with poverty eradication in poor developing countries, the conditions for loans should be flexible and negotiable in order to balance the interest of donor (World Bank), as well as the interest of the borrower. With this in mind, there should be no one-sided conditions.

ii. The effects of applying the International Competitive Method

World Bank loans comprising the privatisation condition has a component of International Competitive Bidding (ICB), which necessitates all bidding for the privatisation tender and all other procurements to be open for local and international bidders, incorporating equal grounds of competition. This process is obligatory for all projects funded by the World Bank (big financial institutions). The method has advantages, such as allowing fair competition to all local and international bidders. The objective of ICB is to select the most competent and quality service-provider or contractor. However, with this condition, large foreign contractors or services providers may take advantage of the fact that they have capital, technology and equipment that local companies do not have; however, this method has the potential for technology transfer, but again, the method limits the development of local private companies.

With this in mind, it is true that the bank is concerned with competent service providers, and so a special upgrading programme for local contractors should be in place, as well as capital for tools and equipment.

4.9.5 Summary

From the discussion covered in this chapter, we can conclude that public water entities (water services companies) can possibly generate capital funds for sustainability and development if the asset shares are valued and sold, auctioned, leased, privatised or contracted, as critically examined in Section 4.3.1 through to Section 4.4 of this chapter. Furthermore, as can be seen from developing an understanding of the application of each discussed method, there are advantages and disadvantages to all methods. With this in mind, the study may therefore conclude a number of things. From the critical analysis on the advantages and disadvantages of the World Bank conditions to countries borrowers the concept of establishing the alternative source for water projects capital funding is obligatory;

however, establishing capital funds from local sources will make Tanzania and other Sub-Sahara African countries self-sustainable and free from external conditions. As a result, the project can be implemented and managed locally under local conditions, and flexibility is possible

With the aforementioned in consideration, the concept to be adopted from the discussion of various methods covered in this chapter is that, through a number of different equity methods, property can generate enough capital funds for water development; however, the governing authorities has a greater role in deciding which method should be adopted. Methods like enterprise debt sale for equity and tariffs review methods can be an alternative solution.

The tariff review method has been evidenced as an appropriate, sustainable, and reliable local source for establishing capital funds in water industries, simply because the income is constant and flexible according to the need, with the only consideration needing to be assigned attention is that of affordability; therefore, this will be the appropriate measure for Tanzania to get out of tough loan conditions. As a result, it can be justified that loans from international financiers are not for poverty reduction in developing countries in the long-term but rather seem to induce poverty acceleration, which is therefore an obstacle for development and should not be accepted unless the conditions are fairly set. However, this can be adopted as a challenge and the motivation for developing our own capital funds from our own local resources.

CHAPTER FIVE: MANAGEMENT OF WATER SERVICES

5.1 Introduction

Water has immeasurable value for our life; its unique contribution on both economy and social development necessitates higher investment in relation to research for better management of the available few resources and better water services. Water is needed for many uses, such as drinking, cooking, washing, cooling, watering lawns, fire protection, commercial use, and sanitation. Therefore, proper planning for good use in order to maximise water contribution value obligates an in-depth discussion on the ways in which better management can be achieved for the benefit of social and economic use. However, the complicity of discussing water services management necessitates greater focus in its usage, costs, demands and supply, and the differences. The rate of consumption per person per day differs from one country to another, as well as from one area to another. According to Organisation for Economic Cooperation and Development (OECD) [267] ranking some developed countries—including USA, Canada, Germany and the UK—have average water consumption per person per day ranging between 154 litres and 515 litres, whilst in developing countries, the average water consumption ranges from 30 litres and 220 litres per person per day. This difference creates a number of challenging questions, such as why the rates of water consumption per person per day in developed countries are higher, and why the rates are so low in developing countries [268].

Bennell [107] argues that the reality today means that 'water scarcity is becoming more common in many parts of the world because of increase in usage and also partly due to climate change. This is a potential conflict we need to manage our water more carefully'. Duff [127] further comments that it is a direct challenge to the whole world. This situation therefore necessitates a high investment of a combination of efforts to ensure that enough water of a good quality is available for all our needs. More attention need to be directed towards developing countries where there is not enough water—even for domestic use.

The British South West Water Company (SWWC) [125] comments that, 'it's quite fundamental on how you view water and sewerage service. If you view it as an essential public service it makes very good sense to stick to public management system, but if you see privatisation as fundamental shift, with industry not so much public service as a commodity, you would argue for change'. This chapter therefore

discusses different water management styles as platforms that can be developed so as to build the appropriate management style for water and sewerage services in Tanzania/Sub-Saharan African Countries. This chapter covers areas including the provision of water services under public management, private water services, and the commercialisation of public services.

The public ownership and management of water supply and sewerage services has been a traditional way for all Sub-Saharan African countries. However, public management in water services has proven to be unsuccessful in all sub-Saharan African countries, where failure has necessitated the adoption of private water services in the region. However, private water services are also not an ideal solution.

Therefore, the discussion on public water services in this chapter is carried out in an attempt to open up and allow the adaptation of concepts from the failure and successes of good use in developing the appropriate solutions for Tanzania water problems. Furthermore, willingness to pay for sustainability of water services and the regulatory position for supporting water sector has been also critically discussed in Chapter Four, Section 4.4.7.

Importantly, the commercialisation of public services has also been discussed in terms of facilitating how services can be better managed. However, the concepts adopted from all five covered areas, including willingness to pay (WTP), regulatory authority, Commercialisation, Public and Privatisation, will be compared with the local Tanzania existing water and sewerage governing system for the development of an appropriate model.

5.2 Section 1: Water Services under Public Management

5.2.1 Introduction

Medalye [126] argues that, 'Water governance can be defined as the range of political, social, economic, and administrative systems that are in place to regulate the development and management of water resources and provision of water services at different levels of society. Countries facing different social-economic, political, and historical contexts which affect the way in which water resources and services are managed'. Furthermore, according to Free Media [92], 'public services is a term usually used to mean services provided by governments to its citizens, either directly (through the public sector) or by financing private provision of services'. It is further stated that the term is associated with a social consensus (usually expressed through democratic elections) that certain services should be available to all, regardless of income. Even where public services are neither

publicly provided nor publicly financed, for social and political reasons, they are usually subject to regulations spanning beyond that which applies to most economic sectors.

Moreover, Cook [221] argues that, at the end of the 1970s, African public enterprise sectors were experiencing poor performance, especially in relation to the water services sector. The situation was due to the existing complex political setting in which public water services were forced to operate without a good base of capital and technical planning. In terms of economic performance and operational services, public industries, for a long time, have existed with difficulties, and have accordingly mainly underperformed. In many cases, political ambitions have been a guardian for performance. The insufficiency of skilled labour, political interference and the over-employment of low-level staff were concluded to be reasons behind failure.

Furthermore, owing to the traditional autonomous nature of the public water sector, other public enterprises were sometimes heavily encumbered by bureaucratic control. The political interference extended from the regulation of prices, the siting of facilities, awards of contracts and staff management to even general water services operational routine decisions, whilst the existing financial operation were very hard to monitor [221].

Generally, public enterprises have greater influence on political decisions owing to the government being formed politically, and therefore management decisions, especially in social service areas, such as water services, communication services, power supply services, economics of scale and costs, managing of resources, community empowerment, and accountability, were affected. Therefore, the efficiency in service performance was the area most affected. Public services were in difficulties, and thus could not control well the financing operations from their own local resources, which forced borrowing and that added to domestic inflationary pressures, external debt and balance of payment problems [221].

According to Kraemer [93], 'water and sanitation issues in many cases are related to decentralisation policy and environmental rights'. The process of the water sector reform involves many social and economic considerations, including economic efficiency, services development, resources preservation as well as sustainability issues, all of which commonly appear to be very complicated. These factors necessitate the emphasis on economic and financial aspects of good governance as the only way of ensuring water services which are developable, sustainable, of a high quality and affordable [93].

The discussion covered in Section 3.9.3 (point iii) noted that most of the cities in developing countries have problems with water supply and sewerage services. The problems are generally caused by either an increase of population or economic problems; however, the factor of uncontrolled population increase is a major cause, which accelerates the actual water demand for domestic and other development usages. This subsequently results in a lack of balance with available maximum water production and distribution—even in the case of services being provided by private companies. Nevertheless, a poor economic situation (poverty) in African developing countries has been another major factor that fundamentally limits the ability of capital water investment. Thus, poverty becomes an obstacle. IWA [94] advocates that, in order to sustain human, economic development, and the assurance of a safe life for future generations, water resources control under good effective management should be in place. According to the discussion covered in Chapter One, Section 1.1, the existing situation of approximately 1.8 billion people in the world having no access to water and sanitation services is evidence of the big challenges in water sector. Therefore, it is everybody's responsibility to ensure that world is safe a place with enough water for domestic and commercial usage.

5.2.2 Public Water Management Style (Public Water Services)

Public water provision system is widely applied in Sub-Sahara African countries. It is structured in a manner whereby the government takes all responsibilities and challenges of the water and wastewater services. The provision of water and sewerage services, for a long period of time, has been considered basic and essential for every human being—regardless of the classes (rich or poor). It was mandated as a core government responsibility. Globally, 85% of all drinking water provision lies in public hands. Under any public service the governance, structure decisions and the management of infrastructure, capital investment, commercial risk, and operations and maintenance are made by public entity. However, the definition of a fully public managed water sector often refers to when water services are controlled or provided through either national or municipal/district government agencies in a designated area. Public managers make decisions, and public funds may be provided from general government revenues, including taxation, loans and other charges. Therefore, governments are responsible for overseeing, setting standards, and facilitating public communication participation and general supervision [126].

In this case, public management in water services performance is not driven by profit; rather, the motivation is affordable water for all. Therefore, for most Sub-

Sahara African governments, the fiduciary elements of the public sector include the need to push for market competition as a stepping stone to quality water services. The public sector regards itself, to a greater or lesser extent, as a neutral layer between the government and the governed. Administrators see themselves not as the unfeeling implementers of executive orders, but rather as an essential check upon arbitrary rule. This leads to bureaucratic services provision. In most cases, the conflicts in water supply and sewerage services are caused by conflicts of interests between administrations of the service providers in relation to government powerful political interference. Such a conflict may subsequently lead to inefficiency in relation to service provision as a cost of compromising the conflicting members. In most cases, politicians are favoured; hence, according to the government system, politicians are the decision-makers and, as a result of such, water services end on a political platform and are therefore not independent service providers [96].

5.2.3 Public Water Services in Developing Countries

In Chapter Three, it was established that most developing countries struggle to implement public water management styles. Although privatisation has a number of challenges in developing countries, Section 5.2.1 indicated that the public style of managing water services is also not successful. Accordingly, the researcher adopted the challenge for developing an appropriate solution for sustainable capital funds and the Ideal model managing water services suitable for developing countries. This was also the consequences of loans accompanied with tough conditions from international financial institutions to Sub-Sahara African countries.

This has resulted in greater discouragement on the struggle for developing the required water capital from our own sources. Most of the public water bodies have proven to be incapable of meeting the development needs of their regions. A number of factors, namely population increase, over-employment, inadequacy in technology, and economic reasons, are all major obstacles for water development. Moreover, most of the public entities are not commercially operated in order to sustain their operations and development needs, especially in this globalised market; however, the World Bank [133] indicates that old infrastructures, social and political problems, environmental, health, and financial constraints, as well as proper governance, can be highlighted as the major problems facing most countries practicing public water services.

Figure 5.2 below presents an explanation concerning the major effects of water services under public management. In the case of a normal public water service, service organisation structure and political decisions have a greater

influence on water services operations. NAP [266] argues that the discouragement with public water services comes from poor water supply resulting worries in public health, over employment, political interference, environmental issues and relations to other city services. This is due to the fact that a registered entity providing water services is publicly owned under the government, and so the public entity management is nominated by the government to fulfil government interest whilst government leaders are politicians. Water services are very much like political tools that back government political interests. This necessitates public entity leaders to fulfil government interest first, which is political interests, and which are therefore considered contrary to professional decisions for better water services. Importantly, this may result in conflicts of service provision, with the outcome inducing unnecessary delays on actions and decisions (bureaucratic) within the system. Kishimoto [265] adds that, 'poor services by cumbersome public authorities, corruption and high rates of water loss are also found in public companies'. As a result, services are sometimes not systematic and reliable with the application of poor technology owing to political interference. However, in the case of public water services, water rates are generally not set to accommodate future capital for services development. In actual fact, water services are provided with affordable rates and are sometimes subsidised. The capital for water development is sourced by the government either from the government's central budget or otherwise from loans and grants. These together conclude that the provision of water service under public management is politically motivated.

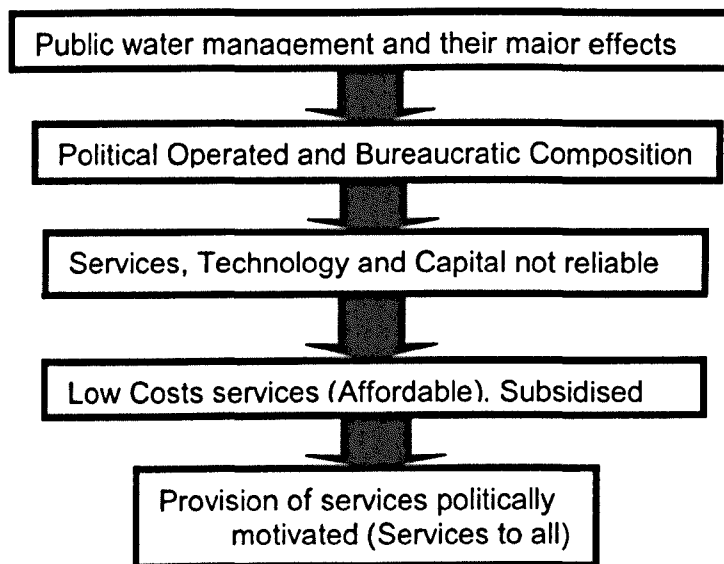


Figure 5.1: Effects on public water management

5.2.4 Criticism of Public Water Services

The covered discussion in Chapter Three, Section 3.9.3 justifies the belief that public water services systems in most Sub-Sahara African countries have proven to be poor in relation to solutions for water problems in the region. The following criticisms can be made:

- As discussed in Section 5.2.1, public water services are exposed to political interference owing to the fact that the property providing services are owned by the government. Accordingly, the management team is selected by the government to fulfil government objectives, whilst government management system politicians are the decision makers; and
- In public water services, capital funds for water projects are governed and sourced by the government, and in mind of the fact that the decision-makers are politicians, the possibility of budget (funds) for water development being politicised is higher, which may sometimes limit the professional project implementation for the benefit of politics.

5.2.5 Appraisal for Public Water Management Style

The discussion covered in Sections 5.2.2 and Section 5.2.3 evidences that public water services have had greater focus on services to all (social basis in water services). The service style has more consideration in expansion to cover water needs to all, and categorically has greater focus on affordability; however, the structure of administration for the services has been neutralised with a traditionally long process of decision-making owing to greater elements of political inflates. The outcome can be clearly measured as integral to bureaucracy; this is because the service provision is owned by the government, and government leaders are politicians—and therefore even the management steam or supervisors for water operations—are nominated by politicians to fulfil political objectives. Professional decisions are mainly not favoured, whilst political decisions have more and greater power. Focusing on the structure of management and the political power of decisions, the research is obligated to conclude that the failure of public water services in most Sub-Sahara African countries—Tanzania being the true example—is due to the complexity of the bureaucratic style on service provision. Therefore, the method focuses on affordable water services to all, which is a special positive challenge to be undertaken during the development of the appropriate model for water services in Tanzania.

5.3 Section 2: The Private Management of Water Services (Privatisation).

5.3.1 Overview

Nebery [98] argues that the private method of managing water supply services has become very popular in most developed countries. The privatisation of water services has been expanding very fast globally, and has subsequently become the most dominating method in the world of water services. Private services are a catalyst in the market, which aim to promote service performance, productivity and profitability through quality management. This research has adopted the definition whereby privatisation is a process that covers the transfer from the public to the private sector, involving a change of style in management, control, and sometimes ownership of productive assets.

The private management of assets is basically concerned with describing quality management as an array of actions designed to broaden the scope of private sector activity, with keen focus on quality, efficiency, quantity, productivity, profitability, customer care, and transparency in terms of market competition. Generally, private services are guided by professional decisions, whereby decisions are made from the analyses of various evidences under set conditions. Moreover, discipline is well maintained in all processes of services, with a good economic model structure of the organisation. However, the major difference in terms of public water services concerns private services capital funds for project development, which are mainly developed with the service provision system. The private provision of water services is free from government political interference. In practice, however, professional assimilation by the public sector in relation to efficiency-enhancing techniques is generally employed by the private sector [99].

Private services description results in private management often being viewed as a goal rather than simply as a means to an end, which can therefore lead to confusion. Markedly, private management focuses on the ownership and/or control of productive assets, their allocation and pricing, and the entitlement to the residual profit flows which generated by them' [100].

However, Sawyer [223] argues that a privately managed entity has one ultimate objective—that of profit; however, in order to pursue this objective, there may be the involvement of other goals, including ensuring the entity's survival, acting as a 'good employer', and paying attention to environmental consideration in addition to other elements; however, the single basic objective is profit [223].

Jackson [225] states that the necessity of discussing private management in water services cannot be avoided as experiences in private water management style are useful. The private water services are an engine-driver for efficiency to any services provision model, simply owing to its structure being commercially oriented. Importantly, the private management of water services imposes the transfer of technology from one side to another, which has greater contribution on work performance. All of this is combined together to provide new ideas as a challenge to existing models in the water management sector.

Essentially, it can be stated that private services is a tool for screening public water services, but also a source of contribution for developing sustainable water services for Tanzania. Notably, however, although private water services has greater focus on high profit-making, in the case of Tanzania, operating private companies do not have the same attitude to government taxes. This is a negative sign to private companies in the country.

5.3.2 Structure of Private Management in the Water Sector

The private management of water services has a long history in developed countries, such as the UK, USA, France, and others. The entire character associated with the private management exists in the form of operational efficiency and effectiveness, as well as profit-making. Cook [224] states that Western experience suggests that the most successful restructuring strategies of private management in water services include 'significant changes in both organisation structures and the operational process'. A change to partial or complete private ownership brings in new management structure which is more effective, more economical, and more commercially oriented.

In general, the private water services approach of introducing new working technology and training necessary for market competition increases motivation in the working place with greater effect in actual work performance. Service performance is increasing owing to the introduction of new techniques necessary for market competition; this is a catalyst for production increase in quality and quantity, whereby the service vision and objectives are changing to new style with more competitive targets. Therefore, the existing and overly complex networks of dysfunctional bureaucracy will be reduced, and the likelihood of arbitrary 'interference' in operating decisions will also be reduced. Each of these changes is expected to contribute improvements in relation to productive efficiency. The key factor is ultimately concerned with determining efficiency in the water sector (enterprises), which will be improved as a result of private management influences.

The change in ownership to private management will improve employees' incentives, which is a catalyst of efficiency in productivity. Importantly, if private management merely converts a public monopoly into a private monopoly, the sector will then not be compelled by competitive pressures to improve its productive efficiency; rather, the private management, if imposed in water services provision, will improve the discipline of work and private capital markets [222].

5.3.3 Effectiveness of Private Management Water Services

In any action, there are negative and positive impacts; however, the outcome and the effectiveness of private water management can be measured in terms of accessing the impacts of change. However, the evaluation on differences between the services provided by private system and the style before the adaptation of private services, should give the reality of private services and its effects. However, focusing on other factors, such as governing policy, the method adopted, and the process of adaptation, has special contribution in terms of measuring the effectiveness of the method. There is no question that, in principal, private management has impacts in both positive and negative lights. Nevertheless, good business management practice remains a significant determinant of the enterprise performance. The measure of effectiveness in the provision and management of private water services has been customised by evaluating the successful and unsuccessful facts (outcomes) of different cases of water service experiences—mainly from Sub-Saharan Africa countries (see Chapter Three). Markedly, this leads to suggestions that the overall effectiveness of the private water management depends on motivations against the expected set goals of performance, the size of the operating area, the political environment, and the physical structure of the water customer classes in the area of operation [225].

In a private managing system under 'ownership' by shareholders or entrepreneurs, the provision of water services is funded the customers, with the sector normally controlled by market forces. The restructuring to private management has a greater focus on business market characteristics, which is what makes private management different compared with other methods. The private operator working on day-to-day management, operations and maintenance duties in a water services on a contract basis for a certain period has little opportunity to change the system because the power, control and influence on major policy decisions remains in the hands of the property owner. Basically, major characters of the private water services include services being automatically promoted, asserting that private water management can provide modern management and

expertise, which is otherwise unavailable or inaccessible in the public sector, and also that privately owned organisations have full power and control without any public interference.

5.3.4 Worries of Private Services in Water sector

The private water services are fully commercialised, and its operation procedures are therefore strategically based on focusing on high profit making. If private water services are adopted, the major concerns remain as higher water charges and an increase in joblessness whilst the generated profit is taken into individuals' pockets. This is due to the fact that water prices include actual production costs, calculated amounts for services and development, as well as a certain percentage as profit for the services provider. NAP [266] cautioned that the decision as to whether or not ownership or operations of a public water utility should be transferred to a private firm is complex. Immediately, economic questions arise, such as 'Will privatisation reduce customer's monthly water bills? The emphasis on high water charges (billing) carries a greater worry of the whole private water services; it is a battle between quality services and affordability to all. Furthermore, operations under private management in the public water services mean the decision-making structure imposed upon the water services is private interest-based and, in most cases, unresponsive to community wishes and needs. It is frightening that, when considering private management, the ability of local residents to effect change in water services or to resist it will be diluted—and the power of staff management will also be linked directly to the ability to run the organisation efficiently with retrenchment.

In relation to operational conditions, the concern for general welfare and the overall well-being of the customer and his family means that costly services which are not paid in full by the customer or third-party payers be simply eliminated, with the prices increased unreasonably to ensure financial viability. Furthermore, Kikeri [97] notes that, in Sub-Saharan African countries, private management in water services have been the most acceptable as a popular approach for economy reform. Within the last 20 years, for example, there has been privatisation in developing countries, which has become a modern way for water services management. However, the region is not well prepared, and the current picture surrounding the potential for private management in the water sector under the competitive market mechanism gives the mandate of being the only solution in the water services sector in Sub-Saharan African countries. Nevertheless, it is considered that the failures of the methods should also be published for the best through a comparison of efficiency of the method. Public services and commercial

service methods should also be published for imposing new challenges in the water management sector. However, the scarcity of information and evidence concerning the impacts or failures of practicing private management in the water sector are not widely open owing to the market competitiveness of the private contracting companies [97].

5.3.5 Benefits of Private Management in Water Services

According to Ramanadham [118], Eldean [106] and Kraemer [93], the following benefits can be taken as the positive effects associated with private management. In developing countries, the practice of private management on water services will benefit customers, employees, and the entire nation in a number of different ways.

Firstly, the authorities will be more responsible and much freer from government intervention in relation to the day-to-day operation activities, and will be further protected from fluctuating political pressures and financial constraints. The access to the capital market will mean that authorities will find it easier to pursue the effective investment strategies for cutting costs and improving the standards of service.

Moreover, authorities will be better able to compare the performance of individual water authorities against each other and against other sectors of the economy, which will improve the financial spur to improved performance, whereby a system of economic regulation will be designed to ensure that the benefits of greater efficiency are systematically passed on to customers in the form of lower prices and better service than would otherwise have occurred.

Thirdly, the private sector introduces measures to provide a clearer strategic framework for protection of water sources and environment.

Furthermore, and finally, private water authorities will have greater incentives to ascertain the needs and preferences of customers, and to tailor their service and tariff accordingly. However, the private managed authorities will also be able to attract high-quality managers and other professionals from other parts of the private sector; thus, the opportunity will arise for the wide ownership of shares, both amongst employees and local customers. Moreover, the majority of staff will be more closely involved with their business through their ownership of shares, and will be motivated to ensure its success, thereby increasing performance efficiency and productivity [119].

5.3.6 Disadvantages of Private Management (Negative Effects)

On the other hand, the private management in water services has its own disadvantages, which can also be taken as negative effects to the government, employees and customers. Importantly, the disadvantages may be focused and classified as weaknesses to private management, as shown below.

i. Increase of Unemployment

The increase of unemployment owing to the adoption of private services management has been noted as one of the major negative effects associated with private services. The fact is that private management style is a business-oriented method, and business focus is therefore placed on the efficiency of productivity in an economical manner, the introduction of new technology, and modern working equipment with the advantage that the adaptation of private services accommodates changing of organisation structure to fulfil the private services for market needs. This covers the objective of maximising profit through minimising expenditures. Therefore, the focus is placed on minimum workers with maximum productivity, given the advantage for new management styles to go for the termination (retrenchment) of workers. Schiller [47] argues that, 'the review of various methods of private operating sectors and finds that, public entities changed to private management (sales and auctions) have more negative effects on workers', due to the introduction of new private organisations, which favour the operation under private objectives. Law [139] adds that, during the change from public to private management of public utilities, large-scale retrenchments were practiced, which originated from elements of overstaffing and limitations of vacancies caused by the new structure. However, the interest of incoming private management is efficiency on training when seeking to achieve a reasonable number of quality staff, which therefore results in significant job redundancies in sectors including communication, power and water services [139].

ii. Risk of Increasing Loans

In the case that private management provides a loan from any financial institution, the borrowed amount will not be equal to that which is paid back: the total pay back will equate to that which is borrowed plus profit, although this could be even greater due to penalties, depending on the contract and the circumstances concerning how the project was implemented. This all reflects the greater impacts associated with water charges.

iii. Social Changes

Under private management, all activities are carried out on a profit basis, some of which are social activities that are not profitable for the company, and so are usually dropped. However, the new organisation structure comes with new rules and conditions, and as the new organisation structure is concerned with fulfilling the private management objectives, it has to focus on efficiency, quality, productivity and the maximisation of profit [142].

iv. Conditions of Capital Funds for Privatisation

Depending on the donor, if capital funds have been borrowed from the World Bank, then all procurement procedures and project implementation should be according to the World Bank procurement and implementation procedures. This includes various final and operation decisions to be made or mandated by the Bank. Notably, the power of no objection is executed by the Bank throughout every stage of project implementation. Nevertheless, during the project preparation period, the bank has the final say concerning the nomination of the contractor or the private operator; this is what happened during the DAWASA privatisation [141].

v. Increase of Commodity Price

Water charges are always on the higher side under a private services provision. In the private services, government subsidies are not provided; therefore, costumers are required to pay the actual cost of the services provided. Moreover, in private water services, prices are calculated from the actual production costs, services and profit for the service provider, as well as other finance charges. This situation is more experienced in the privatisation of water supply and sanitation services [122]. However, all the discussed disadvantages have indirect or direct effects on willingness to pay, as well as social behaviour changes in water services: for example, the stealing of water through illegal connections. In Dar-es-salaam, for instance, 70% of the uncounted for water is trusted to be illegal connections, whereby the remaining small percentage is leakage. Illegal connection for water supply or the cutting of the water supply pipes is greatly influenced by unaffordable higher water changes. Furthermore, the effects of higher water charge (increase in commodity price) has accelerated the unaffordability to the poor who cannot afford paying the required service costs. Regardless, the situation forces the poor people to use cheap, unsafe water, thus resulting in the increase of water-borne diseases in Dar-es-salaam city.

5.3.8 Appraisal for Private Water Services

The private style of water services has originated in developed countries, which have been practicing such methods for a long time. In Sub-Sahara African countries, the style was predominantly introduced in the early 1990s (see Chapter Two). Notably, depending on the process of adaptation, the method of implementation (full or lease contract), and the conditions for capital loans, private water services in some areas have been successful; however, in countries such as Uganda, Ghana and Tanzania, private water services have not worked thus far. Furthermore, even those areas considered to be successful in terms of private water services have created greater gaps between poor and rich people owing to the acceleration of water charges. Essentially, higher water charges means the majority of low-income people cannot afford the services; however, better services remain available for those who can afford them. Nevertheless, the quality and efficiency are motivations of private services. From this angle, it may be stated that the private water services do not provide a solution for Tanzania water services, simply because the majority of Tanzanians are low-income people. Nonetheless, private water services have good aspects to be considered, such as efficiency and quality in product and services, discipline of work, performance monitoring (performance contracts), motivations and incentives, and ideas concerning market competition. The underlined positive aspects can possibly be adopted as a contribution for devising appropriate water services systems in Tanzania.

5.3.9 Summary

The experiments and analyses on private management in the water sector concern successful approaches and failures, both of which have been critically discussed in order to establish the causes of failure and secrets of success. However, the discussion has been necessary as a challenge for creating constructive ideas, which is important for the development of acceptable water services for Tanzanians. Notably, private water services have been executed nicely in some countries, although there is the problem of high water charges owing to the commercial style of operation, which ultimately places a greater deal more focus on profit-making. Ultimately, it is best for those who can afford to pay.

Other noted disadvantages of the private water services include the private structure of organisations, which is concerned with productivity and efficiency, and there is always a minimum number of staff, which subsequently increases

unemployment. Therefore, countries with higher level of unemployment show that, private water management creates an increasing amount of jobless people.

Social change owing to the introduction of private water services is an issue, as private management places greater focus on profit; thus, any social activity executed by private companies is implemented in mind of making profit for the company. As a result, this should be compared with the advantages—including efficiency in services, productivity, quality and private sustainability—so as to achieve the best conclusion. However, every outcome has its contribution to society, whether positive or negative, depending on outcome. Nevertheless, all effects have challenges for a better future, which also acts as both indicators and motivators of successful privatisation implementation. This evidences that the conflict between the private and public provision of water services will never end, and will never be solved owing to the fact that there are some good aspects (success) resulting from both good practices as well failures (disadvantages), as has been evidenced in Section 5.29a and Section 5.29b.

The discussion covered in Section 5.12 shows that most developing countries have the fundamental concern that the adoption of fully private services in the water sector means a loss of power of control in terms of management, with numerous political reasons relating to the loss of ownership owing to traditional water issues being used for campaigns. This is a social issue that carries special weight in terms of politics. A second critical concern is that of increasing water prices during the course of privatisation, as there are no government funds, which therefore mean the price of water, will need to increase in order to cover all expenses, as discussed in Section 29b.7. This may cause people to take actions, including complaining and carrying out demonstrations, which could cause the government to lose its popularity.

Moreover, experiences from Western European countries—Great Britain, France and Germany, for example—that have a long history in privatisation, with similarities in practices of private management style, particularly in the arena of the water sector, are more efficient and reliable. However, the capital for privatisation is better if it is generated internally, which will accordingly reduce the water price to consumers.

As discussed and evaluated in Table 5.1, each method has its negative and positive effects, each of which has something to contribute to the betterment; therefore, equal consideration to each effect has been the focus of establishing better contribution to future water management style. Furthermore, in comparison with local Tanzanian water service experience, the concept for the Ideal framework

was developed; thus, the developed water management style focuses on the actual needs and benefit for Tanzania. It is not easy to conclude which of these methods is best owing to the various advantages and disadvantages associated with all methods. However, I believe that the best method of practice should originate from the two methods (public and private services).

5.4 The Commercialisation of Water Services

5.4.1 Introduction

Commercialisation is adopted as a water management model where operations are more independent and competitive, and the product(s) (water) is sold into the open market. The product water is available according to the requirements (quality and quantity); thus, water is sold in order to cover actual total production costs so as to ensure sustainability and services development. In this section, the discussion on commercialisation has been structured in an attempt to examine the contribution from the subject towards developing the appropriate model for the management of water and sewerage services in Tanzania [92].

5.4.2 The Process of Commercialisation, and Reasons for Adoption

The commercialisation process involves the strategy of producing greater quality and quantity water (product) for domestic and other needs for the benefit of actual commercial market demand. Essentially, the focus is placed on the product value of the market, whereby water is sold in order to generate enough funds to cover operation costs, sustainability, and capital development. The process is concerned with establishing operational activities by switching to adopting market characteristics aimed at improving the provision of services. The actual costs are designed to be covered from customer charges within the balance between affordability and services sustainability. Normally, profit is generated in order to cover its capital development.

The change to commercialisation involves the restructuring of public services to form a new organisational structure, whereby civil servants are trained to provide a new focus on market competition. The change has a direct effect on employees through some being relocated or transferred; essentially, this depends on the new organisational structure. If the new structure comprises the formulation of semi-autonomous executive agencies/organ, then it has been designed in order to affect a further cultural shift for better performance, which will improve economy through efficiency, effectiveness and accountability in policy implementation [92]. Markedly, there are various reasons for the commercialisation of public services, although all

are generally related with service improvement, expansion, and the economy sustainability of the particular public entity. However, forces for adopting commercial services are basically economic and market-oriented in consideration of promoting quality and efficiencies in services. As such, it may be recognised that the commercialisation of public water services is engaging a new commercial knowledge which predominantly boosts water service improvement, whilst establishing the economic potential of the particular service. Importantly, there is the need for commercial services, which will ensure a positive effect on the technology development and economic delivery. Importantly thing is, 'efficiency is a keyword and concept in a system of accountability' [93].

Commercialisation is the lifeblood of the economy, and creates competency and prosperity, boosts productivity, and builds sustainable services. Service reform policies vary significantly, and are broadly inspired by an intellectual movement in public administration called New Public Management (NPM). Markedly, NPM mainly covers the public economy and areas in which the government services have proved to fail (management and funds for sustainability). This highlights a lack of independent structure in terms of service provision and higher interferences in both political and power decision, which are the major causes of failure. Importantly, the influence of politics in decisions and the neglect of professional decisions, depending on governing systems, are critical. In addition, it is sometimes more fundamental to consider what is said rather than what is done in terms of helping development; however, all of these are contributing factors of failure.

Moreover, commercialisation has been discussed critically in an attempt to capture the concept so as to establish the correct solution for water services in Tanzania. Commercialisation exists with greater enforcement in product value (quality of water) and service sustainably, with the advantage that the commercial style of services can be organised and applied under the public style of management with minimum effects on restructuring, which may not affect water charges. However, the preparation for adoption necessitates a good background of commercial knowledge, which is a key factor in setting performance indicators and general monitoring during implementation. The entire process of looking for adopting a commercial way in water services has been derived from the capital for self-sustainability and the need for expansion. Furthermore, the need to consider the possibility of adopting commercial operation in water service has been necessitated by the existing gap concerning how to find capital funds for water development in Sub-Sahara Africa countries. The commercialisation of public services means that they become more accountable and efficient when run

according to the market principles. The service providers respond to market incentives.

5.4.3 Advantages of the Commercialisation of Public Services

The principles of a commercialised entity depend on flexibility according to the market of service. Kikeri [6] comments that, 'public provision is less productive than commercial'. Normally, commercial operations are commanded by the requirements of the existing markets; therefore, the plant, equipment, water production, labour and materials are all made commercially flexible in an attempt to facilitate market requirements. The greater advantage of commercial services is that there is the mechanism of being exposed to open market for competition, which alone results in good-quality production. The rate of good prices includes an estimated amount for service extension; in good practice, an entity under commercial services management does not depend significantly on government subsidies or any second source for its capital funds. Its commercial operation allows the self-generation of capital funds for entity development owing to being guided by commercial plans, whilst quality, efficiency, productivity, and marketing skills are the major driving factors. However, this means that, under commercial practices, the product costs in terms of basic operations, sustainability, and the depreciation of asset costs are covered by sufficient revenue generated from the product.

With the above taken into account, it should be noted that commercialisation induces technological development owing to the fact that market competition forces quality improvement with cost reductions; therefore, the adoption of new technology with good tools and equipment is required in order to achieve this stage. In specific regard to water services, this commercial practice has the wide meaning that definition includes the capital layouts for expanding and upgrading network connections to all water customers and the construction of new facilities.

As a further point to consider, commercialisation often signals an effort to cut fiscal deficits or to otherwise generate more financial resources for the service. Finance ministries often promote commercialisation in an attempt to slash subsidies. In addition, fiscal pressure can be so strong that financially viable and well-performing utilities are sold off to produce larger 'one time' increases in government revenue. However, this may have implications in increasing the product price, although the focus still remains on affordability, which is covered due to the fact that the market competition includes value for money [104].

5.5 Experiences of Commercialisation from Various Projects

Commercialisation is monopolised by external attempts considered necessary for adopting change, which has been done so transparently with reference towards effectiveness and efficiencies in the context of services and production. Essentially, this can be described as the best service and quality products for the market.

Markedly, the experience from commercial services in relation to the concept of non-profitable goals meant that the assumption was made that commercial non-profitable firms do not make profit; rather, their aim is to simplify the operational process, subsequently leading to lower product-related costs. In such a situation, the introduction of commercial service acts as be the catalyst of service improvement through good equipment management, business planning, and personal management—all of which are major problems in water services in the context of Sub-Sahara African countries.

5.5.1 Commercialisation of Water Services in Zambia

The world move towards water services restructuring could not afford leaving behind Zambia water services. According to Phiri [229] water sector reform in Zambia started slowly from the early 1970s. The government's full attention was directed towards the water sector reform, which continued into the 1990s with the major reform executed. Up until 1993, the Zambian government culminated its general water operation strategy into the National Water Policy (NWP), with only 43% of urban population benefitting from access to safe water and appropriate sanitation at that time. In rural areas, only 30% of the population were in this position. In order to overcome this serious water problem, from 1994, the change of management structure in water services was executed.

Inadequate water for domestic and commercial uses necessitated the structure of management in water supply and poor sanitation services to be changed. A normal institutional and legal framework to protect water sources and a campaign to encourage community participation in the water sector were introduced.

The problems of funds for capital investment and narrow allocation from the central budget were considered as the major obstacles for water development in the country; therefore, the adaptation of international trends in commercialising water services as a solution for water management in Zambia was considered to be an appropriate solution for Zambia. Accordingly, the commercialisation of water services in Zambia can be seen as a strategy aiming to improve water and sanitation services in the country [229].

It is recognised that such commercialisation has also been a product of conflict in regard to water service provision between two different government authorities (Ministry of Water, and Ministry of Local Government). According to the National Water Act 1949, the responsibilities and role of providing water supply and sanitation services has been under the government—either through the local government or central government through a particular ministry. However, the major contradiction was the ministry duties for water services were delegated to the Ministry of Local Government through local authorities or municipality. The set-up of the existing water service structure was not performing well, which comprises a great deal of contradiction. It was two different ministries doing the same job, which resulted in unnecessary conflicts—and sometimes jurisdiction challenges for local authorities, owing to a lack of capacity to provide water supply and sewerage services. At the beginning of 1993, this contradiction necessitated the formulation of a government special commission to study and reorganise the set-up of the water sector, and from here the idea of commercialisation for water services was born [330].

i. Driving Forces to Commercialisation of Water Services in Zambia

Zambia is amongst the poorest developing countries. In 1994, it was established that the water supply and sanitation urgently required reform for creating better and more affordable services to all Zambians. It was for the purpose of increasing the responsibility and freedom to improve efficiency in social services and encouraging innovation, creativity and reducing politicisation in public services.

The Zambian government, which did not have enough capital funds for water development, concluded that the commercial style of water services would be adopted as the way of achieving improved water services in the country. In this vein, Pirie [103] argues that commercialisation is a direct way of 'relieving some of the government financial pressures and describe a solution. The adaptation of the commercial system for Zambian water services was forced by the need to get out of inadequacy and poor water services in the country, and a set-up of sustainable, affordable, stable water supply, and sanitation services was the goal through the adaptation of commercial services

The government agencies were permitted to change the old public procedures for the provision of goods and services to adopt future of commercial environment, which is one of the major differences concerning the way in which commercialisation was adopted. However, the conflict of management in water services between the Ministry of Water and the Ministry of Local Government, as

discussed in Section 5.5.1, was one of the major obstacles to country commercial water services.

Importantly, the commercialisation of water services in Zambia was significantly influenced by changes in the world style in managing water services owing to economy problems, the environment, and industrialisation. According to Dagdeviren [45], many first world countries showed emerging trends in relation to the global water management style (corporatisation), and from the early 1980s, the world revolution on water management were started. This idea subsequently led not only to commercialisation, but progressed further to the privatisation of various public utilities, including water, gas, electricity, communication, and even transportation in some parts of the first world. Therefore, like many other Sub-Saharan African countries, the commercialisation of water services in Zambia was adopted as a strategy for water service improvement, which was forced by globalisation change in water management style and the need for sustainable, developable, affordable and self-dependent Zambian water system.

ii. Zambians Process to Commercialisation

The process of reform towards commercialisation in Zambia began in 1982 with the corporatisation of water services in the capital city of Lusaka, followed by a period of 'tariffs rationalisation', which went together with legislative and institutional reform from 1992 onwards. The process become more effective after 2000 when the regulatory board—the National Water Supply and Sanitation Council (NWASCO)—was formed, with nine more commercial entities subsequently established as independent commercial operational units to serve almost 40% of the Zambian population; 86% of which was peri-urban population.

In Zambia, nine commercial, independent operating utilities provide water and sewerage services in urban and suburban areas; there are additional plans in place to establish new commercial entities in the country. According to the Water Act 28 of 1997, local authorities are empowered to establish water supply and sewerage utilities in Zambia. In this case, the commercialisation exercise has meant that the local authorities still own the utility and, in the same vein, local authorities are owners alongside other private investors in other commercial utilities

iii. Effects of Commercialisation in Zambia

The adaptation of commercial water services in Zambia has created a problem of price increase owing to water tariffs being reviewed to cover the actual services costs. The commercialisation of water services under the private operator has

affected water tariff increases in many countries in Sub-Saharan Africa: Senegal, Gambia, Cote d'Ivoire, and Guinea, which are amongst those affected. Phiri [229] notes that the major effects of commercialisation in Zambia include tariff increases, which cause water to be unaffordable. According to Dagdeviren [231], Zambian water tariffs are established according to the category of housing, comprising three major classes: low, medium, and high. Since 1990, water tariffs have been increased by between twofold and eightfold in real terms. The existing policy of the total cost recovery has affected some areas; the low-cost category has increased more than the higher-cost category in some provinces. Moreover, tariff increases and the reduction of government subsidies to the sector water charges remain above the ability to pay of many poor Zambians. These two policy goals of ensuring commercial existence, and sometimes meeting social objectives, has proved contradictory, simply because the increase of water tariffs has caused the neglect of various social objectives especially the right of providing affordable quality water to all Zambians.

iv. Appraisal for the Commercialisation of Water Services in Zambia

The discussion on the commercialisation of water services in Zambia has evidenced that the adoption of commercialisation is the most reliable and appropriate; although not very successful due to unaffordable higher water charges caused by the tariffs review. The absence of water tariffs control, balance, and fair play to all (water users, services providers, and government) have made water services unaffordable for low-income Zambians. The regulating authority should be in place to ensure fair affordable water charges are implemented.

The process of the government policy and process of adoption concerning the commercialisation of water services has proven to be a solution in a situation where a public operating entity cannot fund itself for service sustainability and development, whilst its services are diminishing. Therefore, a change of operational system—from public to commercial—is recognised as a practical solution for increasing product quality, quantity, sustainability, and service development flexibility, in direct consideration to market needs. Commercial services attract a quick generation or adoption of new technology simply owing to its existence in regard to open competition. Moreover, good water services makes customers satisfied, with customer satisfaction recognised as having greater impact on boosting revenue collection (income) from daily water sales. However, in commercial services, prices of water per unit covers actual product costs plus extra estimated affordable amounts for services sustainability and development (tariffs review). In this case, affordability should be critically accessed, especially if goals

are water services to all, and the government wants to be free from loans with conditions.

5.5.2 Commercialisation Process in Somalia

According to Parker [13], 'commercialisation is one of the ways of reinventing public sectors to make them more effective and in market'. Somalis water services were initially provided under the control and management of central government agencies. The situation has changed, and now water supply and sewerage services are provided under the control of local public entities reporting to municipalities or direct to central government (state level). The hope of a stable state of Somali is now possible in some parts of the country and this is resulting in unprecedented growth of urban populations into some towns. However, the existence of unclear institutional framework and lack of proper control owing to political instability have together left public services infrastructures with no hope of matching the current water demand. Therefore, reform in regard to adopting a commercial system of services was considered the only alternative for Somalia in the water sector.

i. The Necessity to Discuss the Process of Commercialisation in Somalia

Somalia's experience of water services management provides an understanding of their adoption of commercialisation. The uniqueness of the Somalian process is focused on political instability with the atmosphere of civil war in the region. The Somali water supply distribution coverage is lower than in any developing African country. The commercialisation of Somali has different experiences in comparison with other developing countries.

The process towards commercialisation was implemented immediately after the conclusion of a study carried by a number of international agencies, including UNICEF, Somali, European Commission and other agencies, all of which were involved in reconstruction of Somali. All parts worked together under set objectives with focus on commercialising the water services provision as follows.

ii. Objectives

The focus of working areas was towns that have enough security to facilitate the progress of urban water services commercialisation, with the following objectives:

1. To evaluate the actual need for commercialising or partnership in providing public services.

2. To understand and assess the existing performance limits and weaknesses encountered by the existing private operator.
3. To evaluate entities' positions in consideration of commercialisation or private sector participation of the existing legal weaknesses, and the political willingness to devise reform according to need.
4. To relate other examples from Africa developing countries to advocate the need for change.
5. To prepare recommendations to facilitate the change to commercialisation or public private partnership in the visited areas

iii. Process of Implementation

Commercialisation in Somalia was executed in a very special way due to political instability in the region. Adam [9] argues that, in the move to a commercialised system, there is 'need for rationale to restructure the existing bureaucratic organisation and formal determination to set relationships of quality products, cost, quantity and affordability'. Furthermore, water and electricity services were already outsourced to autonomous independent bodies not in municipal budgets and which were pushing towards cost-effective services (value for services); therefore, the issue was regulation of the sector. The actual services costs of the little available was not affordable to all. The Somalia study for infrastructure development was carried and, after a long debate on the ways in which the process of implementation would be carried out, the six big towns in the country, including Borama, Berbera, Burao, Hargeisa from Somaliland and two other from Puntland, were transferred to commercial water services. However, the decision to commercialise water services and electricity was accepted with the majority of stakeholders including municipal mayors of the six big towns, civil servants, and common consumers in the region. It was a democratic water commercialisation and this was obligatory according political situation in the region.

iv. Benefits from Somali Process to Commercialisation

The water commercialisation process adopted by Somali was very different in comparison to Zambia. The Somalia commercialisation procedure was designed and implemented systematically with three major factors, including planning, in-depth field study, and analysis of awareness and acceptability within the local environment. This commercial adoption process has greater benefit on implementation as it has been formulated with awareness and acceptability from all necessary stakeholders in the region. Therefore, this approach can be accepted

easily across the Sub-Sahara African region owing to the fact that the preparation for adoption has involved the participation of all stakeholders. The participants (stakeholders) are in a position of understanding the source, cause, and advantages of changes, as well as what should be done; this will make it easy for the stakeholders to adopt change. However, the participation issue has its own importance for transferring the knowledge and technology. Various stakeholders participated in the field study and therefore their views were collected and analysed during the planning for implementation [11].

In comparison with the process adopted during the privatisation of water services in Tanzania, Somali water commercialisation organised and executed very professionally owing to sound planning and also because, at the very beginning (at preparation stage), all stakeholders were involved with full contribution. This is a democratic style of water services commercialisation.

The benefit of Somali water commercialisation process is that the government will have the opportunity to learn what its people need. The changing policy allows various changes—the commercialisation of public properties, installation of regulators, new taxation system, and other changes—to be implemented. With this noted, Ramanadham [10] argues that the implementation of public-sector commercialisation begins with adopting practicing commercial principles. A study before implementation is one of the commercial principles adopted during the water commercialisation in Somalia. Moreover, a study conducted after democratic agreement on implementation is a unique style of approach that has good promise of success. However, the actual situation in the field suggests this model of approach; therefore, the lesson should be that the best approach for any project development should start with preparation, and ideas for implementation should originate from the place wherein the project is to be implemented [47].

v. Appraisal for Water Commercialisation in Somalia

Somalia has executed a special democratic approach for change to a commercial management system, which has successfully adopted greater changes in water services sector. The impact on the successful upgrading of the dilapidated water supply and sewerage services, in a situation whereby the existing political system is not stable has shown greater success of commercialisation in water service.

The Somalia democratic method of commercialising water services is one of best strategic approaches with guarantee in acceptability to all kind of stakeholders. This has greater assurance towards building sustainable and

affordable water services. The lesson here is that the Somalian strategic approach for commercialisation of water services is a practical model that can be adopted in other countries within the Sub-Sahara African region.

The second major lesson from Somali commercialisation is regarding the process and adoption of a proper study, and the participation of all stakeholders. These two important steps form the foundation for formal change assurance and acceptability, which Somalia commercialisation process had to go through. Furthermore, from the discussed benefits of commercialisation in the case of Somalia, the base of successful implementation depends on government acceptance and commitment to change

5.5.3 Summary

The public management of water services has tradition of bureaucratic practices owing to its existing structure being established and controlled by politicians. Therefore, day-to-day operational activities are highly interfered with political decisions. With this in mind, it should be noted: if the country is not stable politically, like Somalia at present, it is very difficult for infrastructure and other services to be in a good operating condition according to the need; however, the development of services is also not reliable owing to a lack of funds; therefore, the evidences from the discussion covered in Section 5.6.3 and Section 5.6.4 approved the solution of commercialisation that is strategic for real development. Private management of water services has built up with a higher level of discipline based on commercial ideals based on a number of factors including motivation, recognition, appreciation and many others. In the context of private operations, there are excuses for bureaucracy, which makes for higher efficiency and good productivity. However, the objectives of the system aim to maximise profit-generation, and may cause unnecessarily higher water charges that may not be affordable to many poor people in developing countries.

Commercialisation under public management has a major focus on the sustainability of services, efficiency, and development. Undoubtedly, these are major tools for operating commercial systems, and so under this system, the generation of capital funds for sustainability and services development is guaranteed. Public services have a nature of considering more affordability to cover low class people; however, such low-cost services have a lot of incontinences due to flexibility caused by interference of political decision. As shown in Somalia water commercialisation (Section 5.6.3), commercialisation within the government is a more balanced system of managing water services because it covers sustainability, as well as directing greater consideration on affordability to

all. Commercialisation has been in practice for many centuries, although the approach has been improved from one place of adaptation to another, depending on the circumstances of the implementation (for example, the Somalia approach). The approach for the adaptation of the commercial style of management should be developed to fit the particular situation. The purposes of commercialising public services are for developing good management practices, efficiency in social services, or producing quality products according to market demand with the aim of producing value for money. Therefore, public commercial services can provide one of the solution models for Sub-Sahara African countries. Moreover, the experience from the discussion evidenced in sections 5.32 and 5.36 shows that most of the public projects or services that are changed to commercial systems were successful by implemented with a good degree of achievement.

The commercial operating entity under public ownership has a wide range of sources for capital funds than the private operating entity, hence commercial services under government ownership are entitled for government funding, either from the central government budget or government loan. Furthermore, the responsibility for securing capital for water development remains a government task, and in the case of where the government subsidy is injected, the total water charges could be affecting, thus leading to low water rates. Whilst private water services have very limited sources for capital funds, either loans with interest or adjustment of water charges, they all have negative impacts in regard to the total water charges; therefore, higher water rates may be established, with the likelihood of unaffordability for the poor majority.

In principle, water services provided by the government aimed to cover all citizens, including people with higher and lower incomes, with all customers enjoying water free of charge or with very highly subsidised services. However, practically peri-urban residents and other rural areas without formal water services do not benefit from the government subsidies, meaning those who are provided with services (including sustainability and services development), hence the value of unit product (volumetric prices) is served commercially [4]. Therefore, commercial water services are fairer in terms of providing services as its structure for water charges is covered with maximum consideration to actual services costs, sustainability, and affordability, which is not much focused on profit gain.

According to the discussion, the differences between commercial and private operations are in the change for set-up and adoption, ownership, and traditional focus on objectives. Basically, private operations are devised of commercial bases. Nevertheless, private and public services exist differently owing to the private

sector having natural commercial contents. Commercial services can be adopted by public-management or public-owned entities. The notable and significant difference is that private services are business-oriented in nature, with greater focus on interests. Commercial services under public management are services-focused with consideration on sustainability and services development, rather than profit making. Furthermore, in real practice, commercialisation addresses and emphasises value structure of services, product, and sustainability, more so than other areas. In some cases, privatisation may be adopted as an instrument to facilitate commercialisation, aiming to eliminate the existence of depending on government subsidies. Moreover, the objectives of adopting commercialisation in public services is and will remain concerned with improving effectiveness and competency, and achieving stable services, which may result in improving value for money. They also deliver improvements that broadly relate to improving regulations, tackling restrictive staff working conditions; adopting more flexible financial management, and focusing on areas besides profit. The question of which method is better between commercialisation and privatisation is a difficult one to answer, as each method has advantages and weaknesses; however, according to the discussions covered in Chapter Four and Chapter 5, this study concludes that commercialisation under public ownership is the best solution for Sub-Saharan African countries.

In an attempt to improve water supply and sewerage services, appropriate management style and stable capital funds for sustainability and services development are required. Making water charges affordable and realistic for sustainability and as a source for establishing capital funds necessitates in-depth analysis of the existing different water management experiences, with consideration to actual local factors (political, economic and social), where changes are to be implemented. However, the successful implementation of commercial services will reduce the government's tasks of chasing loans and slicing a small government budget for water projects development. The commercial role will control the diversity—including formulation of the new organisation structure, operation plans, performance monitoring and decision-making—which will automatically motivate the total performance in services improvement and create the right environment for business to raise productivity within water sector.

5.6 Regulatory Authority in Water Services

The regulatory water authority is a public constitutional authoritative body set and empowered to monitor, coordinate, supervise, and referee fairness on water

charges against quality and standard of the provided services for the benefit of service providers and water users according to governing policy. The regulator may exist in all (public, private and commercial) types of water services. The complexities of the regulatory process in the water sector involve setting the water price level and water tariff structures. Water charges may not end up being equitably distributed amongst income groups; however, the capacity and level of functions, powers and roles of regulatory authorities varies from one country to another depending on the nature of establishment and the governing policy of the individual country. Nevertheless, the universal common goal of all regulatory authorities is to control the quality of services, thereby creating smooth coordination amongst stakeholders and ensuring the fairness of water charges between service providers and service beneficiaries.

In principal, governing policy and guiding Acts are different from one country to another, and so existence, formulation, roles and function of each individual regulatory authority differ from one to another. In each country, the local governing policy describes the existence and power of its regulatory authority. Within the same justification, the functions, roles and power of each regulatory authority are different from another.

5.6.1 Evidences of Differences in Structure, Function and Power

According to Oman Info [244] In Oman, the Electricity and Related Water Regulatory Authority is responsible for regulating the electricity and related water sectors. Basically, it seeks to ensure the provision of electricity and related water services throughout the country, and protects the interests of consumers—particularly those of limited incomes, the sick, and the elderly. The authority is charged with implementing the sector's general policy and preparing plans and programmes for its development.

The Water Services Regulatory Board (WASREB) of Kenya is the only institution in the country mandated to oversee the implementation of policies and strategies related to the provision of water and sewerage services. Notably: 'WASREB sets rules and enforces standards that guide the sector towards ensuring that consumers are protected and have access to efficient, adequate, affordable and sustainable services' [247]. In Gambia, the Public Utility Regulatory Authority (PURA) was established under Act. 2001. PURA was established to control and perform various activities in sectors, including water and sewerage services, electricity, and communication. The authority was structured to regulate public activities including energy services (gas, oil and electricity), communication,

poster, water and sewerage services, transport, and the environment. This multi-sector complication necessitates the formulation of a special organisation structure capable of complying with this nature of multi-sector composition within one authority. This situation necessitates wide coverage of not only professional knowledge, but also the composition of different technicalities in regard to supervision and regulation matters—especially in regard to those issues surrounding performance-monitoring, standard-setting and licensing.

According to Gambian Water Policy, water and sewerage services programmes were set on millennium water development goals, with special target aimed at measuring the progress and development of the service provider, National Water and Electricity Company (NAWEC), which is required to have a water service licence from the regulator PURA. In other words, one of the PURA duties is to licence water services providers in Gambia, along with receiving and working on complaints, request, comments, and suggestions from both services providers and water users; reviewing the regulations for better performance and providing better performance conditions for the services provider; setting and supervising explicitly format for water tariffs review and approval of water tariffs change; and ensuring coordination between services providers and benefiteres (especially the participation of all water stakeholders in the process of tariffs review). For example, on December 27, 2010, PURA received an NAWEC request for tariffs increase of approximately 31% for electricity and cost recovery for water and sewerage services in the city of Banjul. According to PURA [269], in Gambia, the procedure for water bills changed according to the PURA Act 2001, which was structured to accommodate a wide range of participation and consultancy of all kind of stakeholders or discussion, critical analysis, and the contribution for compromise before any approval for change.

In Gambia, the review of water tariffs has to systematically go through a number of stages, with wide involvement of all stakeholders for the accommodation of different opinions for fair decisions and for the interest of both parties, i.e. services provider and water users. This is the key role of PURA in Gambia.

5.6.2 Appraisal for Gambia Regulatory Authority

PURA has evidenced the existence of multi a sector-structure formulation in regulatory authorities; multi-task composition in its structure opens up the potential for the wide participation of various experts, which is necessary not only in terms of supervision and monitoring, but also for regulatory matters (standard-setting and licensing). PURA was established with the aim of regulating energy services,

communication, transport, environment, Posta, water and sewerage services. Importantly, this has its complicity with greater challenges in standards-setting and performance-monitoring, although the composition may easily give quick results in coordination issues. PURA has been formulated with 9 systematic steps prior to the approval of tariffs change. Notably, the process opens up a greater opportunity with higher consideration to all water stakeholders, who participate equally to introduce new ideas and provide constructive criticism; however, all the contributions are considered equally in mind of decision.

In comparison with Oman, the Oman regulatory authority is responsible for regulating the electricity and related water sector only, which means the functions of the regulator in Oman, is less than in Gambia; therefore, operations are also different. This means that the organisational structure is also different. The Kenyan regulatory authority (WASREB) also has a very different structure with the specific function of ruling and enforcing standards that guide the water sector in ensuring consumers' protection in regard to water rights, quality water services, and water charges. This provides conclusive evidence that each regulating authority has been established differently in order to sustain its local needs. Therefore, the governing policy is the determinant factor on establishment of the nature, power, structure and functions of the regulatory authority.

5.6.3 Water Regulatory Authority in South Africa

According to Muller [243], the South Africa water regulatory authority was established by the Water Service Act 1997, and has authority with clear rules in the area, including the provision of water services, water-pricing, and governing the contracts for the provision of water services. The regulatory authority is powerful in terms of the provision of water supply services, and specifically monitors the standard of services provided by municipal water authorities. Municipal water authorities are service providers, and are fully responsible for daily water services operations. According to the Water Services Act, in South Africa, regulating water authority provides a comprehensive framework for overseeing and regulating water boards' establishment as a family of regional public utilities under the Authority of Ministry of Water. The authority is responsible for the collection and publication of information concerning water services. This is a powerful regulatory tool available to the nation. In South Africa, the framework for water development plan covers water tariffs regulations, and addresses the legislation governing municipal finances and coherent interface between inherited municipal and sector regulation. In principal, the South African water regulatory authority is specifically focused on regulating water services provided by the municipalities [243].

5.6.4 Critical Appraisal for South Africa Water Regulator Authority

Evaluating the operating functions and the organisational structure of South African Water Regulator Authority is extremely difficult. The difficult water set-up structure in the country—which notably gives much diversity, especially in the boundaries of power and collaboration with municipal governments—gives no opportunity to provide a simple description. However, the operations and functions of South Africa regulating authority are to monitor provision of water services, water pricing, governing the contracts for provision of water services and overseeing and regulation of water board.

Water services are provided by the municipal water authority under the regional water boards. In this case, the regulator provides a comprehensive framework for the overview of all municipal boards. In the South African management style, the power of regulatory authority extended more to regional municipal water boards. The effectiveness of the system and the function of the regulatory authority can be measured at both municipal and local levels. This regulation style provides additional opportunities in the participation of local water service users. The regulator structure of operation, which has been more keenly powered towards regional municipal water boards, has proved a greater success in water services. This style of regulating through regional municipals is a constitutional structure of the South African government, which justifies the regulation model having many styles of existence, and therefore structure power, duties, responsibilities, and limitations, all of which depend on governing constitutions. The South African regulating structure is successful in the South African territory. The lesson here is that countries with a similar structure should take the challenges from South Africa regulating structure.

5.6.5 Water Regulations in Egypt

In Egypt, the policy concerning water supply and sanitation is mandated by two government ministries (the Ministry of Water, Resources and Irrigation, and the Ministry of Housing, Utilities and Urban Communities) In this model, the Ministry of Housing, Utilities and Urban Communities is responsible for monitoring and supervising three different water services institutions (Holding Company for Water and Wastewater; Cairo and Alexandria Portable Water Organisation; and The National Organisation for Portable Water and Sanitation), which operate in urban areas.

According to Pirard [245], the outcome of the national water sector reform of 2004 was THE formulation of the National Water Holding Company. The company

began with 23 branches of independent water and sewerage operating companies. The largest cities, including Cairo and Alexandria, were governed with four separate water supply and sanitation companies, whilst the remaining 19 cities each had joint water and Sewer Company for sustainability and the provision of better services. However, Cairo and Alexandria Potable Water Organisation Company (CAPWO) executes a water plan investment and the procurement of works for two major cities Cairo and Alexandria. The function and role of the National Organisation for Portable Water and Sanitation Drainage (NOPWASD) Company is to execute water plan investment and the procurement of works in the whole of Egypt, with the exceptions of Cairo and Alexandria. This Egyptian water services operational structure is functioning with one objective to provide the best and most affordable water services to all Egyptians. Water services operation in the country is regulated centrally under water regulatory authority of Egypt.

The Egyptian Water and sanitation sector has been under great support of USAID since the early 1980s, with successful cooperation leading to services improvement with the establishment of the water regulatory authority of Egypt. According to Sharabas [244], the driving force for the water sector reform, which resulted in the establishment of Egypt Water Regulatory Authority (EWRA), was major institutional and technical problems, including duplication of administrative entities, low-cost recovery ratios, and a lack of qualified and modern management systems. However, the main objective was to create an inter-ministerial policy coordination committee, and water and waste water regulatory agencies.

According to OECD [246], the establishment of EWRA operational framework and its existence is not fully autonomous. It is an organ under the Ministry of Housing, Utilities and New Communities, shouldering the major function of linking the government, society, and the water/waste water holding company to ensure that national policies and regulations are followed. The governing board head is the Minister for Housing. Moreover, the ministries of finance, health and population and environment are also Board members of the Agency. However, the EWRA goals are to ensure that national water policy is implemented, the institutions in the sector are performing well, and the fair balance between service costs and tariffs are well protecting, including the promotion of private partnerships in the country. In order to make this possible, EWRA has installed and implemented a water quality programme with realistic performance indicators, and a benchmarking plan for utilities, and designed a water balance action plan [246].

5.6.6 Critical Appraisal for Egypt Water Regulatory Authority

The driving forces and objectives for establishing water regulatory authority in Egypt depended on local needs. The Egypt Water Regulatory Authority (EWRA) has been formed to solve major institutional and technical problems, such as low-cost recovery ratios and A lack of qualified management. This is different from other countries, such as South Africa, Kenya and Gambia. EWRA is unique due to the fact that it is controlled and managed by two different ministries; therefore, this creates multi-sector responsibility. This shows that water regulatory authority is not necessarily based and controlled under the water sector only. The structure and nature of functions are formulated by the actual need and according to the governing policy. The unique structure of the operation of EWRA is under two different ministries based under Egyptian constitution, which gives flexibility in the ways in which the regulating authority should be formed, alongside its reporting mechanism. Driving forces for establishing regulating authorities are different: Egypt went for water-regulating authority for solving duplication administrative entities problems, low-cost recovery ratio, and a lack of qualified and modern management. The authority is successful working in Egypt. The lesson here is that the regulating authority can be established not only for water quality and prices control but also as a solution to the aforementioned problems. However, the good performance of EWRA in Egypt does not mean it will provide a solution for all African countries. Furthermore, the administrative order to EWRA, with the fact that the regulator is under two different ministries implementing different policies with two differences in reporting mechanisms, means the situation is complicated, and the conflict of interest between the two ministries may actually accelerate unnecessary difficulties.

5.6.6 Summary

The discussion shows that the driving forces for establishing regulator authority in Egypt were concerned with solving administrative problems and the adaptation of modern management system. This justifies that an regulatory authority can be established not only as body to provide adequate control, quality monitoring, and affordable and sustainable services to public in water sector, but also to solve some administrative problems. The uniqueness of EWRA in its reporting mechanism can also be adopted as a challenge to study and analyse the profitability of regulatory authority being governed under two different ministries. The advantage of ministerial coordination, as justified by EWRA, has extended the activities and role of regulator in water sector. These new challenges will increase

the contribution and value of regulatory authority in water services, as well as in water resources protection. Therefore, for any water services set-up, regulatory authority is a tool for services development, and thus the need of regulator is mandatory.

However, the discussion on EWRA, SAWRA, PURA, WASREB and OERWRA evidences that the regulatory operational power, functions, structure and establishment are different from one regulatory authority to another. The challenge is that the model for regulatory authority has no standard structure; it can exist in any form provided it performs the policy defined duties. Each country has its own objectives and priorities, but the organ being in place is mandatory. This indicates that setting a standard structure of function (model) for the regulatory authority is extremely difficult. There are some common functions to be adopted in every model, including regulating water tariffs, refereeing fairness, quality of services against charges, setting standards for service providers, coordinating amongst stakeholders, and licensing the services—all of which are mandatory to each and every model. Therefore, a practical sample model of the regulatory organ can be principally developed based on these factors. Due to policy differences from one country to another, the power and extension concerning performances are different, and will remain different from one regulator to another. Therefore, each regulating authority model should be developed according to local needs. Importantly, the need to assess the local environmental needs and the existing governing policy should be the first step if the objective is to come up with sustainable regulatory authority model.

5.8 Willingness and Ability to Pay for Water Services

5.8.1 Overview

According to Naing [262], willingness to pay is the maximum amount of money that may be contributed by an individual to equalise a utility change. The definition advocated being that 'WTP is the maximum amount of money an individual is willing to pay for a commodity is an indicator of the value to her/him of that commodity'. The economic theory value, according to ECO [263] saying that, 'If something is worth having, then it is worth paying for' this is principle idea of WTP. However, it has been widely emphasised that assessing WTP is for the economical sustainability for the services to be provided. Therefore, the affordability for services to be provided is an obligatory stage for proper project

planning. Several surveying methods, including questionnaires and interview approaches, have been developed to measure the acceptability and ability of consumers' willingness to pay for water supply services [263].

5.8.2 Assessing of the Willingness to Pay in Developing Countries

WTP can be easily established by focusing on and scrutinising the ability and character of water users in terms of whether or not they are ready to pay for new water charges. During the project planning phase—and even the period of review for improvement—assessment for WTP is obligatory. The sustainability of water services depends on the effectiveness of water user payments to sustain the water services. WTP shows the picture of how new water charges will be accepted, and gives project economical sustainability assessment necessary for planning. Wedgwood [251] says that, under the survey method, WTP can be estimated through major three approaches: by asking people directly; by analysing individual expenditures of money, time, labour, and other factors; and through observing the price that people may pay for product in various markets.

Lauraine *et al.* [249] argue that, 'the willingness to pay studies have been widely reviewed for their potential applicability in evaluating government regulations involving changes in (small) risks across a given population group'. Moreover, Guha [254] argues that consumer willingness to pay is mainly for getting benefits translated in money terms as a central concept framework. It is a situation whereby water consumers are offered theoretical market in which they are asked about their willingness to pay as accessed for a certain service in a condition which sometimes does not reflect the real market. Studies for willingness to pay have been carried out in a number of places around the world and in particular in developing countries.

In developing countries, WTP can be advocated directly by assessing a number of physical indicators, including water users' ability to pay (income) against the actual water services cost, limitation of quality and quantity on services, social and culture effects, and knowledge of understanding the importance of payment of water charges for sustainability.

According to Shirima [256], the old Tanzanian tradition of understanding that water is a free gift from God and the political mentality established during the struggle for independence, whereby, after independence, water would be free of charge to every person, are factors that have affected the willingness to pay for the majority of peri-urban and rural residences in the whole country. This has resulted in a greater discouragement towards the water payment, which is therefore a

significant burden on water services companies in the country. People are not willing to pay for water services because of their belief that water is a free gift. The willingness to pay is not only related to tradition and politics, but also to the attitude that higher water charges has significantly impacted the whole picture—especially the causes for willingness to pay.

In India, for example, more than 230 households from residential and slum areas were involved during the willingness to pay assessment. The outcomes varied across the sample. The majority of the water users expressed their WTP according to their income for drinking water. The greater part of decision on water treatment (purification) method depended on and was governed by the household's ability to pay. Nevertheless, with perception on the benefit that may accrue from the change, the natural dislike to pay behaviour was also noted amongst householders. It was also noted that a lack of education or knowledge in the family or community is a barrier for accessing relevant information especially on water services sustainability this also has greater impact in WTP [252].

The India summary on WTP shows that low-income people are less willing to pay because of affordability. This shows that the willingness to pay can be driven by the income factor. The solution is that setting water charges should include consideration to minimum income so as to suit low-income people of a particular area. This consideration of low-income people will be a catalyst for raising the motivation concerning willingness to pay. Knowledge of understanding the sustainable value of the provided service is a great challenge concerned with pushing out less willingness to pay for provided services.

Carter *et al.* [248] state that, 'underlying socio-economic and cultural reasons are the major contribution to the sustainability challenges of the willingness and ability to pay for water'. According to Vandemoorthele [250] in Zimbabwe, women were found to be willing to pay 40% more than men for improvements in domestic water supply. In the country, women carry the burden and hardship for searching for and collecting water for domestic use. Although women are more willing to pay than men, their ability to pay is lower than men's because of their low income. Importantly, men have a higher income generally, whilst women are more concerned with family duties, especially in rural areas. The low-cost recovery for water services has also affected the Western parts of Kenya, despite seemingly high average household incomes, and yet willingness to pay was very low because of the fact that men with high incomes were not willing to pay, women were willing to pay but their income was low. The responsibility for this expense remains with women. In fact, it was noted that, in actual spending priorities, water bills payment

was near the bottom of the list. The value placed on other household items was very high. There was greater variation between people's priority and their willingness to pay due to high water charges. In these circumstances, of women under such difficult surroundings, to be responsible for family water payment makes water services unsustainable because women income is not stable.

Culture also has a greater impact on willingness to pay for water services. According to Mgeyekwa [205], in the eastern part of Tanzania (Tanga), the majority of the population is Muslim, and according to the religion, not paying for consumed water is a great sin. The fear of committing a sin makes believers pay their bills. In addition, the traditional culture of the Tanga people—to allow women to go out for any difficult jobs (searching for water and even food shopping)—forces men to pay water bills timely to ensure service is available at home.

Men keep their wives indoors not only because of culture, but also as they feel ashamed and discriminated if their women go outside with buckets to look for water; therefore, the situation forces men to make water permanently available in their homes. This practise is a catalyst for willingness to pay, and is a real practical example of how tradition and culture could be the driving force for willingness to pay. Tanzanians used to fetch water freely and directly from rivers, which is where the idea of water being a free gift originated.

In relation to service reliability and availability, WTP is driven by physical-need circumstances, where the greater service reliability, the more water consumers are encouraged to pay. In a situation whereby water services or tap water are in higher demand, water users become desperate and impatient, looking for water necessary for survival. Regardless of how much cost is involved, the individual need for water demand dictates the power and altitude of readiness to pay. This happened in Tanzania where more than 4 million Dar-es-salaam inhabitants were supplied with less than 35% of the actual tap water demand. The situation forced middle-class people to be ready to pay any fixed water charges provided they get more tap water. Importantly, the difference in demand and supply circumstances influences the willingness to pay.

5.8.4 Motivation for Willingness to Pay

The concepts from the discussion indicate that the motivation for WTP is complex. The design of a special mechanism to ensure the sustainable for motivation is obligatory. The motivation for willingness to pay has a greater contribution in the whole process of water development. Water charges being paid timely will allow for good services planning and development. However, the question is what to do and how to make water users willing to pay for water charges on time.

This is a great and endless concern. According to Epstein [69], the challenge is communication, which is necessary for understanding and sharing water service ideas between water users and services providers for the benefit of both parts. Being closer to the problems facing water users (customer care) may be an ideal stimulating willingness to pay, which has motivation in nature. Improvement of water services (quality and quantity) for water users has in it a special motivation for WTP. Also, willingness to pay can be motivated through special means of creating an easy way for bills payment (paying online), and other means. Importantly, the enforcement of law can be one of the WTP motivations.

Implementation strategies should consider areas that create difficulties for WTP. However, practice of quality management in water services—and especially good customer care—can be one of the major tools for motivation to accelerate WTP. Increase of water pressure and network expansion under good supervision, good customer care, and well-organised billing system.

Simplifying the mode of payment and having a wide range of payment methods, including direct debit, online payments, and any other flexible methods, are also a catalyst to WTP. These are useful tools to enhance willingness to pay for water users.

WTP can also be stimulated by consumers with low income by setting them very affordable tariffs. This will encourage people of this group to pay their water charges. However, for those who cannot afford payments, they still deserve to get enough water for the necessary domestic use. Therefore, the top-up to cover the difference between actual water costs and low-income people's tariffs is to be compensated by tariff on water users across the spectrum.

5.8.5 Appraisal for Willingness to Pay for Water

Affordability and customers' attitude on water charges can be identified through analysing causes and sources for willingness to pay. The results have special contributions in terms of devising good sustainable water development plan. In the discussion of Section 5.8.1 and Section, 5.8.2, there was the critical scrutinisation of various factors, which indicated that the core drivers of willingness to pay include effects due to actual water charges, effects of people's income, social effects, attitude surrounding the beliefs of free water, and traditional and environmental culture. The ideas on WTP practices have been analysed from various regions, including India, Zimbabwe and Tanzania, which have obligated the researcher to categorise primary indicators for WTP as follows.

One of the major indicators of water customers' willingness to pay can be directly reflected from the group of water users with higher income. Water users of this category can manage and are motivated to pay water charges at any cost. To them, the need is reliable water supply; therefore, in this case, the availability of good water services is a motivation for willingness to pay. In the case where willingness to pay is available but there is no sustainable water services, people from this group can easily go for independent water supply system (individual boreholes). This means individual sources for water supply originated from willingness to pay with unreliable water services being not in place. In the same group of category, there are some not ready to pay—even if services are provided to the required standard. Tools, such as extra motivation to increase willingness to pay is mandatory, depending on the circumstances, but education, legal action or services termination can be motivation.

Water users with low income who cannot afford to pay the full amount of water charges (Section 5.8.2) indicate that women from Kenya and Zimbabwe are more willing to pay than men. Although women's incomes were lower than those of the men, the traditional distribution of labour obligates women to be responsible for looking for domestic water. Unavailability of domestic water for daily use forces women to be more willing to pay. In this case, knowledge of sharing responsibilities will motivate the whole issue of willingness to pay from the men as well. Therefore, education on equal responsibility sharing in the family can be another stimulant tool for willingness to pay.

5.8.6 Summary

Willingness to pay for water charges is a wide area of discussion owing to its association with a wide range of aspects, including water management style, water charges system, overall revenue collection, and the water billing system. The importance of WTP is immeasurable owing to the sustainability of water supply services depending on funds from costumers' water charges, which are noted from WTP; therefore, the causes and effects, should be detailed and analysed in order to motivate water uses, which is necessary for stimulating the willingness to pay.

However, the discussion covered in Section 5.8.3 reveals that the assessment of the willingness to pay is a primary tool for any sustainable water supply project. Moreover, willingness to pay gives the actual picture of the project life. Therefore, project preparation stage should cover the willingness to pay for better planning.

In Section 5.8.2, a number of stimulations have been discussed, with motivation for willingness to pay recognised as an endless process. High water charges have been evidenced as one of the major obstacles for WTP. In Section 5.8.3, it was also revealed that various factors, including education, good customer care, quality water services, flexibility on methods for payments, and a good mode of water bills, are major stimulants for WTP.

The ideal water services management model is a stimulant and catalyst to WTP as it comprises a significant element of good services and customer services. However, the governing policy is the major guardian of the implementation strategy that will ensure the provision required water services standard. The enforcement of tough rules, including penalties and disconnections for non-paying water users, also has a special push to encourage people for payment. It is true that tough roles and penalties have no direct relation with WTP, but that fear of penalty is a stimulant and driver to commitment, which accelerates the willingness to pay for water services. Accordingly, education and tough conditions for water non-payers should go together and be respected; hence it is a facilitator for addressing the true meaning of willingness to pay.

Since the close communication between service providers and water users under the umbrella of regulatory authority has a greater advantage for willingness to pay, water users are involved in direct discussion, especially in setting water charges, which makes water users feel that they are more responsible and services partners with a power of ownership, which has motivation in WTP.

CHAPTER SIX: EVALUATION AND MODEL FORMULATION

6.1 Overview

This chapter has been structured to evaluate and link the substantive contributions covered from the discussion on water services in Sub-Saharan African countries. The chapter was developed to reinforce the study objectives as a stepping stone for establishing an ideal solution. The concepts will be scrutinised for improvement of structure for field work and development of sample model. Therefore, it is a strategic approach for formulating a primary ideal model for a field test. The discussion focus was to evaluate the water services experience from Sub-Saharan African countries. Therefore, the areas covered include definitions of privatisation, private and public sector organisation, contracting, sources for funding water projects, and commercialisation of water services. Furthermore, capital funds from the World Bank loans and their effects in funding water development projects were also critically analysed

6.2 Privatisation

6.2.1 Definitions of Privatisation

There are number of definitions regarding privatisation, some of which are detailed below:

- i. The term 'privatisation' has been used to describe an array of actions designed to broaden the scope of private sector activity, or the assimilation by the public sector for efficiency-enhancing techniques generally employed by the private sector. This loose description—which results in privatisation often being viewed as a goal rather than simply as a means to an end—can lead to confusion. With this in mind, it is stated that: 'Essential privatisation is only a process therefore, analytical correct definition of privatisation which covers the transfer from the public to the private sector of the ownership and/or control of productive assets, However an alternative way of expressing this definition and one which moves away from the emphasis on ownership it focus simply on the change in the supply of a service from the public sector to the private sector, irrespective of the source of its financing' [12]

- ii. Privatisation (alternately 'denationalisation' or 'disinvestment'), according to Adam [12], is the transfer of property or responsibility from the public sector (government) to the private sector (business). The term can refer to partial or complete transfer of any property or responsibility held by government. A similar transfer in the opposite direction could be referred to the nationalisation or municipalisation of some property or responsibility.
- iii. Ramanadham [3] offers two definitions: 'Privatisation is divestment by state-owned assets to private ownership, whether by sale restitution, give-away or liquidation' and the second definition is; privatisation is 'delegation by transfer of management and control of state assets or activities to agents operating in accordance with market indicators, together with market sector managerial autonomy and incentives' (while maintaining state ownership and ultimate control). Examples are leases, concessions, opening franchises, management contracts, and performance contracts for public enterprises and contracts (see sections 4.7.9, 4.8.0 and 4.8.1 for further details). Moreover, delegation can also be achieved by the issuance of vouchers to users of services by which they can pay providers on a predetermined basis for each customer service given (producer subsidy) [3].
- iv. According to Eftuna [24], privatisation means the sale of shares in government of publicly-owned business organisations.
- v. Cook [5] advocates that the limited impact of privatisation in significantly shifting the balance between the public and private sector has encouraged more attention to be given to public enterprise reform, without a change of ownership, as a means of fostering private sector development .
- vi. Pirie [6] states that privatisation may also be defined that the transfer of the state activities to the private sector had featured many household names [6].
- vii. According to Parker [7], privatisation is the transfer of ownership of assets from the public to the private Sector.
- viii. Bennell [11] describes the following: 'Privatisation is generally used to mean, the sale of company shares to private shareholders, Aiming to improve industry performance by increasing the role of market forces, many other measures can contribute to this, notable freeing of entry to an industry, encouraging competition and permitting joint ventures.'
- ix. Estrin [4] defines privatisation as referring to 'the transfers of ownership of public corporations from state to private hands, typical by public offering

auction, tender and others' [4], i.e. it is the process of transition from a socialist to capitalist economy.

- x. Macedonia privatisation agency [25] concludes that, privatisation is popularly associated with a change from bureaucratic, sluggish and badly managed organisation to one that is dynamic entrepreneurial and customer-focused.
- xi. According to Hossain [26], 'privatisation involves selling state-owned enterprises (SOE) or Government Business Enterprises (GBE) and other government activities to the private sector, with the purported aim of the process to ensure a GBE operates on a commercial basis or is subject to fair competition' [26],[10].

To conclude, privatisation is recognised as a technical term that can be defined in many ways. Therefore, a sentence to conclude is: privatisation is the 'transfer of operation or ownership and operation from public hands to private individual or organised groups'. This research concludes by adopting the following definition by which privatisation can best be defined: the introduction into the public sector or what has previously been the public sector, of conditions typifying the private sector. It is therefore possible to envisage privatisation taking place even though no change in the ownership of public assets takes place, thus public enterprise may remain in existence but may be required to adopt a more commercial approach.

6.5.3 Critical Appraisal for Privatisation

The evidences covered from the discussion in Section 5.3.1 and Section 6.4 show that privatisation has many different angles in terms of presentation, definition, adaptation, as well as implementation; however, the real meaning of what is privatisation remains the same: it is a change of existing public style of management to strategic system of providing services with clear objectives under the management or ownership of private individuals or organised private group. The changes are enforced for the purpose of improving a number of areas, namely efficiency, productivity, quality and maximisation of profit. The driving forces for adopting private water services exist in different ways.

The DAWASA privatisation was due to a lack of capital funds for water development. Similar to Ghana, Senegal, Guinea and many other Sub-Sahara Africa countries, as indicated in Section 3.9.3, other factors, including world pressures due to industrialisation, globalisation, services improvement, efficiency and sustainability in water services, are the driving forces for privatisation. The

discussion also indicated that the different types of privatisation discussed previously exist to fit different environmental needs of each particular situation.

As discussed in Section 5.3.4, there are a number of reasons, including the rise of water charges, the increase of unemployment, tough conditions of loan for privatisation, improper methods of adaptation, forced privatisation, worries on losing ownership or control on waters services, and political reasons, that may be seen as causes of privatisation failure in Tanzania, Uganda, Ghana and many other Sub-Sahara African countries. However, in Senegal, privatisation was successful, with great effect on affordability due to higher water charges. Failures in privatisation have brought about a new challenge concerned with establishing the best approach to fit the requirements.

In general, the involvement of the private sector in water services has contributed to greater changes in a number of areas, including the provision of water supply and sanitation services, changes in culture (traditional of higher commitment and discipline), efficiency in services, as well as in product value for money. On accessing the outcome of private water services in Sub-Sahara Africa, we can say that privatisation has been forced to be accepted (loan condition) because the model is foreign in terms of its origin, with a new culture of implementation, which has brought about new challenges, particularly when striving to evaluate its effects on affordability, profit distribution, culture change, and increase in unemployment. This catalyses the conflict between public and private style in water services; therefore, privatisation on water services can be adopted as a solution for generating capital funds as well as a catalyst for service efficiency, however the issue of affordability will still be questionable.

6.6 Comparison and Evaluation on Water Services Experiences

The discussion in this section combines and evaluates various water services ideas discussed in previous chapters. Evaluating different experiences in the water sector is not an easy task as each experience has originated from its own environment. Water services experiences from a number of countries—including Cote d' Ivore, Gambia, Kenya, Senegal and Uganda—have been compared with the objective to evaluate the advantages and disadvantages of their water services operating system. The need for comparison is to come up with useful ideas that could be adopted in model development. The objective of evaluation is to measure similarities and differences, and the effects that could guide the section to compromise. The main objective of this comparison and evaluation is to collect different ideas and to identify challenges for the possible formulation of sample

model in privatisation of water services. According to the objective of this exercise, the areas of focus in each case were driving forces for privatisation, operating structure and its composition, the adopted method and its suitability, the government role, position and role of private operator, and the project financing system. The discussion on comparison has been summarised in tabular format as follows (see Table 6.1 below).

Table 6.1: Comparison on water services from different countries

Areas of Comparison	Cote d' Ivore	Gambia	Kenya	Senegal	Uganda
Type of method and situation before change	Under public management water services, poor, water quality, larger consumer were charged higher	Public water services, More than 40% UFC Low skilled staffs with illiteracy (50%) Poor Services	Public water services. Poor water services in general (low production, 55% of UFW and low revenue, higher turbidity in water	Public water Services. Poor water services (non-payment of water bills and UFC increase	Public water services. Pool revenue collection, limited water supply network, management change
Method and type after change adopted	Private water services (SODECI) with lease contract	Private water services (MSG) with lease contact , Terminated (NAWEC)	Commercialisation was adopted as Priority solution for water services in Nyewasco	Private water services (SONEES) with lease contract	Private water services (Gauff Ingenieure) then ONDEO (Contract performance)
Reason and the driving forces (for change)	Serious financial crisis and poor (quality and quantity of water)	Poor water services due to low quality and quantity in water services	Need of reliable sustainable and affordable water services to all and water policy change.	To improve water services, win loan from IDA and the World Bank	Expansion of water services network and loan condition from WB and IMF
Sources of capital funds	Government funds, water charges (tariffs review), WB loan (\$ 13.5m)	Euros 37 million Loan from ADB	NO capital funds were invested, transfer of infrastructure and restructuring	Loans from ADB, IDA , US \$ 290 from the World Bank	Loans of US \$ 60 million from WB in 1990 to 1998
Operating service structure	Composed of Government, private operator, Public grand authority(FDE)	Composed of Government, private operator (MSG) and Asset Holding Company regulating authority (PURA) came later.	Composition of Government, Nyeri municipal, operator Nyewasco and water board	Composed of Government, Asset holding company (SONES) and the private operator (SDE)	The operating structure was Government, Asset holding company (NWSC) and private operator (Gauff Ing. /ONDEO)
Government role and responsibilities	Policy issues, Public grand authority and investment	Policy issues, Asset holding company investment and coordination and regulating	Policy issues and water resources	Policy issues, framework to all stakeholders, control of resources	Policy & Capital funds, water sources, Asset holding company
Role and function of the private operator	Operation, maintenance, revenue collection and all water service duties (independent)	General operation duties (revue collection, operations and maintenance)	Operation maintenance and revenue collection and all other water services duties	Operation and maintenance of water services in Urban areas	Rehabilitation of the water supply system, operation and maintenance, and revenue collection

Areas of comparison	Cote d' Ivore	Gambia	Kenya	Senegal	Uganda
Role and function of the regulator	NO regulating authority	During the private services regulator was not in place	No regulating authority, all regulating duties were carried by water board in cooperation with Nyeri Municipal	Regulator was in place and therefore, all regulation duties were executed by government	Regulating authority was not in place, the regulation duties were carried by government /asset holders
Effects of change and WTP	Water service improved (quality and quantity) with greater effect on higher charges	Earlier termination of private operator (power performance) water services was deteriorating	Increase in water production, turbidity problem has been solved, water customer connections have increased, water tariffs were introduced	Water supply and sewerage services was improved, although high water charges was also noted (affordability)	Private operators could perform as agreed in contract. After two years period was forced to resign
Water users and there position	Position on the structure were services beneficiaries	Water users were just beneficiaries but after establishment of PURA water users were part in tariffs regulation	Water users are beneficiaries and at the same time are part of management (the board of management is composed of water users (WTP is higher.	Waters were only beneficiaries	Water user were only beneficiaries, no specific role to perform

6.7 Combined Discussion on Case Studies

This section brings together the different ideas from various covered case studies. The discussion will build the concepts that will be used to formulate a water services model. The discussion has been developed to conclude driving forces for adoption of private water services, existence of privatisation, private operator's role and function, commercialisation, adaptation and suitability of the method and major sources for project funding. The discussion is meant to produce a primary sample model as a step forward towards developing a permanent solution for Tanzania water problems.

6.7.1 Why Privatisation?

In the discussion covered in Section 3.9.3, which evidences that privatisation was adopted as a solution for capital funds and as a substitute to the operating

bureaucratic poor efficient or dormant business services to improve water services, privatisation opens up markets for competition, which gives credit to quality products and value for money owing to market challenges. The adoption of private services develops another question surrounding product value and affordability, with the monopolistic existence of politically influenced public water services to be challenged, with private services system affordability for all having been considered. The discussion also indicated that all three different methods of privatisation (full privatisation, partial privatisation, and concession) have similar objectives, including efficiency, quality, productivity, and profit-maximisation. The discussion also indicated that, in each of the three methods, there are a number of differences in approach, adaptation, and implementation procedures. The conflict between private and public services seems to continue; although the advantage of the conflict is that, it opens new challenges for researching the best water services model which should be encouraged for the benefit of water services sector.

6.7.2 Driving Forces for Privatisation

The driving forces for the adaptation of private water services are many; however, they can be merged into two categories, including external and internal driving forces. Internal forces for change are those factors associated with social, political and economic considerations, which start within the country with evidence that, the available water services are not sufficient and therefore need improvement. The system is managed and owned by the government. The owner (government) does not have enough funds to invest into infrastructure investment or for any other reason (to transfer the capital investment from one asset to another). In this situation, the government decides to get out of services operations; thus, the government disposes (selling, renting or contracting) its assets to private services.

On the other hand, external drivers are the forces that originate outside of the country; it is a decision made not within the government's will, such as when the government is desperately looking for assistance or a help to solve a specific internal problem. The problem requires large amounts of investment, and the government has no such funds. Therefore, the government asks for loans, and the loan provider dictates that 'the condition is loan with privatisation'. In most cases, the donor's conditions are not limited to the adaptation of private water services only; it also involves how privatisation should be adopted and implemented, the method and operation type, and the use and control of the loan.

The effect of affordability is also reflected in water charges because the water costs per unit set will cover actual water production costs, loan recovery, donor and private operator costs, and profit.

The discussion in Chapter Three shows countries including Uganda, Senegal, Gambia, Cote d' Ivore, Ghana and Tanzania that are desperately in need of capital funds necessary for water and sanitation improvement for economic and social needs. However, the World Bank opened loan assistance to these countries with a full package of conditions, such as the adaptation of private services, the World Bank procurement procedures, and project report for monitoring and its procedure. Therefore, Sub-Sahara African countries, without choice, were forced to take on loans with this package of conditions. This is a practical example of external driving force. The discussion covered in Chapter Four, Section 4.9.4i shows that Tanzania was one of the borrowers affected by the aforementioned conditions. The effects and criticisms of the World Bank condition to borrowers has been discussed in Chapter Four, Section 4.9.4. In practice, privatisation has induced greater contribution on services improvement owing to efficiency. In other ways, however, loans provided by the World Bank look as if they are there for and fulfil the donor's commercial interest. Therefore, if this is the situation, this may then be perceived as one of the major causes for private water services in Sub-Sahara African countries to be of an unacceptable standard.

6.7.3 Adaptation of Method and Approach

The covered discussion indicated that all the Sub-Sahara African countries, including Gambia, Senegal, Guinea, Cote d' Ivore and Tanzania, adopted similar methods of privatisation (10-year lease contract). However, the differences in approach brought in different results; some countries were successful whilst some failed. Senegal being an example of a successful country in the whole region of Sub-Sahara African countries, it started with a 10-year lease contract from 1996. Following the end of the first term of the contract, the operator, SDE, was awarded with a new contract of 5 years. This came from its good performance in the first period of the contract. Therefore, the lessons from Senegal water privatisation were noted as follows

The private operator SDE has been operating in the country for more than 20 years before taking over the operations of water services. This facilitated the operator with good experience through delivering a better understanding of social, cultural and traditions concerning the Senegal people. This understanding is very important and helpful in terms of managing social services (Water). Therefore, if strategies for change—either in water charges or in network operations—are

properly implemented, the issue of acceptability to water users then becomes easier. This generally has very great impact in private operator's performance.

A good working relationship, teamwork and trust with other working bodies in the sector all have greater contributions in total performance. For example, SDE has had a very good working relationship with the asset holder, regulator, as well as with the government, which has notably facilitated several successful negotiations and compromises in the targets of the contract without resorting to arbitration or litigation.

The participation of all water stakeholders, transparency, good coordination and teamwork throughout the course of the project preparation, transfer and implementation period facilitated SDE as the adaptation of private services in the water sector was executed stage-by-stage and with transparency.

Realistic performance targets in contract are a motivation to perform the set targets, which is one of the reasons behind SDE's success.

6.7.4 Possible Lessons from Failure

According to the covered discussion, there are various countries, including Gambia, Cote d' Ivore, Guinea, Uganda, Tanzania and Ghana, where the privatisation of water services could not work, although the countries adopted a similar method (10-year lease contract method), such as Senegal. In this case, there were also some lessons to be learnt.

In Gambia, the absence of regulatory authority during the privatisation process was one of the contributing factors to unsuccessful privatisation. One of the regulatory duties is coordination (to create balance and fair play between water users and services provider). This makes it easy for acceptability of privatisation in the country. In comparison with the Senegal privatisation, the Gambian private water operator—the French origin company MSG—had very little experience of the Gambian environment. Political instability in the country—especially during the privatisation period, when the government was under military control—induced an atmosphere that may have contributed in terms of unnecessary worries, alongside a poor working environment with the private operator, which may have led to underperformance.

Difficulties in terms of operating old and poor condition water infrastructure created an obstacle for private operator performance. Low-skilled employees with illiteracy rates of 50% amongst management staff and 90% of the total employee of MSG was one of the factors which may have created a number of difficulties in terms of the adaptation of new private management style. Such factors may have resulted in

the poor performance of the private operator, and thus premature termination of lease contract.

Some countries, including Uganda and Ghana, executed private water services in a way different to other countries (Senegal, Guinea, Cote d' Ivore, and Gambia), with both adopting management contract method with short periods. Ugandans had a two-year management contract with private companies, first Gauff Ingenieure Consultancy, and afterwards ONDEO, both of which are private operators and were not able to work more than two years each owing to underperformance. The question subsequently arises: What was the cause of underperformance within the two years management contract period?

German Origin Company Gauff Ingenieure and French origin company ONDEO are both foreign companies with little experiences in Uganda culture, traditions, and military politics; therefore, a two-year operation period was too short to achieve maximum delivery against the expectations. However, the higher performance target set in the two-year management contract with the ambition of the installation of water meters to over 70% of water customers and an increase in the revenue collection of up to more than 85% of total water supplied with no capital investment, was undoubtedly unrealistic.

In Uganda, during the adoption of private water services, the regulatory authority was not in place; thus, the regulatory authority duties were executed by the government. Importantly, the government is not considered independent; it prepares the contract, supervises, and accordingly regulates. Furthermore, the regulator is independent and responsible for monitoring and supervising fair play between service providers and other stakeholders (standard, quality and prices). The operator not being in place may result in biasness and thus an unfair assessment of the private operator.

In Ghana, there was no trust established between the operators (foreign companies) and common water users (local citizens); this was owing to a lack of transparency. For example, groups of campaigners organised the protection of private water services with the belief that water charges would increase, and the profit would be taken out of the country. Even some trusted that foreign private companies were building new colonialism in Africa. This kind of demonstration as a result of a lack of trust may ultimately create a number of unnecessary obstacles, which may subsequently diminish service performance. In this regard, transparency and stakeholder participation at each stage in the whole process of adaptation is considered the best practice so as to ensure trust and smooth adaptation.

6.7.5 Operating Structure of Private Water Entities

Chapter Three indicated that the practiced privatisation and the adopted procedures by each individual country were different from one country to another. The differences proved to be significant in terms of the success or failure of each privatisation. The most significant differences reflected on uninformed organisation structure of the operating entity, as well as the governing policy. The structure, power, and duties of each individual organisation are guided by the governing policy of each country. In this regard, what matters most is the way in which the organisational structure efficiency is recognised in relation and coordination with its different Boards within the water sector. The organisation is powered to perform a specific function. The case studies indicate that structures adopted by a number of countries during the privatisation period comprised government (responsible ministry for water), asset-holding company, regulating authority, and the private operator. The role and function of each organisation is different from one country to another, with components dissimilar.

Senegal was an example of the most successful private water services in Sub-Sahara African region. They have adopted and practised privatisation without having regulatory authority; the regulatory activities were executed directly by the government. The organisation components for water services provision were Government, utility holding company and private operator. Apart from being the most successful private water services, due to absence of regulatory authority. However, the complains on higher water charges from water users had spread widely.

In Tanzania during the adoption of private water services the regulatory authority was not yet formulated, therefore the ministry of water on behalf of Tanzania government was implementing regulation activities.

Guinea and Gambia with the lease contract methods, still each country had different structure and strategies in privatisation approach. The Gambia approach was to introduced internally. The performance contract with GUC and then GUC board of management was restructure, but yet all these efforts was not productive. Then GUC was successfully contracted to MSG for 10 years lease contract. The regulatory authority (PURA) came later, but during the process of privatisation PURA was not in the place. Therefore, the privatisation for Gambia composed of Government (policy issues), Asset holding company (UHC) and the private operator (MSG).

In Guinea the military government was dealing with general supervision, policy issues and regulatory activities. SONE, the former operator was changed to

asset holding company, operated the transmission pipeline and water treatment plant that provided bulk water to the capital Conakry. The company was also in charge of investment planning and debt servicing. The comparison indicates that, two countries adopted privatisation with differences in style of adoption and structure composition.

The Cote d' Ivore privatisation structure was composed of Government (policy issues, contract performance monitoring and approval of change for tariffs), Private operator SODECI and the developing funding company FDE. The structure was simple but role of regulatory authority was not clearly defined. The regulatory authority was not in place during the privatisation

In Uganda, during the privatisation, regulatory authority was not in place; however, the contract management was not successfully performed. The absence of a regulator may have contributed to unfair assessment of what has been performed by the operator and therefore lead to unnecessarily ending the contract within just a short period of two years. The importance of regulatory authority should not be in Uganda only, it is obligatory in any private water services.

The conclusion from this discussion is private water services exist in many different structures, and each structure developed to fit specific conditions. The adoption processes are also differently, depending on how the changes were planned and executed, but adoption of private water services in any country depends on acceptability to the structure of the governing policy. However, in any form of operation whether private or government the independent operating organisation should be in place with full charges in all operations and maintenance activities. ***The privatisation idea was adopted for field test to measure its acceptability and how better can it work in Tanzania water services.***

6.7.6 The role and function of regulatory authority

The discussion covered on this chapter has led the researcher to conclude that, regulatory authorities in water services exist as guardians to ensure procedures, control of quality and the nature of services are fair and executed according to the standards. Regulatory authorities are referees to check and give fair play between the service providers and the water users. The proper control on fair water charges is stimulant to willingness to pay. A combined implementation strategic forces developed by good coordination between the operator and regulatory authority with make water user enjoying quality services within fair charges, this will accelerate the willingness to pay, and therefore to improve water services in general. This strategic stimulation for willingness to pay supported by

tariffs review method can justify the objective of generates capital funds from the local sources.

The structure organisation setup discussed in chapter 5 analysing the role and functions of the regulatory authority in water services that, the absence of the regulator may cut coordination and close communication not only between water users and services provider but also the closer link between the government and water users. Water services organisation structure which accommodates regulator regulatory authorities have greater contributions and participation of all water stakeholders, especially in the matters that involve water and the review of water charges. The regulator role of providing standards and monitoring the services provided by the operator are all subjected to quality assurance which has impact on willingness to pay. In other word existence of the regulatory authority in water sector has greater impact on services improvement and therefore to accelerate the willingness to pay.

Although in Sub-Sahara African countries water services are monopoly provided by just one service provider (no competition) and therefore is in higher demand, automatically the product water has direct attraction on the willingness to pay. Therefore, we can say that, the regulatory authority according to its roles and functions in any type of services (public or private) is a catalyst for willingness to pay. Therefore, the role, function and power of regulator are different from one to another. Some regulatory authorities have structured to perform wide range of professional duties (Communication, energy, post and water) and some only for one specific duty. Depending on governing policy which guides the setup and structure performance of the regulating authority, but the common function, role and duties of regulating authorities are setting standards, monitoring and evaluating the operator's performance for quality assurance, and refereeing the water charges to ensure fairness for both services provider and water users. ***The regulatory authority and the public grand authority (owner) with clear boundaries on operating duties to each department should be part of model to any adopted method of service.*** This will ensure the quality of services which is independent from interference.

6.7.7 Role and Functions of private operator

According to the discussion on the role, power and functions of water service providers (private operators), it is that difficult to generalise the total picture of the responsibilities as each contract differs from another. The governing and financing policies proved to have greater influence on the role, power and function of operation duties, which governing policy also differs from one another. The

discussion indicated that, the major common roles to all private operators (water services providers) were billing and revenue collection, leakage control, operation and maintenance of water services. The discussion proved that, good working environment starts from roles and function that the operator is empowered. However, Senegal water operator SDE indicated that, working efficiently within properly described roles under good coordination with other sector partners is the only way to success. Therefore, the focus will remain that, freedom and clear description of role and function of the operator is the guardian to reach successful performance. However, good working coordination with other partner organisation in the sector is tool to enhance good performance.

In Senegal the private operating company SDE with total of 90% shares of foreign and local individuals gave strong and greater power to commercial mind of operation. This originated from greater influence of business mind due to the fact that the majority of shares owned by private sector with common language of business and profit making. The 10 years lease contract made a picture that water services was like a private property in the country. Secondly, the absence of an independent regulatory system gave greater advantage to operator on standards, reporting and water pricing issues. SDE had a role of equity contribution which was converted to a capital investment for water improvement. In Uganda, the private operators had very limited power, the operator ONDEO was responsible for general common roles (revenue collection and operation and maintenance) his powers were limited within the compromise and to fulfil performance targets according to the contract agreement.

In Cote d' Ivore the private operator SODECI apart from common duties mentioned above, had a responsibility to supervise the project funding company (FDE). In this case, the operator SODECI had full authority of deciding on investments and executing them. In Guinea, the water services operator, SEEG in comparison with other private operators in the region had fewer responsibilities due to the fact that the asset holding company SONEG was the operator of transmission pipeline and water treatment plant who provided bulk water to capital city of Conakry. While in Kenya under the operator Nyewasco had all responsibilities including asset holding, investment and as well general operation duties.

To conclude on standard functions and role of a private operating company is not any easy task. The decision is in the hands of responsible government, which is formulated to fit local needs. What type of method of privatisation is to be adopted may be a big factor to drive functions of each member organ (operator, regulator

and owner) responsible in provision of water services. Functions and power of operator are set by entity owner (the government) and clearly stipulated in the contract of agreement between the operator and the entity owner (government). However, the most repeatable functions are noted to be distribution of water supply, metering, new water connections, maintenance and repair of water service lines, customer care, distribution of water bills, revenue collection, leakage control, improvement of water data base; and in some areas, water production and treatment. Therefore, setting the role and functions of private operator is a government task, depending on the governing policy and sometimes conditions accompanied by loan from donors. If the services objectives are ensure quality, sustainability and affordability then having independent operator in the model is obligatory.

6.7.8 Performance contract in water services

The discussion on effectiveness of the contract performance style has been covered in section 3.3.2 that, Uganda was the country adopted the style of contract performance system during the privatisation of NWSC. The performance contract with clear milestones for given period (monthly, quarterly and annually) specifically in the areas including water leakage control, customer connection targets, revenue collection, development of water services networks, standards for application and connections, water meter installation and reading, reporting mechanism and record up to dating. The private operator Gauff Ingenieure Consultancy completed first term of its two years contract in March 2000. According to the contract the evaluation for operator's competency was carried and the operator couldn't qualify for second term because low performance in revenue collection. Under contract performance style private operator ONDEO was contract to provide water services in Kampala city for two years period. The operator ONDEO couldn't manage the situation. Targets were not met which resulted to poor performance in terms of revenue collection, poor water leakage control, and poor water pressure in the network. Internal pressure from government to the operator was increased because of underperformance and this cause the operator to resign claiming that the targets were unfairly raised. Failure of meeting the agreed performance target was one of the reasons that forced the termination of DAWASA City water lease contract (see section 2.6.2). Therefore, performance contract is a commitment and reference tool for performance monitoring and evaluation to operator or implementer in which the feedback leads to a certain decision. No measure of performance, no future project plan or no proper direction for of implementation and therefore no proper decision in project progress. This means, to make water services sustainable, the periodic performance monitoring and evaluation is obligatory and therefore any appropriate

water service method should be periodically evaluated for the project sustainability. The contents in water services performance contract are many with diversity depends on project owner's objectives but factors including revenue collection, leakage control, customer connection are most common in contracts. However, in any performance contract, performance indicators should be clear, measurable and should be set fairly.

6.7.9 Source of finance for the project

The discussion on sustainable financial sources for water development projects indicated that the reliable sources of funds are either loan from financial institutions or through adoption of tariffs adjustment. Loans from financial institutions have covered greater part of the funding. In all discussed area of Sub-Saharan Africa countries, water development projects have been funded by loans mainly from the World Bank. In Uganda, IMF and the World Bank loans prescribe that, the country must privatise its key utilities and market, In Cote d' Ivories, the World Bank loan of \$ 13.5 million was for supporting operation and the technical cell of privatisation. In Guinea capital for water investment were financed by financial institutions and the World Bank being number one, in Senegal water privatisation project was funded by the World Bank through IDA and other partners including African Development bank and while in Gambia 37 million Euros for water development project were financed by African Development bank. Regardless of the success or the failure of the project, the World Bank loans remained to be the major source of funding water development projects.

What are the effects of the World Bank loans? The effects of the World Bank loans have been critically discussed in chapter 4 section 4.4.2 and their results are detailed. However, the effects of the bank loans are generated from conditions of the loans; condition of privatisation on water services, condition of interest and condition of adopting the World Bank procurement procedures have greater effects. The condition of loan for private water services has indicated to have serious impact on higher water charges and therefore to create a greater challenge on affordability for water users in different countries. Although quality, quantity, efficiency in services and production and technology change are the major gains and attraction for adaptation of private water services. In higher commercial focus analysing the real water costs in private water services can be concluded as a total operation costs + estimated profit. Value of total operation costs in private services is higher than other services because it consists of very higher wages for the foreign employees and experts (special category of employees) those costs are reflected on water charges (see section 4.4.2). Furthermore, the total sum of loan

recovery is a great burden to water users, because the total amount of any loan recovery (pay back) composes the actual amount of loan plus the extra agreed amount as a loan interest. This burden reflects into daily customer's water charges with higher risk on affordability. ***The effects of loans from international funding institutions have brought in a new challenge for finding alternative sources for funding water projects. This research has adopted the challenge, and therefore loans from international institutions will be considered as reference of challenge and not reliable funding source.***

6.8.0 Commercialisation of water services and tariffs review

The discussion on commercialising water services has been critically covered in chapter 5 section 5.4.that, commercialising water services is taking the operation services to be more independent, competitive and the product (water) is sold into open market. Ensuring water is available to meet quality and quantity required for domestic and other use. In this commercial services water is sold in order to cover the actual product costs and some extra amount for services development and sustainability. Also noted that, an private services has commercial content in its process and approach. The differences between private and commercial services has also described that commercial services can operate as non-profitable company, this has greater advantage if the method is adopted in government owned entities. The experience from Zambia in section 5.5.5 shows that, commercialising water services under private operator has created a problem of price increase in commodity (water) value. Commercialisation under private operator has affected water tariffs increase in many countries in Sub-Sahara Africa, Senegal, Gambia and Cote d' Ivore which are amongst those affected.

Similarly, commercialisation can be adopted in public owned water entities. The experience from Somaria in section 5.6.3 shows that, commercialisation of water services not only improved water services in the country but also brought in close communication between different groups of stakeholders and government.

In Kenya as detailed in section 3.4.3 that, commercialisation of water services in Nyeri in 1998 has improved water services in the various areas including water production of Kamakwa water treatment plant (from 6000m³/day to 9000m³/day), turbidity problem has been eliminated, new connection for water customers has increased and that caused the increase in revenue collection.

The application of commercial services style in public owned entity has greater advantages not only on services improvement but as well on affordability, because commercialisation can be operated under non-profitable circumstances.

Depending on the nature of the system, in some cases project capital funds can be developed within the commercial services.

Water charges are set to accommodate the need for project development. This method is more practical when services are provided commercially and independently. The discussion in chapter 3 indicates that, Nyewasco was established with zero capital and is an example of commercialisation with no capital. The water services company in Kenya was strategically transformed from public to commercial water services. Loan for investment was involved, however only infrastructures (assets) were transferred to the company and that was the capital investment. Therefore, with independent authority of organisation and operation the company managed to establish its capital investment through the tariffs review method. The effects of adopting the tariffs review method as a source for developing costs (capital funds) are directly in the hands of water users; this also has a direct effect on water charges. Technically water charges will raise to affordable level, the difference of this approach in comparison with private system is that commercial operation is not necessarily be profit operating company; it could be a non-profitable company. It could be owned by government, whereby the interest is affordable services to all. However, if it operates as a profitable company still the profit we go to investment and that will reduce the estimation of extra amount in tariffs review and that will result to low price, also the operation expenses are focused less than the private water services, hence the wages for management team and employees are paid according to government scheme of services. or experts is reasonably lower than in the case of private sector since the greater part of expertise is locally outsourced (see the effects of loan conditions in chapter 4 section 4.9.2).

No need of loan or government budget. Therefore, commercialisation of water services under public ownership has shown to be an ideal solution for operating water services in developing countries, and therefore the researcher concluded to adopt the concept for developing appropriate model suitable for managing water services in Tanzania.

6.8.1 Appraisal for combined case studies

The discussion on combined case studies has brought in special input on creating the road map for developing a framework model solution. Some of the inputs were taken for the field test to evaluate the acceptability and practicability. Other ideas were adopted for further analysis before adopting the model. In the discussion in section 6.7.4, it was highlighted that the concept of privatization of

water services has come under doubt in Tanzania and other African developing countries, as the method was adopted but not successful. However, the method has a number of advantages in service improvement, but the factor of affordability has become a major worry with regard to the method. Through questionnaires, the privatization idea was field tested to measure the acceptability, applicability and practicability.

With regard to the concept on organizational structure for operating water services, as detailed in section 6.7.5, different structures exist in water services, but every structure is to fit somewhere, the common components are independent operator, regulatory authority, asset holding company and entity owner. The effectiveness of the model structure depends on the components and function of each. Every sector in the structure should have been formulated with clear job descriptions detailing duties, role and functions to perform, and this will limit interference. The concept of structure components has been adopted for further analysis with consideration given to the acceptability to government policy which will be adopted as a model structure component.

The concept of role and function of the regulating authority in the water services industries is critically discussed in section 6.7.6, i.e., that the regulating authorities are formulated according to the governing policy. Therefore, the area of operation, power, functions, duties and responsibilities are different from one authority to another. Most sub-Saharan countries have regulating authorities for water services. The major common functions of a regulating authority are monitoring, control of quality and quantity of water services, control and regulation of water charges, and establishing good communication between water users and operators.

With this focus in mind, the existence of regulatory authorities in water services leads to good cooperation between water users and operators, which is motivation to WTP. The researcher adopted the existence of a regulatory authority in the model.

The role and functions of the (private) operator in water services are different from one operator to another depending on what has been agreed in the contract between the operator and the owner. However, the most repeatable functions are distribution of water supply, new water connection, revenue collection, metering, maintenance and repair of water lines, customer care, and distribution of water bills and improvement of water data. According to the discussion in section 6.7.7, an operating company - whether private, public or commercial - should be independent and free from political interference. This has greater assurance in quality and

service sustainability, and with that in mind the concept of having an independent operator in water services has been adopted in the model development.

Performance contract in water services was one of the concepts adopted directly in the model development. In Uganda, as discussed in section 6.7.8, because of a failure in performance contrary to the performance contract targets, Gauff Ingenieure Consultancy Company was proved not to be qualified for a second term contract. ONDEO also was forced to resign because of underperformance contrary to the agreed performance contract. In Tanzania (see chapter 2), City water company had its contract to perform water services terminated in Dar-es-Salaam, one of the reasons for this being underperformance contrary to contract. A performance contract is an agreement and commitment to perform a specific volume of tasks within the agreed time. This periodic assessment gives the required focus of implementation which is a base for decision making. . With this in focus along with the other advantages described in section 6.7.8, the concept has been adopted in the model development.

Different sources of capital funds for water projects have been discussed in section 6.7.9; however, loans from international institutions dominated the discussions. The advantages and disadvantages were also detailed and their effects were analysed including loan interest, expert's conditions, conditions of privatization and condition of ICB which has a significant impact on the actual value of loan and its effects (especially on higher water charges). Sub-Sahara African countries are in a disadvantageous position with regard to loans being granted only on the basis of tough repayment conditions, and the challenge was to develop an alternative source for capital funds. This research has accepted and adopted the challenge, and therefore local funding sources, including tariff reviews and mass contribution methods, were analysed and adopted as alternative capital funding sources.

The commercialization of water services and the tariff reviews method - a concept adopted from the discussion in section 6.8.0 - prove that commercialization (equally to privatization) will improve services' efficiency and performance. With the same efficiency, the method has flexibility in operation and can be adopted in non-profitable situations as well as by public entities. It can ensure sustainability within an affordable range through its natural total cost recovery in comparison with private or public services, which have failed to perform in Tanzania. Commercialization has been adopted as a concept in the research solution.

6.9.0 The concepts used for the ideal model framework

The model framework discussed in this section is a combination of ideas that were developed from previous chapters and in the combined discussion in section 6.7. Various cases were discussed, gathered, evaluated and critically analysed for developing the cause of water problems and the solution. Lack of capital funds for water projects and the absence of an appropriate management model were identified as the major obstacles for water development in Tanzania and sub-Saharan African countries. The need for a sustainable source of capital funds for water projects and the appropriate water services management model were the driving force behind this study and which solution should be developed. Strategically this section is combining the adopted concepts to form a primary model framework. Therefore, the concepts included in the ideal model framework were developed to fulfil the need for establishing proper sources for funding water projects and the requirement of a sustainable management style in water services as follows.

6.9.1 The model

The adopted strategy for developing the ideal model has been established from the critical and systematic discussion covering various water services experiences from sub-Saharan African countries including Ghana, Guinea, Kenya, Uganda, Ivory Coast, Senegal Gambia and other countries. The concepts were established step by step from the driving forces for privatization, process and method adoption, organization or operating structure, role and function of the private operators, regulating authorities, and existence and function of asset holding companies. The sources of failure and success for each case were also examined. Thereafter, the ideal water management framework model was developed. However, the need for developing the ideal water management model was concluded based on evidence from the analysis on what are the causes for the failure of private water services in Tanzania as compared with other sub-Saharan African countries.

6.9.2 Composition and operating structure of the model

The ideal model framework for managing water services in Tanzania (sub-Saharan African countries) will be composed of four major departments including the owner, independent operator, regulating authority and water users. The

organization structure of managing water services will manage and develop water services through generating the operation services costs and capital funds from local sources. The model framework for services will comprise two major parts including management organization structure and sustainable sources for capital funds necessary for operations, sustainability and development according to the need.

6.9.3 Existence, function and role of each department

The importance of each adopted department has been critically discussed in section 6.8.1 in that the composition of these departments, each with their own clear job descriptions, will form a strong ideal water services model for Tanzania (sub-Saharan African countries). In operation, each department depends on one another and their relation is cemented based upon the objective of providing quality, affordable, reliable and sustainable water services to all. The role, functions and the need for each organ has been critically discussed as follows.

i. Ownership

There are three major types of ownership of the infrastructures or operating entity: government, private and shared ownership, whereby, on services provision each ownership type has its basic priorities and objectives. As discussed in chapter 5 section 2.2, public types of services have greater focus on services to all and therefore its operating objectives are driven by priorities that favour water services for all. On the other hand, private water services have greater focus on profit gain, i.e., the system has objectives and implementation procedures that are competitive and more efficient, but are more focused on profit maximization.

Furthermore, the evidence provided in chapter 5 section 3.1 shows that private or sharing of ownership in the water services sector was not a traditional way of managing water services in sub-Saharan African countries, it was brought in by the world financial institution (The World Bank) as a major condition for a country to qualify for loans. In the same discussion it is indicated that, either for political, traditional or for social reasons, sub-Saharan African countries (Tanzania) were not ready to lose the ownership of the infrastructures or the operating entities. Focusing on the locality situation, consideration was given to the flexibility of capital fund sources (government budget, loans with flexible conditions, mass contributions, grants and tariff review methods). This study has concluded that, under the ideal model framework, the ownership of infrastructure and operating

property should remain under government control, and therefore, the owner (government) will perform the following responsibilities.

6.9.4 Role and function of the government

The government, as owner of the infrastructures and operating entity, has the following role and functions in this water management model with general governance, capital funding and ensuring good cooperation work between the departments (operator, regulator and the asset holding company) being the major responsibilities.

i. The government will execute all the policy issues including development and amendment of the policy, enforcement of water policy practices, incorporating the entity development into a general water master plan for development, evaluating and taking the necessary action on performance of the asset holding company and regulating authority, and setting the performance contract with the regulator and asset holding company. Ministry (government) will create good working environments with its affiliated operating organizations to protect water resources and license water extraction, and give maximum assistance to its affiliates for the assurance of good work performance.

ii. Sources for capital funding

The capital funds for water projects consist of a variety of sources including loans and grants from external financial institutions and local funds from the government budget, water tariffs and other local contributions. Development and sustainability of any water services require investments and funds. In some cases capital investment does not necessarily need to be in the form of liquid asset. Depending on the situation of the infrastructures, if infrastructures are in good condition, commercialization can be adopted and the existing infrastructures can be transferred to capital investment. This happened in Kenya (see section 6.6.7), where Nyeri water services was successful at commercialization without utilizing capital funds.

Depending on the adopted method for water services' improvement and the physical situation of the infrastructures, and if the adopted method is commercialization and the physical situation of the infrastructure is good, then infrastructures can be transferred as a capital investment. Section 6.6.7 of this chapter evidenced that commercialization of water services in Kenya was

successfully executed without the involvement of capital funds. This means the infrastructure can be one of the capital investments.

Another source of capital funds for water projects is loans from international institutions (The World Bank, ADB, EIB and others). As discussed in section 4.1, the conditions that accompany loans are tough and not necessarily appropriate for poor sub-Saharan African countries. Therefore, this research was developed with one of the main objectives being to find alternative funding sources.

The local sources for establishing capital funds identified in section 6.8.1 were the tariff reviews methods, mass contribution and other government sources. Chapters 2 and 3 identified that government budgets cannot sustain water project investment, which is why they went for loans. The discussion on section 6.7.1 identified the potentiality of the tariff reviews method as a sustainable local source for establishing capital funds. The factor of WTP has a greater impact in generating services costs and capital funds in water services. The importance and contribution of willingness to pay has been clearly discussed in chapter 5, section 5.8.4. In any structure, stimulation and motivation is needed to increase the willingness to pay for such services. The measure is the amount of water payments and higher revenue collection indicating good performance. Performance brings better customer services. Better customer services are one of stimulants and motivations for willingness to pay. Therefore, more revenue collection means more funds for capital development, especially if the tariff reviews method is adopted or if the project is funded by loans, then that means the ability to pay back loans is enhanced. Therefore, an effective working structure should accommodate fairly the issue of willingness to pay.

iii. Funding the project

The funding sources for establishing projects were identified; the government as owner is directly responsible for other sources of funds, i.e., the government will be responsible for the work or for ascertaining the different project funding sources. This will include grants from international organizations and friendly countries, local companies, central government budget and any other official donations and contributions. In this case the government is directly obliged to search for project funding. According to the covered discussion, if capital funds are raised from the government budget (tax payers), then this will automatically have greater influence on final consumer water charges and that will make services more affordable.

6.9.5 The asset holding company

Concept of the existence of an asset holding company in the water services model was initially discussed in chapter 2, section 2.2.6 in that the DAWASA privatization structure would be composed of the Ministry of Water (owner), DAWASA as asset holding company, City water services as operator and the regulator EWURA. The tasks of each department were critically discussed.

The considerations on the asset holding company were adopted because of its role and functions in the model (see section 2.3.1). In this model, the asset holding company is an independent operating department with a clear role and functions to perform. However, it should be 100% owned by the government. Thus, as shown in section 6.8, in all the private water services structures, the asset holding company department was in place. The present DAWASA asset holding company is important, especially for sustainability of the water services. Therefore, the structure of this model adopted the composition of asset holding company. The role and functions of the asset holding company can be defined as follows: the asset holding company will exist to facilitate good cooperation and coordination with other operating organs (operator regulator and government) in the model. However, the department's main duties will remain being the asset holders on behalf of the government; the asset holders will also finance and implement all the capital works, developing and review of the master plan for planning and implementation. It is also the responsibility of the asset holding company to look for capital funds. The asset holding company will monitor the good operation of the water infrastructure carried out by the operator and the outcomes will be evaluated and used as the basis for proper decisions at the end of the contract. According to the operational strategy of the model, the immediate supervisor of the operator is the asset holder, thus, the asset holding company will have to be flexible and very strong to tackle all problems presented by the operator. It is the responsibility of the asset holder to rehabilitate and expand the existing water infrastructure to meet the actual required consumption.

6.9.6 Regulatory authority

The experience of the discussed case studies evidenced that any successful operating water services require an independent regulatory organ. The role and function of the regulator shall be to ensure the standard and quality of water services, comparative efficiency and performance, and at the same time, to be a referee for creating fair play on water charges. The goal is to protect, not only

the interests of water users, but also to be reasonable and to give a fair opportunity to water service providers to be heard. Thus, regulatory authority's roles can be divided into three groups: authoritative roles, coordination responsibilities and management functions.

i. Authoritative roles

The evidence on water services reinforced the idea of the authoritative role of the regulator, that the regulatory authority should have power to issue and rescind licences for water services operations - when and how will depend on the performance criteria. The regulator should have power to set and amend the standards of services performance and monitoring powers at every stage of the services provision. The regulator should have the power of review, approval and refusal of new proposals for water charges.

ii. Coordination responsibilities

In this role, the regulator is to perform a coordinating role between services providers and water users. This allows cost effective solutions to be implemented. At the same time, the regulator has to raise awareness levels among water consumers through information and educational activities. Furthermore, the regulator will in some situations be obligated to assist in settling disputes if they arise between the stakeholders.

iii. Water tariffs control

The major role of the regulatory authority in water services is the control of water tariffs. The whole process involves receiving requests for a tariff review from the services provider, evaluating the provided evidence, collecting water users' opinions, evaluating all of these and then making a decision. This may involve special procedures, but technically different stakeholders are involved at different stages of the process. The process of involving stakeholders has a great influence on motivating willingness to pay. As detailed in section 6.7, accommodating customer opinions during the appraisal of tariff reviews makes water users feel part of the system. That makes them feel more respected and that makes them not only understand, but also accelerate, the commitment to pay, because of they believe the charges are fair. Supervision of the procedure is also the regulator's task. The regulatory part is the most important in any water management model and the absence of a regulatory authority may led to failure of privatization as indicated in the Uganda, Gambia and Guinea case studies (see chapter 3). The regulator should be in place before the process of privatization begins; when the structure is

agreed, then the first establishment should be the regulator. This will help to guide the quality and level of water service standards to be provided by the new operator.

6.9.7 The services provider (operator)

The role and function of the services provider in many cases are bounded by the owner's objectives for the particular project - what the operator should do and the limitations are clearly described in the contract. Depending on the nature of the contract, in the DAWASA case (see chapter 2), the operator (services provider) was also responsible for contributing a fixed amount as capital funds (equity) every year. In the case of Ivory Coast, the operator SODECI was being compensated if the amount of water consumed fell below the capacity of the network (see section 3.5.1). However, in any efficient water services system, the independent services operator component is compulsory. Specifically, the duties of the operator are described in the agreement between service providers and the asset holding company.

The discussion in section 6.7 identified the duties of the services operator as follows. To operate and maintain water infrastructures, water production and treatment, water distribution according to the agreed standards, waste water services, revenue collection, water connections for new customers, to establish and implement the contract between customer and operator, updating the distribution network, records keeping (operation, maintenance and development), good customer care, water meter installation, leakage control and raising proposals for water charges reviews. All the defined work should be described using measurable targets and realistic performance indicators (volume of work and time). Another obligation of the operator is to coordinate closely with customers in order to understand their problems and to give solutions within a short time period. The most important matter is that the targets set in the contract should be visible and realistic, because the assessment of the operator's performance is based on the agreed target performance, therefore, unrealistic targets may lead to an unfair assessment of the total target performed by the operator, mainly in favour of the asset owner.

6.9.8 Framework model for field test

The framework model for field test was established from the concepts developed in combined discussion of case studies and the critical analysis of privatization. The test was carried out to ascertain the acceptability and applicability

in the field, and to gather new ideas with the objective of coming up with the best solution for capital funding and appropriate management style for water services. How the test was conducted and methods applied have been critically discussed in chapter 7, but the concept for the field test was adopted from this framework model. The concluded composition structure of the adopted framework model was government, regulatory, asset holding company, and private operator and water users. This means that the team work and good coordination of all these independent departments, with good governing policy and the acceptance of people in field, will ensure that the objective is fulfilled.

The model inter-department coordination, roles and functions of each sector, to ensure sustainability in operation, are summarized and presented in diagram format in figure no. 6.1 below.

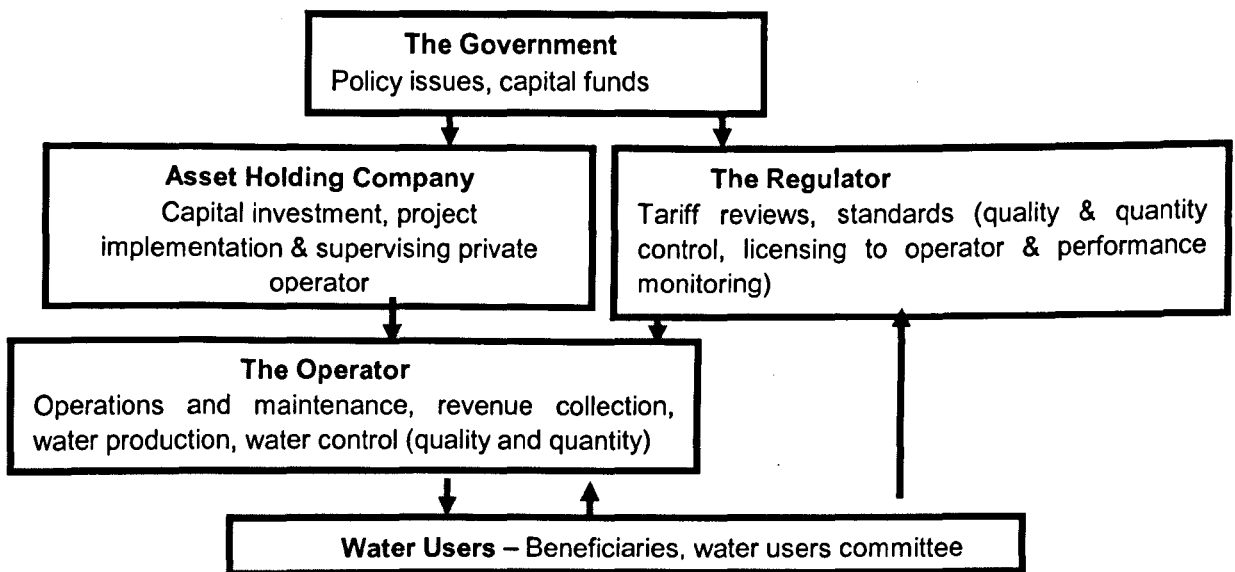


Figure no. 6.1 Model framework

6.9.9 Summary

The framework model was developed through the systematic challenging of ideas covering the water services experience of Tanzania as discussed in chapter 2 and experiences from other countries in water services in sub-Saharan African (see chapter 3). The other knowledge which contributed was developed based on experiences gained on capital funds for water projects and critical discussions on various water services management methods in chapter 4 and 5. The model has been developed purposely for testing in Tanzania. Suitable water services model should comply with local environment needs to solve the existing and focused local water services problems.

Evidence in sections 6.9.4, 6.9.5, 6.9.6 and 6.9.7 showed that each part of the model structure is unique. The total performance of the model depends on the performance of each individual part. The failure of one part has a significant impact on another part as well as the whole structure. However, the stability of the model depends on stable capital funds, either from loans with flexible conditions or capital funds developed from local sources. The issue of willingness to pay has occupied greater value in this model; hence the economic and financial aspects of this model depend on how water users will react to water bills. Therefore, all kinds of motivations (advertisements, discounts for lump sum payments, accurate and timely water bills, and different options for payment as well as disconnection for non-payers) for water customers, as well as employees, will raise the feeling of moral obligation to pay water bills and should be highly encouraged. The field results will be adopted for the improvement and the adding of value to the system, with the objective of coming up with an appropriate water management model.

CHAPTER SEVEN: METHODOLOGY

7.1 Introduction

This chapter provides an overview of how this study was executed. Lewis [135] notes that, the central methodology presentation should not only be clear in its characteristics but also should indicate why its application as the essential aim of the research and why it is view of as the only means of securing adequate research control. To retain critics and quality of discussion each structured component was examined step by step to answer the questions what? Why? And how? This was guidance for developing the research questions and objectives, topic of research, research approach, research method, and approach for data collection, verification, model development, validation, conclusion and recommendation for the research question.

7.2 General Philosophy of Research

7.2.1 Reasons for executing research

According to Sekaran [172] research is 'a systematic and organised effort it is a series of steps designed and followed, with the goal of finding answers to the issues that are in our working environment' The reasons for doing research are many, depending on the nature of the problem intended to be solved. However, in most cases the idea of executing research can be driven by criticizing or developing the existing idea, theory, belief or law. Brickman [155] adds that, research can be carried out just for explanation, or just for understanding. Research can also be carried for the purpose of analysing the existing knowledge and as phenomena in social science. The other reasons of doing research is finding the truth for future use or solving existing problems. However, for good reason in doing research, the researcher's main responsibility is to observe everything systematically and each observation should be subjected to critical analysis.

7.2.2 Formulation of the Research Topic

The ideas that facilitated the formulation of this research topic originated from the physical water management problems in Tanzania. The experience, causes and effects of adapting different styles of water management in the country,

necessitated the need for this research for developing solutions for Tanzania water services. Poor water services and the need for capital water development under public management style forces the country to go for private water services. The failure of private water services and the effects left behind in the country necessitated the establishing of this research. The knowledge of experience covered from literature review (secondary data) guided the formulation of research topic on this study. However, the principal idea of the research question has been established based on the actual water supply and sewerage problems in Tanzania. This is where the research idea was born and defines the originality of this research topic

7.2.3 Nature of research problem and approach for research method

Proper way of solving the identified research problem depends on compatibility of the adopted method to the problem. The right decision on what problem to be solved under which method is almost a half way to a solution. Creswell [137] argues that, 'the method should match the problem' Adopting an inappropriate approach to solve the research problem will always complicate the procedure and sometimes lead to incorrect conclusion. Ghuri [133] argues that in practice the research approaches are grouped into two major categories; **deductive and inductive**. The inductive approach is based on observed evidence and deductive approach is based on logic, beliefs or assumptions. According to Laws [139] each approach has its advantages and weakness depending on the purpose of research, resources and its compatibility to fit in. In practice, good research is a matter of 'horse for courses', where approaches are appropriate for specific aspects of investigation and specific kinds of problems. The key decisions about the strategy and approach to be adopted are usually planned before the research begins. Approaches are selected because they are appropriate for specific aspects of investigation and specific kinds of problems.

According to Kumar [158] 'A research problem identifies the destination'. Firstly the research problem should be clearly identified then literature knowledge will guide to select the method and approach. As indicated in chapter one section 2.1 the research problem is '**Inadequacy of water supply and sewerage services in Tanzania**'. Thus, the research task is to observe this problem (fact) to come up with theory, law or hypothesis. This is inductive research approach. However, in differentiating the two (inductive and deductive) major research approaches Denscombe [226] observed that, 'in induction only facts acquired through observation lead us to theory, law or hypothesis, while in deduction logical

reasoning can accept or reject the hypothesis. Since the research problem has been identified and guided the study to conclude the right research approach (inductive), then next step is to select the research method to be adopted by this study, In order to select the method to be adopted and that which should match with the research problem through the approach.

7.3 The research structure

According to the nature of the problem the research approach for this study has been structured to compose four different stages including Theoretical development stage, Field work and documentation stage, and Model building stage. Each specific task was focused on development of the next stage and coming up with an appropriate solution to the research question.

7.3.1 Theoretical Development Stage

The theoretical development stage is the initial stage of this research (foundation stage), whereby all theoretical primary ideas (knowledge) are gathered and scrutinized to develop a strong project research problem (it is for developing the nature of the research problem), Research Topic, Objectives, Research method, Research structure and to give primary direction of research (developing of research foundation). Ticehurst [232] arguing that, good research solution will results from good research preparation and executed carefully following designed processes, If the process have been followed then every gathered item of information should have purpose, since it will have been gathered to answer specific questions.

The knowledge of water supply and sewerage services in Tanzania during all the three different periods (before, during and after privatisation) facilitated the development of the research problem. However, the establishment of the study questions are explained in chapter one section 1.2 is a foundation for building the general theory of the whole research. According to Kumar [264] ' theory brings clarity, specificity and focus to research problem', The theory of this research has been formulated from impact left by public and private water management failures in Tanzania and the purpose was to clarify and to give proper direction to the research problem as a foundation of research.

The discussion covered in chapter 2 section 2.6.4 indicated that, private water services have failure in Tanzania. Comparing to other water service experiences in Sub-Sahara African countries factors including adopted procedure, sources of capital funds, driving forces, nature of services provider (private operator) and the

performance are the major causes of success and as well failure. The research problem was the 'failure of private water services in Tanzania', and therefore the study topic was the 'Development of the appropriate privatisation model for water services in Tanzania.'

7.3.2 Field Work and Documentation (Implementation Stage)

Field work and documentation is the second stage of the research structure. Following the theoretical development stage, the research detailed tasks performed at this stage including field work data collection, validation, and data analysis and model development. According to McNeill [266] 'factors analysis has much in common with principal component analysis, the main task is again data reduction and interpretation, principal component analysis can be considered as a special case of factor analysis'. In this research the field area was Tanzania and the primary data were all collected from the selected samples through qualitative and quantitative methods including questionnaires and structured interviews. The sample areas were DAWASA and DAWASCO employees, customers and government officers. The secondary data was captured from various contract documents, websites, and government gazettes and government policies. The information was gathered and triangulated for analysis and model was developed.

7.3.3 Documentation Stage

This is the last stage of the designed research structure, whereby the duties performed at this stage are mainly documenting issues including writing of the study report (thesis). Denscombe [226] and Creswell [137] argues that, writing up involves a blend of interpretation, craft and convention aimed at producing a formal record of the research which can be evaluated by others.

At one and the same time it is a creative enterprise and an activity constrained by convention. The report should be concise, with findings and arguments presented in a convincing and consistent way. The stage of documentation covers the final answer of the research work in this matter this research has presented the research answer systematically in a consistent way to open chances for criticism, challenges as well as future studies and for the benefit of the sector. Conclusions and recommendations are presented with no limitation to Tanzania only but can be applied elsewhere within the favourable conditions.

7.4 Research Methods and Application

Research method is a tool to be used as a bridge to find the answer of an identified research question. However, according to Creswell [137] a research method is a specific approach to data collection and analysis with objective. McNeil [266] added that, methods for conducting research are many and 'there is 'no one' right direction to take. There are, though, some strategies which are better suited than others for tackling specific issues. Therefore, this research has critically examined systematically each method. The method which looks compatible to the research problem was adopted as a research method to this study. The types of research methods are grouped in the following three categories including quantitative, qualitative and mixed research methods.

7.4.1 Quantitative Research Methods

Quantitative methods are research methods dealing with numbers and anything that is measurable. The quantitative research is typically taken to be exemplified by the social survey and by experimental investigations.

Seale [145] argues that, 'quantitative research may facilitate the interpretation of relationship between variables. Quantitative research readily allows the researcher to establish relationships among variables, but is often weak when it comes to exploring the reasons for those relationships. While a qualitative study can be used to help on explain the factors underlying the broad relationships that are established'. Quantitative measurements regularly depend on qualitative assumptions about which constructs are worth measuring and conceptualising. Therefore, it is also true that, quantitative research facilitates qualitative meaning, quantitative research help with the choice of subjects for a qualitative investigation.

The research is associated with a number of different approaches to data collection, sampling methods and as well as in analysis. The social survey is one of the main methods of data collection which embodies the whole quantitative research method. Smith [173] notes that, it is the survey capacity which generates quantifiable data on large numbers of the people who are known to be representative of the wider population in order to test theories or hypotheses. Another major common quantitative research method is the experiment. In an experiment method there are two groups which subjects have been randomly allocated an experimental and a control group. The logistic of experimental design is that the formal group is exposed to independence variability but the control group is not. However, the groups are identical in all aspects with only one difference that, experimental group is variable while the control group not.

Survey and experiment are the main methods of quantitative research in areas including data collections, counting and measuring. The results of quantitative research are in numbers or series of numbers and they are often presented in table graphs or other forms of statistics [232]. The presented tables and graphs behaviour/trends can be read and interpreted to give the true picture of the diagnosed research problem.

i. Advantages and Disadvantage of the Quantitative Method

Strategy such as experiments can produce a mountain of data in a short time at a fairly low cost. Survey methods lend themselves to quantitative data. Survey methods have wide coverage associated with large-scale research covering many people or events but, surveys can also be used with small – scale qualitative research project. Applying survey research methods have connections associated with getting information straight from the horse's mouth, and more than this the search is purposeful and structured. In the experimental approach the greater advantage is during the process of implementation, you can change testing samples with the aim and objective of focusing on special data collection. In this method, all data are monitored and collected at one centre point. Generally quantitative research facilitates qualitative meaning by helping with choice of subjects for qualitative investigation.

MMU [26] argues that, the disadvantages of the method including quantitative implementation approach have character of dealing with breadth when it comes to the data that are produced, this consume more time. Quantitative analysis results are limited as they provide numerical descriptions rather than detailed narrative, and generally provide less elaborate accounts of human perception. Through quantitative analysis the additional pre-set answers will not necessarily reflect how people really feel about a subject and in some cases might just be the closest match. Quantitative approach has emphasis on wide and inclusive coverage limits the degree to which research can check accuracy of the responses. The use of survey approach does not prevent the researcher from checking on the accuracy or, honesty of the responses. Furthermore, quantitative research is often carried out in an unnatural, artificial environment so that a level of control can be applied to the exercise; this situation necessitates the availability of special equipment's depending on and nature of research and the required environment but altogether reflects on higher costs.

The detailed discussion of just one method alone will not give enough evidence for making conclusion on which method should be adopted for this

research; therefore the need to discuss other research methods for fair judgment is obligatory.

7.4.2 Qualitative Research Methods

A qualitative research method is mixture of rational, explorative and inductive approaches. Its application relies on the skill and experience of the researcher who plays a very important role in the whole process of data collection up to data analysis. The required skill to execute qualitative research includes thinking abstractly, stepping back and critically analysing situations, recognizing and avoiding biases in order to obtain valid and variable information by having theoretical and social sensitivity.

Smith [174] adds that, qualitative research is thus common in social and behaviour sciences and among practitioners who want to understand human behaviour and functions. Hesse-Biber [170] argues that, 'qualitative research is a distinct field of inquiry that encompasses both macro and micro analyses, drawing on historical comparative structure including observational and international ways of knowing things'. It is multiple epistemological positions, theoretical frame works and research methods are included in qualitative research. Qualitative research tends to be associated with participant observation and unstructured in-depth interviewing. Creswell [137] adds that, 'All perspectives contest for centre stage in describing model of investigation called qualitative research'. Case study, action research, grounded theory are among of the most common qualitative approach methods. However, every method has its advantages and weakness [138].

i. Qualitative under grounded theory approach

According to Punch [242] grounded theory approach is an overall approach to research and a set of procedures for developing theory through the analysis of data'. Borgatti [243] added that, grounded theory method provides systematic procedures for shaping and handling rich qualitative materials although they may also be applied to quantitative data. Grounded theory method also allows novices and old hands alike to conduct qualitative research efficiently and effectively because these methods help in restructuring and gathering and organising data and analysis. Punch [242] concludes that, 'grounded theory appeals because it concentrates on discovering concepts, hypotheses and theories'.

Glaser & Strauss [241] urging that, 'a strategic link to formulate and developing a formal theory based on data'. Its process and strategy of executing grounded theory method has been formulated with explicitly on data collection with target amount of unstructured textual from various sources and its analysis. The

method provides in-depth systematic scrutiny of the given textual information for building theory; therefore it is suitable for studying individual process, interpersonal relations and the reciprocal effects between individuals and larger social processes, especially if the objective is to develop a theory to fit or to be applied in a specific situation. Linden *et al* [244] noted that, the method is more useful for studying typical psychosocial topics such as motivation, personal experience, identity, attraction, prejudice, and interpersonal cooperation and conflict.

Grounded theory differs with other research approach because it is explicitly emergent, it does not test hypothesis. It sets out find what theory accounts for the research situation as it is. Therefore, in this respect it is like action research, however the application of the method aims to understand the research situation and to discover theory implicitly in the data. The grounded theory has its own source of rigour and it is responsive to the situation in which the research is done. It is driven by data in such way the final shape of the theory is likely to provide a good fit to the situation [247], [248].

ii. Qualitative method under case study approach

The case study approach is used where experience and theory are little available to guide the research, therefore study of selected example become very useful approach of gaining insight and formulating of hypothesis for further research. Ghuri [133] Argues that, case study method is the favourite as a research strategy when the question of study is 'how and why', it is also advisable that case study approach is used when you want to study a single organization and you want to identify factors involved in the same aspects or behaviour of any organization or small unity. However, with case study approach it is possible to study number of organisations with regard to a set of variables that we have already identified or assumed [133].

The decision to use a case study approach is a strategic decision that should relate to the scale and scope of an investigation, and it is not least in principle dictate which method or methods must be used. Indeed, strength of the case study approach is just that, it allows for the use of varieties of methods depending on the circumstances and specific need of the situation. In most cases , case studies are done through a review of existing historical materials, records and Interviews, however in some cases the approach involved are observation and interaction, but in real practical situation case study method is synonymous with qualitative research or method [138].

However, special skill and caution are highly required during conducting a case study, because the design for data collection is very crucial while the whole study depends on data collection. Capability of listening, interpreting, understanding, taking the right information, asking the relevant and probing questions is highly needed. This forces the researcher in personal to go for data collection [133].

However, decision on which approach to adopt depends on research objectives and nature of study, given time, availability of funds and researcher's willingness. However, both grounded theory and case study approaches with differences are all equally good and their follow under qualitative research method.

iii. The Advantages and Disadvantages of the method

Qualitative research may help to provide background information on context and subjects act as a source of hypotheses. Qualitative research method allows the application of multiple methods on data collection and data analysis, especially when case study method is adopted. For example, in case study method, during the data collection questionnaires and interviews approaches can be used together which add value on data quality and verification? Parallel with use of multiple methods, the case study approach fastens the use of multiple sources of data. The method is suitable especial where the researcher has little control over events, because the approach is concerned with investigating phenomena as they naturally occur. There is no pressure on the researcher to import controls or to change circumstances. Qualitative research has multiple application, which can be adopted for theory-building (inductive) and theory- testing (deductive) depending on nature of research both can use the case study approach. Qualitative approach can fit in well with the needs of a small-scale research through concentrating effort on one research site (or just few sites).for example if you need to study the operation and performance of small organisation qualitative methods gives clear perspective on methodology and In case of executing ethnographic approach the goal is the complete understanding of a particular situation therefore with this approach we are able to obtain a more accurate picture.

The disadvantages of the Qualitative methods in practice tend to favour of depth over breadth, which has a direct effect on coverage and time consumption. For example, in the case study, the approach most vulnerable to criticism is in relations to the credibility of generalizations made from its findings. In general study carried though qualitative method may adopt more than one approach, and it has higher cost in methodology implementation in comparison with quantitative method.

Collection of qualitative data requires more time, more staffs and all these have reflection on costs

Blaikie [227] adds that, the application of qualitative method requires an extended and intensive period of involvement, a researcher may become fully immersed in the social activities at all levels with personal involvement, this means qualitative methods obligates researchers to become insiders to discover the social actors, culture and worldviews. In summary, the existence of qualitative research methods are mainly for using social actors of view, describing the study, focusing on social processes, adapting flexible approaches and developing concepts and different theories [227].

7.4.3 Appraisal for quantitative and qualitative methods

The evidence prevailing in section 7.3 of this chapter advocates the principles of concluding the appropriate research method. The need for analysing which method should be adopted between the two quantitative and qualitative has basically focused on the advantages and disadvantages each method, and its flexibility on application to fit the study problem. The nature of study problem has defined the approach that the study should be executed to develop a sustainable solution for water services in Tanzania. This focus has opened another challenge of looking for the appropriate approach to organise and develop the idea from zero stage to formulate the most appropriate solution for Tanzania water problems. In that matter, grounded theory was adopted for critical discussion to evaluate its compatibility to the study as follows

7.6 Mixed Research Method (Triangulation)

7.6.1 Overview

Gill [167] argues that mixed research method is a combination of tools study of the same problems. However, triangulation can also be defined as 'multi-method or convergent validation and for most part shares the notion of complementary qualitative and quantitative methodologies'.

Brannen [144] argues that 'combining research strategies as a means of examining the same research problem and hence of enhancing claims concerning the validity of the conclusion that could be reached about the data' Mixed research method refers to a research strategy that crosses the boundaries of conventional standards of research by deliberately combining methods from different traditions

with different underlying assumptions. (Mixed method strategy is one that used both qualitative and quantitative research methods)

Denscombe [228] adds that, triangulation involves the practice of viewing things from more than one perspective; this means the use of different methods, difference source of data or even different researchers within the same study. In other treatments triangulation is an application of different research methods aiming to solve the same question with basis that, the approach of different methods will strengthen the study.

Troham [158] notes that, 'in quantitative study triangulation has the logic of enhancing the validity of findings'. Brannen [144] adds that, 'triangulation method does not merely involve methods and data only but it covers investigation as well as theories'.

Romm [143] supported that 'positivism suggests that inductive and deductive reasoning operate to ensure science increasingly gathers improved accounts of eternal reality'. The available weakness will be eliminated within the process to come up with more quality findings. Generally, triangulation gives ways of formulating a problem, testing of theories, different ways of sampling and data collection, hypothesis testing, casual and social problem analysis [228].

7.6.2 Application of the Mixed Research Method

Mixed research methods can be adopted and executed in any kind of research for the purposes of improving accuracy, widening the picture of study, compensating strengths and weakness, developing the analysis as well as an aid to sampling.

i. Improving accuracy

Using different methods to investigate the same subject improves the confidence and accuracy of findings because the method provides the researcher with the opportunity to check the findings from one method against the findings from another. Mixed research method approach seeks convergence, corroboration, correspondence of results from the other different method. It is the process of different methods the researcher can feel confident in assuming that findings are accurate

ii. Getting a wide picture of the research area

Adopting more than one method (mixed research method) enhances the findings of the research by providing a more wider and complete picture on the area of study, (the application of mixed methods facilitates the data produced by one method to be complemented by another method and therefore the combined

data from different methods of collection can provide alternatives and wider perspective).

iii. Compensating strength and weakness

Mixed method offsets any inherent weakness or bias in one method by combining it with another different method; this can compensate the weaknesses and biasness

iv. Development of analysis

The comparing of findings of the same study collected from different methods (mixed methods) can be adopted as means for the analysis of collected data. An alternative method is introduced as a way of building on what has been learned already through the use of the initial method. Mixed method is also adopted to produce more data that might shed light on things.

7.6.3 Advantages and Disadvantages of Adopting a Mixed Research Method

Technically mixed research method has more advantages than the weakness hence the method formulation is made to facilitate the elimination of weakness caused by using a single method (from either qualitative or quantitative methods). Qualitative and quantitative approaches when combined, one approach enhances another. It may even be the case that such investigations will come to be seen as yardstick for good research. Therefore the few major advantages of the method are; mixed research approach facilitates production of a wider picture. The findings are likely to address a wider range of the question related to how, why, what, who, when and how many? However, mixed methods when adopted provide links between different methods and different kind of data with different contribution for the research. More advantages of the method have been described in qualitative and quantitative as discussed in sections 7.3.1 and 7.2.2. The disadvantages of mixed research method are generalized to be very few because the methods compensate each other to overcome weaknesses from each method.

Adaptation of mixed research methods has a disadvantage of the increase of time because each method needs for its application and therefore having two methods means much more time than using a single method. The application of mixed research method requires the researcher to have or to develop skills with more than one method. This means the researcher needs to develop and exercise skills to cover both qualitative and quantitative approaches [228]. Gill [167] concludes that, in comparison with its disadvantage, the method is extremely time – consuming and costly.

7.7 Selection of Research Method

Selection of the appropriate method to be adopted for this research was not an easy job. Babble [134] argues that, 'each research method has its strengths and weaknesses, and certain concepts are more appropriately studied through some methods than others'. Blumer [136] adds that 'the method selected is determined by the nature and content of questions that researcher wish to answer, available sources and accessibility of potential subjects'.

Lewis [135] notes that 'the method to be deployed in the study of social life must permit one to establish a relationship between the essential factors involved in social change. These relationships must be causal and must apply to the process of change. The whole process of selecting the suitable method for adoption is very complicated. Boynton [160] argues, 'There is no rule of thumb that tells a researcher precisely how to focus a study. The extent to which a research question is broad or narrow depends on the purpose, the resources available, the time available, and the interests of those involved. In brief, these choices are not between good and bad, but choices among alternatives, all of which have merit.' [160].

However, knowledge and guidance for selecting the appropriate research method for this study purely is guided by the literature knowledge (secondary data) and the research structure has been developed. Babble [175] indicates that, 'it is useful to consider the full range of possibilities for data collection in the study and to select the appropriate method against the set objectives, the nature of the project and predetermining the nature of the method, their use of closed-ended versus open-ended questioning and save their focus for numeric data analyses.

There being no guide for selection of right method for a specific research. Maykut [140] argues that 'anybody who wishes to study any aspect of the world about them has to decide what methods they are going to use'. Their decision is made on the basis of their assumptions about what kind of thing they are studying. Scientists who study the natural world, including plants, minerals and animals assume that the things they are studying are not aware of their own existence, since the causes of their behaviour are outside their control. The guidance based on literature arguments that, actual need for study, resources (funds and sources of data) and time given are the basic references to guide researcher for selecting the appropriate research method. Considering all evidence discussed in this section, the researcher concludes and adopts mixed research method 'multiple research strategies' commonly known as 'triangulation' as a study method for this

research. It is the purpose of strengthening the research quality by error elimination focusing on the disadvantages of applying any of the methods (qualitative and quantitative) [140]. Therefore adoption of triangulation method to this research will not only add value and upgrade the quality of this research but also will give the right approach towards the set objectives, and to develop the appropriate answer for Tanzania water management problem. The collected data through qualitative and quantitative methods were analysed and gathered, and captured concepts were adopted for model development.

7.7.1 Adaptation to Survey Method

The selection of an appropriate research approach is a critical decision in most social research processes. The selection is dependent on the objectives, sources of data, environmental conditions and availability of funds. Strategic approach for selecting the appropriate research method has been discussed in section 7.6 of this chapter. The ideal research method to any study depends on the nature of the research problem and approach. Principally, the research problem dictates the study approach (inductive or deductive), critically understanding of the research problem, the approach and knowing the sample areas, the method for data collection can be concluded. However, availability of funds and knowledge of the field environment are important factors on concluding the ideal method of approach. Therefore, the strategy guided the researcher to match the suitable method to the research problem. The research problem is ***developing of the appropriate model for water supply and sewerage services in Tanzania*** (developing countries) with ***inductive*** approach the adopted research method is ***survey method***. Guided with literature knowledge and the research objectives, the researcher used his own judgment to balance the advantages and disadvantages of different research methods in order to conclude the appropriate approach for his research process.

Kelly [237] adds that, 'surveys are well suited to descriptive studies, but can also be used to explore aspects of a situation or to seek explanation and provide data for testing hypothesis'. Nevertheless, the survey approach has the potential to provide a lot of information obtained from quite a large sample of individuals, whilst the advantage during the interviews is that open-ended questions can be applied with greater confidentiality in particular questions of special interest or can be executed in-depth, with follow-up questions asked whilst unclear items can be explained.

Marsh [233] argues that the survey method is a tool which, like any other tool, is open to misuse. It can be used to provide evidences for sociological arguments

as well as for ideological construction. Therefore, the survey as an inquiry which covers the collection of systematic data across a sample of cases is used in the case of a social survey in order to collect social facts (data)—not only in ways of collecting data but which also comprises the analysis of results. However, there is the unique advantage of survey approach, which the research produces data from the original source (field) as empirical data

However, the survey approach in this thesis has been restricted in order to have two selected methods, including questionnaires and face-to-face interviews with open-ended structured questions. The restriction was for the purpose of wide and in-depth coverage on data collection owing to the nature of the two adopted methods. The open-ended questions were structured and strengthened following pre-tests, whereby the first developed questions were sent to three different people in Tanzania for testing in terms of quality, clarity and content verification. Notably, the questions were precisely structured and clearly presented, which often dictates the range of answers from respondents whereby the aim was to get consistent answers to consistent questions. The question is, is the approach developed properly to the extent that, the structure of the questions can appropriate measure to the required objective?, because ensuring of maximum and quality information depends on questions structure and its composition. However, the advantages of the questionnaires are its ability to accommodate a large number of people (participants) within a short period of time; therefore, the researcher can fix his/her finite time span for a project, which can ultimately assist planning and the delivery of end results.

Furthermore, Denscombe [138] adding that, the survey approach is a research strategy and not a survey method. Many methods can be incorporated with the use of a social survey. The adoption of this strategy allows the use of a whole range of methods within the strategy, including questionnaires, interviews and observations. Therefore, the researcher choose to adopt a mixed approach for data collection, hence is compatible to the method and it opens wide range of information coverage.

7.8 Primary and Secondary data

7.8.1 Secondary Data

According to Ghauri [165] secondary data are very useful and can help the researcher in the areas including answering research questions, guiding the study, solving some or all of the research questions. Helping in problem formulation and

or making more concrete and focused research questions, deciding about the appropriateness of a certain research method or even suggesting better research methods for a particular problem. Secondary data also provides benchmarking measures and other findings that can be compared later on with the results of the study at hand. Furthermore, scholars recommend that all research should in fact start with secondary data. Begin with secondary data and only when secondary data are exhausted or show diminishing returns, proceed to primary data. However sometimes secondary data provides enough information to answer the research questions. In this research the application of secondary data was obligatory for formulation of the study methodology and topic (developing finding the appropriate model for managing water services) which would not be possible if there were no secondary data. The structure of this research has been formulated from secondary data. At the final stage of model development some basic references to support the model are sourced from secondary data

In this research the secondary data were gathered from various sources including literatures, websites, journals, contracts documents, policies, government newspaper magazines and other useful documents from Leeds University and Tanzania. Whereby, greater part of secondary data from literature was used as a primary tool for formulation, development and guiding the research. However, most of the documents were used as evidence building concept towards establishing the answers to this research.

7.8.2 Contribution of secondary data to this research.

The knowledge acquired from literature review guided the researcher to formulate the research problem and develop a broad understanding of it. The information from the literature review helped to make a better base from which research conclusion has been made. Knowledge adopted from other projects, accelerated the researcher's confidence in handling and tackling general research problems. For example, the decision to change questionnaire's format of language (from English to Swahili) happened in the field, due to the difficulties respondents had in understanding English. Basically, the approach and strategy for data collection was developed from the literature review.

However, the review of various documents (contracts, policies, government gazette, performance and various project progressive reports) in the field Tanzania, has given the researcher special experience on understanding the real challenges on water management and operations in the field. Therefore, secondary data had significant contribution to this research.

7.8.3 Disadvantages of Secondary Data

Using secondary data as a source of information requires extra care at every stage of adoption, because the data have been collected from different studies and developed for different purposes. Secondary data are information collected by anybody from one of many sources either to be used for a similar or different research purpose. Adopting secondary data is a new use of old used data to a different study aiming to solve a very different problem, which may not comply with previous objectives.

Secondly, the accuracy of secondary data is in the hands of the researcher, which obligates him/her to verify the origins, the process of collection and whole analysis in general. However, secondary data are very useful and important to any new research project. Ghuri [133] argues 'not matter how correct they are, in normal cases secondary data alone cannot lead to the answer for any new research project'. Therefore, secondary and as well primary data should all be treated with higher priority and therefore it is obligatory to the researcher to organise collection of the necessary data for his/her research project.

7.8.4 Primary data

The importance of primary data to any research is immeasurable. The nature of research problem commands the source(s) and approaches of where and how primary data should be collected. Primary data has to be a major source of information to this research. The survey method with combined approaches including interviews and questionnaires was adopted to this research. Therefore, as indicated that the research problem is inefficient water services in Tanzania the primary data source to be from the same country.

Adam and Kamuzora [278] argues that, 'primary data is the data collected by the researcher himself/herself or by researcher's assistants from the field for the purpose of answering research question/issue' The common ways used for collecting primary data were through observation, questionnaire and interviews. These tools are also advocated as survey methods, as discussed in section no7.5.4. The nature of research problem obligated the researcher to adopt two methods (interview and questionnaire) for data collection in Tanzania

7.8.5 Targeted Information and Sample Sizes (primary data)

According to the research design and objectives of this study the domain primary data were collected form Tanzania in different sources (sampling areas) including DAWASA and DAWASCO employees, (as the organisation responsible for services provision in the city of Dar-es-salaam and the Coast region), the Ministry of water and Irrigation (responsible for water policy matters), Dar-es-

salaam water consumers (affected service users) and Presidential Sector Reform Commission (PSRC) (The supervisors of public sector reform in the country including Dar-es-salaam Water Supply and Sewerage Authority (DAWASA) privatisation).

Cooper [229] indicated the 'determination of sample size comes down to estimating the minimum size needed to obtain results with an acceptable degree of confidence. Calculating the sample size involves evaluating the feasibility of the research objectives'. The proportion and nature of information guided by the objectives of the study indicated the sample size for this research is 166 people performing various roles from different institutions in Tanzania. Therefore this research concluded four sample points as follows.

i. DAWASA and DAWASCO employees

In this area a total of 74 employees responded to information request. Employees were more targeted because they were fully involved in all the three different water services provision in the country including public services management, private services management and current water services management. Given their wide experience they were the right source of raw data. Therefore information on changing working conditions, incentives, motivations, participation and their involvement in DAWASA privatisation process were the key information expected from DAWASA and DAWASCO employees.

ii. Government sector (Ministry of water and PSRC)

The information collected from this sample area represented by three (3) senior officers from the ministry of water and irrigation and one senior officer from PSRC. The reason of earmarking this area was that it represented the Tanzanian government's responsible organisation for water services policy issues, water development master plan, funding for water development projects and controls water prices issues. The PSRC has been executing the reform of all government policies including transformation of DAWASA to private management. Therefore, the information from this source was on policies in the water sector, information on DAWASA privatisation and the driving force behind it, expectations on private water services, capital funds for water projects and conditions of the World Bank loans.

iii. Public (water customers)

Information from the public (water customers) was necessary to this research not only for information verification but as also to understanding the different types

of service provision including public services, private water services, and current water services. The information was collected through structured questionnaire forms, which were designed to give detailed information on water services including (water quality and quantity, water charges, customer care and sharing of water services information) from customer's point of view.

7.8.6 Sampling and Sample Size

Sampling in this research was adopted as a process of sorting or selecting elements out of many, with the intention of examining, inspecting, testing and analysing them. The results of which will represent them all. Sampling methods or sampling techniques are many and selection on which to be used depends on the nature of the project's objectives, time and funds available for data collection. However, statistics and theoretic are the only two types of inference which can be applied to achieve external validity. Generally mathematical process, statistical and theoretical inferences are the main tools applied to obtain samples from targeted population, however, analytical generalization is not always based on mathematical or statistical inferences, and it is sometimes concluded from logical reasoning especially on focusing on population [151]. Therefore, due to nature of the study and subject of research this research obligated to select the discussion of few major sampling methods including Judgment sampling method, Random sampling, Systematic sampling method, Multistage sampling method and Cluster sampling methods. Therefore, for the given reasons researcher was concluded to adopt Judgment sampling method.

i. Judgment sampling method

The application of this method depends on personal understanding of actual situation of the sample areas and its environment. The researcher sets the criteria which are more favourable for sample select, whereby in practice this method all elements are selected according to precise criteria established by the researcher. In normal management research, judgment samples are very popular than probability samples, whether the intention is for qualitative or quantitative processing. Judgment sampling also allows sample elements to be selected extremely precisely, making it easier to guarantee respect for criteria such as homogeneity, which is required by certain research designs. Judgment sampling does not follow set theoretical criteria, but in order to use it, researchers must have good understanding of the place where data are going to be collected and general nature of study.

ii. Random Sampling method

The method involves random selection of elements using a random procedure, meaning that the procedure which selects one element might not be the same for selecting other elements. However, the method is each element of the population has the same have the same probability of being selected into the sample (equal probability selection). The elements of the sampling frame are numbered serially arranged from 1 to N and a table of random numbers is used to select them. The method is highly recommended sample collection in the larger area. Furthermore, the method can be adopted in the situation with geographically diverse elements, which can lead the exercise to be very expensive [151].

iii. Systematic sampling method

Systematic sampling is very closely related to simple random sampling method. The only significant difference is that systematic sampling method does not require a numbered list of elements for each sampling area. The systematic process selects the first element is randomly picked from the sampling frame, and then the selection of the following elements is at constant set intervals. However, the selection interval is inversely proportional to the sampling ratio of the sample size N (for example sampling ratio is 1/100: therefore one element will be selected in list of every 100 elements), [142].

iv. Multistage sampling

Multistage sampling makes repeated selections at different levels. The first stage corresponds to the selection of elements called primary units. At the second stage subsets called secondary units are randomly selected from and within each primary unit. The procedure is repeated until the final stage, when the elements selected correspond to the units of analysis. A multistage cluster sample is probability sampling procedure that allows such geographically dispersed population to be adequately covered, while simultaneously saving interviewer time and travel costs [174].

v. Cluster sampling

It is sampling techniques which are mainly applicable when natural grouping of sample areas is evident to guide presentation. The technique is common applicable in research market, however in cluster sampling method sample area is divided restrict equally and collectively comprehensive groups (clusters) and sample elements are picked from each of those groups (clusters). The required

information is absolved from the elements those selected from each group. Burns [142] adds that, cluster sampling is particular type of two stages sampling, whereby elements are not selected one by one, but from subsets known as clusters. Each element of the population belongs to one and only one cluster. At the first stage clusters are selected randomly, and secondly elements of the selected cluster are included in the sample.

vi. Setting of sample sizes for primary data collection

Sample size this is the actual element (people) number picked in each selected sample area for the required information. However, calculating the sample size involves evaluating the feasibility of the research objectives which can sometimes cause modification of the research design. According to Hallway [155], determination of sample size really comes down to estimating the minimum size needed to obtain the results with an acceptable degree of confidence. In samples destined for quantitative data processing, this means determining the size of sample that enables the study to the desired degree of precision or significance level for qualitative research. It is size that confers an acceptable level of credibility.

Cooper [149] argues that, 'the larger the sample, the greater the confidence in results, whatever type of data processing is used'. However, large samples pose problems of practicality in terms of costs and scheduling. Beyond a certain size, they can also pose problems in terms of reliability for the single reason that the sample is very large. Nevertheless, the larger sample can increase the number of collection, recording and encoding errors as well. However, some recommendation for sample size setting including sample must be large or it is not representative, A sample should bear some proportional relationship to the size of the population from which it is drawn, The greater the desired precision of the estimate, the large the sample must be, The greater the dispersion or variance within the population, the larger the sample must be to provide estimation precision, The narrower the interval range, the larger the sample must be and If the calculated sample exceeds 5% of the population, sample size may be reduced.

7.8.7 Approach for secondary data collection

Strategically all secondary data were collected from two major sources including literature and field area (Tanzania). Literature captured at Leeds University was sourced from journals, tapes, magazines, newspapers and internet

Secondary data were outsourced from number of public and non-public official documents including water policy, Acts, Government water development plan, government gazette, Millennium goals, Ministry of water 2008/2009 budget,

Documents for basket funding, DAWASA/ City Water lease contract, World Bank procurement procedure, The World Bank loans conditions, The World Bank and EIB procurement procedure, DAWASA NWSC partnership contract, DAWASCO performance report, Construction supervisor reports, Performance monitoring reports, revenue collection reports and Technical Audit reports were all critically reviewed.

Each document was separately critically reviewed and all substances related to process of DAWASA privatisation, water services acts in Tanzania, role and duties of various players in water sectors, World Bank condition for loans, contract performance details, targets in contracts were gathered for assessment. Similar items were combined and analysed. However, data adopted in form of text were analysed by using Content Analysis Method (TCAM). However, numerical data such as daily revenue collections, tariffs, number of customers, amount of water production and water consumption rates were analysed by Statistical Package for the Social Sciences (SPSS) methods.

i. Expected information from each sample group for analysis

Strategically, the structured questionnaires and interviews were designed to accommodate the collection of all the necessary information to fulfil the study objectives. Each sample group had necessary and specific information to bring in for analysis. However, presentation of different groups of samples was obligatory not only for data verification but also unsure wide and in-depth coverage of the field information. However, in general the expected and targeted information was to have a detail and picture on Tanzania water services ranging from governing policy to operations issues during the whole the three periods (before, during and after privatisation). Therefore, each of the four (water users, DAWASA, DAWASCO and government officers) sample group areas was strategically earmarked to bring up specific information, whereby the concepts were merged to formulate a common solution. In this case, the selected sample areas and targeted information from each sample group can be summarised and presented in table form, please see table no 7.1 below.

Table 7.1 Information targeted for analysis

SN	AREAS OF TARGET	PARTICIPANTS	TARGETED INFORMATION
1	Government Sector	i. Ministry of Water ii. PSRC	Policy issues, water services background before, during and after privatisation
2	DAWASA	i. Management ii. Common employees	Contractual issues, project implementation, targets in performance, project monitoring and planning
3	DAWASCO	i. Management ii. Common employees	Operations, maintenance, water production and services issues and revenue collection (billing) management issues and
4	Public (Water users)	Big and Small water customers	Change in water services and the effects

7.8.8 Strategic approach for Primary data collection

The field work in Tanzania executed to collect primary data through systematic structured format of questions (questionnaires) and interviews for specific people. The need for executing mixed method for executing mixed method for field work was concluded from the nature of study objectives, with greater focus on easiest way of collecting maximum required information within the designed period of time. The approach and content was designed to meet the required information for the research objectives, while each question has specific information to be extracted. The time given for completion and return was seven days. This approach did not work and it was only after a follow up of the researcher himself that 136 completed forms were collected for analysis.

The face to face interviews were structured with similar questions. The implementation was carried by distributing structured interview questions to selected officers through their personal secretaries. The request for face to face interviews was made, and open end structured interview was executed to almost 83.3% of all targeted officers. Kumar [157] adds that, 'open-ended questions provide in depth information if used in an interview by an experienced interviewer. In questionnaire, open-ended questions can provide wealth information provided respondents feel comfortable about expressing their opinions and are fluent in the language used.

i. DAWASA

Focusing on getting information from common employees, with the permission from DAWASA chief executive officer, 40 questionnaire forms were randomly distributed to member of staffs (not management) from different departments.

Within the same period appointments were made and three senior officers (management team) were interviewed including Director of Finance, Director of quality assurance and Planning and studies Manager. The interviews were carried with structured questions. The answers were recorded at the same time notes in writing were taken. However, immediately after the interviews the captured information from these two means (written and recorder) were compared for quality and correction. This was information adopted as management general views.

ii. DAWASCO

The approach for data collection in DAWASCO was different in comparison with the process applied for DAWASA. At DAWASCO 65 questionnaire forms were officially handled to Chief Human Resources officer and through her official status these questionnaire forms were distributed to 8 sub branches offices. The Sub branch managers were responsible to randomly pick 8 employees within their areas for completing the questionnaires. The period of one week was fixed to return the completed forms. At the end of my field study 50 completed questionnaire forms were collected for analysis.

The interviews with DAWASCO management team were with the Chief Human Resources, Chief Commercial Operations, Technical Auditors and Customer services manager. The same structured questions with management focus on DAWASA privatisation, process adopted during the privatisation of DAWASA, capital funds from loans and conditions, failure of DAWASA privatisation and the effects and sources of funds for water projects were adopted during the interviews.

iii. Water Customers

The permission was granted by DAWASCO Chief Executive officer, the researcher distributed 10 customer questionnaire forms to large consumer services manager, 10 forms to Public relations Managers and 5 questionnaires to each of six water operation zone areas, The customers who came to settle their water bills or any water complains were requested to fill those forms. The questions were designed to give feedback on quality and quantity of water supplied during the

three different periods before during and after privatisation of DAWASA, value for money, customer care, position and participation of customer in general water services, water billing process and what do they think should be. All complete forms were collected on day to day bases for analysis and further action. At the end of field work period the researcher collected 46 completed customer questionnaire forms and from those questionnaires the information was adopted for analysis.

iv. Ministry of Water and Irrigation

The face to face interviews with three senior officers including the Assistant director for urban water services, resources planning and ministry chief lawyer, all from ministry of water and irrigation were conducted. The interviews were conducted under special arrangement with the permission of assistant ministry permanent secretary. The open end interview questions were systematically and purposely structured to fulfil the research objectives. Therefore questions were developed in considering what information is needed and will be collected from management team (decision markers). It is information from those who participated full in DAWASA privatisation. The study has to have clear picture of whole privatisation transactions and the effects specifically from government officer's views. This was a necessary part of information for formulation a practical answer of the research. The targeted information were on government water policies, source and driving forces for DAWASA privatisation, effects of DAWASA privatisation, process adopted, funds for water development, conditions and effects of the world bank loans, water customer's reaction on privatisation, experiences on different water management services (private and public) and expectation on future water services in the country. The same procedure was applied during the interview with PSRC officers. Finally all collected information was gathered and analysed.

7.8.9 Responses on Data Collection Compared to Targets

According to the targets on required information as detailed in section 6.5.1, total of 155 questionnaire forms were distributed to the targeted groups and out of those only 136 questionnaires were filled and collected for analysis. However, three forms were not correctly filled or completed. The response was about 77.8% of the expectation. Regarding on the interviews, the executed interviews from all planned sources were 10 out of 12 predicted senior officers. However, again this is 83% performance out of expectations. That makes the total response in primary data collection to be 78% of the designed volume of data required for this study. The verification of data from individual information or groups of people is automatically compensated in this coverage. The 78% achievement for data collection was

sufficient for next step of the research process. Nevertheless, the process of data collection was executed by one person researcher himself and in detail the response on each area was as follows.

i. DAWASA employees were the first targeted sample group and as explained in section 7.8.5 with permission from chief executive officer 40 questionnaires were randomly distributed to all level employees by the researcher, whereby the collected filled forms were 24, this is 60% of all targeted responses and therefore the information from 24 people was adopted for analysis being representative of the sample group of DAWASA employees

ii. DAWASCO employees this was a second sample group targeted to give information from 65 employees, with assistance from DAWASCO head of human resources officer the questionnaire was distributed and after a week 50 percent completed were collected. This is 77% of total targeted information from this group. Therefore, the information from 50 collected forms were adopted for analysis being representing DAWASCO employees group.

iii. DAWASCO water customers

This was the third targeted group for data collection through the questionnaires method. Total of 50 questionnaire forms were distributed to large and small customers form more detail (see chapter 6 section 6.7.3iii) and out of that 46 forms were correctly completed and collected, this is 92% achievement of total targeted information from the group of water consumers

iv. Government officers

The information collected from this group was through the face to face interviews which were conducted by the researcher from 12/5/2008 to 20/05/2008. The target was to interview 12 senior officers (Three senior officers from the ministry of water, 3 from PSRC, 3 directors from DAWASA and 3 directors from DAWASCO). Unfortunately we managed to complete only 10 interviews making 83.3% achievement of all targeted interviews. The information collected was basically policy issues, decision making, plans for future, involvement on DAWASA privatisation, loans condition, alternatives sources for capital funds and water management in general. The information from 10 interviews was adopted for analysis to represent the whole group of officers. Nevertheless, the whole picture of the responses from all targeted areas of 167 respondents is 130 people, this is 78% achievement. This achievement gives confidence and strength that the methods adopted for data collection were appropriate. The summary picture of

achievement on data collection can be presented in table form as follows (see Table 7. 2 below)

Table 7.2: The response areas for primary data

SAMPLE AREAS	ESTIMATED RESPONSE	ACTUAL RESPONSE	ACHIVEMENT IN PERCENTAGE
DAWASA Employees	40	24	60%
DAWASCO Employees	65	50	77%
Water Customers	50	46	92%
Government officials	12	11	83.3%
Total Response	167	130	78%

7.9 The interview structure and contents

The adoption of interview method to this research was based on the data collected through questionnaires having coverage in width (quantitative) and not in depth. The adoption of interview method will automatically compensate the gap of coverage left by the questionnaire and therefore to create more quality data necessary for analysis.

Bryman [264] comments that, the future of an interview is in eliciting information by the interviewer from the interviewee under the operation of rules of varying degrees of formality or explicitness concerning the conduct of interview. Therefore, the method of structured interviews for data collection was obligatory not only for in depth data collection but also for promoting standardisation of both asking of questions and as well the recording of answers.

i. The Structure of Interview

The semi structured interview questions were designed to be open ended to give a wider scope of information collected from respondents. However, also the 12 interview questions were structured with focus on who the interviewees were and what kind of information is expected from them. The 10 interviewees from

DAWASA, DAWASCO, MNISTRY of WATER and Presidential Sector Reform Commission were the people for all information regarding the whole of the water services in the country. In particular, the adaptation, procedure, implementation and effects of private water services, conditions of the World Bank loans and their effects from DAWASA experience and other possible sources for funding water supply projects.

The reason to interview senior officers is that, they are and were part and decision makers during the privatisation takeover and also it was the only way of getting them involved. Traditionally senior officers are not very interested on filling of questionnaires (writing) so interviews were the better strategy. Interviews were carried the day afterwards the notes and recorded information were compared for verification before returning to interviewees for approval and verification.

7.9.1 The questionnaire structure and content

Questionnaire is a set of questions set or asked by an interviewer who records the answers for his/her specific use. The structure and composition of questionnaires for this study was developed to fulfil the need of collecting maximum information as required for research objectives. The development of a survey questionnaire for this study was based on three major factors including aim and study objective, type of information required for the study and easiest way of collecting quality data. The contents were adopted from the model framework developed for field test (see chapter 6 section 6.8.7). Greco [261] argued that, before the questions can be designed it is necessary to have a clear idea of what is being investigated, when the domain is clearly defined and then the researcher may proceed to formulate the questions. However, domain usually defines the information to be gathered and their relevant sources.

i. Questionnaires structure

McNamara [263] saying that, in collecting data for an study 'questions are developed to find out what people know, feel and think' Therefore, designing of questions for data collection can be structured into two different types including open end and closed questions. The differences between the two are, in closed type the questions are designed with sets of alternative choices of answers from which the respondent can choose from among of the given answers. In open ended the questions are designed to give no options answers to respondent, in this case the respondents provides their own answers in their own words. This research adopted both closed and structured open ended type questions with a greater

focus on source and type of data to be collected and the area of contribution of the respondents' free ideas.

Kumar [264] argues that, 'It is important that questions are clear understandable, also the layout of a questionnaire should be such that it is easy read and present to the eye and the sequence of the questions should be easy to follow. This situation obliged the researcher to translate the questions from English to local national language (Swahili). This was the easiest and faster way of communication.

Therefore, from question number 1 to number 9 of the DAWASA employee's questionnaire form all questions were multiple choice closed questions and the last question no.10 was open end question with no limit on contribution. However, the questionnaire form for water users were also dominated with 16 closed multiple choice questions with only one last question (no.17) open ended. In whole structure each question was designed with very simple clear sentences, while the three optional answers were given to every closed question. Respondents were restricted to select only one the most appropriate answer out of the three given answers.

Fraenkel [235] adds that, for every question that needs answering on the basis of survey data, we have to ask ourselves whether or not an examination of some sort will be involved, and whether or not the comparison will be possible from the data planning to be collected. The comparison is to ensure that the sample groups exist on the same basis so that they can be validly compared.

However, according to Bryman [173] research questions must have clear social scientific angle and if research questions are not specified clearly, there is greater risk that, the research will be unfocused, unclear of what research is about and what is data collection for. Therefore, questions were designed clearly to give back the real and meaningful information necessary for this research (see the questionnaire in appendix M in the CD). However, the information collected was to cover periods before, during and after privatisation in Tanzania. The collected information were combined and scrutinised for analysis and concept adaptation.

7.9.2 Data Analysis and the Adopted Concepts

Data analysis for this research was on accordance to variables which originated from local Tanzania data and the analysis was carried carefully and effectively.

Dunsmuir [146] states the 'analysis is the process of organising information that you have collected'. Data analysis is the act of transforming data with aim of extracting useful information with aim of coming up with conclusion.

Breakwell [163] argues that, 'it is not surprising that data analysis has number of very different ways of proceeding methodology'. Teahurst [161] comments that, data analysis may be simple and straight forward and may follow fairly logically from the collection technique to be used. However the analysis of data may be complex and thought needs to be given to the time and the skill which are required to undertake the analysis. More consideration should be given to the format of collection of data two (2). The collected quantitative and qualitative data analysis procedure potentially allows the researcher to develop the theory from the data. Therefore, information from primary data sources through interviews and questionnaires covered in a greater part of this research, and mainly were in the text form. Therefore, the transcript content analysis (TCA) method was applied. Secondary data were also collected in text composition form and this factor of the collected data being text composition suggested the adoption of qualitative analysis method, while SPSS method was adopted for analysing some quantitative data collected through interviews and secondary data.

i. Analysis of data from interviews

The information collected through interviews from 3 DAWASA and 4 DAWASCO senior management officers, 3 directors from ministry of water and one officer from PSRC. The information were gathered and analysed to represent the group idea. The contribution from this group has special importance in this research; it gives the real picture of water management in the country which helps to understand the system and its weaknesses from decision makers, with objective of developing the appropriate and sustainable solution for Tanzania water problems. The researcher adopted the TCAM for interview data analysis. The information were collected fairly, with open mind and without biasness. Then reviewed critically, the information covered from areas including process and adaptation of private water services, project implementation, role and duties of each organisation in water services sector, conditions of loans and contracts, services performance, targets against performance were gathered for scrutiny. The systematic analysis was carried as follows.

Process of analysis started immediately after the interviews. Whereby, the answers during the interviews were directly compared with the information captured on tape recorder. It was a primary verification, to ensure the clarity, quality and control of data from each of the groups. The concept captured from each group was adopted as contribution towards development of sustainable solutions for water problems in Tanzania.

The information from each group were scrutinised the most sensitive statements were transcribed separately. From this information on each group the indicated most sensitive statements was transcribed separately. The statements with similar meaning were combined to form few paragraphs with common meaning. The substantive statements were sorted from each group and categories according to the similarities. After comparison, the statements with similar category were combined to form a group of similar meaning. To ensure no specific message left, in-depth checking for all information of each group was carried. And finally the analysed messages with similar presentation were adopted to form group substantive statement to represent the individual group message. The interpretation was done in each group and this was carried as an official meaning of each group. Concepts from each group were adopted for scrutiny as a contribution for development of appropriate solution for water management in Tanzania.

7.9.3 Analysis of quantitative data (questionnaires)

The structured open ended questions were developed with the target of maximising information on water problems and the challenges. Total of 140 questionnaires were distributed and 136 were completed and collected including 50 from water customers, 46 from DAWASCO employees and 40 from DAWASA employees. The information collected through questionnaire was interpreted in text form and content analysis method was adopted for analysis. The data were first converted and presented in graphs and table format. The information those were in form of numbers (numerical), for example amount of water production per month, amount of revenue collection per month and expenditures per month were developed in a spread sheets and with help of SPSS different behaviours were analysed and interpreted. For example, the comparison on how much funds was collected during the three different periods (before, during and after privatisation). Concepts from quantitative and quantitative methods of data analysis were triangulated (see diagram no.7.5) and adopted for developing the appropriate solution for Tanzania water management problems. The primary and secondary data were critically analysed through both qualitative and quantitative methods and combined concepts were adopted to develop the conclusion of the study as follows.

Each of the categorised groups (numerical and textual data) was analysed separately according to the nature of the data under the following major steps

- i. Firstly, all numerical data were clearly developed in spread sheet

ii. Secondary, using SPSS different characters were developed in form of table and graphs

iii. To get the meaning the developed characters were interpreted into text format and the concepts were adopted

For, the qualitative data as detailed in section 7.9.2 that, hence the collected information were in text format, therefore the researcher adopted method for analysis was Transcript Content Analysis (TCAM) as easy analysing the data in for of text (qualitative data).

7.9.4 Triangulation in Data collection and analysis

The concepts adopted from the analysis of questionnaires and interview with help of literature knowledge were evaluated for comparison to fit the research objectives with focus on developing the appropriate solution for water problems in Tanzania.

Fienberg [147] acknowledges that pooling data on the same topic from several sources or examining several studies simultaneously, can be an effective vehicle for better understanding of the topic, through technical problems can be severe.

Laws [36] argued that, In application of qualitative and quantitative methods, 'qualitative research aims to collect facts and figures using the methods like questionnaires or formal interview (social survey) while quantitative aims to gain more in depth understanding of a situation by involving informal interviews in participant observation or analysis of personal diaries' Therefore, multi-methods approach adopted during the primary data collection and after triangulation was ensuring in-depth and wide coverage of available information and as well to help counterchecking the solidity of the provided data. How data were collected, gathered, analysed and combined for concepts adaptation is clearly discussed in sections 7.8. Therefore the whole process of triangulation in data collection can be summarised and presented as shown in figure 7.1 below

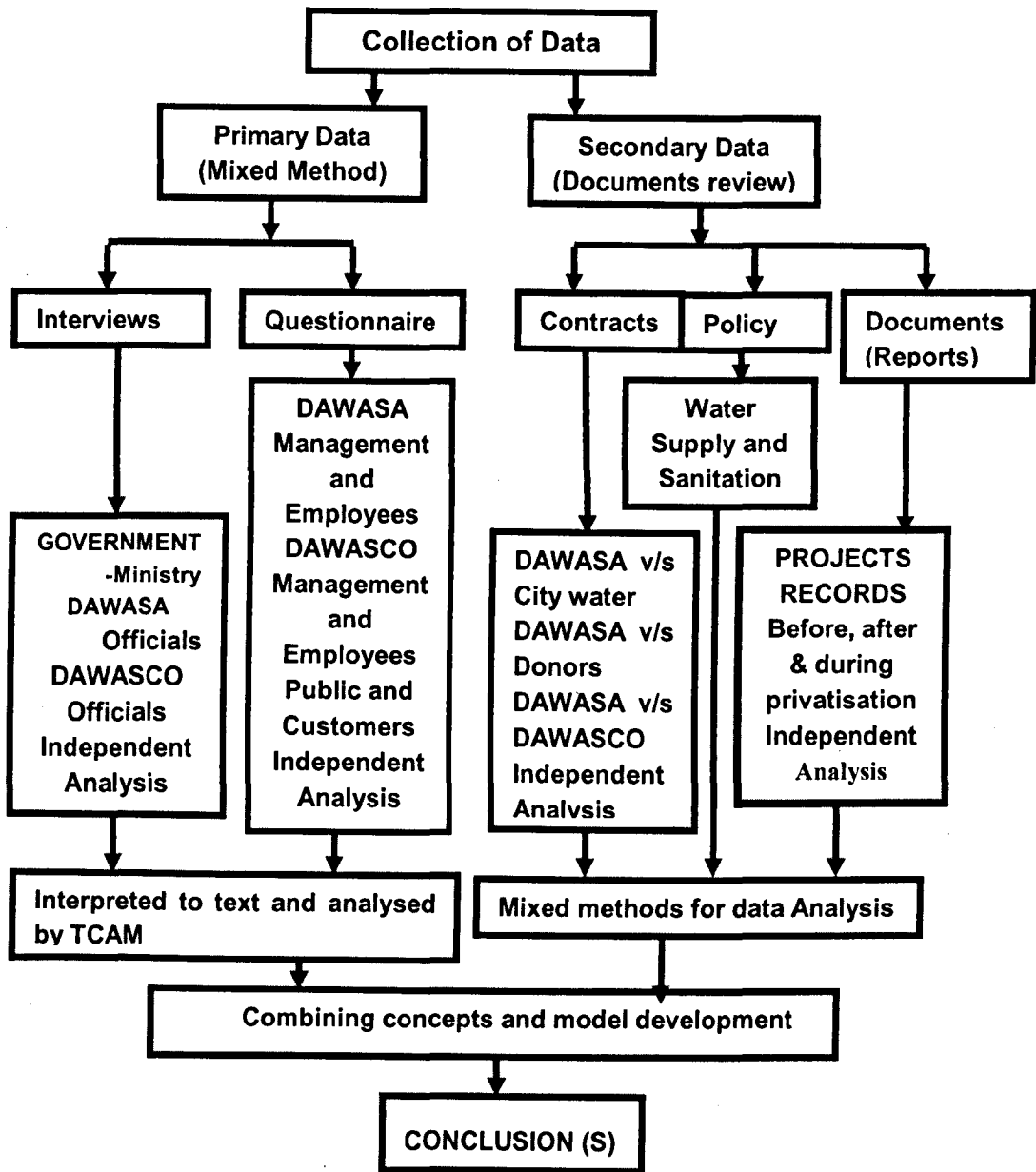


Figure 7.1 Triangulation methods data Collection and Analysis

7.9.5 The adaptation Concepts and Model development.

The Ideal model for this research was developed from the concepts adopted from experience based on literature review and the field information. As discussed in chapter 6 section 6.8.6 that, different water services experiences from Sub-Saharan African countries including Uganda, Kenya, Ghana, Senegal, Guinea, Gambia, Zambia, Somali and Cote d' Ivoire were critically discussed and analysed (literature contribution). And from the discussion the concept were gathered to form

model frame work (see section 6.8.9). In section 7.9.1 of this chapter indicated that, the contents of the questionnaires and interviews were adopted from this developed model frame work. Therefore, the questionnaire survey and interviews conducted in the field Tanzania were transporting the adopted experience from literature knowledge to be tested in the field. Therefore, from field results the concepts were developed and with additional literature knowledge the Ideal model for water management in Tanzania was established.

7.9.6 Model Development procedure

The executed procedure for developing the ideal water services model for Tanzania composed of three different stages including development, field work and the model development stage. These stages were structured to fulfil the objectives of the research and that the procedure will ensure quality and appropriateness of the solution. Each stage was structured with specific duties to perform of which each stage in the structure depends on another (see figure 7.2).

As discussed in the research structure at section 7.3.1 that, development stage is foundation of the research and therefore it guides whole implementation and procedure of the research. The task of literature review is main duty of this stage, which necessary for establishing research plan, the research problem, followed by aim and objectives, methodology and the developing frame work model and questionnaire for field test. The strategy was established and information from various sources including literatures, website, magazine and journals were gathered and concepts were developed and adopted to build model for field work. And from model frame work concept were adopted to develop questionnaires (see section 7.9.1) that taken to the field test.

The tasks implemented in the field work stage were data collection, analysis, verification and validation. Data were strategic collected with help of other tools including tape recorder, note pads and camera during validation period. Various sources including water customers, DAWASA and DAWASCO employees and government officers were involved. Using questionnaire and interviews the task was carried and the collected data were analysed (by using TCAM and SPSS) to develop POCO.

According to the structure of research, through interview method validation was carried in seven regional water authorities including Iringa, Mbeya, Mwanza, Arusha, Tanga, Morogoro and Moshi. Various contributions were collected and analysed.

The last stage designed to document the whole research process, development of abstract, acknowledgement, conclusion and recommendation for future researches, the objective is to come up with a quality thesis. Therefore systematically and stage by stage with good floor of material contents the thesis was detailed documented to form a volume of 300 pages.

The adopted research procedure with three major component theoretical development, field work and development and model building can also be presented in form of diagram as shown below see figure 7.2

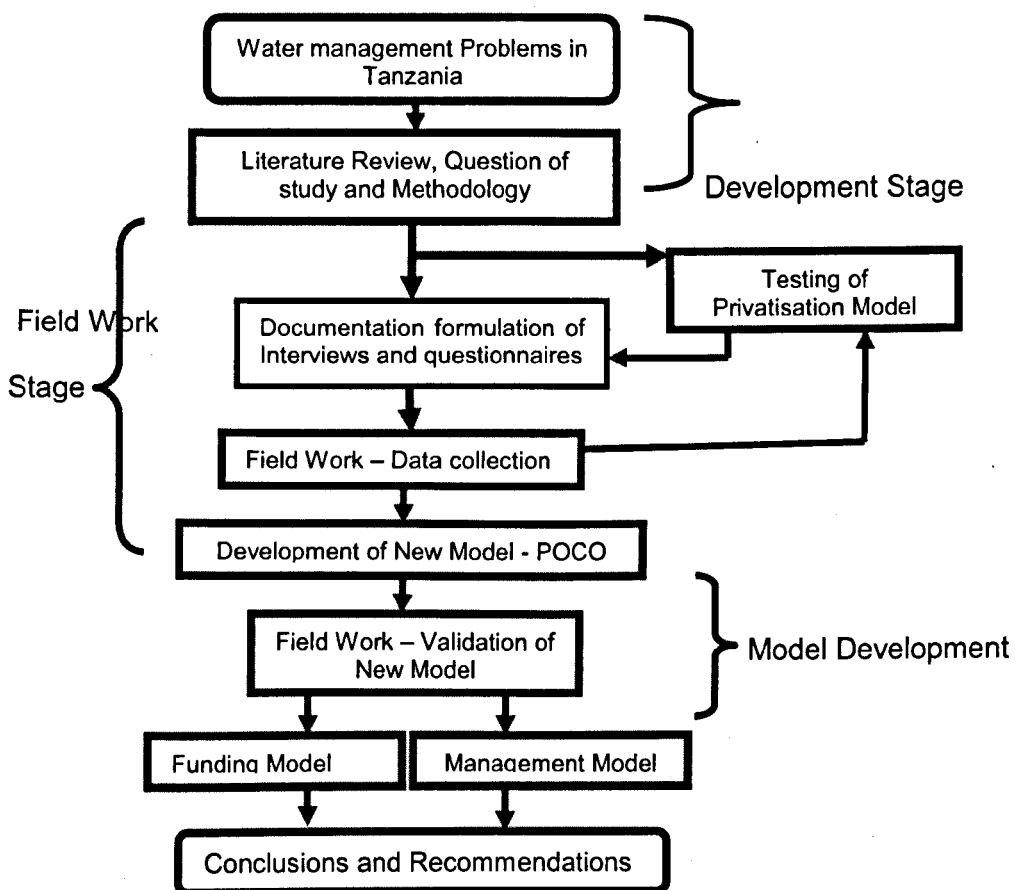


Figure 7.2: Adopted Research Approach

7.9.1 Summary

Methodology of this study has been structured to guide the whole procedure of research implementation aiming to ensure the objectives have been reached. Knowledge and guidance for selecting the appropriate research method for this study purely is guided by literature knowledge. The process involves challenges and not easy task due to its complicity in considering the objectives of the study. As

discussed in section 7.7 of this chapter that, the complicity of the research question and the set objectives forced the implementation process to adopt a combination of methods (multiple stage strategies). The method has facilitated with successful results the adoption of questionnaires and interviews in the field Tanzania. Only one approach of qualitative data (questionnaire) collection would have not been easier for Tanzania because traditionally most of the officers do not like much paper work, therefore the use of questionnaires alone could have limited the percentage of responses. On other side organising interviews for all employees being the only source of information could have been impossible due to time limitation for feed work. Therefore, we can say that application of mixed method was necessary not only for the purpose of quality but for situation like Tanzania data collection would not be possible without application of mixed method. Furthermore, the initial verification of corrected data was carried in the field through comparison of the same information collected by different tools; however also similar questions were given to big number of despondences checking with comparison was adopted as one of verification tool. Validation of the developed solution was carried through interview in different local selected areas, where the model is expected to be applied however, the comments and challenges were adopted for quality assurance and model strengthening.

CHAPTER EIGHT: FIELD RESULTS AND MODEL DEVELOPMENT

8.1 Introduction

This chapter presents the empirical findings, from the field work and other experiences within the Sub-Sahara African countries. Systematic data analysis and detailed procedure for developing the (solution - POCO) new model for water services in Tanzania has been discussed.

8.1.1 The purpose and content reflect to this chapter

According to the objective of the study and the structure of this thesis (see chapter 1 section 1.6.8, this chapter is structured to evidence the origin, source and the detailed procedure used to develop the research solution for the concluded water services problems (capital funds and management model) in Tanzania. It is a stage last for development the answer for the research question. Chapter six (6) has evaluated and concluded the major problems on water services in Tanzania and other covered sub-Sahara developing countries developed previously during the discussions in chapters 2, 3, 4 and 5. In chapter 3 section 3.9.3 was concluded that, realistic answer for the research question should able to solve the two crucial and fundamental problems including the ***appropriate management model and availability of sustainable, unconditional capital funds for water development.*** This chapter was developed to cover systematic analysis of the field data from each sampled area. The concepts adopted from field data with knowledge of guidance form literatures made possible formulation of this research solution.

The field work approach has contributed good knowledge of local ideas which improved the value of model in strength and as well in local acceptability. This would have been not possible if the adoption of concept from field data couldn't have taken in consideration. The process, the developed contents and the adopted concepts to formulate the model has clearly indicated where the research solution is originating. This has indicating that, the developed research solution has greater contribution of local ideas, the place where the problem is. The diagram no. 8.1 below shows the flow of the process for model development from the analysis of field data, concepts from previous discussions, model development, testing and the solution POCO.

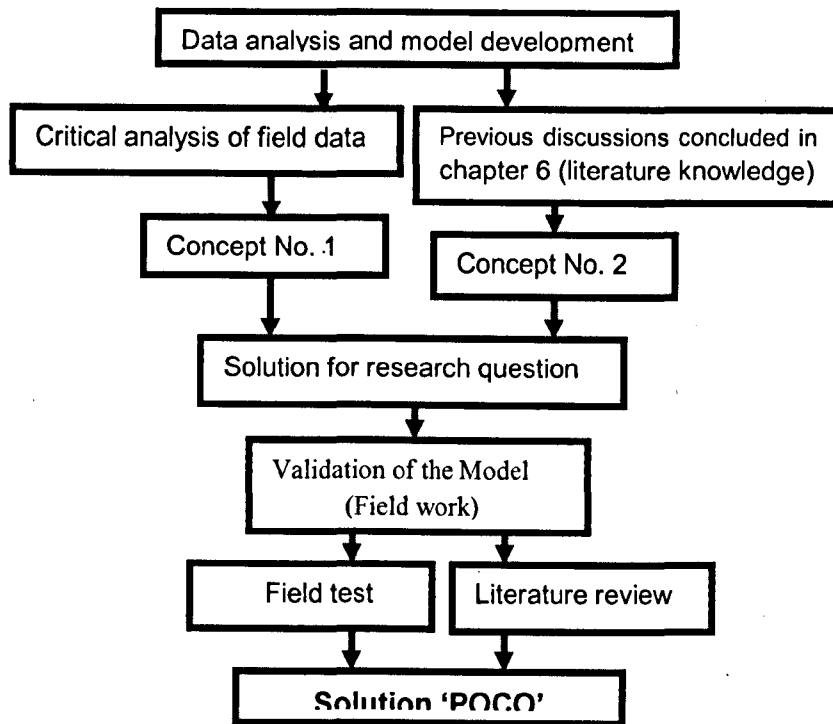


Diagram no.8.1 main inputs for POCO development

8.2 Section 1: Systematic analysis to each sample group

8.2.1 Detail process of primary data analysis

Sources for data collection, method for analysis and the adopted procedure for collection and analysis have been clearly discussed in previous chapter (see chapter 7 section 7.7.6 and in table no. 7.1). Therefore, the analysis is as follows.

8.2.2 DAWASCO Employees

The information gathered from 50 DAWASCO employees, regarding water privatisation experiences. The answer was 45 employees out of 50 are not in favour with private water services because, they note that private water management brought in different treatment among the employees, (while classes /categorisation and grouping the under different classes for treatment - in salaries, benefits and even in working coordination among them were increasing). Job security was not present due to introduction of new structure of working rules with more focus on maximisation profit. Privatisation brought in a gap between low class employees and management. The low paid employees remained inferior and less

confident with feeling that, the new system have neglected them and they were value less, this situation has greater effect in relation to employee's performance (demoralised). It is discourages working performance and also may be adopted as one of the evidence that led private water services to be not accepted.

i. The process of DAWASA privatisation

41 respondents out of 50 collected forms indicate that, from preparation, implementation process up to termination of privatisation was confidentially planned, supervised and implemented by the government. Even the ending of privatisation was just officially announced by government and, employees were not involved in any process. This indicates that, Ideas and opinions from employees were not included in the whole process of DAWASA privatisation, they were taken by surprised without knowledge of change, without knowing what next, this might have caused unacceptability of privatisation.

ii. Expectation of private management practice in water services

Views from 46 responses indicated that, employees expectation were good working environment (modern working tools and equipment's), attractive salaries and bonuses, open chances for skills development (training), recognition and award for good performance. There concluded that very few of these things were practiced and almost all were not in place. This shows that, employees were not enough motivated and lack of motivation in provision of services may reflect to poor performance.

iii. Opinion for future management for DAWASA

65 questionnaires were collected from DAWASA and DAWASCO employees. The summary presented was that, water services in Dar-es-salaam should be kept under local citizen management. It should be structured according to the actual local needs. Any foreign structure or model of management will be difficult to be adopted as it was not developed or oriented with local traditions and culture. Therefore the interpretation is private management of water services is a foreign developed water management style. This suggests that, the appropriate and practical water management style for Tanzania should be developed in the country based on local environment needs and managed by local people

iv. Dividing operational area into small size operating sub zones

60 respondents out of 71 distributed forms collected from DAWASA/DAWASCO employees indicated that, the DAWASA operation area is too big. The idea of dividing water services area into sub branches is appropriate and will improve water services. It is closer to customers. Customer's information's and water services behaviour can be easily monitored in a small area. Revenue collection and leakage control will be more effective under branch management. A more effective DAWASA organisation structure should have sizeable small water operational branches.

v. Was DAWASA privatisation successful?

The 62 DAWASA and DAWASCO employees answered that DAWASA privatisation was not successful for different reasons including. 39 employees' referred to the government declaration that, water services are still poor. The government has also declared that private operator city water services have failed.

15 employees states, privatisation was not successful because there were not treated well. 60 workers indicated that, were taken to privatisation by surprise (there were no information; everything was handled confidentially, not well prepared for change). Seven employees expressed that, the new roles introduced by private operator were not accepted by employees and this caused motivation drop down and poor relationships. From these factors, the message here is privatisation was not successful because, employees were not prepared for adopting the change, and the introduction of new rules was not accepted by employees. These altogether were the causes of unacceptability which led to privatisation failure.

vi. The views on government decision of terminating the private operator's contract

66 DAWASA and DAWASCO employees supported the government decision of terminating DAWASA City Water lease contract for City water services for not performing as agreed in the contract.

The failure of City Water discouraged privatisation in the country. In comparison the current system of water services under DAWASCO seems to be supported by the majority of DAWASCO employees. The currently organising structure was locally established as a quick substitute to cover the gap left by the private operator (DAWASCO was temporary solution for a government to fill the gap of city water services). However, 12 employees' note that, communication

among workers has been now improved, because all workers are treated equally and now workers are friendlier than before (team work). Majority supported the termination of private operator and now under temporary structure of operation (DAWASCO) employees indicated they satisfaction. The message here is employees there are in favour with local developed model, and local management team.

vi. The assessment of the cause of DAWASA privatisation failure?

DAWASA and DAWASCO (68) employees mentioned that, lack of participation, poor cooperation between management team and common employees, lack of transparency, lack of motivation for good performance and the private operator having poor experience in field of privatisation or limited knowledge of the operating area were the mains causes of the failure. Meaning that, employees were not involved in process of DAWASA privatisation (participation). the government handled it confidentially (lack of transparency). However, the government was forced to go for private water services without having experience in the area and caused poor preparation of the whole privatisation process including neglecting the employee's participation. Private operator had poor experience of the area (culture, traditional of local people) introducing new rules in this situation might have caused a morally conflict.

Workers adds that, private operator concentrated highly in empowerment of new technology to meet the designed private operator's targets (that has accelerated the costs of operations) which seem to be different from DAWASA privatisation objectives (Conflict of interest). Private operator interest was on higher profit making (priority for those who can pay fast), while the government interest was services first and best services to all. Therefore from employee point of view the causes of failure were lack of transparency on the whole privatisation process, lack of participation, poor cooperation and low experience of private operator on local culture and traditional.

vii. Compare the three different style of water management (public water services, private under city water and current DAWASCO?)

DAWASCO (46) employees commented that, privatisation made services worse, increasing of water problems and water price rise. Employees indicated that, the services that were provided under public management before privatisation was far better than the services provided by private operator, water rationing was less and charges were low.

Employees indicated the current DAWASCO water management style, that current water services are much better than during the period of the private operator. The improved areas are control of water leakages, workers motivations and incentives and general management relationship to common employees.

Table 8.2 presenting the summary of comparison in different areas according to the information collected in the field from 70 DAWASA and DAWASCO employees. The purpose of comparison is to identify the weaknesses and success in each period. The concepts will adopted for developing the most efficient and acceptable management style suitable for Tanzania needs. The comparison based on assessment of various areas of performance as captured from the questionnaires categorised into three different periods including DAWASA period (before privatisation), City water (privatisation period) and DAWASCO period (after privatisation). Therefore the table of comparison structure was limited to measure availability and effectiveness of drivers of performance including motivation to employees, general working atmosphere, availability of tools and equipment and salaries and incentives. In chapter 2 section 2.6.4 indicated that, termination of the DAWASA City water lease contract was caused by operator's poor performance, therefore the indicators were developed to find out what was the cause of the performance failure? The results will be adopted to improve the solution model.

Generally all the given factors (motivation to employees, general working atmosphere, availability of tools and equipment and salaries and incentives) are stimulant or motivation to accelerate the work performance. Therefore availability of these factors in working place will make the performance successful. Each factor has specific role to drive individual performance. The better the performance, the better on productivity which gives sufficient water to all and also motivation for willingness to pay. Comparison in all mentioned areas will give a good picture of performance necessary for further step of model development. The summary of comparison presented as follows (Table 8.1 below)

Table 8.1: Comparison of working environment

DESCRIPTION OF ITEMS	DAWASA PERIOD	CITY WATER PERIOD	DAWASCO PERIOD
Team work	Good team work	No team work	Moderate
Type of management	Good cooperative management	New management with new rules	Little Coordination
Motivation to employees	Highly motivated	Low motivation	Zero motivation
Working condition	Good atmosphere	Serious In everything	Not bad working atmosphere
Tools and Equipment	Very old	Modern equipment's period	New working tools and equipment
Salaries and incentive	Low salaries with motivation	Government scale salaries without incentives	Government salaries without incentives

8.2.3 Summary from the table no.8.1

From the information available in the table the following things can be concluded

i. The DAWASA and DAWASCO employees more happy and good working condition during the period before privatisation although salaries were low and tools and equipment were few and old, they were highly motivated because of good cooperation with management team

ii. The period during privatisation (City water services) (DAWASA and DAWASCO) employees were less motivated because of little coordination with management team due to introduction of new management rules and less incentives with government scale salaries, however new and modern working tools were available

iii. The current period under DAWASCO the employees indicated that, the cooperation between management team and employees has started to build up, new working tools and equipments are available, although salaries are still in government scale without any incentives

Does these three different situations have any effect in performance? the answer is YES; The comparison in performance discussion in chapter 2 section 2.6.1 that, evaluated the annual performance within these three period indicates that, the performance during the period before privatisation was higher and better than privatisation period (City water services) although after privatisation period (DAWASCO) the performance has raised up again. The comparison in

performance has been summarised under one major indicator **revenue collection** and that during the period before privatisation the revenue collection was Tsh. 14,087 million during the privatisation period dropped to Tsh,12,903 million and after privatisation period raised up again to Tsh. 17,776 million (see table no. 2.2). Considering that, tariffs were reviewed just after privatisation started. Therefore, good coordination, team work and transparency have greater effect is performance. (Motivation is the factor).

8.2.3 Summary on DAWASA and DAWASCO employee's concepts

The following summarised are the key findings

i. The preparation for change from public management to private services (from DAWASA to City water Services) was planned and executed by government of Tanzania confidentially. Employees were not involved in any part of process which resulted in the employees to having very little knowledge on the objectives and the whole process of change to privatisation.

During the privatisation process new working rules were introduced by the private operator. This abruptly change resulted in discouragement of the employees work performance. This may be one of the major causes of privatisation failure in the country. This can be summarized and presented in diagram as shown below see figure no. 8.2

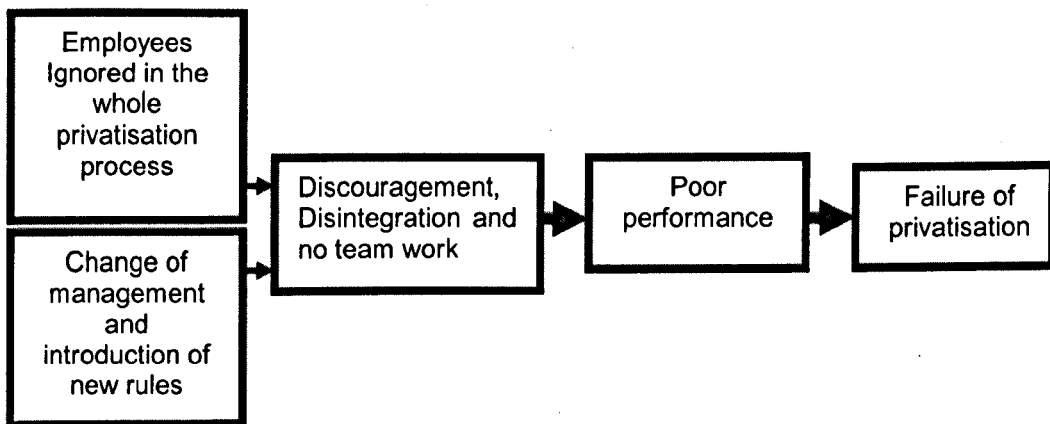


Figure 8.2: Major causes of privatisation failure.

During the process of DAWASA privatisation, the government overlooked equal participation of DAWASCO and DAWASA workers. They were not given the opportunity of contribution and participation in the whole process of privatisation. This mistake may be one of reasons why the DAWASA privatisation couldn't work. The private operator was so fast to introduce new rules which were not accepted by

employees. This caused motivation drop down and poor relationship with employer. The research suggests that, this approach to privatisation would not work.

ii. The change of management organisation structure during the private water services and the introduction of new rules were some of the major factors, for failure employment security to be not reliable during the private services period. Employees had feeling that new rules were neglecting them and they thought that the rules were introduced make them redundant. .

iii. The operational area for DAWASA services should be divided into small reasonable sub branches this will ensure efficiency in services by being so closer to customers. This will facilitate close follow up and quick attempt of customer problems, good management of water distribution network especial on leakage repair and control.

8.2.4 Results from Customer Survey

The information targeted from DAWASCO water customers was to enable to the provision of water services in the three (Public, private and current DAWASCO) different periods to be evaluated. This assessment was needed as guidance to practical solution for existing Tanzania water management problems. Comparison on quality of water services provided during these three periods is challenging because there are some common factors (similarities) and as well differences, whereby the concepts are developed from both similarities and differences. Customer's information is feedback on the actual situation in the field. This research considered the information from DAWASCO water customers to have a higher value. It is important tool for screening the provision of water services in those three different periods. The quality information from water users will encourage and accelerate the development of a solution for the users themselves and government. Therefore the information from 46 despondences which is 92% of the target was collected for analysis as follows.

i. Questions; As Customer, did you knew that, DAWASA is going to be privatised? Do you support privatisation?

Water customers (45) agreed that, privatisation of DAWASA was known to them before the implementation. Their also accepted that them being customers were not involved in any part of privatisation process, because the government was handling it confidentially. The concept here is on water users' position of the whole process of DAWASA privatisation. Changes (public to private) not being

transparency to water users made them feel isolated, not recognised this may have been cause of unacceptability of private water services to customers.

This means water users went to private water services without awareness or by push. Unknowingly taking water consumers from public water service to private system may cause resistance to which revenue collections may drop down. Resistance and unacceptability may all account to privatisation failure. Therefore there is a need for finding an appropriate solution which is acceptable, practical and clear to all. Regarding on privatisation support or not customers were divided, 24 costumers were against privatisation because of worries on high water charges, and 23 water users were in support for private water services because of expecting better water services.

ii. Opinion, was DAWASA privatisation Successful?

Water users (41) commented that, water services under private operator was not successful, increase of water shortage and higher water charges were the many reasons. Customers expected that, private water services will improve the water flow, quality of water will be higher, a reliable billing system and fair water charges. All these didn't work out. Water services under the private operator were more difficult than before. According to this analysis the privatisation was not successful and there were better without privatisation. This is a challenge that an appropriate water management style is needed in the country for better water services.

iii. Expectation from best water services provider?

The summary of their answers were priorities, starting from the most important as follows.

1. Receiving clean and safe water all the time
2. Receiving the required amount of water with good pressure all the time
3. Reasonable water charges (fair water charges)
4. Water for domestic use and extra for other commercial purpose
5. Good customer care

Focusing on the customer's analysis indicated there should be appropriate services to cover the customer expectations

iv. Importance of services performance monitoring in water sector?

Water consumers (33) indicated that, performance monitoring is a very important factor ensures the quality and progress of the project implementation. And it should be a part in any good management model.

In analysing private water services customers indicated that, the private operator City water services and as well during the public water services. Monitoring of work performance was not serious issue. That's why water leakage were main, customer water bills were not good and it was a permanent problem, records were not kept. In this discussion customers indicated that performance monitory is a driver for better services in water industry and therefore it should be available in any good structure of water management.

v. The Questions. On opinion regarding comparison of services provided during privatisation period, before and after

The analysis (40) customers' note that, water supply services provided by private operator was not as good as expected; It was poorer service than DAWASA and the current DAWASCO services. People couldn't get enough water and water rationing increased. Water supplied was always with a low pressure, frequently interrupted either by power cuts or burst pipes. Water charges were rising up concurrently. The other 6 customers admitted that, currently water supply services under DAWASCO management are more stable and better than during the period of privatisation. There are still some problems which existing serious including water shortages and in a greater part of Dar-es-salaam. Water is supplied by rationing with low pressure and interruption of services due to power cuts and pipe repairs still exist. There are some improvements than during the City Water period. The analysis from water customer's comments has evidenced unsatisfactory on water services provided by private operator, and therefore the concept adopted here is private water services under city water company didn't perform well to customer satisfaction in both areas including water services and as well water prices. And that the adaptation of private water services in the country caused unaffordable higher water prices.

vi. Question: How can you assess the government commitment in the whole issue of DAWASA privatisation?

48 customers attempted the question and all agreed that, although there were not consulted, the government was highly committed to implementation of DAWASA privatisation. Customers note that, it was the government obligation to maximum commitment for assuring the success of DAWASA privatisation. The government invested more commitment on the preparation stage but with lack of experience at implementation stage the commitment was not much. The question intended to capture the evidences of whether the commitment of government has an impact on changes especially on ensuring the successful introduction of new

water management style. Therefore the concept from this analysis is government commitment can accelerate the speed to change and as well play great role on acceptability and facilitation.

vi. Question: Cause for DAWASA privatisation failure?

The customer's 24 forms were analysed and indicated that the government taken it so fast without having enough experience of privatisation in the country. The importance of this question was to evaluate the reason and causes of the failure for the future improvement. Tanzania went for water privatisation without enough preparation. Water customers and as well DAWASA employees were not prepared for privatisation. However, the new experts (management team) from operator's side took over City water operations without having enough knowledge of local environment, culture and social behaviours of employees. The confusions from both sides made an unsuccessful privatisation. The process of change in water management services needs enough time for preparation and a good strategic approach. However also understanding of local environmental for practice will add value on the whole process of implementation and acceptability.

Vii. Question: Privatisation of water services has greater contribution in provision of quality and reliable services in this country?

The consumer's 28 forms were analysed and interpretation that, private water services in Tanzania has not achieved the objective of providing quality and reliable water services. From their experience private water services (City water services) created more difficulties in the country. Their insisted that, privatisation won't work here anymore. Their said, with reference from City Water Services experience we want no more privatisation, the situation before was far better than during privatisation period, the need is to improve the previous style of water services under local management. They believe that, local developed model under local management is more effective than any other way. Hence the local developed model will have contributed with some local ideas. Acceptability and applicability will be there and therefore, quality and reliable water services will be guaranteed.

viii. Question: Value for money in water services?

49 customers answered that, value for money in water services was not existed. Services provided were not reliable, because of absence in quality and quantity. However, the term 'value for money' at this situation presented the evaluation on economy, efficiency and effectiveness of services in the field.

The available small amount of water was not possible to serve all. Therefore the understanding of water value for money to customers is where the quality, quantity reliable and affordability are met; this concludes that, the true model for solving water problems in Tanzania should have to cover value for water according to the customer's definition.

ix. Question: How do you value the termination of DAWASA/ City water Company contract before the time?

The collected information from 46 customers out of all 50 completed the forms, were analysed to answer if the government did the right thing to terminate the contract because the private operator city water services. Actually this decision should have been taken earlier so water services destruction could be at minimum. This shows the termination of the contract was also supported by customers. The government had economic reasons for termination (government income was dropping down because of poor revenue collection by City water services. The lesson here is ideal water management style should accommodate the customer and as well government interest.

8.2.5 Summary of Customers Contribution

The analysis covered in this section has scrutinized the customer answers.

The analysis from customers will be adopted in development of the appropriate solution for water services in the country. The conclusion from customers can be as follows

i. During the privatisation of DAWASA customers were not involved or were not considered as important stakeholders. Understanding through participation makes it easy for acceptability while uniformed customers may cause resistance. This was one of the process failures noted from customers.

ii. DAWASCO water customer's opinions on accepting private water services were divided on the sense notes that, 24 customers were against of water privatisation with worrying that, private services is always costly and therefore focusing on that water supply services we will not be affordable to all. On other hand 23 water customers were happily supporting water privatisation with higher expectation that, water problems will be no more, availability of quality and quantity water with best customer care will be in place. However, when private operation was implemented the second group of customers those had high expectation of better services were more frustrated because they couldn't get enough water to meet there expectation, this forced all two groups of customers to unite under one

tone of rejecting private water services. Therefore DAWASCO customers rejected private water services because of its poor services.

iii. The lessons adopted in summary analysis on questions vi, vii, viii and ix guided the research to concluded that mitigation to future reliable and affordable water services in the country will only be possible through development of local water management style under professional committed leaders and privatisation will work no more. However, a good knowledge from the failure of private services should be adopted as challenge for coming up with better solution.

iv. According to the summary analysis customer's opinion on failure of private water services in Tanzania can be concluded that, the failure was due to under quality performance of city water services. However, the failure has left behind a good challenge of researching the appropriate water services management model acceptable for Tanzania needs.

8.2.6 Findings from the senior government and Parastatal Officers

The study had interviewed 10 decision maker officers from government offices. The interviews were structured to come up with information on the specific areas including policies and government involvement on water business. On the other side the interview questions were made to examine the government role and participation in water development, handling of private water management process, general management of water services, sources of funding water development projects, conditions of loans and its effects in the water sector. The analysis and adoption of concept was executed as follows

i. Question: What do you understand DAWASA privatisation?

A total of 4 DAWASCO and 3 DAWASA officers admitted that, they were not informed of anything on DAWASA privatisation. They insisted none of them was involved in the process. The process was executed confidentially by the government because the government was worrying and feared demonstrations and resistances from DAWASA employees and other people. This situation of senior officers being not aware on DAWASA privatisation indicates the communication gap between government and DAWASA officers. The barrier on flow of information may jeopardise efficiency in performance and may also create misunderstandings and break down of team work. The 3 ministry officers and 1 from PSRC indicted that DAWASA privatisation didn't come accidentally was strategically planned. The adoption was planned and strategically executed under three major steps of

implementation including policy amendments, legal steps and technical implementation steps. Also they admitted to be fully involved in DAWASA privatisation process. They knew and they participated in the whole process from preparation stage. The lesson here is the government executed DAWASA privatisation confidentially. All water services employees were not involved except few responsible officers from ministry of water and PSRC who executed the whole process of privatisation.

ii. Question; what was driving force for DAWASA privatisation?

The 3 water ministry, PSRC and 3 DAWASO officers indicated that, It was the urgent need of funds for repair and rehabilitation of the existing old water infrastructures that forced Tanzania to request a loan from the World Bank. The World Bank granted \$ 165 million loan with condition of privatising DAWASA. The privatisation of DAWASA was part of the World Bank loan's condition to the Government of Tanzania. The government aim of implementing this condition was earning a loan from the World Bank. The original objectives of the request was for capital funds to improve and develop sustainable water infrastructure for Dar-es-salaam water services

iii. Question b: Why Tanzania went for World Bank and no other financial institutions?

The answers analysed from all 10 officers was that, the government of Tanzania was forced to go for only a World Bank loan because no any other international institution was ready to assist the project. The World Bank indicated a willingness to help as the amount required for the project was very big so other financiers were hesitating to assist. The World Bank offer was grant inclusive and loan settlement period was comparatively longer than other financial institutions (15-20 years). The existing aged DAWASA infrastructure was discouraging new investors. The World Bank motivation of giving loan plus small% of grant convinced the government to accept the loan. Motivation to help should be widely examined, because it could have impact in total loan payback, especial with interest of 15% of the total loan amount. This indicates that, the World Bank initial sign of willingness to assist plus grant was a lobbying to make business,(the World Bank is operating as private business financial institution). The loan goes with 15% interest. Unless the conditions are favourable but loans from international institution should be discouraged. The challenge here is to find out the alternatives funding sources favourable to our needs.

iv. Question: What was the government commitment in the whole water privatisation issue?

The 3 ministries and PSRC officers answered that, the government was highly committed to privatising water services because it was believed that, this was the only solution for Tanzania water problems. Evidence shows that, the government installed the water policy Act. 2002 for DAWASA privatisation covers other various private activities including private security services, consultants, contractors and many others. In 1994 the Government of Tanzania signed a special agreement with United Kingdom to guarantee the safety and protection for all foreign investors called Investment Promotion and Protection Treaties (IPPT). The agreement objectives were ensuring safety and security for various private investors and extra offers of Tax relief to any new private business. These were the few examples of the government commitment on private operations in the country. The question was designed to understand how much the government commitment can contribute to changes when a new style of water management is adopted. The lesson here is government has greater position to influence changes once the commitment is invested, this fact should be considered during the development of any new model for water management.

v. Question: Why lease contract method was adopted for DAWASA privatisation?

The 4 government officers (PSRC, and Ministry) answered that, the DAWASA privatisation method (lease contract) was adopted from the analysis of the following factors: The Government was not ready to lose ownership of DAWASA. The Government of Tanzania desperately needed capital funds (for repair and rehabilitation for existing old aged infrastructures). PSRC officers add that, the nature of the service was very sensitive to the public with greater attraction in government political repetition. The government couldn't let it go. The service is for all people and therefore leaving such a sensitive issue on hands of private foreign contract alone is risk.

At the same time DAWASA assets (infrastructure) was very old and to not attractive for share selling to generate capital funds. Therefore the Government was to repair and rehabilitate first and capital for that was not available.

The information analysed from these interviews, concludes that, the government decision on which privatisation method to be adopted has been greatly influenced by political interests. The position of government was not to lose the DAWASA

ownership while at the same time, wanted DAWASA to be operated privately. The government wanted to have a strategic influence on the water sector because of its higher capital investment in water projects, and water touches all and has political sensitivity. On other side the government was looking for capital funds for rehabilitation of DAWASA infrastructure. These factors proving the possibility of political bias during the decision and process of privatisation, which may be the cause for adoption of lease contract method. The political decision of privatising DAWASA was not the government's origin idea. The government for political reasons was not ready to lose the ownership of DAWASA all what they wanted was capital funds for rehabilitation, however to secure DAWASA ownership and for loan qualification the government went for lease contract method.

vi. Question: How was the risks focused in DAWASA privatisation?

The 5 government officers answered that, all possible DAWASA privatisation risks and their avoidance has been taken care in DAWASA/City Water lease Contract. Has been covered in areas including equity contribution, Guarantee from parent company and Indemnity (water quality, water quantity and work performance per given time). Duties and responsibility of DAWASA and City water was clearly explained and punishment or penalties for not performing or underperformance are also stipulated clearly in the lease contract. Therefore all risks including performance risks caused by force majeure and many others were well covered in the contract. The direct concept to adopt here is focusing on possible risks and how protect is an idea to be adopted during development of any water management model.

vii. Question: What was the reason for termination of DAWASA / City Water contract?

The collective answers from 4 ministry senior officers, 1 from PSRC and 3 DAWASA were, the reasons for termination of DAWASA/City Water contract privatisation contract was due to material breach of contract,

- a. The private operator (City water) was not contributing its equity as agreed
- b. Performance guarantee of US dollars 8.5 million was not replaced
- c. Non-paying of rental fees
- d. Poor performance of works: due to Poor revenue collection, Poor water meter installation, Poor water leakage control. The termination for DAWASA/City Water lease contract was for those reasons. The City Water Services could not fulfil

contract obligations and therefore the government of Tanzania was forced to terminate the DAWASA City water Lease contract.

viii. Question: Do you think, was DAWASA privatisation successful?

The general answer from all three (3) senior officers and supported by 4 DAWASCO officers was, DAWASA privatisation was not successful due to the fact that objective set was not met. However the transfer of property was carried smoothly and successful but the actual implementation was not done accordingly. This indicates that, private water services under city water services was not successful

ix. Question: What are the lessons (experience) gained from the failure of DAWASA privatisation, which can possible adopted for future use ?

The collective answers from all seven officers were as follows

- a. Evaluation of bidders for privatisation tender should be more serious and critically to cover in wide the bidder's background, history of experiences of the bidders in the region and the tender should be more competitive to involve not less than three bidders. (not like it was for DAWASA tender); In case where the number of bidders is less than three the advert should be repeated to call for bidders.
- b. Independent regulator should be in place before the nomination of private operator (contractor), this will ensure good services control from very beginning.
- c. Critical inspection of proves and evidences to satisfy that bidders have enough capital, skills, professional members and good experience in the particular area.

The effects and implication of evaluating one bidder as happened to DAWASA privatisation tender may always lead to select incompetent and unqualified contractors, like what happen to nomination of City water Company. The approved contractor City Water couldn't afford paying contractor equity and had not ability of proper skill of managing to perform according to the contract. This facilitates poor image of the whole exercise. The ability and experience of the bidders should be critically evaluated to not allow coming up with weak and inexperienced contractors. However, also selection of incompetent contractor may leady to weak performance of duties. Therefore City water services may be was incompetent from very beginning and that resulted to contract poor performance with unnecessary cost impact for Tanzania due reorganisation and judicial process for termination.

ix. Question: What are the benefits of DAWASA privatisation?

According to eight public officers contributions the analysis indicated that, achievement of capital loan from the World Bank was one of the major benefits of DAWASA privatisation.

The private operator introduced new ideas of commercial focus in water management this was also noted benefit of privatisation. Private operator introduced new management rules which were good for security and discipline in any working place. Private operator brought in new tools, equipments and new skills of managing the equipments.

The example of benefit from new equipments and technology brought in by private operator was underground water system construction by using tube turner ring instead of excavating the whole bigger space which could have caused many inconveniences, long time and cost more. The concept here is, any change has its advantages and disadvantages and therefore any change should be acknowledge by analysing what has contributed to the community. Regardless the failure of DAWASA privatisation, but privatisation in the country has opened number of challenges including management change of culture, change of water managing style and focus of services in commercial aspect which brought in commercial sensitive in water services, Introduction of safety issues and techniques for good customer care. Whereby, the noted changes were adopted as challenging contribution towards realist solution for Tanzania water problems.

x. Question: What was the customer's reaction on privatisation?

This question was answered by all 4 DAWASCO senior offices that, within the project implementation period customers have different reactions. At the very beginning of the project most of the customers had higher expectations that with a private operator no more would exist. The majority supported and welcomed private water services. After period of time when customer realize that there is no service improvement as per there expectation, and instead water rates were rising rapidly. Those who supported private water services were disappointed and they turned to be the greater opposes of privatisation. The whole idea of the question was not only measure the customer's reaction on privatisation but also to measure private water service in terms of services and costs during the period. The question was structured to capture some input from customer's reactions and relation to private operator. This analysis of government officials indicating that water users are not in favour with private water services

xi. Question: What do you know about World Bank conditions for loan?

The answers from 3 ministry officers and 4 DAWASCO officers were that, the World Bank loan conditions were divided into three different parts. The first was loan qualification conditions in which DAWASA privatisation was obligatory. Second condition was Tanzania government contribution (Local contribution) of Tshs.750 million to cover counterpart contribution. A third condition was implementation procedures in which the World Bank procurement procedures, control and project supervision was to be followed. All procurement should follow the World Bank procedure and final decisions are made by the bank. The condition of adopting the World Bank experts, who are highly paid, was also from the loan. The conditions were designed to fulfil the commercial and business purposes of the bank.

The test on effects of the World Bank conditions in Tanzania from government official's information was indicated that, DAWASA privatisation was forced by the World Bank, under 'no privatisation no loan' condition. The Tanzania government was only looking for funds (loan) necessary for repair and rehabilitation of water infrastructures and not privatisation. The major effect of the World Bank loan was privatisation of DAWASA. The failure of privatisation has left behind number of different effects including chaos in employees system of wages, water leakages was above 40% of total water production, no funds left in operation account, big debts for electricity bills and quick restructuring of Dar-es-salaam water services to form DAWASCO as replacement for City water.

The lesson here is having no capital funds was a bottom cause of DAWASA privatisation, therefore two recommendations are adopted from this situation, Firstly the World Bank procedures for assistances (loans) should allow flexibility of its condition according to actual existing borrower local circumstances. Secondary the World Bank first considers building capacity of local contractors to prepare them to compete with international contractors if the condition is IBC. However, concept here is development of local capital funds from local sources is the only way to avoid such heavy unnecessary damaging World Bank conditions.

8.2.7 Summary From the interviews answers

The answers of the senior government and parastatal officers were analysed and summarised as follows.

i. The discussions indicated that, private water services are no longer trusted by DAWASA/DAWASCO employees (section 8.1.5vii), water customers and government officer in Tanzania. Government of Tanzania being not ready to lose the DAWASA ownership and the combined effects of bad experience left behind by

the failure of DAWASA privatisation. The privatisation is no longer accepted by anyone in the country. The ideal solution for water services in Tanzania should not be privatisation, because it will not be accepted and therefore it won't work.

ii. Tanzania adopted privatisation only as a step to qualify for the World Bank loan necessary for rehabilitation and repair of DAWASA water services system. To avoid to be forced or be free from foreign external conditions Tanzania should come up with its local capital funding method as a solution for water development capital funds. This would be an alternative from the World Bank loans with difficult conditions.

iii. The World Bank should be advised to be flexible on its conditions to borrowers, especially the effects of the loan conditions to developing country especially on the conditions that limits and obstruct government borrowers development for example condition of International Competitive Bidding that does not give chance to local contractors to win the tender due to poor capital, condition of providing sometimes less needed experts with higher salaries from the loaned amount. Therefore to come out of all these new solution for water capital funds should be developed from possible local sources in order to get out of unnecessary loans conditions which favours the donor's objectives.

iv. Evidences from analysis shows that, provision of water services under public management has been not successful due to diminishing of water and sewerage services in the country. This obliged the government go for the World Bank loan. These facts obliged the researcher to conclude that, the practical and compromising style for water supply and sewerage services in Tanzania should not be private or public water services, but good lessons from private and public services should be adopted in the solution.

v. Privatisation of water services has good contribution in terms of skills and technology development, which when evaluated properly can be adopted in any model for better water services.

vi. Adoption of private water services has been proved to be one the factors for loan qualification according to the World Bank rules. Therefore, privatisation can be used as tool for loan (capital investment) qualification or any other means of capital fund generation. This gives bad emerge of privatisation, because privatisation can still work better without ICB and other conditions.

vii. Approval for successful or failure of private water services should be measured by evaluating the services provided by the private operator in certain fixed period of time after privatisation this should be compared to the actual situation before privatisation against the objectives on agreement for privatisation. In this case the transfer of property from public to private hands is just one step of privatisation and in order to justify the full successful privatisation the evaluation should consider the objectives of the privatisation.

viii. From the discussion evidenced that, bid evaluation for selection of private contractor to provide best water services should be concluded from number of competitive and not only with competitor, one bidder evaluation system should not be used, and hence one (company) bid like what happened in DAWASA may result to favour the available contractor which may not necessarily be the competent.

ix. From analysis of government official's comments noted that, for social and political reasons the government was not ready to lose the DAWASA ownership, that's why government went for lease contract with City water services. The concept here is development of ideal water services solution should take in consideration this government interest.

8.3 Part 2: Concepts adopted from secondary data (Covered discussion)

According to the discussion covered in section 8.1 that, the solution for water problems in Tanzania should be formulated with concepts developed from primary data (field in Tanzania) where the problems are to be solved, and as well the concepts developed from other experiences (Sub-Sahara developing countries) as discussed in chapter 6 section 6.8. The key concepts adopted from the literature and surveys are laid out in following sections.

8.3.1 Commercialisation of water services

The concept of commercialising water services was developed and adopted from analysis of commercial water services in Sub-Sahara African countries including Zambia, Somalia and Kenya as discussed in chapter 3, 5 and 6 (3.4, 5.4.3)

Commercialising water services was as one of the management style alternatives for sustainable and affordable water services. The adoption of commercial water services will make the country out of loans. Produced water is sold at a calculated price to cover the actual operation costs and is affordable to

focus on development. The commercialisation of Nyeri water services covered in chapter 3 also evidenced that, under commercialisation reliable, affordable and quality water services can be achievable. As discussed in chapter 5 (5.6.5) private services has commercial in nature, but commercialisation can be adopted in public sector. Whereby, a public owned entity can be commercially operated. In this situation where government objectives is better water services to all, commercial water tariffs are designed with consideration of affordability to all.

8.3.2 Management by performance contract

The performance contract style of management is also a concept adopted from the discussion covered in chapter 6 and 7 during the comparison of different management styles in water services. This concept was initially developed from Uganda case study under services provided by NWSC as detailed in chapter 3 section 3.3.5 The idea of a contract performance was initially developed from the data collected in the field in Tanzania. In a contract performance management, periodic evaluation of work done against target is possible. This gives opportunity to review targets, process and assessment of project implementation plan. Individual performance can also be measure and evaluated for necessary action. On other way performance contract with clear set milestones pushes the individual or group moral of performance to reach the set target. In this case performance contract is motivation for efficiency. However, good performance contract should compose clear, realistic and measurable targets. In adoption to new model, the performance contract will be between government and services provider and internal periodic performance contract between the operator and employees.

8.3.3 Sources of funds for water development

The discussion covered in chapter 6 (6.8.2), concluded that, Depending on loans from international financial institutions as the only source of capital funds in water projects has forced most of Sub-Sahara developing countries to go for privatisation and other difficult conditions (ICB, foreign experts with higher wages and others) This has affected the objective of water services to all due to increase of water charges against poor economy situation in the region. In this situation the loan's with tough conditions does not allow real water development in the region. The source of capital for water development in Sub-Sahara African countries (Tanzania) can be developed from local sources. Capital funds can be generated from tariffs review method, local contribution and local or international loans with

soft conditions. Based on these facts the study focus is that, good management of small available capital funds from local sources is a sustainable platform towards real water services development. The use of regulatory authority in ensuring the fairness of water charges and transparency on tariff review will meet the affordability needs through the stakeholder participation. The tariffs review method is an appropriate way to start for capital fund generation.

8.3.4 Existence, Role and Function of Regulatory Authority

The discussion in chapter 5 (5.7) emphasized the position and functions of regulating author in water services that, in water services organisation structure regulating authority has to be in place. The power, role, existence and functions of the regulator should be clearly defined. The basic duties of the regulator is focused on providing assistance and facilitating other water sector bodies to perform. Water regulatory authority is a water tariffs controller and therefore its function is to stand for fairness between services provider and water user. This regulator position will benefit both services provider as well water users because of no overcharging for water users. Water tariffs will be based in actual production costs to balance the actual water costs (operations and maintenance) and as well future development (services improvement and expansion) if has been considered during the tariffs set.

Therefore, existence of regulatory authority in provision of water services is an opportunity for opening and facilitating transparency to allow direct discussion between water users and the services provider. Recommendations for tariff changes, advices and new plans can be easily accepted and flexibly implemented. In other hand regulatory authority is monitoring the quality of water and services, under the set standards therefore improvement on services and quality is guaranteed. This is what will be measure from customer satisfaction. However, facilitation of willingness to pay will be a key indicator for customer satisfaction and affordability

8.3.5 Structure and composition of the services provider.

The organisation structure and responsibilities of water services providers are covered in chapter 6. Has evidenced that, the sustainable organisation structure should have clear defined responsibilities, boundaries and coordination between and among the stakeholders. Structure composition should be systematically arranged with clear objectives of each department involved in the structure. The functions link between one section to another and one department to another should ensure the compatibility, strength and collaboration of the whole structure.

The structure should compose clear participation of all stakeholders (water users, operator, regulator, government and asset holding authority). Good structure composition has greater impact on services performance. For assurance of quality, quantity and affordability services regulatory authority provides close coordination among the stakeholders which has greater impact on WTP. The government position in the structure should also be clearly defined; the responsibilities and duties should be clearly articulated. The discussion also indicated that, for easy monitoring, good customer care, better managing of water network (maintenance and repair) and water leakage control the structure of operation, should allow division of the total services provided area into small reasonable operational branches.

8.3.6 Conclusions

The discussion covered in section 8.2.3 has concluded that, adaptation of new water services style (from public to private) needs preparation strategy and during the implementation participation of water users should be encouraged. Water users are the water bills payers and only from their payments can water services be sustainable. Seriously working with customer's opinions will enhance the provision of water services to all.

The private water services is not a solution to every country, the Tanzania experience of failure of City water services left people less trusting of any kind of private water services.

The discussion covered in sections 8.2 and 8.3 indicated where the research question is coming from. The concepts on structure and components for developing ideal solution for water services in Tanzania has been detailed in sections (8.3.1 to 8.3.5) and as well summarised in diagram no. 8.1 of this chapter. Therefore, the solution has been formulated from concepts developed in the field Tanzania and the adopted from other experiences.

However, the need and the guidance for developing an appropriate and sustainable solution for capital funding and good system of management was the first concept adopted from discussion and critical analysis on Tanzania water management system in chapter 2 and as well concluded in critical discussion on various Sub-Sahara African countries water management experiences covered in chapters 3, 5 and 6 of this thesis. In analysis the all mentioned chapters has evidenced that, poor water services in Sub-Sahara African countries and especially Tanzania is caused by lacking of capital funds for investing in water development projects. The only reliable major source of funding water projects is loans from the

International financial Institutions (the World Bank). They have tough conditions with interest on favour of donor. Following the analysis on advantages and disadvantages of the World Bank loans in chapter 4, the research indicated that, loans with such tough conditions are a burden to borrowing countries. The need to find alternative source for water projects was required. Having an appropriate source for funding for water projects is a half solution and therefore it cannot solve water problems without sustainable and appropriate structure of management style. This required an examination of the major methods of water management including public, private and commercialisation of water services as analysed in chapter 5. The conclusion was each method has its uniqueness but the environment of the application is the commending factor. The evidence from data analysis collected in Tanzania which is advocated what style of water management is appropriate for Tanzania water services. The solution for water problems in Tanzania is consideration of the local environment needs (acceptability, sustainability and affordability).

In chapter 6 and in section 8.3.1 discussed that, commercialisation in water services has an objectives of providing quality and quantity products with good services, the product that can compete in the market and be sold. The product is sold to cover the actual production cost and extra expenses. In this situation the operating mechanism (regulator) to control quality of services and water charges for the benefit of services provider and as well water users should be in place. This will ensure the affordability. However, the boundaries in role, functions and responsibilities of each department member in the sector should be set clearly to avoid interference and confusion during the implementation. Setting clear performance targets which are measurable, clear roles, clear functions and clear responsibilities is a motivation to accelerate work performance.

8.4 Part 3: Solution for water management in Tanzania

8.4.1 Background

This section is a product of the theoretical solution for the research problem. Thomas [144] argues that gathering solution of a study for advocacy on the face of it seems rather straight forward, but is very often messy and complex because it involves serious issues of legitimacy and power of relations, however, by only critically evaluating the data that support for a particular approach and data that alternative approaches can build up and gain support for the appropriate solution.

The section is about the discussion of an appropriate solution for water problems in Tanzania (Sub-Saharan African countries).

Conclusion from the discussion in chapter 3 (3.9.3) that, the water problems in Tanzania (Sub-Saharan African countries) are caused by two major problems including funds for capital development and sustainable water services management model. Therefore, the appropriate solution for this study has to solve the capital funds and sustainable water management problems. be developed to solve the concluded two major problems

The framework privatisation water services model developed in chapter 6 (6.8.1) structured with role and functions of all departments including government position, asset holding company, regulator, private operator and water users was adopted for field test in Tanzania. The field results were critically analysed and as shown in sections 8.2 and 8.3 that, new concepts were adopted, and with additional literature knowledge the ideal model POCO was developed. To fulfil the research needs (capital funds and management for water services), the solution POCO has developed with composition of two different parts including potential capital funds for services development and sustainable water services management style as follows

8.5 POCO

8.5.1 Definition; *Public Ownership Commercial Operation* (POCO) is a practical water management model developed locally to solve water services problems in Tanzania (developing countries)

8.5.2 Originality and Structure composition

The POCO structure composed of two major parts including ***organisation management structure*** and ***commercial sustainability*** of the model. The management part of the model is formulated to deal with various activities, roles and responsibilities performed by each organisation. The boundaries and activities performance measure is also clearly stipulated. However, the commercial part of the model is structured and to provide the financial capability of the model to cover its operational costs and capital necessary for sustainability and development.

The organisation management structure POCO clearly identifies the responsibilities, activities and boundaries of each component. The success of each component depends on another, starting from ministry of water and irrigation as the owner of the water entities to operator DAWASA. The structure boundaries of

POCO creates a division of management power with clear responsibility to each component and from government to DAWASA. This will enhance DAWASA performance and especially on accountability. The government role will remain as property owner, chief policy makers and overall system evaluator on services performance. The POCO structure of dividing total working area into zones with reasonable size of operating area will increase the quality of services operation by giving fast closer services to the customers. This will impact control and recording on water leakages. It will provide greater accountability. Furthermore, POCO structure of performance the ministry is again responsible to measure and access the performance of DAWASA operations periodically. However, recognition for good performance and various motivations adopted as the major ways for performance to improve

8.5.3 Part one: Ownership and management structure of POCO

The composition of management structure of POCO can be pictured and presented into three divided major groups. The groups are formulated according to nature of activities of each group. Policy issues, structure of organisation, management, and implementation strategy were the bases for categorising the functions of each individual group.

The combination of all activities performed by each group is what determines the POCO structure. The assurance on quality performance in POCO management model has been guaranteed with clarity of role and functions of each organisation. The composition of contract performance in the structure will be a catalyst to raise motivation for better performance; hence the targets will be measured and evaluated periodically. First performance contract is the performance agreement between the government (ministry) and DAWASA, the second performance contract is between DAWASA management team and Sub branch offices. In this internal performance contract each individual performance target will be clearly described and performance indicators will be set measurable. Therefore POCO has formulated with coordination, relationship and combination of different role and functions from different departments in water sector. However, the mode structure has been summarised and here below presented in diagram form (see figure 8.2).

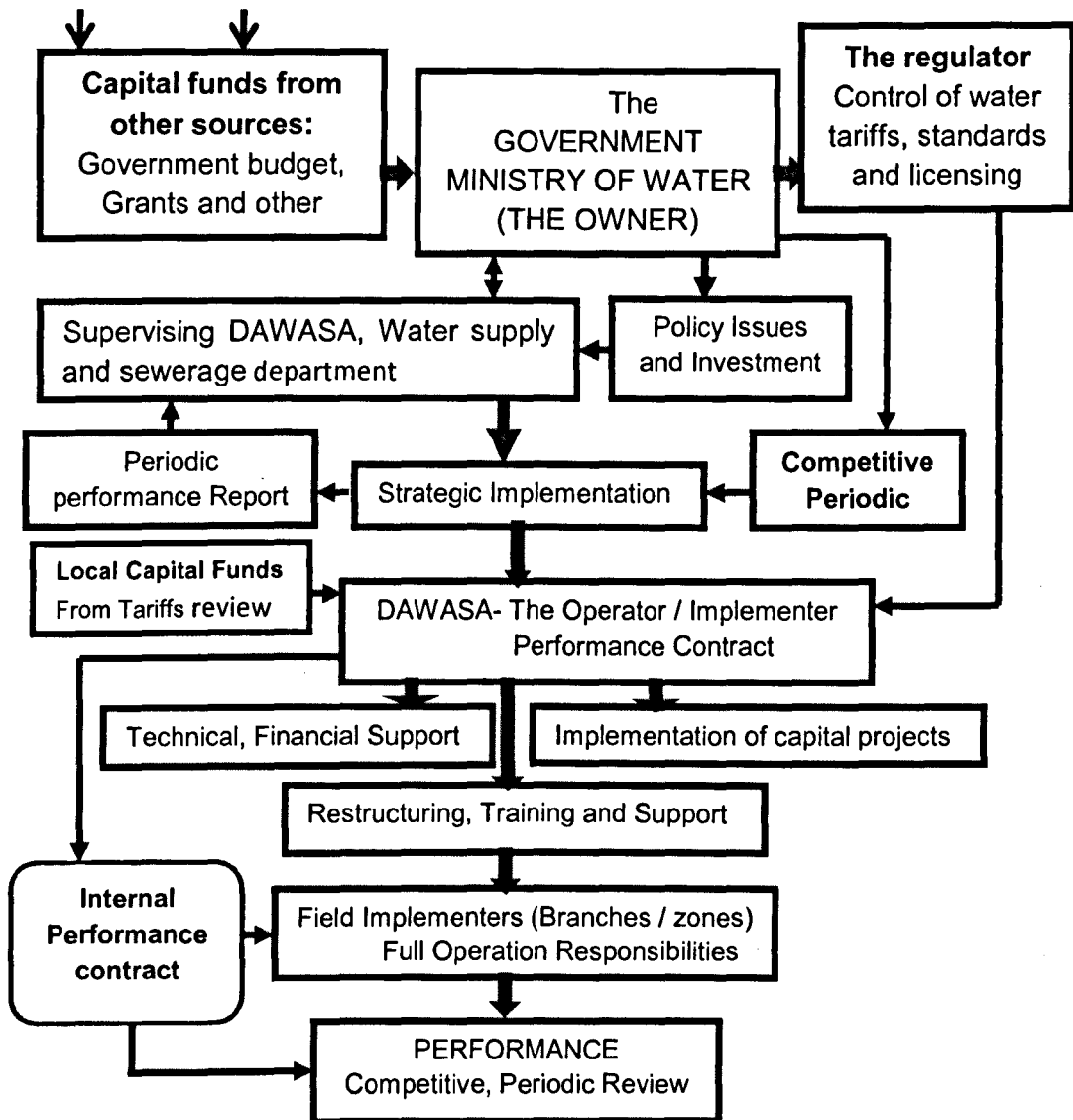


Figure no. 8.3 The POCO operation structure

i. Government (Ministry of water and Irrigation)

The government will own the entity by 100% and therefore, the government will be fully responsible for policy issues and capital Investment.

Why DAWASA should remain a parastatal organisation (a government owned entity)?

For political reasons Tanzania government was not ready to surrender the DAWASA ownership. Furthermore, DAWASA being government property will easier implementation of government policy especially the government objectives

of water services to all, rather than being a private entity which in many cases the services objectives are referred to the profit gain. Assurance of services to all is greater because as a government services provider the actual cost of services can also be subsidized. Capital investment responsibility will be the government task this will allow DAWASA to concentrate more on services issues. Furthermore, capital for funding water projects can also be sourced from government budget. The POCO model indicated that DAWASA will remain to be government owned.

According to POCO ministry of water (the owner) structured with two management and control components (ministry top management team and department of water supply and sewerage). The ministry top management team will be mainly the decision makers, with other responsibilities including sourcing funds for capital investment and supervising the distribution, reviewing national water master plan and development of new policies and other management duties.

While the department of water supply and sewerage will perform the following responsibilities including supervision for implementation (contract), planning and supervising national water master plan, monitoring DAWASA performance and evaluation according to the contract obligation, sourcing capital investment for water development, contract terms and operation criteria, setting contract period, with no objection from ministry management team awarding the contract to qualified operator. Setting the standards for performance with clear indicators, reviewing the operator's terms of contract and contracting and providing advice and support to DAWASA without interference.

All duties are implemented at first as proposal, the proposals are taken to ministry top management team for decision, after decision the department is taken to operator for implementation. We can conclude that the department of water supply and sewerage is working with strategy of implementation and project supervision. The binding relation between the Government (ministry) and DAWASA (the operator) is Competitive Performance Contract (CPC) in the contract all the responsibilities of two parts the owner (ministry) and the implementer (DAWASA) should be clearly described. Among of the important things which contract should compose are terms of contract, performance indicators, evaluation procedures, time schedule, quality and measured standards.

ii. Position or regulatory authority (relationship, duties and control) according to POCO

In the structure of POCO recognises the full responsibilities of the creation of an independent regulatory authority, and that, duties including standards control of the quality, quantity, services performance and control of water charges to create

balance and fairness in water pricing between service provider and the consumer are all performed by the regulatory authority.

In this case the regulatory authority is issuing the licence of operation and the guidance of standards for services to services provider. The regulator will provide structure, procedure and timetable that will allow two parts water users and services provider to dialog on water charges (water tariffs change) before the decision is reached. Moreover, the regulator is obligated to chair the debate and collecting the opinion on the request for tariffs review. Whereby, the regulator and service provider will have an opportunity for monitoring the willingness to pay (WTP). In this case the regulator will also take the advisory role to services provider according to the matter ascends in conversation. Therefore, in this model regulatory authority in greater part is exist to assist the performance required from services provider.

iii. DAWASA (the Implementer) according to POCO structure

The formulation of new DAWASA responsibilities under POCO has been adopted from analysed discussion developed from DAWASA employees, parastatal senior officers and customer information collected in the field Tanzania. . However, the concepts had greater focus on services improvement under good working environment necessary for existing and future needs. Under the POCO structure the new DAWASA under 100% local management team with new incentives will remain to be an operating organ or services provider under 100% of government ownership. The new DAWASA responsibilities will remain to is the major water services provider (operator) contracted by the owner to perform all water services operations including repair and rehabilitation of water infrastructures, services expansion, water network control, water meter installation, billing and revenue collection and protection of water sources. Under these responsibilities DAWASA management structure has to reorganise to become more strategic to ensure the responsibilities implemented according to the contract needs.

The DAWASA operating structure is composed of two major operating sections including DAWASA head management team and field implementers (branches/zones) each group has integrated responsibilities however in totality they all perform according to Ministry/ DAWASA agreed performance contract.

DAWASA head management team has formulated with administrative and as well implementation responsibilities. This department in main dealing with supervision to all activities performed by branches including providing them better training, advice and support, providing them necessary tools, equipment and

manpower, monitoring of internal competitive performance contract, evaluation of branches performances and performance target setting and review (the internal performance contract between DAWASA head team and branches), setting of motivation, incentives and as well punishment for poor performance, establishing of new branch/zones, proper managing of revenue collection, preparations of periodic performance report to be submitted to department of water supply and sewerage periodically are also main duties of DAWASA head office.

Capital development projects are centrally implemented under special unity (planning and project implementation) under DAWASA head team, the unit tasks includes water production, water network rehabilitation and treatment, because project implementation requires high professional skill of finance and technical matters in organisation, supervision and implementation. According to POCO major source for capital funds will be generated from daily revenue collection and other local sources, the monthly generated amount will be deposited in a special account monitored and controlled by project implementation unity a section of DAWASA head management team. And annually the amount will be taken for project development.

iv. Zones water providers (The implementers)

Zone offices are the sub set of the DAWASA operating area. The total DAWASA operating area should be divided into zones depending on number of customers and size of area for operation. The major reasons of the zone divisions is improving of services performance to customers, by bringing services closer to customers and therefore to improve customer care.

In this structure zonal managers are responsible to manage, supervise and monitor all the zonal activities and reporting back to DAWASA head office.

The number of staff in each zone will depend on the size of the operation area, number of costumers, tools and equipment available. For individual performance monitoring each employee has its defined and measurable duties to perform. Duties are divided according to the size of zone and number of customers. The tasks to be performed in each zone includes meter reading, bills preparation and distribution, new connection and records, water meter installation, leaks repairs, sewerage services, water rationing if necessary and attending daily customer problems.

The implementers described under this model are daily operator's group of people dealing with customers. In this case, the zone areas which are the subset of the DAWASA geographical operating area. Zones have to be developed and structured with good management teams. The zonal manager's duties are focused

on providing better services to water users and revenue collection according to the internal performance contract with self-explanatory targets and performance indicators between DAWASA head office and zonal areas. In this case employees have to perform to meet their targets. The designed task to be performed at this stage includes directly dealing with all water customers problems in the offices and on the field. Workers are highly motivated to compete each other for recognition and awards which definitely each individual performance is monitored closely. The performance report is send back to DAWASA periodically, for review comments and other necessary action if needed.

v. Contract of performance in POCO

Contract performance in POCO has been developed as a measuring unit, reference for performance evaluation and as well motivation in project implementation. Individual or group duties and responsibilities will be measured for accountability. The agreed performance contract with clear indicators and milestones becomes the driving force for performance to meet the set target. The performance monitoring contract in water services has much focus in services efficiency, which will improve productivity meaning quality and quantity in the market. Improvement in quality and quantity will make water users happy and therefore their will pay more (it is motivation for WTP). The objectives of efficiency in productivity and services are one of commercial principals in water services which have more focus on customer satisfaction. Meeting customer satisfaction meaning stimulating/motivating her/his willingness to be able to pay water charges accordingly. This will have greater impact in operation and services because the POCO operations and development costs has been designed to be established from water charges and other local sources. The performance contract will be formulated with number of performance indicators, schedule of activities with time, quality and standards and targets and periodically the contract the performance will be reviewed. The performance evaluation is based on the set contract indicators. This is important and special motivation for performance. Therefore POCO structure adopted performance contract motoring and review approach for efficiency in providing services and stimulation of WTP.

vi Coordination and relationship of deferent components in the structure

In POCO structure each component is operating independently with clear role and functions of performance. The demarcations in performance responsibilities were clearly established to avoid interference and collision during the operation. However, the model goal is achieved when each model component has performed

successfully. In this case we can say the total success depends from successful performance of each component in the model and each component depends from another. Therefore should be an existing relationship between the components as follows.

vii. The relationship between government (ministry of water) and DAWASA.

Government is the property (DAWASA) owner. This means that the ownership relation between government and DAWASA is there. The performance contract relationship between the owner (government) and the operator (DAWASA) makes close coordination between the two because the operator has to report the performance periodically and the owner has to evaluate for necessary decision. Providing good working environment, providing capital funds these are major areas of coordination and relationship that each department depend on another.

Relationship between government and regulator is in policy issues and good communication in professional matters because regulation authority exists constitutional to implement government policy, the regulator performance and assessment of operator performance are all reported by regulator to ministry. In this case ministry is constitutionally supervising and monitoring the regulator.

However, the relationship and coordination between the regulator and operator is existing widely such that, may be seen as regulator is supervising the operator, because the operational licence is issued by regulator, this means he should be satisfied with operator performance. Water charges are controlled and regulated by the regulator, so the operator should submit the proposal of change to regulator, standards of performance in water services are set and reviewed by authority, and therefore periodic reporting mechanism of the performance of operator to regulator has greater builds greater coordination with frequently communication between operator and regulator.

Coordination and relation between regulator and water users, is where the water charges are reviewed, regulator coordinates the comments and the ideas of water users for fair consideration on water charges. The relationship between the two is specifically of fair ground for water charges. The coordination and relation between service provider (DAWASA) and water users the relation between the two is very wider and closer because the services provider DAWASA is working for water users to ensure water users are comfortable with services and they pay accordingly. This makes them to meet every day with number of discussion especially where the services is not available or is in unstable condition. Therefore the services provider (DAWASA) and water consumers they have wider

coordination and relation each one depends on another in everyday activities. The coordination and relation of each department in water services is necessary if the objectives is to provide better services and affordable, because is only through coordination and combining effort of each department that objective can be achieved. Therefore POCO has formulated with coordination, relationship with combination of different role and functions of different composed departments in structure.

8.5.4 Part two: Commercial sustainability of POCO

Commercial part in POCO structure is its ability to developing local capital funds for its operation costs and projects development. The need to find stable sources for funding total operation costs and new water projects was identified from data collected in Tanzania. Developing capital funds from internal local sources is a big challenge, which mostly depends on the political stability of the country. The advantage of establishing capital funds from local sources is a catalyst towards building a stable economy and self-dependent vital to true national development. This will ensure the sustainability of the DAWASA. This research has come up with a capital funds development model from the local Tanzania sources to ensure the practicability of POCO as follows.

The methods for developing capital funds from local sources for water projects in covered in this section. Three different methods are covered including Tariffs review, Local contribution and Basket funding. Each of these methods have previously practiced in the country. They have been adopted with a different approach and different objectives. The approach covered in this discussion has been developed from the data collected from the field in Tanzania.

i. Major sources for capital funds in water projects

The major sources for capital funds can be categorized in to external sources and local sources. The external sources are formulated by two elements including Loans and Grants from International financial Institutions (World Bank, African Development Bank, UNIDO EIB and others) while local sources includes sources from government budget, local contributions and property self-generating capital funds (tariffs review methods and other methods). Local sources for funding water projects have different process for funds generation. Focusing on objective of coming up with sustainable, reliable, affordable and condition free sources for capital fund in water projects. The discussion covered in this section is generation of capital funds from local sources. Establishing capital funds from local sources will make the government free from external funding conditions (loan interest and

others) and will also empower the government with full decision on fund usage and managing. No external conditions, therefore flexibility for better use is possible.

Thinking of alternative funding methods for water development projects as a substitute to loans from international financiers was developed from scrutiny of the loans and conditions to country borrowers (see section 4.9.5 for more detail). The big interest rate of each loan, short period of payback and extra implementation conditions from financiers were some of the analysed characters. Disadvantages of the World Bank conditions as detailed in section (4.9.2) and the experience of the World Bank loan's conditions on the effects of DAWASA privatisation as indicated in (Appendix Q) were the reasons for this conclusion.

On considering the possible local sources, methods including the tariffs review, mass contribution and government funding were critically discussed to be concluded as a substitute solution for loans with tough conditions. The methods are all local in origin and supervised by local personal therefore acceptability, affordability and adoptability for implementation will be easier. The conditions of funds will be set locally and therefore to allow quick and easier consultation if needed and therefore to allow flexibility for good use. No investment required for setting this process. Water projects funded with local developed funding system will be a reliable substitute for the World Bank loans with burden conditions.

The discussion in this section is about the generation of capital funds for water development projects from internal local sources. The summary of major sources for capital funds in water development projects can be presented as shown below in figure no.8.4

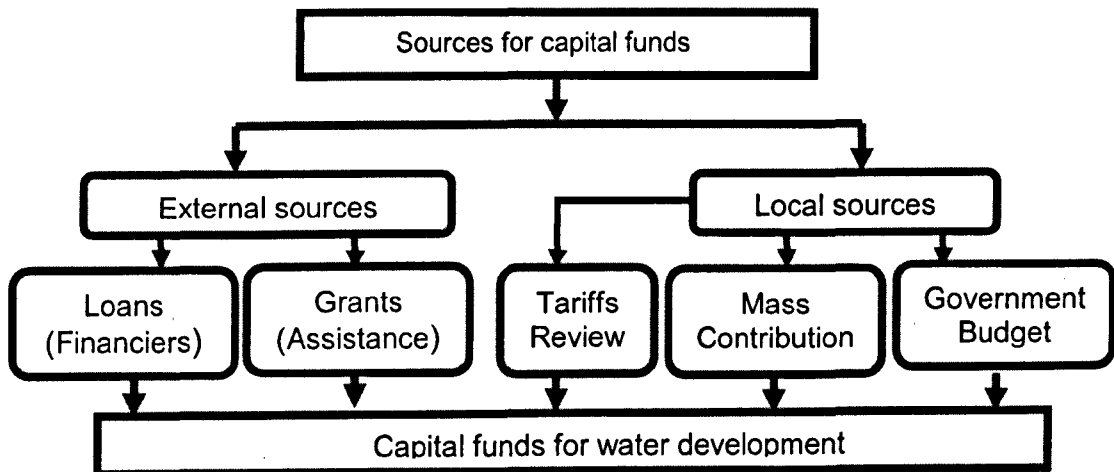


Figure 8.4: Sources for capital funds

8.5.5 Capital funds from daily water operation business

Tariffs review approach is one of the local capital fund generation. Tariffs are basically determined from detailed information specified in respect of generation, transmission and distribution costs and sometimes focusing on capital for development. The guiding principle of a tariff setting is to enhance efficiency, quality and economy in use of resources and ensure financial visibility of the utility. It is for the interest of customers in considering that the water supply, production and distribution cannot be maintained unless the total service charges are adequately levied in the existing water tariffs [178].

This method is adopted where the water cost break down is made up from 1 m³ volume of water.

This approach can be adopted in Tanzania (Sub-Sahara African countries) provided the objective is to improve water services with focus on sustainability, affordability and capital establishment. The approach of breaking down the total water cost in 1 m³ value plus extra percentage for development can be adopted for generating special basket funds, purposely for capital water development.

In this case water charges can be reviewed and adjusted. The increase from the adjustment will be accumulated to build independent local capital funds for Tanzania water supply development projects. The currently DAWASA low water charges can be used as a stepping stone and advantage for introducing the changes aiming to accumulating capital funds for water development in the country [179].

1. The Justification for adopting tariffs review method

The justification for adopting the tariff review method in countries with poor economy and difficulties in water supply services especial Sub-Sahara Africa countries is more focused on affordability and then establishing a progressive funding mechanism from available local water services. The challenge to generate capital funds for water projects. The method can be adopted as stepping stone for generating sustainable capital funds for development of water projects at any scope of application. Countries like Tanzania had bad experiences from the effects of loans with difficult conditions from International financial Institutions (World Bank, EIB, ADB and others). The tariffs review method is justified as an alternative against unaffordable loans from international donors. The application of this approach is straight forward and needs no capital for establishment. This involves only reasonable restructuring of existing water tariffs with a goal of establishing an estimated amount for sustainability of water services. The government policy to

acknowledge the change is priority thing; however it will be easy for policy change because the entity DAWASA is a government owned. In this situation the method is more justifiable.

ii. Generation of Capital funds from Tariff Review Approach

In the DAWASA case the practice of tariff review adjustments it is practical, realistic and it is an appropriate alternative solution against loans with tough conditions from International financial Institutions. The tariffs review approach should be introduced on basis of actual volumetric water sold and not in basis of production capacity. The difference between production and real water sold is unaccounted for water (leakages and other wastages) which has been estimated to be 35% of total water production. This percentage will be decreasing to less than 10% within a period of 5yrs due to the implementation of DWSSP. The exercise of generating capital funds for water development in Tanzania will be implemented stage by stage from establishing production and sold water quantities, examining the current water charges, reviewing the existing water tariffs and calculating the amount to establish a capital fund for sustainability and services development. The governing principal of capital fund generation is an accumulation amount from a difference of total revenue collection and actual expenditures. This generates the practice as follows.

iii. Approach for calculating the cumulative Funds in a given period P;

Starting with considering the quantity of water sold (total amount of water production – unaccounted for) a given period of time (P). The reviewed tariffs are considered to be constant for all the given time (P = 5 years) period. The period of 5years has been selected because of target set for implementation of DWSSP.

The principal is, the total revenue collection minus actual expenditures = Cumulative funds (F_c). This can be adopted for calculating cumulative and the amount generated as capital funds for water projects. The process can be summarized and transformed into mathematical formula and presented as follows;

$$F_c = (C_v \times T_p - C_v \times E + (E_{cc} - E_x)) Pt$$

Where;

C_v = Volume of sold water in m^3 , however, the amount of sold water will change timely depending on of new supply connections and amount of consumption

T_p = Revised water tariff per cubic meter (m^3) or new estimated water tariffs (see table no. 8.4).

E_e = The existing DAWASCO water tariff per cubic meter (m^3)-(see section no. 8.5.6)

E_{cc} = Current DAWASCO revenue collection (see table no. 8.3)

E_x = Current DAWASCO expenditure (see table no. 8.3)

P_t = Five years (DWSSP implementation period)

Therefore, through tariffs method the existing water rates and by using the given formula capital funds for water development can be generate as per designed objectives.

➤ **Calculating the cumulative capital funds through tariffs review method**

The process of calculating how much funds can be generated from DAWASCO daily water sells is one of proves that this method is practical, and also it is an indicator for reliability and in-house affordability. This proves that, the approach is appropriate solution for generating capital funds, and it is practical alternative for loans with tough conditions from International financial institutions. The adopted process has formulated with systematic calculation based on amount of water production, existing water rates, reviewed rates, sells, comparison on affordability and analysis of the differences. The amount to establish as capital funds will be from the differences between the total revenue collection and expenditures as follows.

➤ **Water production from DAWASA sources**

Water served by DAWASCO are from four different sources including underground water Bore holes and three major treatment plants (Upper Ruvu, Lower Ruvu and Mtoni treatment plants) after being rehabilitated under Dar-es-salaam Water Supply and sanitation project (DWSSP) to raise its production ability to the designed origin capacity is as follows

The current water production from three water treatment plants and ground water sources (bore holes) are Lower Ruvu with production capacity of 41million litres per day, Upper Ruvu with production capacity of 18 million litres per day and Mtoni treatment plant with capacity of 5million litres per day and $19,000m^3$ per day

from ground water. According to the detail calculation of the total water production as attached in (appendix T), accumulating the four sources of water production, the total water quantity will be;

$$64,564,963+24,288,369+2,106,386+6,840,000 = 97,799,718 \text{ m}^3.$$

However, according to Kulwizila [185] Unaccounted for water and other water losses is 30% of the total production, therefore the consumed water is only 70% of the total production ($68,459,802.6 \text{ m}^3$) per annum. Noted that, implementation of DWSSP combined all the leakage control, plants rehabilitation, repairs, installation of water meters and all necessary expansion for distribution network. It is therefore assumed that the expenditures within a period of project will not increase. In case of any extra expenditure then will be absolved by extra income from the covered repairs and maintenances. According to Midalla [189] DAWASA has set a goal to reduce water losses (unaccounted for water) up to less than 10% of total production. The DWSSP which includes total leakage control, water meter installation, up to dating data base, improvement billing system, rehabilitation of treatment plants, reservoirs, improvement of buster stations and combating all those with illegal water supply connection this will increase the volume of total sold water to all categories of costumers.

Furthermore, the implementation of DWSSP will have impact on increasing DAWASCO revenue collection time to time. The DAWASA goal is to reach less than 10% of total water losses within five years of DWSSP, considering that, the present total water losses is 30% therefore; there will be an water increase of 4% annually due to losses recovery. This water increases will also increase the total sales which will automatically increase the revenue in old and new tariffs. This will make the total annual collection as revenue gain to build the estimated capital as follows;

The attached (appendix T in the CD) shows the detail calculations on how the capital funds will be generated that, Total sells with new rate – Total sells with old rates + 4% annual increase from reduction of losses + normal saving between existing collection and expenditures. And total expected amount from all three developed local methods were detailed.

8.5.6 Existing DAWASCO water charges

The existing DAWASCO water tariffs has been structured into three different groups of water consumption, All DAWASCO customers have been systematically classified into three different categories of water tariffs. These categories have been structured with different water charges based on nature of water use and

consumption capacity [186]. The categories includes tariffs for Domestic customers with consumption not more than 5 m³per month, domestic customers with consumption above 5m³per month and the tariff for commercial costumers.(see table no.8.2 below)

Table 8.2: Existing Water Tariffs [8].

Sn.	Description	Unit Volume m ³	Rate per Unit	Rate in GBP (£)
1	Non Domestic users	1	Tsh.725.00	0.36
2	Domestic Users (0-5m3)	1	Tsh.488.00	0.24
3	Domestic Users above 5m3	1	Tsh.654.00	0.32

i. Current revenue collection

The revenue collection report for year 2006/2007 and 2007/2008 gives the picture of how much funds and collected from water charges, operational costs and what is the balance from the total expenditure [9]. Also from this report we can also picture the total income when focusing on the sustainability of provided services, in considering the local internal sources. The expenditure is an indicator for sensing the real need to sustain the existing services by understanding the expenditure. We can set targets focusing on accumulation of local income as a product of difference between collection and expenditure. Expenditure is a milestone for setting extra needs for income collection. These are clear evidences that through tariffs adjustment and balancing of expenditure DAWASA can generate and save funds for its capital projects. Development of the required local capital funds will be from differences between the total collected revenue and the expenditures. However, funds good management with commitment is necessary.

Table no.8.3 below shows the DAWASCO performance of revenue collection and the expenditure for the year 2007/2008 in TSH.

Table 8.3: DAWASCO Revenue collection for year 2007/2008

FINANCIAL YEAR 2007/2008 IN Tsh.			
YEAR	MONTH	COLLECTIONS	EXPENDICTURES
2007	JULY	1,638,468,019.02	1,338,169,900.48
2007	AUGUST	1,651,347,067.13	795,003,002.52
2007	SEPTEMBER	1,544,144,953.32	1,675,758,027.37
2007	OCTOBER	1,714,617,412.15	1,192,713,649.51
2007	NOVEMBER	1,603,344,266.00	1,006,971,579.96
2007	DECEMBER	1,428,928,402.43	1,228,420,788.28
2008	JANUARY	2,145,119,422.79	1,247,543,382.80
2008	FEBRUARY	1,906,292,553.96	1,694,886,189.92
2008	MARCH	1,464,993,473.28	1,274,986,490.63
2008	APRIL	1,719,199,557.44	875,471,924.44
2008	MAY	2,015,758,024.03	1,472,908,981.89
2008	JUNE	2,078,358,928.86	2,142,561,481.19
	TOTAL(Tsh.)	20,909,672,081.01	15,945,395,398.99

ii. Calculation of savings under tariff review approach

The whole set up is a mathematical calculation and figures are the amount of water production, water rates and sold quantity of water. Considering the total losses our working figure will be 70% of the total production which is 68,459,802.6 m³ per annum. According to Modella [187] the amount of water sold by DAWASCO per annum is only 63,003,000.00m³. This sold water necessitates the calculations for establishing capital funds to be considered as a bottom line for total revenue generation from DAWASCO sources. This focus will make the calculation more prospective and positive because the increase in water sells due to DWSSP impact on leakage control will raise the total revenue collection step by step. The estimation (calculation) will base on the actual volume of water sold in each category and therefore the tariff will be reviewed systematically according to the categories customers.

According to Julius [11] DAWASCO have three categories of water tariffs shares the total volume of sold water as follows

1. Domestic Category One (DCO), customers with consumption not above than 5m³ per month they cover about 14% of total sold water

2. Domestic Category Two (DCT), all customers with consumption above than 5m³ per month they are consuming about 77.2% of total sold water and

3. Commercial Category Costumers (CCC) supplied approximately 8.8% of the volume of total sold water (see figure no.8.5)

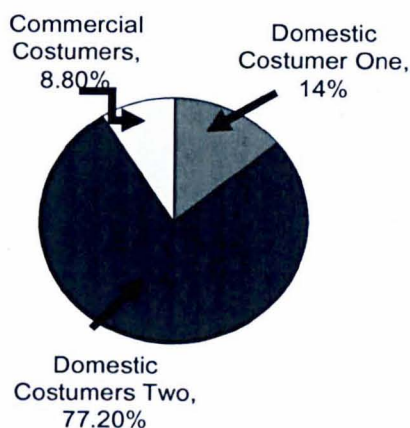


Figure no.8.5: Categories of Customers and consumption

Based on the evidences of DAWASCO water tariffs as shown in table no 8.2 and the objective of establishing capital funds from tariffs review method, the adjustments were systematically executed. Each consumer category was critically reviewed with considering the affordability the tariffs were analysed and adjusted. The new tariffs with detail breakdown were designed and presented in summary sized table for more clarity as shown in the table 8.4 below.

Table 8.4: Combination of existing and reviewed water tariffs

Sn.	Description	Consumed water in m ³ /Annual	Existing rate/m ³ In £	Adds amount p/m ³ In £	New rate in £	Old Amount In £	New Amount In £
1	Domestic users up to 5m ³ per month	8,832,414	0.24	0.20	0.44	2,119,779.4	3,886,262.22
2	Domestic users above 5m ³ p/m	48,666,328	0.32	0.30	0.62	15,573,225	30,173,123.4
3	Commercial customers	5,504,258	0.36	0.50	0.86	1,981,532.9	4,733,661.9
4	TOTAL	63,003,000				19,674,537	38,793,047.5

According to the table 8.4 above the adjusted water charges in each category will be as follows.

For domestic uses not more than 5m per month with current rate of £ 0.24 per cubic meter, the new rate will be £ 0.44 per cubic meter

The domestic customers with consumption above 5m per month holding the current rate of £ 0.32 per cubic meter there rate will change to £ 0.62 per cubic meter and for non-domestic customers with current of £ 0, 36 per meter cubic there new rate will be £ 0.86 per cubic meter, The adjustment were adopted for calculation to give mathematical indication on how much the revenue will rise from this first adjustment and the impact especially the affordability.

8.5.7 Coverage of affordability during the tariffs adjustment

The new water rates review was carried based on existing water tariffs in each customer's water category and with objective for establish water capital funds from local sources. Mathematical calculation was based on water sells per annual.

Calculation for adjustment was focused on nature of consumption on each category. The final adjustment was set with greater focus on the income of low class people with maximum of their consumption to cover the affordability. The evidences of protecting the affordability have been covered into two areas including consideration of the low people and national income per capital against other water rates practices in neighbour Sub-Sahara African countries with low income per capital than Tanzania.

As discussed in POCO structure chapter 8 (8.5.3 vi) the relationship and coordination between the operator and regulator, between regulator and water users). The affordability is also controlled through normal government process of screening new water rates for approval through Energy Water Utility Regulatory Authority (EWURA).

8.5.8 Affordability in comparison with neighbourhood country Uganda

Relevance of comparison with Uganda comes from the point that, National Water Supply Corporation of Uganda has contract official working relationship with DAWASA. Whereby the two public organisations, they assist each other and sometimes working together in some technical areas hence Tanzania and Uganda are boarded in one region of East Africa, and people of these country in greater%

shares similar culture. Uganda water supply and sewerage services are under management of National Water Supply Corporation of Uganda. Moreover, the existing system for water charges in Uganda depends on frequently information from meter reading of individual customer and estimation from unmetered customers, which is quiet similar with Tanzania water system. The Uganda water charges has been formulated under two deferent categorizes, the groups including Domestic and Commercial rates which designed to the following composition of water tariffs.

8.5.9 Evidences of the comparison on affordability

Affordability on reviewed water tariffs can also be justified by comparing the differences in water charges within the neighbouring countries those have similar level in economy. According the discussion covered in chapter 3 section 3.3.4 the Uganda currently water charges for domestic use is $1\text{m}^3 = \text{GBP } 0.462$, while the designed new expected domestic water tariffs for Tanzania will be cheaper than by $\text{GBP } 0.24$ per every cubic meter volume. However, according to Atlas Method 2007, the Tanzania Gross National Income per Capital (GNIC) is ranked higher than Uganda by 24% money value, while the Tanzania purchasing power is 57% higher than Uganda. Therefore, the comparison has been detailed as follows;

a. Uganda water charges comparing to Tanzania

i. Domestic water supply; $1\text{m}^3 = \text{Ush.1, 341.00}$ and sewerage is 75% of it

ii. Commercial water supply; $1\text{m}^3 = \text{Ush.2, 085}$ and sewerage is 75% of water supplied.

Notes that, in billing all two tariffs category has to go with tax (VAT) of additional extra amount of 18% [10]. (Conversation of currencies as per 16th Sept.2008; $1 \text{ GBP} = \text{UGsh.2, 889.00}$; Therefore considering that, Uganda water for domestic use is, $1\text{m}^3 = \text{GBP } 0.4642$; ($1\text{USD} = \text{UGsh.1, 635.00}$ and $1\text{Tsh.} = \text{UG sh. } 1.41436$).

The new reviewed water charges for domestic usage in Tanzania (see table 8.4 in section 8.5.6) will be $1\text{m}^3 = \text{GBP } 0.44$. Therefore Uganda water charges is expensive than Tanzania new reviewed water rates by $0.4642 - 0.44 = \text{GBP } (\text{£}) 0.0242$ per every cubic meter

The minimum cost of 1m^3 water for domestic consumption in Tanzania is **GBP 0.24** while in Uganda the same volume of water will cost **GBP 0.464**

b. Comparison on Capital Income and purchasing power

Income per capital (Tanzania Vs Uganda) in considering, the Gross National Income per Capital (GNIC) for the year 2007, the Atlas Method (AM) and Purchasing Power parity (PPP) [11]. The positions of these countries were ranked as follows. a. Atlas Method -2007

Table 8.5: Gross National Income per Capital

SN	COUNTRY	RANK	US Dallas
1	Tanzania	184	1,200
2	Uganda	192	920

b. Ranking on Purchasing Power Parity-2007

Table 8.6: Purchasing Power Parity

SN	COUNTRY	Rank	US Dallas
1	Tanzania	187	920
2	Uganda	340	400

This evidencing that, the POCO first time reviewed tariffs is affordable hence is even less cheap than the existing Ugandans water charges, furthermore POCO is a 100% government owned property implementing the set Tanzania water policy which is mainly quality, quantity and affordability to all. And in some cases if needs arise government can still subsidise the costs hence service provision is government owned. The regulating authority in the POCO structure is also for quality, quantity affordability assurance. Therefore, through all these tools POCO method of tariffs review has guarantee in affordability.

8.6.0 Acceptability of Tariff review method

To answer how this method can be accepted and adopted in the poor country like Tanzania is not a straight thing. However, the possible right answer should be a locally developed method with greater inputs from the field. Nevertheless, natural formulation of the model and process of adoption is to facilitate the application of POCO management style, therefore tariff review method is more appreciated

i. Origination and composition of tariff review method

The method has been developed from information collected in the field Tanzania where this solution is expected to be applied. This alone has greater influence that, the local existing problems obligated the development of this new method being the appropriate solution, from bounded relationship between the method and local people mind hence it has delivered from their own information. Furthermore, the method is more easier to applied when POCO is the place because the two things shares the same originality

ii. Similarities with existing water charges system

Tariff review method has greater similarities with existing method of raising funds for new domestic water supply connection. However, the existing method is designed to generate funds through water charges purposely for new domestic water connections, whereby the tariffs review method is developed to generate funds from water charges for water projects development as substitute for loans with condition from International financiers,. This has been evidenced in DAWASA DAWASCO lease contract, that similar method for fund generation was practiced. Funds were collected for special task 'new domestic water connection' whereby under the title First Time new Domestic Water Supply Connection Fund (FTNDWSF). Article 37 of DAWASA/ City water lease contract says 'the operator shall levy the First Time New Domestic Water Supply Connection on all its water supply consumers (including all domestic and all industrial and other consumers). To allow the operator to establish and maintain the first time new domestic water supply connection and shall pay all amounts received by way of First Time New Domestic water Supply Connection tariff into the First Time New Domestic Water Connection Fund. The operator should ensure that this fund held in special account and shall not use this funds (FTWDWCF) for any purpose other than the set programme [148]. The First Time New Domestic Water Connection Fund shall be subjected to a separate accounting and independent audit. Misapplication of the fund by the operator may lead to a penalty of a particular agreed amount. The First Time Domestic Water Supply Connection Fee indexation formula was

$$FTDWSCF = (L_T / L_0 * 0.35) + \left(p_T / p_0 * \frac{F_T}{F_0} * 0.5 \right) + 0.15$$

Where

L_t is the index for labour published by the National Construction Council at Time 'T', i.e. the date of application of the formula

L_o is the index for labour as published by the National Construction Council at Time 'o' from data of bid submission

P_t is the Index for pipes and fittings (flexible) # as published by the UK Department of Trade and Industry at Time 't', i.e. the data application of formula

P_o is the index for Pipes and fittings (flexible) # as published by the UK Department of Trade and Industry at Time 'o', the base date i.e. 28 days before bid submission

F_t is the UK pound sterling foreign exchange rate against the Tanzanian Shilling at Time 't' i.e. the date of application of the formula

F_o is the UK pound sterling foreign exchange rate against the Tanzanian Shilling at Time 'o', the base date i.e. 28 days before bid submission,

* Is the multiplier

8.6.1 Appraisal of the method

This system of Levy out of water services has been adopted during the DAWASA/City water lease contract can be adopted by DAWASA to raise its own capital for sustainability and development of water services. Application of tariffs review in POCO method is quite similar to the method used to develop funds for First Time Domestic Water Supply Connection Fee (FTDWSCF). The method can be improved and adopted to generate Capital funds, for water development. In this case water charges are reviewed and adjusted, and the increases from adjustment can be accumulated to build an independent local capital funds for water supply development projects. Application of tariffs review method is compatible to the currently DAWASA act for water charges and that can be used as a stepping stone and advantage for facilitating the changes towards accumulating sustainable capital for water development in the country. Tariffs review and FTDWSCF they are similar in approach with difference in objectives that, tariffs review in POCO is a tool for establishing capital funds while in FTDWSCF is also a tool for establishing funds specifically for new customer connection. This means the system self-fund development is existing in Tanzania water services. In other words we can say POCO's tariffs review method is modernisation of FTDWSCF to solve capital fund

problem for water development. Is just like taking old part away and replacing a new similar part in the same engine. Therefore with similarities in approach, adoption and implementation procedure tariffs review method indicates to work better than FTDWSCF and because of its objectives being bigger than FTDWSCF tariffs review approach evidencing to be more acceptable in the country.

8.7 Capital funds from Mass Contribution

8.7.1 Overview

This section is designed to consider how fine mass contribution approach can be used to raise capital funds from local sources for various project developments. This approach has been adopted from traditional practices as a social behaviour of Tanzanians. Originally, local people from villages and small town used to share all kind of development activities, whereby all community development activities were grouped and organised. Different families used to work together (contributing their own energy through physical participation) or by donating a certain affordable amount and the contribution were collected to form capital for projects. In towns and cities where majority of the people are employed, their organise special deduction direct from their salaries to give for the community development projects.

A practical example, of mass contribution executed recently by the Dar-es-salaam local citizens under the organisation of regional commissioner Mr. Abbass Kandoro [198] were citizens contributed more than Tsh.5 billion for schools construction and education development in the city. Similarly, such an approach can adopted to generate funds for water development projects.

1. Process adopted and approach

On May 2007, the Dar-es-salaam regional commissioner organised a special fund raising meetings for class's construction in the region, due to inadequate education facilities in the region. The participants were all regional executive offices including three district commissioners from Kinondoni, Ilala and Temeke, municipals chairpersons, municipals executive directors and regional members of parliament. Regional taskforce team and three district executive committees were formed under the chairmanship of regional commissioner at regional level, while at district level the taskforce team was chaired by district commissioners and regional Administrative Secretary was the regional committee secretary. The structure of the

operation was focusing on how to collecting more of the targeted amount of at least Tsh. 4 billion from different group of people including workers, business people and as well peasants in the region for a 5 month period. This process of implementation can be presented in summary form in figure no.8.6 here below

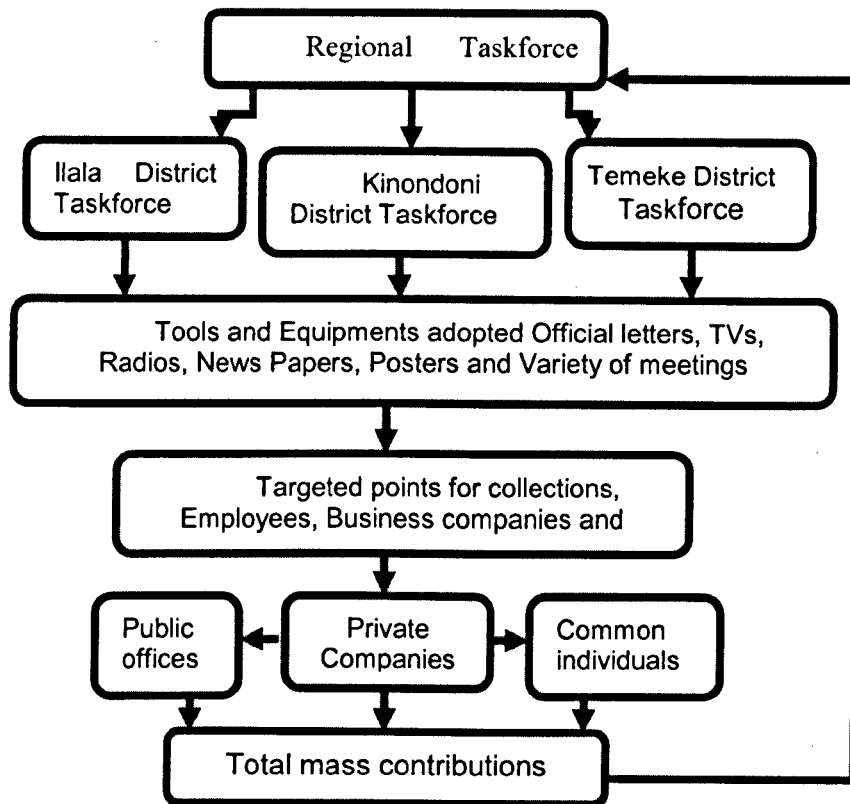


Figure no. 8.6: Mass Contributions Method

According to figure 8.5, three district level committees were formed. Under the chairmanship of district commissioners each district committee was transformed to task force and major task was to strategise the contribution exercise within local environment. How much per personal, for how long and means of collection were jointly discussed and agreed with workers union. Target areas for collection were set (Employees, business companies and volunteers) and strategic plan for funds collection involved tools and equipments including official letters, TVs, Newspapers, Radios, Posters and meetings. The implementation started by opening four different bank accounts whereby each district had one. The exercise implemented at district level by advertising, writing official letters, conducting seminars, meeting and face to face interactions and through street chairperson's local people were contributing and official government receipt were given. All collections were sent to district bank accounts and after to the regional central bank account.

ii. Implementation at regional level

Regional central task force was supervising the whole implementation process in the regional (the three districts). Main duties were preparation of regional strategic plan and targets, project performance monitoring, to support district committee by providing necessary tools and advices, public information and control of total regional collections and ensuring fair distribution according to each district needs. The implementation strategy at regional level mainly is through meetings with selected donors. A list of business companies was prepared by district task forces (municipals) and sent to regional commissioner who followed by inviting to a meeting those short listed business companies. Regional task force under regional commissioner was also responsible for organising meetings with workers unions. This was on how much each employee was contribute and method of direct debit from their salaries. This regional committee has special schedule meetings held every two weeks for checking and reviewing the implementation progress.

iii. Supporting tools during the implementation

The major working tool was a bank account which was opened for this special task. The account was under the control of the regional project commander and it was named Katibu Tawala wa Mkoa (Regional administrative Secretary) No. 16:40. The account was restricted only for crediting. All the collected funds were directed to this central account as a collection centre and weekly collection was publicly reported but the distribution of funds (expenditure) was under the whole executive committee (all taskforce members) for their information and contribution.

The account is still operating. The contribution was still open for all individual and groups. The account is now for general regional development. During the implementation number of tools including TV, radio, official letters, newspapers and posters were used. Special TV and radio donation programmes were the main strategic tools for motivating contributions. The government official receipts were issued to contributors. These were special receipts in which has accompanied with 10% discount of import taxes for the personal belongings.

➤ Approach of collection workers Contribution

The exercise of collecting employee's contribution was carried at institutional or ministerial level supervised by ministries permanent secretaries and institutional heads. The official letters from the Dar-es-salaam regional commissioner were

written to all the institute heads (ministries permanent secretaries) addressing the whole process clearly. The contribution was deducted from worker's salaries according to standard set and each employee was given government official receipt. The collected funds were gathered and categorised as a particular institutional contribution with proper records then banked into account no. 16:40.

➤ **Process of Contribution**

The contribution was in money and as well school construction materials. The whole process involves competition for the three municipals contesting the best collector award. The process is still going on with the situation as follows. The total collection up to 26th May 2008 was as follows

Cash amount collected in was in Tsh. 1,863,420,753.00 and Construction Materials worth in Tsh. 373,440,000.00. Total amount of contribution was Tsh. **2,236,420, 753.00** equivalent to about USD 2, 005, 020.00. The whole exercise was planned to last for five months only from 26th May 2007 to November 2007. For a period of only five month the collected amount was US \$ 2,005,020.00. If the exercise will be carried for 12 months (1 year) continuously, the amount will rise to approximately **US \$ 5,000,000.00** the exercise was specifically set with specific objectives.

The adoption of a similar approach for establishing water capital funds with improvements especial if setting of required period will focus on reality. Then, generation of more than US \$ 5,000,000.00 per annum is possible. Therefore this is a practical example of establishing local capital sources from mass contribution approach.

8.7.2 Capital funds from government sources

The other commercial aspect of POCO is its ability to develop capital funds from government organised basket funding system. The contributions from international financial institutions and country friends are organised specifically for water development projects. The contribution is normally for a specific period under structured government control aiming to establish enough funds for water development projects. This is one of the practical substitutes for loans from big financial institution. The push for coming up with special basket fund originated from the difficulties of loan's conditions as in the discussion covered in chapter four section 4.9.4. The immediately need of appropriate and sustainable capital funds for water development project forces this research to consider the government basket funding method as one of the alternative for sustainable capital funds. The

government basket funding method for establishing capital for water development projects have two groups including sources from central government budget and cumulative basket funding. However, funds from the government budget are not stable due to the poor economy. This necessitates shaping our focus on how basket funding is more effective, and what are currently donor's commitments and the future structure of water development in the country.

According to government Millennium Development Goals Vision 2025 that, Ministry of Water and Irrigation (MWI) will lead the role in **facilitating** and implementation of the Urban Water Supply and Sewerage (UWSS) in the country.

Had formulated UWSS to comprised three major sub-components including capital investment for Dar-es-salaam Water and Sewerage Authority (DAWASA) and other Urban Water Supply Authorities(UWASAs) in the country, Management and operational support at UWASAs level, and capacity building at national and UWASA levels. The requirements include refurbishment, upgrading and extension to existing water supply systems including source development, sewerage facilities and in some treatment plants. The ministry tasks will specifically involve areas of infrastructure development and improvement. The priority will be given to the cities and town areas that require assistance to upgrade their water supply and sanitation systems.

i. Funding for Urban Water Supply and Sewerage

In respect of funding Water Supply Development Projects (WSDP) the government of Tanzania has established a Water Sector Basket Funding (WSBF) as one of the key capital sources for programme implementation. International and local government partners depositing funds into special water development account. Partners they pledge and deposit their contributions on a six (6) months basis. The deposit is financing the activities in the sector for at list first six months of the Tanzania financial year of budget.

ii. Process of Depositing and Transfer

The process is if development partners are depositing funds, they are require to inform the ministry of finance and ministry of water in writing. The communication must provide detail of the 'account number, name of the sub project or programme and any other relevant details'. Then the Bank of Tanzania issues a Bank Credit Advice (BCA) to the Ministry of Finance to notify the bank has credited the Water Sector Development Account. Funds that received from countries development partners and all bank credit advices of these files are maintained by the ministry of

finance on receipt of the bank credit advice. The ministry of finance issues the receipt voucher which is also used to update the cash book.

iii. Basket funds flow chart

The basket funds were designed for development and sustainability of urban water and sewerage authorities (UWSAs), Local Government authorities (LGAs), Water Basin Offices (BWos) and Ministry of Water (MoW). The structure of basket funding flow chart has been designed to the actual need focusing on three major components including sources of funds, holder and controller and project Implementation. Each part has its important function for securing and safety of the funds in the country and as well as to ensure repartition to the donor.

iv. Sources of Funds (Donors) and transfer to users

There are three categories of different funding sources (donors) including those who are earmarked as permanent and stable donors, unpredictable donor and donation from local government budget. Those described as earmarking development partners are International Development Agency (IDA), African Development Bank, US-Millennium Challenge, Netherlands Government, Japan, European Union, GTZ, France, SECO and EIB these are officially committed that, within five years (2006-2011) period they will contribute a specific amount annually, Second category of donors are called Pooling Developed, the donors that are those they come over at any time to contribute, no pledges no official contracts no specific amount declared countries and any organisation they come and make donation any time with any amount. And the last group is Government of Tanzania; the government must contribute a declared percentage out of annual budget. Whereby all donations from these different sources are gathered and saved under the Exchequer accounts.

The Exchequer Accounts is key play in the whole process of fund transaction from receiving to distributing point. The major responsibilities of the exchequer accounts are to collect all funds from donors for control, safety and distribution. The control is a major function of the bank which includes setting of special account designed for every donor, special account of every recipient and monitoring the funds flow. Therefore to make this practical there are forms purposely for monitoring, distribution and control of funds

For control and good management, funds transfer to water authorities (fund users) has to go through the following process. The process is the water authorities (fund users) have to prepare detailed request to parent ministry (Ministry of water) is forwarded to Exchequer for scrutiny.

Ministry of Water prepares a quarterly cash flow; normally it is one month before the commencement of the next quarter with reference to work plan and cash flow for the preceding quarter and the consolidated cash flow forecasts to the water supply will be submitted to group financial committee for review and approval. Then ministry of water (MoW) requests the ministry of finance (MoF) to transfer funds from the water and sanitation development project (WSDP) holding account by special forms called TFN 358. After review the form is passed to the Accountant General to transfer funds from holding account to exchequer accounts. When the transfers have been affected, the BoT issues the MoF with debit advise finally the MoF credits each WSDPs cash book. Thereafter, MoF sends Exchequer notification issue to ministry of Water for notification of transfer. The whole process from the source (donors) and internal transfers to fund users can be summaries and presented as flow charts please see figure no.8.7 below.

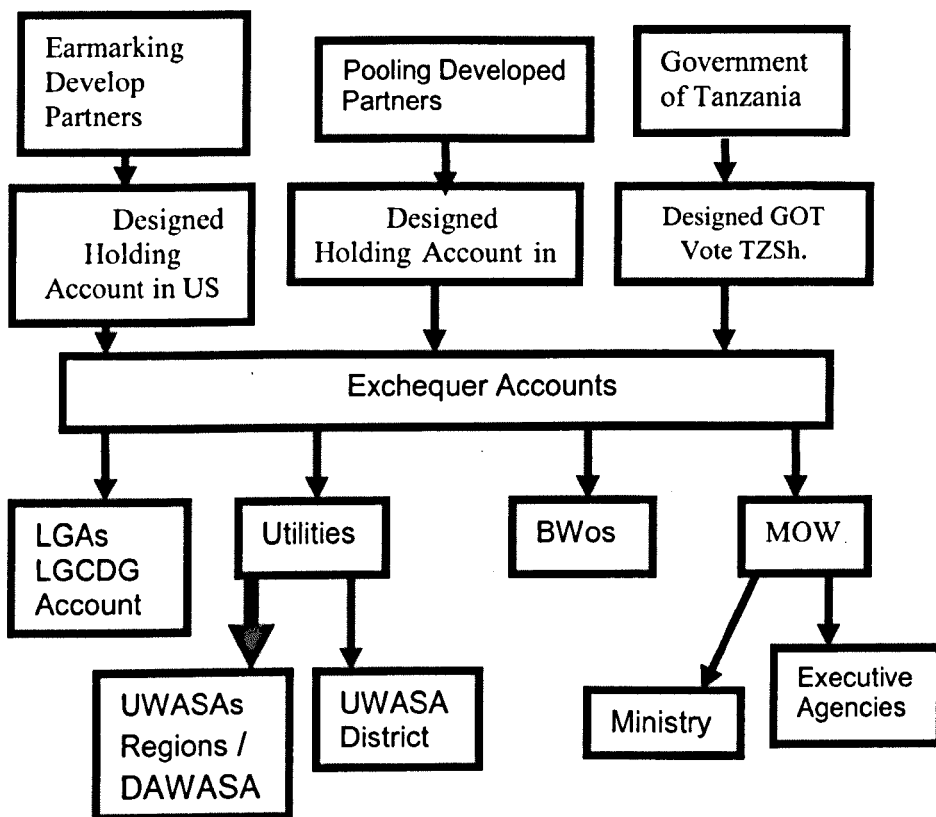


Figure no. 8.7 Flow chart for basket funding

8.7.3 Current position of basket funds

The government of Tanzania has allocated funds for its fiscal year 2008/2009 budget to the Ministry of Water and Irrigation (MOWI), Local Government Authority (LGA) and regional secretaries to ensure water developed in the whole country including urban, peri urban and rural areas. The basket funds allocation for this year were as follows (Summary of FT 2008/2009, Budget allocations to MOWI, LGA and RSs Votes Source: MOWI and regional MTEF 2008/2009). The table no.8.5 below describes the actual funds allocation to each sector for the year budget (2008/2009).

Table 8.7: 2008/2009 Government Budget allocation for MOWI

SUMMARY			
Budget Allocation	Budget FY 2008/2009 (Tshs)		Total
	Local	Foreign	
MOWI (Vote 49) for WSDP	35,463,379,000	91,305,914,700	126,769,293,700
MOWI (Vote 49) for ASDP -Irrigation	11,000,000,000	2,018,574,000	13,185,574,000
Sub-total – MOWI (vote 49)	46,463,379,000	93,491,488,700	139,954,867,700
Sub - Total –Regional Votes (LGAs & RSs)	0	62,686,934,000	62,686,934,000
GRAND TOTAL (WSDP & ASDP)	46,463,379,000	156,178,422,700	202,641,801,700

i. Basket fund donors

Many External Support Agencies (ESAs) used to prefer bilateral financing of individual projects under a myriad of policies and implementation arrangements instead of a more consolidated approach. However, some of the donor funding projects has already made progress towards financial harmonization and general budget support mechanisms. Budget sources and donor financing need to be substantially expanded to reach the Millennium Development Goals (MDGs) and Vision 2025 targets for water resources management and water supply and sanitation coverage. Basket fund donors for water supply development projects in the period of five years (2006 - 2011) are including IDA, African Development Bank, US-Millennium Challenge, Netherlands Government, Japan, European

Union, GTZ, SECO, France and EIB. Tanzania government is also contributing almost a quarter of the total budget for the project. Therefore for the period up to 2011 a total amount of US \$ 951,000,000 is expected to be collected from the named donors. Any others who will come forward it will be a top up. Each donor and the commitment for contribution can be summaries and presented in the following table 8.6 below

Table 8.8: Current donors of Basket for basket funding: (Source: MOWI and regional MTEF 2008/2009)

Source	WSDP Financing Plan (2006 - 2011) US\$	Share/Ratio of Contribution
Government (URT)	251,000,000	26.4%
International Development Association	200,000,000	21.0%
African Development Bank	80,000,000	8.4%
US-Millennium Challenge Account*	66,000,000	6.9%
KfW/Netherlands Government	130,000,000	13.7%
Expected contribution from other DPs (Japan, EU, GTZ, SECO, France, EIB, etc)	224,000,000	23.6%
WSDP 2006-2011	951,000,000	100.0%

ii. Priority in fund distribution

The collected amount will be distributed to various water projects in the whole country. According to the strategy set by the distribution committee the priority areas are protection and management of water sources, rural water supply and Urban, Management support utilities and new project investment for water supply structures and sewerage system. However, the whole project funds distribution plan has been described in number of components and presented in the table structure. (Please see appendix R in the CD).

iii. DAWASA position on basket funds

DAWASA as a largest water services authority in the country with more than 600 employees situated in the former capital and commercial city of Tanzania

servicing more than 3.5 million people. According to MOWI structure DAWASA fund allocation is under the component of Urban Water Supply and Sewerage (UWSS). The total allocation for the period from 2006 – 2010 is US \$ 510,875,000' [193].

The authority is spending almost 25% of the total UWSS allocation, because of its geographical location, functions, area of services and number of people saving. However, how much funds will be located to DAWASA depends on DAWASA request according to its strategic development plan (maintenance and development). However, according to the available estimates DAWASA will be funded 25% of the total allocation for UWSS. Then DAWASA will be allocated about **US \$ 31,929,688 per annum**. However, basket funds depends on available donated funds normally it is not reliable depends on number of factors sometimes donors might withdraw or they cannot fulfil the promise. Therefore this study considered the source as one time capital fund (not long term source).

8.7.4 Appraisal for POCO capital funding methods

The three discussed POCO methods for capital funds (tariffs review, mass contribution and basket funding) have been established from local sources. Each method has its advantages and disadvantages. Any of these methods can be applied separately or combined.

The tariffs review method is applicable only when water charges are reviewed with additional percentage for sustainability and development. However, change for water charges necessitates the approval of the regulatory authority. According to POCO the regulatory authority and operator are all independent organisation owned by government. The major role of regulatory authority is to ensure water charges are set to sustain and develop the existing services and at the same time the charges are affordable. POCO developed with greater consideration on affordability therefore, tariffs review method under POCO is acceptable in Tanzania. The tariffs review method is common in many countries in the World. The amount to be generated under this method normal depends on the size of the water distribution network and number of existing water customers. The greater the number of water customers, the greater the amount of collection. Depending on the design and objective set the method can be executed permanently or for specific period. If the affordable issue was not considered during the preparation (calculation) estimation time the new proposed charges will create difficulties in the process during the approval, then the new higher water charges will be the cause of conflict between the services provider and water users. Mass contribution method has indicated to be an appropriate local solution for capital fund development.

The method involves use of tools and number of different approaches for funds collection (discussed in section 7.5.8). The implementation process is difficult and very discouraging because it necessitates closely follow up on each action and each step to make the project effective. Furthermore, the application of the method need time and higher commitment because it involves meeting with number of people and groups, legal procedures, involves number of implementers, organisation and frequently evaluation, and sometimes training is necessary. The overall process of implementation is long and difficult. Therefore, mass contribution method can be adopted once and for specific period.

The method of basket funding is also appropriate solution for capital funds, no conditions for payback and no profit generating however, it depends more on how much funds are available in the basket and various promises of donor's commitment. Funds in the basket are not flowing constant, they are cases where donors are paying the whole commitment at once and there some cases they pay quarterly and there are as well some cases they cancel the commitments due to political reasons. In other way the government contribution is small according to the government income therefore funds in this pocket are not constant and how much to be contributed it depends on donor's willingness. The research has adopted this method with those cautions and that, the method used to establish one time capital fund for specific period, will not be continuously it is not reliable. Therefore, the most stable and more reliable source among the three is tariff review method which has been approved and adopted as a major source of local capital funds to this research.

8.7.5 Effects of the model POCO in Practice

Application of POCO will have impact on both managerial and financial change, that POCO will bring in new style of managerial practice with objectives of providing better and affordable water services to all. The effects and impacts can be measured on POCO acceptability to government, operator and water users. Will it be willingly acceptable?

i. Management impact

In practice POCO change the existing management organisation structure to bring in greater focus on commercial operations. This will affect the nature of operations by being more independent and free of interruption from government. On other side government giving away its traditional freedom of interruption in water services may not be so easy and this may become one of the reasons which may lead POCO to be not accepted. POCO management structure brings positive

changes in existing water services and that, POCO improves coordination among of the water stakeholders by introducing the commercial focus in production and operations. This makes performance monitoring and control to be more effective and more competitive with benefit to both customers and as well operator.

ii. Financial Impact

Adoption of new model POCO will make better water services in Tanzania, and improves the amount of water sells, the higher the sells the greater the revenue collection and the higher the sells the greater the government income through tax collection. Water services will improve because of POCO structural and ability of establishing reliable and sustainable capital funds from local sources. Sustainable capital without conditions and local strategic plans under contractual performance monitoring are the POCO major tools that, will give positive impact the financial status in water services. However, the tariffs review method is the a catalyst for fund raising, however, the strategy has an impact on increase of water charges with direct effect/touch to water users. Worries on affordability due to increase of water tariffs can be used as a tool to influence the resistance against POCO. Still this situation can easy be tacked through education in transparency and direct participation of all kind of water users.

8.7.6 Uniqueness of the POCO

POCO has unique extra values and special contribution in many ways including composition, origination, adoption and its sustainability. The adoption of POCO for practice in its local area has so many uniqueness including

i. Originality

POCO has originated from local challenges on what to do next after the failures of public and private water services in the country. Even the research topic was formulated to solve the existing local problem. The model developed from analysis of local data where the problems are to be solved that's why it has been concluded that has local origin which is not similar to any model. The concepts formulated POCO were from the contributions of all Tanzania water stakeholders (customers, employees in water sectors and government people) who were organised to contribute independent opinions to this study. It was local ideas from stakeholder's participation, that what makes uniqueness. POCO is a local solution easier with almost no cost on adoption and implementation. The combination of all these local ideas from various stakeholders to come up with one appropriate solution covering the interest of all focusing on acceptability and adaptation necessary for actual local need.

ii. Composition emblem

Structure is other uniqueness the model (POCO). The model has two major components including ownership and commercial operations. The ownership component is 100% government ownership of a public entity which is not necessarily publicly managed. Under the POCO structure the entity is independently managed. Policy issues are on the hands of the owner (government). The other part of POCO is commercial operations. The commercial part of model facilitates the generation of necessary funds for services sustainability and its development. The entity is operated commercially to cover all its necessary operation costs. The entity owned by government and managed independently and commercially. POCO have both public and commercial operation interests.

iii. Application

The model has uniqueness in application that, once adopted is already a solution of management for water services and as well capital fund generation method. POCO satisfy government needs (ownership) and also satisfy water users (affordability) this makes the model easier acceptable to all and that makes easier in application.

8.7.7 Appraisal of the model POCO

The differences between POCO and other model (public and privatisation) is that POCO has adopted some useful factors from all the two models. Concepts of efficiency and performance monitoring are the major factors in privatisation. Concepts of the public ownership and services to all are major goals of public services. As discussed in section 8.5.3. POCO will be easy accepted and applicable in the country because it has developed from the failure of private water services. The differences in functions and structure between POCO and privatisation is what will make POCO to reduce water charges because POCO has local sources for generating capital funds and greater consideration on affordability. However, this will improve the revenue collection and reduction of water loses. The uniqueness and originality of the model as discussed in section 8.7.6 has indicated greater acceptability in its application which therefore brought new hope of affordable water services to all. However, detail appraisal of the model can be clearly presented on discussing the model advantages and disadvantages as follows.

8.7.8 Advantages

i. Better water services for all

The POCO implementation structure indicates that the DAWASA operation area will be divided into reasonable zone sizes depending on the number of customers or the geographical distribution of the water network in the area. Each zone or sub-branch area will be well equipped with necessary tools, equipment, and skilled labour. This will ensure faster and sustainable services for customers due to services being closer to water users. Good services to water users means closer supervision of water distribution to customers; this includes closer control of water leakages, reduction of water leakages, and increasing of water supply in the distribution network. Services will improve for customers because of an increase in water quantity and pressure. The POCO implementation structure with the approach of commercial operations will open and encourage a closer service relationship between the service provider and customers. Customer complaints will be handled and solved within a short time because of the closeness of services to customers.

ii. Commercially sustainable

The field data shows that the DAWASA privatisation was due to a lack of funds for repair and rehabilitation of old, aged DAWASA water infrastructures. This forced the Tanzania government to go for a World Bank loan with the condition of privatisation. The commercial component in POCO is designed to ensure the entity is stable for its operational costs and for services development. The product (water) will be served commercially to cover its total operational costs, and extras will be invested as capital development for better water services. This will make DAWASA more sustainable and self-reliable on commercial aspects. POCO allows flexibility when it comes to commercial aspects.

iii. Satisfaction to the Government and acceptability

The aim of the government was to qualify for the World Bank loan and not to lose the DAWASA ownership through privatisation. For similar reasons during the privatisation, the government wanted to not lose the ownership of DAWASA.

The government was not ready to lose the DAWASA ownership because of mainly political reasons. POCO has structured to retain the DAWASA ownership. However, government properties qualify for government subsidies for development of public services which may reduce water charges with better monitoring and control to ensure the service is affordable to all. POCO was

developed with greater inputs from the local field data gathered from all water stakeholders, the place where the problem of water services management is existing. POCO process and approach for adoption covers a wide range of different participants at preparation stage. This allows the transfer of knowledge among the participants and the project host and therefore to make POCO acceptable and adoptable easier

iv. Environmental friendly

Availability of plenty water through adoption of POCO will make water sufficient for domestic use and as well for another usage including irrigation for gardening and plantation in general. This will decorate the earth surface to make attractive and friendlier for human use

v. Increase of the land value

POCO will make more water available, the availability of safe water will make land greenish and fertile this automatically will encourage and attract all kind of investors, this will stimulate the competition for investment and therefore land value will increase

vi. Enhancement of Efficiency and Commitment

The problem of inefficiency and bureaucracy in DAWASA services has been evidenced by 72% of DAWASA water customers as analysed in section 8.2 The performance contract that covers close monitoring and periodic performance review in POCO is one of the motivation for efficiency that, eliminates any bureaucratic process. This means any performed work is measured and evaluated for decision.

The group or individual performances will be accessed and rewarded accordingly. The periodic performance targets to each described duty will be a special motivation to enhance services performance. The implementer will work hard to achieve the targets. This will accelerate total commitment and therefore to improve services efficiency. Application of POCO necessitates improvement of data base. Records are important tool for various uses including evaluation and review for development of new targets and a well as for research use and from target review focus water services will be improved with minimum bureaucratic to maximum efficiency.

vii. Relationship and good coordination

The application of POCO will improve and reinforce working relationship and communication between the government and services providers. The structured performance services report is provided periodically by the operator (DAWASA) to the government, and government reviews the report for action accordingly. This makes government closer to operator and sharing water problems closely and possibly it opens space for providing quick solutions. The government water policy is easier to implement. The government and operator will work under one objective better water services for all.

8.7.9 Disadvantages of the POCO

i. Application of POCO requires training for understanding its structure in areas including labour and power divisions and implementation procedures. In practice, the risk of interferences from political decision is high because the entity (DAWASA) is owned by the government and in government system decision makers are politicians. DAWASA management is installed by government mainly to fulfil government interest. Depending on the nature of decision most political decisions are an obstruction to professional practice.

ii. Adoption of POCO will introduce new management rules especially when service provisions are managed under performance contract. At beginning this may cause some difficulties to employees those have been working under a different management style. This will result in resistance with effect on work performance.

iii. For the purpose of water leakage control and proper monitoring of the distribution network POCO will urgently need to install large number of water meters which requires higher capital investment at very initial stage

iv. Application of POCO involves a lot of records keeping, systematically stage by stage and especial on up to dating customer records, network behaviour, water quality and production. It is important for activities monitoring and targets review. Record keeping may look too much.

v. Adopting POCO involves organisation restructuring. The DAWASA operating areas is divided into reasonable size operation zones depending on number of customers and geographical distribution of water system. This requires training and development of new standards of performance criteria with targets, extra motivations, periodic review and modality of reporting. All these requires funds for mobilization, good skill and requires change.

8.8.0 Summary

The information gathered from water stakeholders in the field and literature knowledge developed and concluded POCO as a solution for Tanzania (Sub-Saharan African Countries) water problems. The POCO managerial structure composes number of different organisations with major tool contract on performance. The work efficiency and control on project performance is through the periodic evaluation of the performed tasks. This allows the review of project strategies to shape the quality of work within the designed implementation period and therefore guarantee of quality in performance and efficiency in greater. The discussion in section 8.6.4 indicated that, the existing working relationships between different stakeholders in POCO structure is a driver of model performance to ensure that, the project objectives are achieved with common focus of all stakeholders. In this case participation for common decision and fair consideration of water users and service provider ideas are met. This indicates that, the model system has made with team work approach which is motivation for WTP. Varieties of capital funds establishing approaches (tariffs review, mass contribution and government funds) in the model indicating that, model can be adopted with flexibility depending on circumstance of which approach is favourite to that particular environment. One or all approaches can be adopted at once or systematically depending on project strategy and field environment. This flexibility of model in application makes POCO possible to be adopted in flexible conditions and therefore to be a solution for other Sub-Saharan African countries. The discussed advantage and disadvantages of the model has opened a window for general analysis on acceptability, adoption and application the method that, analysis from these factors with focus on the new project objectives can be best way on concluding how POCO can be adopted. However, adoption of POCO method will solve water services and funding problems to make water services affordable to all.

CHAPTER NINE: VALIDATION OF THE NEW MODEL (POCO)

9.1 Introduction

This chapter discusses the external review of the new water services model POCO. The exercise was executed in Tanzania with aim of examining the model POCO on its applicability, acceptability and appropriateness. The theoretical and practical value of the model is examined later in this chapter.

9.1.1 Approach to Validation of Model

Focusing on the study objectives, information control and verification, a structured interview approach was the appropriate validation strategy to this research. Senior Tanzania officers have unlikely to respond to questionnaires; therefore the option of using questionnaire approach would not be appropriate. The, interview questions were structured in an open ended style to allow in-depth and wider coverage of the interviewees' comments on the model. The aim was to test the acceptability, applicability and adoptability of the POCO in the place where the model will be applied. The structure of questions was strategically developed to test the strengths and weakness of the model, see the interview question in appendix M in the CD.

The validation was carried out in Tanzania for a period of one month from Mid July 2009. Aiming for quality contributions (positive and negative) staff management knowledge, professional practice and experience in water services, current holding position in water services sector, and personal ability and willingness on discussing new ideas were the key factors for selecting the POCO valuator. Senior officers (grade A) from local water authorities in Tanzania were selected for the interview. The officers were responsible for decision making in their authorities including chief executive and other senior officers from Mwanza, Tanga, Morogoro, Iringa, Mbeya, Arusha and Moshi regions. Please see (appendix S in the CD) for details of each interview.

The validation of the model brought in some significant changes to the model and adds value by strengthening the contents.

The exercise brought forward a number of challenges evidenced this wider range of practical experiences. All the seven interviewees were local professional engineers with managerial experience of not less than 15 years in water sector. The validation was executed strategically to involve local Tanzanians professional

and responsible people. The collected comments, criticism and new ideas were from local professional people those who are in the field practising water services with long experience in management.

9.1.2 Summary of the validation interviews

The mostly discussed areas were summarised into three groups, the composition of POCO structure and its functions, acceptability and adaptation of POCO, and development of capital funds. How POCO performances will was also analysed and presented as follows.

i. Composition of POCO and functions

The comments from MUWASA, AUWASA, MOUWASA, TAUWASA, MORUWASA, IRUWASA and Mbeya water authority senior executive officers was that, POCO organisation structure can be a solution for Tanzania water services because it is local origin and its composition allows close control and monitoring at every stage of implementation. The strategic organisation process on control and balancing water charges for the benefit of both water users and as well services provider makes the model structure more acceptable. The implementation phase should have close monitoring place. Other support services including security and professional duties should be implemented through competition by private companies and it will enhance the total performance.

The interviewees added that, within the POCO designed structure the individual and total working performance will be controlled and measured in the performance contract. Therefore the provision of water supply and sewerage services will improve due to this structural contract control style.

The POCO structure grant 100% government ownership. The interviewees commented that, water services should be owned by the public. It is proper because the government makes policies for water, controls the resources and is responsible for water capital investment. The government looks after human development and water is a base of life and development. However, they cautioned clear boundaries should be in place to prevent political interference on daily water services activities.

The interviewees indicated that, the commercialisation structural component in POCO should be seriously implemented in all water services sector if the idea of self-capital development is the goal.

POCO should define in detail the boundaries and interrelation between member organisation, whereby roles, duties, responsibilities and power of each organisation should be clear. The interviewees were concerned with the strategic

implementation of POCO indicating that, the performance responsibilities should be divided into two categories monitoring and implementation. The practice should take place after short and long term training.

ii. Acceptability of POCO

Comments on acceptability was all the interviewees indicated that, POCO will be easier accepted in the country because it has origin concepts of local ideas including culture and traditional that, has greater impact on acceptability to local people and especially being developed purposely to solve Tanzania water problems. Considering the history of water problems in the country that, from 1961 after independence water sector has been under restructuring and change of management from public to private then parastatal, but no study was carried out to come up with appropriate solution for the problem except POCO. This promises greater acceptability. The POCO component of considering the affordability and participation of all stakeholders for decision on water charge will not only motivate the WTP but also will make the model acceptable and practicable

POCO is compatible to government water policy, while the POCO structure justifies the necessity of government ownership in water services. These factors have extra acceptability because the government will have no objection to the model adoption. It covers the major government interest (ownership). The Mwanza water commercial manager Manyema [204] added that, a model, formula or method can be adopted either for testing, improvement or as permanent solution. Therefore POCO is more acceptable and can be adopted not only as a solution for Tanzania water problems but as well as testing or improvement

The government will not only accept POCO because of ownership but will support POCO because of its ability of developing capital funds from local sources that will make the government free from borrowing loans from international funding institutions and therefore free from donor's unnecessarily tough conditions.

iii. POCO methods for Capital funds development

The need for alternative and sustainable source for capital funds was 100% accepted by all the interviewees that, It is important at this time when loan conditions are not favourable to the borrowers. POCO methods for generating capital funds were also agreed. The three alternative including tariffs review, individual fund contribution and basket funding are technically sound with following comments.

iv. Challenges on tariffs review method

The tariffs review method being the major source for generating capital was accepted. Worries that, tariffs review will raise a specific amount for capital development will cause higher water charges for those with low incomes. This will increase illegal water supply connections and vandalism in the existing water supply network. The issue of using unsafe water for poor people will rise and therefore water borne diseases will spread. Mtaita [208], Shushu [206] and Mgeyekwa [205] indicated their worries on how the regulator will react at first time because, EWURA seems to bias and not easily accepting review of water rates with good reason that they are protecting people from higher water charges. On the other side Mfugale [203], [204], [207] and [208] insisted that, with detail analytical evidences EWURA would definitely approve the review for water rates provided the vision and objectives are clear. The concept adopts but not to be included in POCO because should be detailed in its objectives and strategy of implementation.

v. Capital funds from local Institutions

Mgeyekwa [205], Mfugale [203], Swai [209] and Halima [207] suggested that, loans from local financial institution should also be included in POCO as one of the sources for generating capital funds. The loan's conditions from the local financial institution are locally set with greater possibility of flexible and they may not be stronger than the ones from the foreign because local funding institutions and as well DAWASA are all existing under local Tanzania policy and they are made to serve Tanzanians. These new comments were analysed and the concepts were adopted as reinforcement to POCO.

vi. Contract performance in POCO

All seven interviewees were in favour of performance style contract, however they indicated that, the contract period should fixed and if possible should not be more than 2 years, (first year of big contract or projects is the observation period but second year is implementation time). Periodically review of contract within short time makes it easy for any adjustments or collections if necessary. Improvement of contract terms according to the real situation every two years period is reasonable. They added that, contract terms should be realistic and measurable. Contracts should have room of open competition between the performer and its set targets and as well among the employees themselves. The best performer should be awarded and worse performer should be answerable.

9.1.3 Summary of concepts from validation exercise

The summary indication of the validation exercise is that, POCO with clear objectives and clear procedure of implementation was accepted as a sustainable solution for Tanzania water problems. However, there are some concepts adopted for the model reinforcements as follows

i. Training (Clear understanding of POCO)

The model should have special training program before and during the adoption to ensure good transaction and clear understanding of what is POCO and its objectives. This means clear understanding of model and its objectives will make it acceptable, adoptable and assurance of trust to all stakeholders. Therefore the position of training should be first in the structure and actually is and continues process until model it is in full capacity in practice. This means that, preparation time is obligatory and during that time one of the important activities training should be conducted. Whereby the structure should allow the fixed period for training to all stake holders and the training effects should be measured before POCO is kept in practice.

ii. Capital funds from local institutions

The interviewees raised new concept that, POCO can have a component of establishing capital funds from local institutions. Their insisted that, loans from local financial institutions are soft, with fewer conditions than those from international donors, because local institutions are registered under the local government policy for the benefits of Tanzanians. The idea was accepted but not adopted in POCO because it is completely out of POCO objectives. This concept necessitates establishing of a special study to ensure the security and capability of the local institutions. However, the local financiers conditions should be measured and evaluated to ensure its acceptability, applicability and without having affects to water services.

However, one of the research objectives was to develop alternative capital funding sources as a solution from loans with tough conditions. Therefore, concept was fit to the POCO objectives and that, make it not adopted in the model and therefore was included to the research recommendations.

iii. Restructuring of the DAWASA operating area

The concept was raised earlier by six interviewees, that to make services more efficient the DAWASA operating area should be divided into small sub

operating areas. The new sub-branch zones will have full power on water connection and reconnection for non-payers. The implementation requires initial capital investment, for establishing sub-offices, organisation, equipment, tools and other necessary requirements. This needs special preparation plan with capital funds and as well training. The concept was adopted in model.

iv. Transparency during the adoption

The adoption of the model should be executed in transparent manner and at every stage all stakeholders should be granted full participation. This concept came from all seven interviewees. The important period is during the arranging and dividing sub areas/ zones for operation and especially before adoption of POCO. However, also before commencing of individual contracts 'performance contract' exercise the employee's involvement is obligatory. The employees should clearly understand what are the contract and their contents

v. Free from interference

POCO should be free from higher authority interference on its programs and activities. In the developed model it was just assumed that, POCO will accommodate full freedom. This views worries that, POCO is hundred% owned by government and therefore, it is possible to be used as a political platform Factor of operating boundaries, role and functions with clear demarcation should be articulated in the performance contract.

The performance contract between government (ministry of water) and DAWASA will be as a tool for guiding responsibilities and boundaries of each part, whereby protection of internal and external interference is guaranteed. However legislation of legal existence which every organisation has clearly declared its function and duties to perform is also protecting the interference of government to DAWASA.

iv. Private operation in POCO

The idea of accommodating private services in POCO was firstly raised during the model test in the field Tanzania. Five interviewees recommended that, participation of private services in selected areas especially in sophisticated professional equipments and duties such as plants rehabilitation, designs, construction of big structure, security services, communication duties and others is necessary. Engaging of private services in those areas will enhance the quality of production through competition and therefore to rise the POCO performance. The

idea was adopted and that, to ensure quality, competency, professional, time and money saving in executing POCO some of selected tasks should be contracted to private operators. As shown in diagram no.9.1 below that POCO organisation structure under project implementation unit contracts for private operation will be executed. The selected special and professional tasks will be contracted to professional private services provider. The concept of providing private services in the model is to allow competition and technology improvement for better quality. According to POCO structure the section of project implementation will supervise and review the performance of all services provided by private contractors. Private participation in POCO can be summarised and presented as shown in diagram no. 9.1 below.

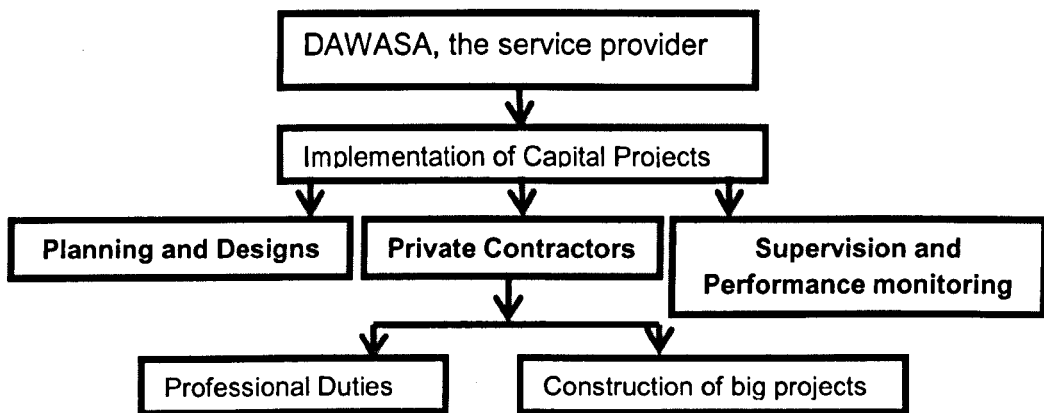


Diagram 9.1: Private services in POCO structure

9.3 Validation on POCO financial part.

The validation for the financial model was a component of the research necessary for cross checking the relevance and its practicability in the field. This research concludes the solution for funds problem by developing the sustainable fund model from local sources, as proves of practicability the two new developed funds methods including (Tariff review and Mass contribution methods) were tested as follows

i. Validation of tariff review method

The implementation validation on practicality for capital fund rising was part of the designed study strategy to ensure the strength of POCO and its applicability. Whereby, the commercial part of POCO has been structured to cover the operation

costs for water services and generation for capital funds, therefore its application was also validated to conclude the cumulative funds as follows. The idea is that, total collection with reviewed rate – Total existing collection + 4% annual increase from reduction of water losses + normal serving between the existing collection and expenditure (annually for five years) for estimated period of implementation. Considering that, during the 4 years of DWSSP implementation almost 60% water leakages will be controlled and reduced the effect will be increasing of water supply by 5% of total production per annual. Considering the existing DAWASCO consumption ratio, the increased water volume has been distributed to all three water categories (domestic categories one and two, and commercial category) and therefore to effect the total water sells as follows

- Domestic category one with consumption not above 5 m³ which is 14% of total consumption will have an increase of 684,597.99 m³ per annum
- Domestic category two with consumption above 5m³ which has domination of 77.2% in total consumption will have an increase of 3,775.068.9.1m³ per annum and
- Commercial category which is occupying 8.8% of total consumption will have increase of 430, 318.7m³ per annum

In order to be precise, realistic and accurate this mathematical validation has adopted to work with DAWASCO amount of sold water per annum. Therefore Sold water = total consumed water – consumed unpaid water. While consumed water = total water production – all wastage (leakages, illegal connections and others). Considering that, within four years of DWSSP implementation period gradually water consumption will increase from 68,459,802.8m³ to 83,213,317m³. Similarly the sold water amount will increase to 82,562,934m³ which is about 90.8% of current total plants production. It has been estimated that, water production will increase by 5% due to plants repair and rehabilitation under DWSSP. The details on this can be presented in table no.9.1

Table 9.1: Systematic and volumetric increase of water sells

Categories of Consumption	Current	1 st Year	2 nd Year	3 rd Year	4 th Year
Domestic Consumer One (14%)	8,820,420	9,505,017.9	10,189,615	10,874,212	11,558,809
Domestic Consumer Two (77.2%)	48,638,316	52,413,384	56,188,452	59,963,520	63,738,588
Commercial Category (8.8%)	5,544,264	5,974,582	6,404,901.4	6,835,218.7	7,265,537.4
Total (100%)	63,003,000	67,892,983	72,782,968	77,672,950	82,562,934

The revenue collection will increase gradually due to increase on water sells which has been cause by water supply increase as the result of DWSSP project and increase on new connections. According to the discussion in section 8.5.6 and mathematical calculations in section 8.5.7 indicating that, the increase in sales will increase the DAWASCO revenue to the target. Increase of water volume has to multiply with existing water rates for revenue gain. Therefore annual revenue increase at every customer category has been calculated to indicate how much annual increase for the whole DWSSP implementation period. The calculation summary can be presented in table format as shown in table 9.2 below

Table 9.2 Annual revenue increase due to volumetric water increase

Categories of Consumption	Current	1 st Year	2 nd Year	3 rd Year	4 th Year
Domestic Category One (14%)	2,116,900.8	2,281,204.2	2,445,507.6	2,609,810.8	2,774,114.1
Domestic Category Two (77.2%)	15,564,261	16,772,282	17,980,304	19,188,326	20,396,348
Commercial Category (8.8%)	1,995,935	2,150,849.5	2,305,764.5	4,456,614.2	6,762,378.6
Total (100%)	19,677,096	21,204,335.	22,731,575	26,254,750	29,932,840

The revenue increase has been calculated in considering the new reviewed water tariffs on each category as stipulated in section 8.5.7 and water volumetric increase as indicated in table no 9.2. The calculation based on new set water rates per one cubic meter on each category as follows;

For domestic category one is £ = 0.44, domestic category two is £ = 0.62 per cubic meter and commercial reviewed rate is £ = 0.86 per cubic meter.

Calculation has been made with consideration that, the reviewed water tariffs will remain consistence (no review again) for five years period. Therefore, with reviewed rate mathematical workings has been executed, to come up with focused amount to be generated. The table no 9.3 below indicates the summary calculation of annual revenue generation for the period of four years. It is a capital amount established from tariffs review and increase of water sells

Table 9.3: Annual revenue collection with reviewed tariffs

Category of consumer	Current charges	1 st Year	2 nd Year	3 rd Year	4 th Year
Domestic Category One (14%)	3,660,984.8	4,182,207.8	4,483,406.0	4,784,653.2	5,065,875.9
Domestic Category Two (77.2%)	30,155,755.0	32,496,298.0	34,836,840.0	37,177,382.	39,517,924.
Commercial Category (8.8%)	4,768,067.0	5,138,140.5	5,508,215.2	5,878,288	6,248,362,1
Total (100%)	38,804,806.0	41,816,645.0	44,828,861.0	47,840,323	50,852,161.0

Considering the revenue established due to volumetric water increase as indicated in table no. 9.2 and revenue established from tariffs review in each category as shown in table no.9.3. The calculation for total capital funds to be established will be as follows.

Domestic tariff one: will increase £ 301,223.00 every year x 4 = £ 1,204,892.00

Domestic tariff two: will increase £2,340,450 every year x 4 = £ 9,361,800.00

Commercial category: will increase £ 370,072 every year x 4 = £ 1,460,288.00

And therefore total collection will be

i. Domestic customers with category one tariffs =

3, 660, 984. 8 +4,182, 207.8 +4,483,406 +4,784,653.2 +5,085,875.9 =**22,197,127.7**

ii. Domestic customers with category two tariffs =

30,155,755+32,496,298.0+34,836,840.00+37,177,382+39,517,924 =**174,184,199**

iii. Customers with commercial category =

4,768,067+5,138,140.5+5,508,215.2+5,878,288.0+6,248,362 = **27,541,072.7**

Therefore, the total revenue collection for the whole period of 4 years will be: SP (£) = **223,922,399.4**

iv. Expenditures

According to 2007/2008 DAWASCO annual report (see table 8.3). The DAWASCO total annual expenditure was Tsh. 15, 945,395,398.99. Considering that, due to unstable economy the inflation will affect the expenditure with assumption that expenditure will increasing by 7% annually in four years period. Therefore, the total expenditure by the end of four years period will be STP (£) = **37,097,163**, The detail calculation of increase on annual expenditure has been summaries and presented in table format see the table no. 9.4 below.

Conversion rate to STP (£) (sept.2008): 1GBP = Tsh.2042

Table 9.4 Annual increases in expenditure

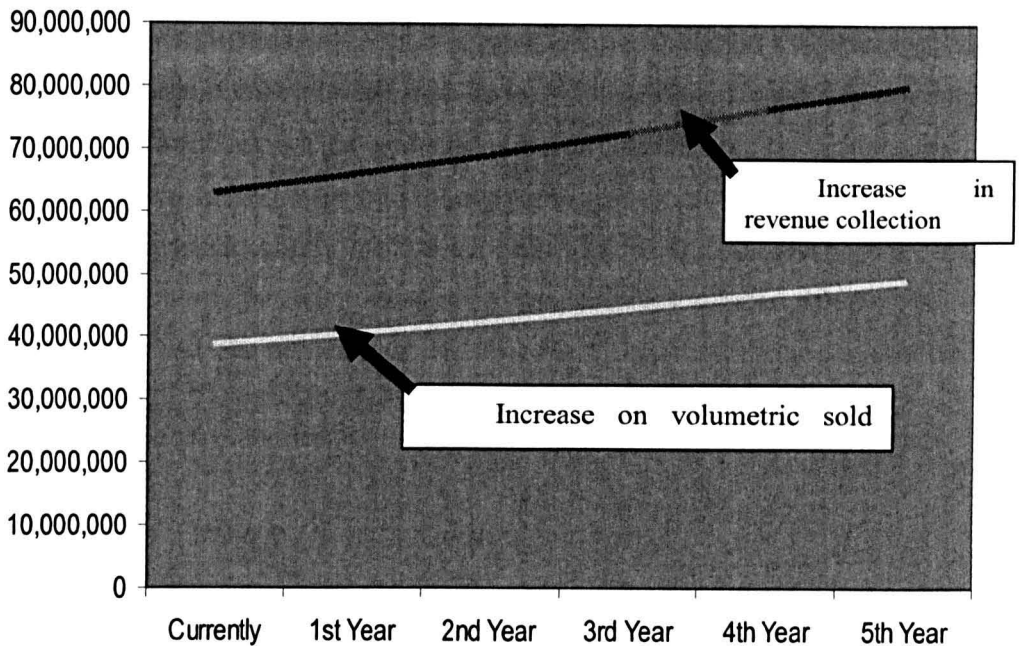
Current expenditure in STP (£)	1st Year	2nd Year	3rd Year	4th Year	Total
7,808,715	8,355,325	8,940,197	9,566,011	10,235,631	37,097,163

v. Total fund established from tariff review approach

The total amount to be raised within the estimated period of four years will be, the total revenue collected after the tariffs review which includes extra sold water increased due to leakage control. Considering the expenditures, the amount to be served as a capital investment will be: 223,922,399.4 - 37,097,163 = SP (£) **186,825,236.4**

This is the new evince that, application of POCO under tariffs review method is an appropriate approach for generating funds from local sources, Therefore only within four years period DAWASCO will manage to establish BST (£) 186,825,236.4 as capital for development in water services .

Evaluation on periodic (weekly, monthly and annually) increase of revenue collection is the major indicator to give proper direction of project success and failure. Therefore, systematic change on increase of the sold volumetric water and increase due to revenue collection can be monitored and analysed statistically through mathematical calculation. For easy evaluation and analysis the calculation has been summarised and transferred to graph presentation (see graph no. 9.1) below.



Graph No.9.1: Volumetric increase of sold water with effect on increase of revenue

9.3.2 Summary

Applications of tariffs review method as approach for establish capital funds have indicated that is reliable, sustainable and acceptable in local environment. The whole calculation and discussion in section 9.3, evidenced that the method has ability of establishing funds up to or more than BST (£) **186,825,236.4** within the short period of four years. This will make water services sustainable and self funding. The detail on how this will be generated has shown in section and summarised in table 9.2, 9.3, and 9.4. However, graph no. 9.1 gives detail character of increase of revenue collection and increase of sold water for same period. Therefore the method is appropriate and affordable for Tanzania water services.

9.4 Validation on Mass Contribution method

9.4.1. Workers contribution from the salaries

Mass contribution method is common and has been very successful in Tanzania. It has been adopted for fund generation in several areas including education sector, health and also can possibly adopted in water sector as follows.

Focusing on targeted amount to be collected, the contribution per person was set by regional executive committee (tusk force) and agreed with workers union

whereby, attention and greater consideration was for low income people, and therefore the structure for contribution was developed balanced to cover all public employees in detail matriculated as follows. In public institutions including ministries, government agencies and parastatal organisations the contribution was from Tsh.5, 000.00 to Tsh.100, 000.00 divided into five months period per person and however those who contributed more than Tsh.30, 000.00 were given special relief on tax payment for their personal property (were offered special tax relief certificate). Therefore the contribution formula for all classes of employees was as follows

Table 9.5: Employee contributions as per Income

Salary per month (Tsh.)		Deduction per month (Tsh.)	Total period of deduction	Amount of contribution in (Tsh)
Amounting from	To			
100,000.00	199,999.00	1,000.00	5	5,000.00
200,001.00	499,999.00	2,000.00	5	10,000.00
500,000.00	999,999.00	4,000.00	5	20,000.00
1,000,000.00	1,500,000.00	10,000.00	5	50,000.00
1,500,001.00	Up ward	20,000.00	5	100,000.00

Therefore, with this affordable minimum amount of contribution mass contribution method was executed for only one year period from 26th May 2007 while the total amount of US \$ 5,000,000.00 was collected. Table no. 9.5 indicating the mathematical detail of the worker's categories of contribution. This evidencing that, provided the organisation has been set properly people contribution can raise some amount reasonable for capital investment. In this situation the exercise was conducted for only one year, that means if would have been carried for 4 years period the contribution would have raised for four times = **US \$ 20,000,000.00**, which is approximately UK £ **11,753,183.15**.

This validation indicating that, the mass contribution method is also accepted as source of capital funds in the country. However the amount collected is less that tariffs review method but if the method organised well with greater number of participants the collection will increase.

This calculation indicating that, if these two methods (tariffs review and mass contribution) were combined applied for a period of four years will generate total

capital funds amounting to BSP (£); $186,825,236.4 + 11,753,183.15 = 197,579,419.55$ approximately £ = 200,000,000.00.

9.4.2 Summary of validation in commercial sustainability of POCO

Sources for capital funds for water projects in Tanzania and Sub-Saharan African countries were to be the obstacle for water development in the region. POCO has developed a solution for the capital fund problem. Therefore testing it was necessary to ensure the value of the model and trust for application. Validation on commercial part of POCO under tariffs review and mass contribution methods evidenced that, POCO is a practical model for local capital fund establishment. Capital funds can be organised from local sources by reasonably reviewing water tariffs as discussed in sections 8.5.5 and 8.5.7 of chapter 8. Mathematical calculations of DAWASA existing water tariffs, estimated tariffs and increase of water supply can build up the DAWASA revenue collection to formulate a stable capital for water development. Under ownership of the government POCO capital funds generation is easier to facilitate the changes because the entity is government property within the available local sources local people ideas. In relation to the validation of POCO capital fund rising, all senior officers approved the method. The general comments of POCO challenges from the validation were as follows.

i. Loans from International financial Institution should not be neglected because of its difficult conditions because it has its own contribution towards the general development.

ii. Other sources for capital funds should be from local financial institutions, because local institutions are under local common policies and therefore their conditions won't be as the international financial institutions

iii. Four senior officers from Arusha, Morogoro, Mbeya and Iringa water authorities expressed their deep worries on restructuring of water tariffs. If it is not well designed with clear evidence then it would not be approved by the regulator EWURA.

iv. Acceptability of POCO in commercial aspects was that POCO is local and practical solution for capital development in water sector. Proper implementation of the model POCO will remake the problem of capital funds for water development. They worried to satisfy the regulator for sanctioning the tariffs review.

9.4.3 Concepts adopted directly to POCO

All the validation information were critically analysed and after is where the concepts adopted to strengthen the model or for recommendation. The concepts adopted with direct contribution to POCO be as follows.

i. Answerability and good funds management

The control and good funds management was the idea brought by six interviewees that, the funds generated for capital should be well kept with proper control so as should not be diverted to any other use. This was referred to the traditional experience of misdirecting funds contrary to origin plan. That all the collected water sells should be well managed under good plan for expenditure, also noted that, finance management is one of few problems in a exiting local water services management. The concept was adopted in POCO that all professional, skilled and competent people should in place while technical and financial audit should part of POCO structure. Time to time training will be provided. However, any type of corruption will be combated with all the forces. This will ensure the good use of the little available funds for services sustainability. This concept was adopted in POCO and that in POCO professional decisions are made by professions under existing discipline system.

ii. Acceptability of tariffs review method as DAWASA major source for capital funds

Worries on acceptability of tariffs review method on being the source for capital funds through full cost recovery and capital development, that, the public regulatory authority EWURA will not accept. This research has worked on the concept and therefore, special training of introduction to POCO has been introduced in preparation stage whereby in this training detail discussion on POCO functions and advantages of adopting tariffs review method will be covered. Evidences on affordability will be provided. Technical detailed on services sustainability and development according to the requirement. Advantages and evidences of tariff review method in comparison to loans from international donors. However, with greater advantage of its compatibility and acceptability to water Act. 2009 has been a special contribution to advocate its acceptability in the country. This water Act, is advocating self-dependent in establishing capital funds for water development projects. Comparisons of POCO to water policy will be a critical example area on the training. However, this special training will be not only for EWURA management team but also to ministry, DAWASA, consumers and all

other water stakeholders. The training for adaptation of POCO will involve open discussion and clear evidences will be provided. This has been directly adopted as part of POCO at preparation stage (The term training here use as a way of educating /transferring knowledge of POCO to stakeholders with focus on acceptability).

9.5 The revised POCO model

All the gathered contributions and adopted concepts through validation process in the field Tanzania has strengthened and reinforced the model POCO by adding greater value in the existing designed model structure.

Therefore, new concepts adopted from validation has strengthened the model to sustain the field requirements in the following areas

i. Control of generated capital funds under DAWASA

Under this revision on funds control and management, DAWASA will manage and control all the capital funds, and that all designed capital funds established through tariffs review, mass contribution and government contribution each source will have separate control and operating accounts. The authorised expenditure will only be for capital investment within and not the outside of the entity agreed development plan. In this case all major procurements will be executed by DAWASA head office, Implementation and Capital Project Unit (ICPU) and sub branch offices will be empowered to purchase only some special items but under the control of DAWASA head office. Funds control is centred in DAWASA head office to ensure annual flow funds expenditure and its value in equivalence to annual investment is tarrying. This is POCO funds control in its operation. However, ICPU is responsible for implementation of all capital project while sub branches offices will be executing all the daily operation duties as explained in section (8.5.3iv). The process and responsibilities for project funds control, procurements and all other expenditures in relation to fund users (implementers) can be summarised and presented as shown in the diagram 9.2 below.

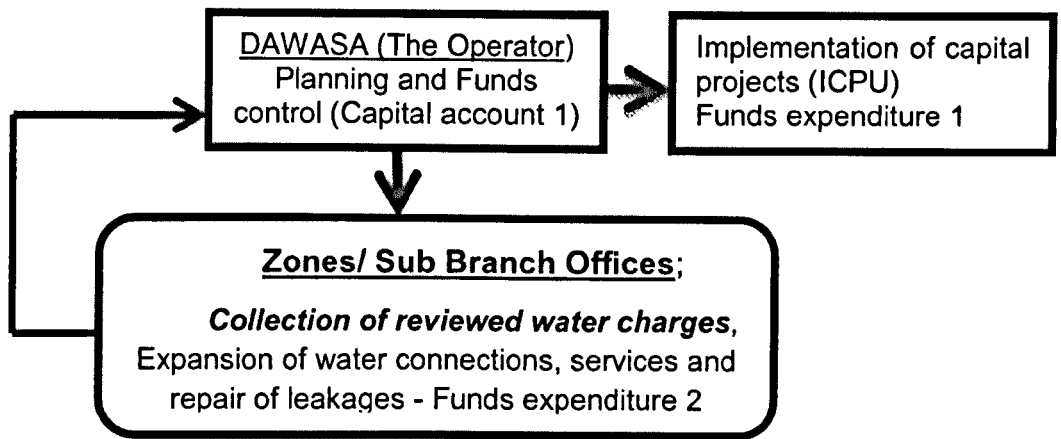


Figure no. 9.2 Planning and control of local capital funds

ii. Special training to all stakeholders

One of the core functions of implementation will be training for POCO introduction. This professional training will cover the detail discussion of the model functions including the advantages and the disadvantages. The areas for training have been discussed in section (9.4.3ii). Strategically the training will involve government leaders (ministry of water), Regulatory Authority (EWURA), DAWASA, DAWASCO and water customers.

iii. Special training will be conducted with DAWASA

The training will involve strategy identification and priority areas for investment. Water services are huge sector and altogether requires big amount of investment. The capital generated amount might not be enough for all works (plants and structure for water production, main pipes, reservoirs, busting stations, distribution lines, domestic lines, water meters, equipment and tools, and general control of unaccounted for water) at once. Strategic plan for identify the priority areas necessary for investment within the whole entity operating area is necessary. Spotting the priority areas for investment plan requires detail analysis of the area cost for investment (affordable or not) and the impact after investment (returns) in terms of better quality and funds. The objective here is determining which area to be invested first with maximum effectiveness. However, the capital funds from tariffs review method is generated staidly and increasingly yearly, therefore the whole process necessitates good understanding on how much is available and where to put the first generated small capital for the maximum

effectiveness. Therefore the second year generated capital with consideration on impact on previous investment can better used for next investment. Under good monitoring this is continuously process of investment and therefore it is continuously process of water service improvement. This requires professional training to ensure good use of the local developed capital funds for sustainable water services in the field.

9.5.1 Noted concepts but not adopted in POCO

i. Loans from financial Institution being sources for capital funds

The noted concept from six interviewees is 'loans from international funding institutions should also be included in POCO as source of capital funds for water projects'. Arguing that, the international sources bring in new technology, new technical and management skill and sometimes higher skilled and competent employees which are basics tools for efficiency in water services.

This research has appreciated that, sources of fund from International financial institutions has greater contribution in local water services development, but the difficult conditions accompanied with loans has negative impact on the whole meaning of water services to all. As discussed in chapter 4, unless the loan's difficult conditions are more flexible and give fair opportunity to all borrowers and donors. This research has been developed to come up with realistic and sustainable capital funds source as an alternative of loans from international institution. The current set conditions for loans makes more difficulties for water development in sub-Sahara African countries. POCO has been developed to solve capital funds problems and as well a substitute for donor loan's difficult conditions. Developing of the appropriate funding model for water projects was one of the research objectives and the research evidenced that loans from international funding institution is not the appropriate source for capital funds (see chapter 3 section 3.9.3 and chapter 4 section 4.9.5). Therefore, this study adopted the idea for comment and advice.

ii. Establishing capital funds from local financial institution

Capital funds to be sources from local financial institution this was also a contribution during the validation of commercial sustainability of POCO. The idea is good but it completely out of this research structure. POCO was developed to solve capital funds problems and as an alternative for loans with difficult conditions. Any loan has conditions; as well local donors have their conditions too. The loan common condition is interest (profit), because any commercial business institution is operating for profit. The interest for loan has to be reflected and covered in

customer water charges, this has an effect of increasing water charges because of loan + interest (profit). POCO has developed with consideration of people with low income (affordability). Any element which will be reflected and impact on increasing water charges is not compatible to POCO. POCO is fighting loans for affordability of water services (to make service cheaper). It is the objective of this research to come up with sustainable, affordable, quality and efficient solution for water services in Tanzania. Adopting local financial institution as source for capital funds needs study to identify the stability, conditions and the effects. For that reasons the idea of local financial institution being a source for capital funds cannot be combined with POCO. Therefore the idea was adopted for recommendation in future studies.

9.5.3 Discussion on new water management model

The discussion in this section involves comparison between POCO and other models (privatisation and public water services) that, have been implemented in the country. This gives opportunity to screen the characters of POCO when adapted to the field. Basically each model developed with specific objectives to be adopted somewhere. However, analysis of general characters of the model for assessing its compatibility to field in necessary.

a. Practical differences between POCO and Privatisation

POCO and private water services has great similarities on services improvement. However, every model has developed to fit somewhere, and no one can fit everywhere, this is because of the existing differences from one model to another. Therefore practical differences between POCO and privatisation discussed in this section has been focused on compatibility of the model to solve water services problem in Tanzania. Therefore the discussed areas are compatibility to Tanzania water Act, localisation of the model, driving forces of the model, generated profit, local management staffs and affordability in providing water services.

1. POCO's Compatibility to objectives of the Tanzania water Act.

Objectives of water Act.2009 are to promote and ensure the right of every Tanzanian to have access, efficient, effective and sustainable water supply and sanitation services through

- Ensuring that water supply and sanitation authorities (DAWASA) are financially and administratively autonomous and sustainable

- Establishing mechanisms to ensure that communities meet the costs for operation and maintenance of their water supply systems and contribute to the capital costs thereof. Furthermore, minister of water has power to declarer any government water entity to be financial autonomous depending on its commercial viability of providing water and sewerage services.

This justifies the acceptability of POCO in the country because POCO has been developed to solve water problems through self-affordability (capital funds that develops from water services), which are main objectives of water Act 2009. Therefore, POCO will be accepted easily because POCO is not only advocating but it is also a Tanzania water Act practice. In comparison with privatisation, that private system was just forced to be practiced because of being the condition for the loan.

ii. POCO's locality

POCO has developed from local problems with greater contribution of local people ideas. The POCO structure recognises local water users as fundamental part of the model and therefore they have given special task to perform on model organisation structure. Review of water tariffs is not possible without water users' participation. That means the regulator cannot make decision without discussion and consultation with local water users. This make them feel that, they are part and parcel of the POCO and that the model is there are local method to solve their water problems. While privatisation is external developed model, was brought in the country as a condition for loan.

iii. Differences in driving forces

Driving forces for developing and adopting POCO is affordable, sustainable water and sanitation services to all Tanzanians (Own willingness to solve water problems). Nevertheless, the driving forces for adapting private water services were a need for capital funds (loan) from the World Bank. This is also a justification that POCO is Ideal model for Tanzania water problems. Therefore, definitely its application will ensure the availability of domestic water with affordable water charges because no extra amount in the water rates to cover the loan and interest.

iv. Generated profit

The net generated profit from water sells is case of the POCO is taken back as a capital investment to the same water development project, while in private system according to number of shares of each member the generated profit is distributed within the shareholders. In the case where shareholders are foreigners

then the generated profit is taken outside of the country. The new model (POCO) will speed up the development of water services in the country, because the whole generated profit is used back as capital. The process of reusing profit as new capital will expand the network and number of customers will increase. Within reasonable period of time application of POCO will facilitate internal establishment of capital funds.

v. Local management staffs

POCO management differ with private services in structure and organisation in general whereby POCO occupies full local management team, therefore final decisions of any level are made locally and faster. Local management team with greater understanding of social, culture and local traditional will improve relationship between management and common employees to form good team work. This will rise the working attitude with commitment and accountability whereby, directly will improve working discipline to increase productivity. This is due to experience and better understanding of local environment, culture, traditional and social life of the people whom they are working with them. Private system with top foreign management team had less knowledge on local culture and traditional. Foreign management team they are fast to bring in new rules to abolish some local working style and sometimes even the introduction of foreign culture may be a cause of conflict and misunderstanding. Those things were noted in DAWASA privatisation were the obstacles and the major causes of privatisation failure.

vi. POCO developed with greater focus on affordability

In comparison with private water services POCO has been developed with greater focus on providing services to all, with major consideration for low income people. Therefore, through the whole process of model development the issue of affordability has been covered. The affordability has never twisted original objectives of developing a practical solution for capital funds generation and for development and sustainability of water services. Funds generated from difference between total water sells and total expenditures (profit) are directly accumulated as capital to develop the same entity. The same generated funds (profits) under private services are distributed to shareholders. POCO retains public ownership while a private water service is owned by private individuals or groups. Private water services are mainly driven by profit maximisation, while POCO has focus on services expansion, affordability and sustainability.

b. Differences between POCO and Public water services

The discussion covered on sections (5.2.4) and (9.4) on role and functions of public water services and POCO. Indicated that, both models are under public ownership with focus on services to all, but the two models have number of differences in structures, operations, chain of command, decision making and as well in control on performance. As discussed in section 9.4.2 that, POCO is an independent commercial operating model and therefore services under POCO has more clear targets and plans, control, close performance monitoring and detail estimation on amount to be generated as a capital. Public water services in not full independent with interference during the operation which in many cases resulted to bureaucratic. The commercial focus in POCO to generate its own capital funds are that, what brings up major differences between the two different models. Public water management style has greater focus on affordability and services to all, the sources for capital funds is a government task (central budget, grants or loans), whereby in some cases service costs are subsidised by government, therefore the model is not self-sustainable.

The driving forces for developing POCO was to water services problem which was not solved by public and as well private style of water services in the country, although POCO has some digestive components of both public and private style but the model organisation structure is different from neither public no private services style.

POCO is a solution for both generating of capital fund and appropriate water management model. POCO has developed from existing local problems to solve water problems for Tanzanians. POCO is an appropriate solution because it composes capital fund generation and water management structure both solutions are necessary for future betterment of water services in Tanzania. Public water services were not successful because of absence of capital for investment in water development projects. As described in chapter 2, this situation forces the government to go for loan and the conditions for loan brought in private water services.

POCO is formulated with two main methods (tariffs review and mass contribution) for establishing capital funds from local sources. As discussed in chapter 8 section 8.5.5ii. Tariffs review methods means, water charges covers actual water production and general services costs. A specific% of money focused to cover services sustainability and estimated amount for services development according to needs. Therefore, water users have to pay the amount of water cost per every meter cubic. POCO structure formulated with greater

participation of water users (see section 6.8.9 and figure no 6.1). This makes water users feel that, water is for users to pay and water services is for them and they own the service, while in public style of water services customer's tends to see it as a public property with less attention.

9.5.4 Challenges facing POCO

The adoption of the POCO for use in relation to Tanzanian water services, as with any other model, has focused on the following challenges:

i. One of the major challenges facing the POCO in Tanzania is that total water production from the three water treatment plants, including other sources such as bore holes and shallow wells, serves only 70% of total urban demand while requests for water connections is increasing by 4% per year and consumption is also increasing due to building developments, population increase and economic development. Therefore, demand is higher than supply.

ii. Less than 50% of DAWASCO customers are covered by water meter connections, and the majority of domestic water consumers are assessed and categorized according to flat rate water charges - this presents a challenge in terms of the control of actual water consumption and has a significant effect on actual water charges.

iii. In Tanzania, other challenges facing the POCO include how to deal with illegal water connections, since people used to steal water by cutting pipes and re-connecting them secretly underground. It is very difficult to control this type of water theft, especial in squatter and slum areas. At the same time, there are those people who change the use of water from domestic to commercial without official authorization. Underground water leakages and general water leakage control presents a major challenge. Therefore, such unaccounted for water, combined with an old distribution network, marks a serious challenge to the POCO because the commercial sustainability of the model depends on water sales - the lower the leakage and the greater the water supplied, along more water sales, the greater the income for the POCO.

iv. Another major challenge for the POCO concerns how to sound initial investment decisions. The POCO self-system of generating capital funds is limited to BSP (£) 31,604, 330.25 as the cumulating amount for the first year, depending upon the number of customers served with water and the size of the water distribution network. Water service infrastructures are very large and expensive.

The generated capital initially will not be sufficient to cover the whole of the required investment. A master plan with details as to the priority areas investment should be put in place, but the question is raised as to where the any such investment should go in such a way that the invested areas may immediately start generating an income. Should it go to increase water production, water quality improvement, the expansion of the network, water metering and control or increasing customer connections? All of these areas have an equal role in increasing income, but which should be first and how much is investment is required? These are important technical challenges facing the implementation of the POCO.

v. The acceptability of the model can also present a challenging issue, especially for stakeholders who believe in public and private styles of water services. They may be willing to accept POCO, but commitment and implementation may not be easy (obstacle to POCO), especially for the decision makers who have personal interests (political, corruption and others) in private and public water services.

9.5.6 Discussion of the concepts developed in the model

The discussion covers a number of concepts developed during the whole process of the research implementation. The discussion has critically analysed the concepts developed and their contribution in formulating the ideal solution for the water services problems in Tanzania (sub-Saharan African countries). However, the areas including public ownership in water services, funding methods from local sources, localization and sustainability of POCO, efficiency in performance and monitoring, and suitability of POCO in comparison to private and public water services have also been critically reviewed and evaluated. However, to strengthen the discussion of the impact of the regulating authority and the importance of the WTP, the under-performance of contracts has also been assessed.

i. The causes of water problems

The concept of the diagnosis of the causes of water problems in Tanzania (and sub-Saharan African countries in general) was the first and most fundamental research focus of this study. The objectives were to understand and evaluate the actual problems facing the designing of a proper approach for identifying the ideal research solution. However, the implementation required the collection of a wide range of information from different sources within Tanzania and other sub-Saharan

African countries, as detailed in chapter 3 of this thesis. The experience of water services in Tanzania - from the independence of the country - and covering public water services, private water services, the failure and success of such methods and the impact of their practices have been critically discussed (see chapter 2). However, the information collected from the field through the mixed research method (as detailed in chapter 7), pushed the study to come up with the identification on what the major problems are. Furthermore, knowledge of the experience of water services from other sub-Saharan African countries including Kenya, Uganda, Ghana, Zambia, Somalia, Cote d' Ivoire, Senegal and Guinea were collectively analysed and compared with that of Tanzania, leading to the conclusion that there are generic major water problems in sub-Saharan African countries. The study identified two major causes, including the unavailability of sustainable capital funds for investing in water development projects due to economic problems in the region, which forces poor sub-Saharan African countries to depend on loans with tough conditions from the World Bank and other International funding institutions. The second indicated major cause for water problems in the region is the absence of an appropriate water service management model, which has to be acceptable and practical so as to suit regional environmental, culture and social requirements. However, the availability of capital funds alone cannot solve regional water problems without an appropriate management model being in place. Each needs the other, and funds need sound management just as sound management needs funds - funds require proper management. Therefore, a meaningful solution should solve capital funding problems and justify its potential in water service management according to regional needs.

ii. The concept of public ownership as a solution for managing water services

The concept of the public ownership of water services in this research was developed from the water management challenges established from information collected in the field compared with experiences from other sub-Saharan African countries. The objective was to develop an appropriate solution for water management in Tanzania. However, the concept of public ownership in this research is different from that of normal public water services which is common in most of other sub-Saharan African countries, and did not prove to be successful due to bureaucratic and political decisions and continual interference in day-to-day activities. The concept is that the entities responsible for the provision of water services should be 100% public-owned but that operations should be independent

and far removed from interference. This is possible because the working relation between the government (responsible ministry) and the service provider will be bound by a performance contract in which the performance targets, duties and responsibilities of each part will be clearly stipulated. The performance targets set are periodically reviewed for decision-making and determining the necessary action. However, within the division of labour, the government retains the role of financing capital development and policy issues; this allows for a wide range of different sources of capital investment, including government budgets, grants, loans and contributions from friends. Meanwhile, the funding of private services are limited to loans with interest or else directly generated from water charges which has an effect on higher water charges as a return. With regard to the concept of public ownership, investment does not focus on the maximization of profit in terms of money (rather, it has a focus on the provision of services to all) - sometimes, services costs include subsidies for accommodating low income people, and in this sense the services provided under public ownership have a greater focus on affordability.

By way of contrast, for private services any profit generated from service provision is taken back as a part of capital investment in the same service. This has the impact of reducing costs for water charges to customers.

Another tool that protects the independence of the public operating entity under public ownership is the presence of a regulating authority - an independent regulating authority with the responsibility of setting service standards and the quality of any operation. This increases the independence of operators and places a greater focus on the standards set by regulator because in instances of failure the regulator will refuse to issue an operating licence. The independent public owned entity (the operator) will speed up the development of water services to all, and hence capital funds are provided from the government sources with the operating entity working under a contract with detailed performance targets. The milestones provided are realistic and measurable, and the concept of an internal performance contract provides a catalyst for performance because any stipulated tasks are given a specific time of completion. Furthermore, the public operator is supervised (i.e., controlled) by the independent regulator under the condition that water services should meet the standards set by the regulator. Therefore, concept of public ownership is not motivated by political reasons - rather it aims to speed up the provision of affordable, quality and reliable water services to all, and so it should result in applications that will lead to that goal. Public ownership can be

adopted as a better way of concluding a sustainable solution for the management of water services in Tanzania (and other sub-Saharan African countries).

iii. Local sources for funds as an alternative to World Bank loans

The idea of developing sustainable capital funding sources for water projects as an alternative to loans with tough conditions from the World Bank and other international financial institutions was initially developed following the analysis of the effects of World Bank loans on water projects in African and developing countries (see chapter 4). The various challenges, as to how to qualify for a loan, the mode of payment and the procedure to follow, the bank interest on any loan, the decision as to how to use and fund management controls, procedures and their impact on society were among the factors that led the research to seek the best alternative funding methods as a substitute to World Bank loans. The need for reliable sources for funding water development projects was obligatory, because poor water supplies and sewerage services in the greater part of sub-Saharan African countries is caused by a lack of sustainable capital funds. The countries in the region suffer from significant poverty which makes them totally dependent on loans from rich international financial institutions. As discussed in chapter 4, such loans are provided with conditions that mostly favour the donors and have the effect of delaying the implementation of the projects due to the lengthy and strict system behind the funding process. This is especially so where every small stage of implementation is approved centrally under the donor's set criteria (whereby there is no objection) before the approval of any subsequent funds. Such conditions include ICB in relation to water projects, funds for experts and the requirement of privatization. These have a significant impact on raising water prices, work redundancies and the loss of government power in the provision of water services management and, therefore, make water unaffordable for those on low incomes.

Alternative local sources for generating capital funds, a tariff review method and mass contribution will insure the sustainability of the development of water projects and free sub-Saharan African countries from loans with tough conditions. Moreover, the speed of decision-making and the reallocation of funds will be increased according to local needs. This in turn will hasten such projects' implementation and lower water prices since the total water price will be formulated less in the interests of donors and private operators. Therefore, water services will become much more affordable for all.

However, the adoption of the tariffs review method for generating capital funds is possible only where a unit volume of water is sold to cover the total actual production costs plus any reasonable extra amount calculated for the development of future water services (capital investment). Mass contribution methods are applicable only when the governing policy agrees; in some countries, sourcing the capital investment for the community and social (public) development is solely the government's responsibility and individuals are not allowed to organize any contribution related to capital funds for public services. The amount generated is invested into the planned and earmarked priority areas, with a focus such that the selected priority areas will be able to generate a certain amount of funds within a specific period of time for the next round of investment.

However, the success of local approaches (tariffs and mass contribution) for the generation of capital funds requires an in-depth assessment of the motivations of the WTP. Generally, the relevant factors including fair and affordable water charges, good customer care, the availability of quality water in quantity, timely charging, transparency for water users through their participation in the review of water tariffs and easy methods for payments will all have act as an encouragement on water users' willingness to pay. Therefore, the notion of a willingness to pay is a part and parcel of the success of the whole when local methods (the review of tariffs and mass contributions) for generating capital funds for water projects. Furthermore, the contract between water users and service providers, with conditions stipulating penalties and even the disconnection of water services for non-payment may serve as a tool for motivating customers' willingness to pay. Therefore, the WTP is a special tool to increase the collection of revenue in water development projects.

iv. The local style of the management of water services

As a concept of a local style for the management of water services in Tanzania (and sub-Saharan African countries), the POCO was concluded from the analysis adopted after testing the theoretical model in the field. The framework model was developed from various concepts gathered from different cases in Tanzania and other countries within the sub-Saharan African region, as detailed in chapter 6. The framework model was used to develop questionnaires and, thorough survey methods, the field information was gathered and analysed so as to develop the theoretical model. This in turn was tested in the field in order to examine its acceptability, sustainability and adoptability. The feedback from the test suggested a number of local contributions for strengthening the model, and with

this focus on localization was adopted into the POCO. The catalyst for this process was the absence of a sustainable water management model in Tanzania (and sub-Saharan African countries in general) which was indicated earlier as one of the major problems obstructing the development of water services in the region.

The absence of a sustainable local water services model in the region was also noted as a cause and catalyst for importing privatization into the region. Tanzania - and many other countries in the sub-Saharan region adopted a foreign model of private water services as a loan package with the hope that privatization would be a reliable solution for solving water problems in the region, and thus the focus shifted from a concept of public water services to one of private water services. However, in some countries within the region, private water services were rejected, such that in some countries they were adopted permanently while in others only temporarily. In assessing the overall performance and effects of privatization in the region - as a foreign means of managing water services in the region - has made both positive and negative contributions to the provision of water in sub-Saharan African countries. Privatization works better in the first world, which has a stable and strong economy and where the issue of affordability does not really exist. Where the model is transferred to peoples with a different level of income and distinct cultures, social norms, traditions and lifestyles the majority of people will never afford the private water services.

As discussed in chapter 5, privatization is not a tool that can automatically turn poor water services into good water services that are affordable to all. Therefore, its application risks creating a gap between classes of people, namely those who can afford to pay for water services and those – the poor – who cannot afford them. Accordingly, because of the poor and unstable economy of the sub-Saharan African region, such a situation may cause crisis and misunderstanding, whereby the majority of local people will be without safe water and, therefore, the region will become a hotbed of waterborne diseases and poor development.

Nonetheless, privatization has made significant and positive contributions to the development of a local and sustainable model for the region. This research has developed a local model (the POCO) as a solution for managing water services in the region and through a survey method the model has been tested in the field and its sustainability proven. Insofar as the model's structure allows the division of the total operating area into small manageable zones according to the local geography and the number of consumers available, it has made a greater contribution to the assurance of quality water in quantity in each area focused upon. The local component of an independent regulatory authority represented in the model makes

a significant contribution to the role of monitoring and controlling water quality and service standards. The regulating organization protects local low income water users against higher water charges, which may - for many reasons – result from the influence of the operator.

In practice, and under the chairmanship of the regulator, water users have opportunities to contribute to the provision of their service and complain where it fails to meet their expectations, and especially during the water charges review process. The water user's participation in decision-making enables people to understand the value of the services provided and, therefore, generates a feeling of personal responsibility which serves as a stimulant to the WTP. It marks a special means of encouraging local people to assess their service and become a part of the decision-making process governing their own water services, under professional guidance. The POCO was developed from various local contributions and seeks to solve local problems of water provision by placing them under the management of local people. This localism of the POCO accommodates greater acceptability and simplicity in practice and, therefore, speeds up the implementation process of the intended objectives. The whole process of water users' participation in the model ensures the better protection of a standard of affordability when the issue of water charges comes around; this is the motivation of the WTP.

v. The control of performance and its monitoring (the appropriate model)

The concept of performance control and service monitoring established in this research was the outcome of the analysis of the causes of failures in providing of water services under a public management style in comparison with private water services in the sub-Saharan African region. The objective was to come up with an appropriate strong model (POCO) so as to eliminate the existing local water management problems, including bureaucracy, poor performance and a lack of commitment, as well as to encourage the better use of available resources to ensure decent work performance. However, the process necessitated the review and evaluation of different styles of water services, including public and private services as well commercialized water services in developing African countries. The experiences countries such as Kenya, Zambia and Somalia have made contributions of significant value towards the building of the appropriate management model.

It was noted in chapter 3 that most sub-Saharan African countries under a public water management style suffering from persistent poor water supply and

sewerage services because of a lack of commitment, political interference and poor performance monitoring of the available small water services system. Furthermore, under public water services, the performance targets have been set to fulfil political goals.

The countries in the region were - and some still are - suffering losses of more than 40% of their water production. This unaccounted for water was due to poor control and monitoring and has had a significant impact on the providers' water services plans and revenue collection and, therefore, affecting any progress made in water development. Furthermore, water bills tend not to be fully paid due to the number of unsolved water problems which discourage the customers' WTP.

Performance monitoring and control measures under a system involving contracts for performance bring some of the important factors established and ensure the appropriateness of the model advocated by this research. They form the drivers of working performance when the POCO model is adopted and in turn secure the model's sustainability in relation to work quality and time control.

However, the internal performance contract between government (the owner) and the services provider (the operator), as detailed by clear targets for performance over a period of time, will periodically reviewed so as to evaluate the work performed in terms of quality, quantity, value and time taken. The outcomes will be adopted as a base for decision-making and determining any necessary actions. However, the set targets should measurable and realistic, since unrealistic targets will give the wrong evaluation results and, therefore, lead to the wrong conclusions and bad decisions.

In periodic performance contracts a risk is incurred as to the total implementation of any work to be done because the service provider must account for any delays; furthermore, the component involving charges for failures in the contract can be assessed as a source of income for one side (the owner). However, on the operator side this is reflected (differently) as a point of reference for caution so as to ensure that there is inefficiency - this counts as a positive impact on the evaluation of the total work performed. This is in contrast with a public style of water services, where operational duties are mainly influenced or interrupted by political decisions, resulting in a situation where no-one is accountable for any failures or scandals, thereby creating a more bureaucratic attitude to performance which may lead to corruption. The contract performance style of the POCO guarantees the ability to control quality and efficiency over a defined period. The contract performance style can be adopted in a number of ways, depending upon objectives to be fulfilled. In order to create a more serious

commitment in settling water bills. A special contract as commitment to payments for the provided water services should be signed between the service provider and water users. The contract details the agreed responsibilities of each part in sustaining services. This contractual commitment is a driver for the WTP from the water user's side and, at the same time, from the services provider's side serves to push for decent service delivery. To ensure the best services for the customer, a performance contract can be introduced between management and employees, whereby each individual employee has to perform a measurable amount of work within a specified period of time. As such, the work done is periodically measured and evaluated and thus the necessary action may be taken to ensure quantity, quality and efficiency.

CHAPTER TEN: CONCLUSION AND RECOMMENDATION

10.1 Conclusions

This research was designed and carried out with the aim of developing the appropriate solution to water management problems in Tanzania. The focus of the thesis was on the eight primary objectives developed in chapter 1. The (methodology) detailed in chapter 7 guided the researcher to execute this task by establishing a theory of study, a section on method, data collection, sample points, the verification of data, data analysis, model development, validation discussion and conclusions. However, the research focus was on water services in sub-Saharan African countries because the study aim was to develop an appropriate water management solution that is suitable for the countries within that region alone (see the detailed explanation in chapter 3). According to the research objectives, this research established the following conclusions

10.1.1 Review and identify the water problems in Tanzania

The review carried out on the Tanzanian water management system identified the following major problems.

The Tanzanian government had no funds for the repair and rehabilitation of the infrastructure. The need for funds for repair forced the Tanzanian government to opt for loans with privatization conditions. Water services have been under private management since February 2003; however, private water management could not deliver the performance required. Water services were diminishing. The causes were identified as poor performance due to poor revenue collection, increases in water leakages and a lack of team work between the top management team and the majority common employees (see section 2.6.2).

The government went for water privatization without making enough preparation or collecting enough information. Their approach harmed the acceptance and implementation of private water services. The adoption of any new method in the water services sector requires preparation, including the further understanding of the method, planning, implementation and the participation of all stakeholders. This practice will ensure acceptance, adoption and good performance in practice. Therefore, any transfer or changes with the objective of

improving water services should include preparation in order to measure the coverage of those factors before implementation.

10.1.2 The delivery of water services in sub-Saharan African countries

The review of the water services in the region indicated that almost all sub-Saharan African countries were facing water supply and sanitation problems and, in fact, most among the worst in the world, whereby almost 2 in every 5 people suffer from a shortage of safe water. Those countries with poor water services experience poverty caused by a poor economic background and they can neither afford nor develop sufficient funds for capital water projects. This research indicated that a lack of capital funds for water development was one of the major reasons for water privatization in the region. Furthermore, the unavailability of a proper water management system to fit the actual local environment was seen as the second major cause of water problems in the region. Most of the existing water management systems were copied from developed countries and as such, in one way or another, experience numerous difficulties due to gaps between their cultures, social norms, traditions and economies. Therefore, it is concluded that capital funds for the development of water projects and an appropriate water management model constitute a universal problem for all sub-Saharan African countries. Accordingly, if the requirement is to obtain sustainable, affordable, reliable and quality water services for all, then a role for private finance is likely form a key component.

10.1.3 The evaluation of funding methods for water development projects

One of the research objectives is the evaluation of different funding methods for water supply services. The evaluation concluded that the countries in the sub-Saharan African region cannot afford to raise their own capital for the development of water projects due to the poverty caused by poor economies of the region. The only major source of capital for water development projects are loans from the various international financial institutions (such as the World Bank).

Capital for water development projects in the form of loans from international financial institutions has always been accompanied with difficult conditions, including the requirement of privatization, and which have significant effects on public citizens (employees) and as well governments. Employees become worried about losing their jobs due to new private organizational structures with new management rules. Depending upon the nature of privatization, the government is

normally affected through either the loss of ownership of the entity or else the loss of power, control and direct management of the entity.

Guidance on procurement procedure as a condition for World Bank loans has a greater effect on local contractors, especially when bidding for ICB tenders. The open ICB invites various international large-scale bidders with a higher level of experience, technology, skills, equipment and tools. Local contractors from developing countries with poor economies have very little capital available to use for modern, technology, equipment and tools. Therefore, local contractors cannot compete fairly and all of the big contracts end up in hands of these international contractors. Moreover, as to approval through no objection as one of the conditions for a loan, this has a significant effect on prolonging the implementation procedure whereby every element of the project during its implementation should have systematic approval from the World Bank. It is a frequently routine job and without this approval funds cannot be released. As a condition, the provision of technical and financial experts (which, sometimes, borrowers do not need) increases unnecessary project expenses. High levels of interest and strict conditions for payments have a major effect on poor borrowing countries. The conditions not only affect water charges but also have a significant impact on the actual amount that is utilized by the project and the total loan payback.

This creates difficulties for acceptability, practice and affordability in such borrower countries. Therefore, to overcome these difficulties, this research concluded that the local methods of tariffs review and mass contribution in the POCO is a solution for sustainable capital funds with no conditions.

However, the adoption of these methods depends upon the flexibility of existing water policies in each country. In cases where the tariffs review method has been adopted, it has to be structured with a greater focus on services to all rather than for profit making. The affordable water charges which have been designed will raise capital funds from differences between total operation/production costs and total water sales. This is an immediate driven capital development (tariffs review for establishing capital funds); the generated funds and profit do not go to individual or groups of private shareholders or others. Rather, the established amount goes back to sustain (i.e., improve) existing water services. However, the WTP plays greater role in the sustainability of this method. People should be willing to and active in paying their monthly water charges. Therefore, special motivations such as good customer care, affordable and fair water charges, easy methods of payment and quality services to stimulate the WTP should be put in place. Good water services and customer care, proper and

fair water charges, customer participation in setting water charges and easy methods of payment are a few of the recommendations in the POCO for motivating the WTP. The POCO indicated that affordable water charges can be one of the major catalysts for the WTP. Therefore, before the implementation of any new water charges, affordability should be critically analysed for the benefit of low income people and, if possible, water users should participate fully in the whole process of review. In doing so, this will transfer both knowledge and an understanding of the sustainability of water services and, therefore, will stimulate the WTP. The POCO has covered all of this, and tariffs review method is appropriate for the Tanzanian (and sub-Saharan African) people.

This research also concluded that the adoption of the local method of mass contribution for establishing capital funds depends upon government policy, since in some countries people are not allowed to contribute to public development projects and it is a purely governmental task to find the capital. In Tanzania the mass contribution method is compatible with the governing policy and POCO has evidence that it is sustainable, safe and that it can be adopted. This method can be adopted once with a special targeted amount and within a designed period of time, as discussed in chapter 8. After the targeted funds have been collected, they should be taken as capital investment for water projects as this will further generate future capital. The mass contribution method has no effect on water charges, which is why the method has been recommended in POCO. The mass contribution method can be applied separately without the review of tariffs or else it can be combined. As a new sustainable solution, this research has concluded the two local funding methods to be reliable and affordable local sources for generating capital funds.

10.1.4 The assessment of the potential value of different water management systems

The evaluation and assessment of the potential value of different water management systems was one of the main objectives of this thesis. The aim was to collect more ideas in water services from different experiences, and it was a necessary procedure for covering enough inputs in developing an appropriate research solution.

The findings indicate that the public water services style was the most practised water management model worldwide. As appraised in section (5.2.5), public water services have the potential in terms of security and services and more consideration should be paid on whether they can be made affordable to all and

people's willingness to pay (in terms of subsidies and fee capital from public funds). However the method has a weakness in terms of efficiency due to the natural bureaucratic cause of the domination of political decisions and interference. Such services are publicly owned and managed by individuals nominated by political leaders in order to fulfil special or political goals. In this case, political leaders are more powerful and, sometimes, political decisions end up governing water services; public water management failed in Tanzania and in most sub-Saharan African countries and it was the failure of public water management which forced privatization to come in.

In the sub-Saharan African region, private water services constituted a foreign water management model brought in as a substitute for the failure of public water management. In chapter 5, private water services were shown to have greater potential in terms of efficiency, competitiveness and quality. However, the weakness of the model was stipulated in terms of the coverage of services, with their expansion being based on increases in income, since the nature of any private business will have an impact on income per product sale, especially when considering higher profit margins. This has an effect on higher water charges (i.e., affordability). Furthermore, in private services the profit generated is distributed to private individuals or to a group of a few shareholders - the profit is not taken back for capital investment and if it is then it constitutes a very small percentage. In the sense, the provision of services is more focused on those who can pay (see the appraisal in section 5.3.8). 'Services for profit-making' is the motto of private water services - they have indicated a significant weakness with an increase of unemployment due to the introduction of new management structures and the adoption of new technology. This forces the termination of employees for the maximization of profit under the cover of economic reasons. These were concluded to be the major causes of the failure of private water services in the sub-Saharan region of African countries.

Examining the potential value of commercialization in water services was stipulated as one of the objectives of this thesis. Various experiences of commercialization in water services - including those of Somalia, Kenya and Zambia - have been successfully implemented. The focus on commercializing water services was adopted as a sustainable way of providing quality water services. As to product costs, the price of a certain measured volume is sold to cover total product costs for service sustainability and the calculated percentage for the development of services. The potential differences between commercialization and privatization were identified in the structure of organizations, in that private

entities make private structural decisions based on the maximization of profit, which are distributed to private shareholders, whereas with governmental commercial services the minimum raised profit is taken back as capital investment in a similar entity. However, the issue of profit-making may not necessarily be focused in terms of money - rather, under public commercial services the profit gain may be assessed in terms of service coverage (i.e., services for all as a goal). Therefore, this research has concluded the first commercial approach in water services by using a combination of concepts from experiences in public and private water services models. This will be practiced within sub-Saharan African countries.

10.1.5 The development of a theoretical model and its testing

The objective of developing a theoretical model and testing it constituted the research's strategic approach towards coming up with an appropriate, checked, approved and strengthened research solution. The approach involved gathering, evaluating and reviewing different water service models - including privatization, public and commercial models - from sub-Saharan African countries. The field information collected from Tanzania made a key contribution in developing the theoretical model. The findings indicated that structural formulations are different between one model and another; however, the operating models were governed by water policies, which also differ from one country to another (e.g., in Uganda the water services model has no regulator and regulating activities are executed by the government). In some areas, the asset holding company's activities - including investment - are carried out by government, but in Tanzania DAWASA is the asset holding company rather than the government. Equally, in Senegal the operator (i.e., the services provider) is not responsible for capital investment in some areas as the operator has to pay a certain agreed amount for capital investment.

The strategy was to develop a detailed sustainable organizational structure with clear responsibility delineated for each component involved so as to form one unit model. The collected information was analysed and the theoretical model - with components including the owner, the regulatory authority, independent operators, water users and sources of capital funds - was developed for field testing, whereby the function and role of each component was developed (see section 6.8.3). However, with the need for adoptability, acceptability, affordability and sustainability being the core measure for the model in determining an appropriate and reliable solution in application, this necessitated the development of a theoretical model to be taken for the field test. This testing procedure was a strategy for strengthening the theoretical model through a survey method.

The test successfully generated a number of challenges, such as the adoption of local funding institutions, projects funds control measures, water charges control and priority areas for initial investment. The contributions were adopted for analysis and the concepts used to localize the theoretical model (POCO). This research concluded that with the objectives of strengthening to meet local requirements, any new water services model would have to be tested before adoption and the results from the test should be analysed with the objective of the model's improvement. The executed test (i.e., its validation) concluded that, an initially developed model (the POCO) was sustainable, reliable and affordable and, therefore, was an appropriate solution for the water problems in Tanzania (and sub-Saharan African countries in general).

10.1.6 The development of an appropriate solution for Tanzanian water services

Development of a sustainable, reliable and appropriate solution for Tanzania's water problems was the core objective of this research. As a research strategy, the water services in Tanzania were critically evaluated in order to conclude their problems were. The unavailability of capital funds for water development and the absence of an appropriate management model for water services were identified as major problems in the country. In order to strengthen the researcher's knowledge and experience of water services, a number of different cases from sub-Saharan African countries were examined. The findings indicated that all sub-Saharan African countries suffer water problems because of a lack of funds for the development of water and, therefore, are permanently dependant on loans from the World Bank. It was also noted that the absence of an appropriate water management model is a uniform problem in the region. The research developed a new strategy to solve capital funds and management problems with consideration paid to affordability.

Through a mixed survey approach, the designed information was collected for analysis and, therefore, an appropriate solution (the POCO) for solving management and capital funding problems was developed.

Accordingly, this research concluded the POCO as an appropriate practical solution for water problems in Tanzania (and sub-Saharan African countries) and confidently suggested that its application protects all stakeholders' interests because its commercial composition facilitates efficiency, quality and affordability. Furthermore, the combination of public ownership and commercial operations in the POCO indicates its uniqueness in terms of the competitiveness of its services to

ensure the sustainability, efficiency and affordability of water supply and sewerage services. As such, the reliability and potential of the model is greatly focused on the sustainability of any capital funds that are generated from local sources and as well as from government sources. In this case, the model provided principals for adopting local contributions which are maintained and so the POCO can be adopted anywhere in the sub-Saharan African region. However, the adoption of local concepts should also be placed under professional guidance so as to come up with independent professional decisions - this will ensure the value of localization in practice. Furthermore, the adoption of the POCO will make Tanzania (and sub-Saharan African countries) free from loans subject to conditions and allow for speedy and independent decision-making, which in turn will speed up water development in the region. Therefore, this research developed and concluded that the POCO is an appropriate solution for Tanzania (and sub-Saharan African countries in general).

10.2 Original research contribution

Scientifically, this research successfully developed a unique and ideal solution in the POCO that is not only an answer to the designed research question but also provides an appropriate solution for managing water supply and sewerage services in Tanzania and other sub-Saharan African countries. However, this research focused the contribution of the POCO in the following areas.

10.2.1 The theoretical contribution of the POCO

The POCO (the Public Ownership Commercial Operation) is a new approach in the water management sector and, therefore, has added a value in the sector and opened new challenges for future research.

The POCO was developed to solve local Tanzanian (and sub-Saharan African) water problems, which are caused by problems with capital funds and the unavailability of appropriate water management styles. This research provided evidence that the adoption of the POCO will free Tanzania (and sub-Saharan African countries) from water problems. It has developed a new vision with confidence that sub-Saharan African countries *can* sort out capital funds problems without looking to external donors. The funds for capital investment in water projects can be established from local sources. Sub-Saharan African countries can develop their own local water management model to solve their local water problems. The POCO brought in new challenges for sub-Saharan African countries to find and come up with appropriate regional local solutions to solve the existing

water problems of each country. However, where the local components in the POCO originate from the local lifestyles of people, their cultures, traditions and beliefs, it will have greater acceptability in the field. Therefore, the POCO has opened a way whereby an acceptable and appropriate water management model should also satisfy the existing local environmental culture and the local peoples' lifestyles.

The POCO, as a new water management model, has introduced a new structure of management in water services where competency in terms of performance is closely monitored through internal periodic contracts. The composition of an internal contract with measurable targets in the model aims to ensure higher working performance by eliminating the bureaucratic behaviour left following the provision of public water services. The internal performance contract, with its clear goals within the model, will raise employees' commitment to better performance in providing water services with the result of encouraging a willingness to pay which will raise the DAWASA's income and that of the government as a whole. The POCO was developed and justified as an appropriate solution for capital funding for water development projects for Tanzania (and sub-Saharan African countries in general). In provision of water services, the tariffs review approach has been justified as a reliable source for establishing capital funds for water development provided that the reviewed unit cost of the water to be sold consists of the actual production and operation costs plus any extra affordable calculated amount which would be direct saved as a capital fund. Through this strategy, the POCO has shown its capability in establishing water capital funds from local sources. This has opened a new platform for economic stability in the water sector, the development of social services and zero dependency on loans. Therefore, the POCO has opened a new, stronger sense of confidence and boosted the trust and self-confidence of poor sub-Saharan African countries such that the development of water services in the region and the dream of affordable water services to all is possible without loans from the World Bank.

The POCO has contributed to a theoretical assessment of the affordability of water charges which has made a significant contribution to accelerating a willingness to pay (WTP). POCO's approaches for accessing affordability were undertaken by comparing the regional member countries' minimum water charges per unit volume against the income per capital of each country. Furthermore, during the process of tariff review, under the guidance and chairmanship of the regulatory water authority, users participated fully, contributing their ideas at every stage before the approval of new water charges. This has demonstrated the greater participation of

water users, as a part of the management in their own water services. The result is the motivation of the WTP with effects on increasing revenues. The practice has also covered the affordability in water charges because water users can defend increases in charges. Therefore, in practice the POCO is a unit measure of affordability and quality of service which has controlled for value for money against the service provided.

The POCO, through the structure of its operation, has developed greater diversity in terms of performance monitoring and its strategic approach of dividing operating areas into small manageable sub-branches, the close monitoring and control and the existing chart of communication. This is a new way of thinking in the field of water management, and the developed structure has opened a platform that can be adopted as a challenge to develop something suitable in both Tanzania and elsewhere in sub-Saharan African countries. The POCO findings can be adopted as references or else as secondary data for other researchers.

The POCO has brought in a new way of thinking that in Tanzania (and other sub-Saharan African countries) water services can be provided commercially under the ownership of the government and, through this style of management, both performance efficiency and better services can be achieved.

- i. The POCO has widened the focus of thinking from the idea that water services can be only be provided by just two methods: private service or public services alone. As such, it has brought in a challenge for studying other ways for providing better water services.
- ii. The POCO process of implementation has come up with a new way of thinking whereby customers are the best assessors of the provided water services and that attending closely to customers' problems is not only a better way of improving services but also provides a special motivation for a willingness to pay. This is a core value of funds' sustainability in water services.
- iii. The POCO has contributed sound theoretical knowledge of the water service sector which can be used as a reference (secondary data) or as a stepping stone for developing other studies both within and outside of the water sector.

10.3.2 The practical contribution of the POCO

i. Adoption of the POCO will bring in more water for domestic and other commercial uses and the POCO will, through its ability to generating capital funds itself, be able to expand, sustain and develop water services within its operating area. However, the availability of more water for all uses (both domestic and commercial) means that the land will be more fertile and give it a higher value,

since green land is a catalyst for human development activities and an attraction for investors. Therefore, agriculture development will be in place to generate income for both the government and individuals. Gardens, trees and other plantations will grow and so make the area more environmentally attractive and friendly. The geographical view of the country will change to a greenish hue because, naturally, water is the decorator to the earth. Therefore, the application of the POCO makes the environment more attractive and friendly.

The availability of enough water for domestic use will cause the government's income to grow because many people will be served tap water with charges and, therefore, increase the government's income through taxes on water bills. In another way, the availability of enough commercial water will encourage the growth of industrial activities which will not only raise the country's economy but also increase employment

The availability of enough water for domestic use through the adoption of the POCO will ensure that all Tanzanians are able to use safe tap water and, therefore, that all water borne diseases will be eradicated so as to make Tanzanians happier and free from many diseases.

ii. The adoption of the POCO will make the country free from loans subject to conditions because the POCO has mathematically and statically proven that, through systematic water tariffs, the adjustment in water services is a possible source for establishing capital funds from local sources, and that the availability of stable capital funds from local sources will improve investment in the sector and, therefore, speed up the provision of affordable water services to all since the actual water changes will cover less profit. This will make water prices low and affordable in comparison with privatization because the cost per cubic meter in private services includes actual production costs, services costs and loan recovery plus profit, while in the POCO the water cost break down does not include loan cost recovery plus profit. Therefore, the POCO actual water charges per cubic meter will be cheaper and affordable. This encourages water users to pay their water bills accordingly.

iii. One of the practical contributions of the POCO is that when the model is adopted it gives a guarantee in terms of quality, safety and service efficiency, because it developed with the systematic counterchecking of its implementation process. For the purpose of review and monitoring, all activities are measured and evaluated periodically. This gives a detailed picture of the project's implementation process in every activity in a timely manner which is necessary for decisions to guide the project. The POCO's periodic performance contract with clear targets between the operator and owner, as well as operator visas implementers, is one of

the tools for counterchecking performance in quality and efficiency during the POCO's implementation. Therefore, when the POCO is adopted it gives quality, efficiency and security in work.

iv. The POCO includes training programs for employees and other stakeholders so as to provide a good understanding of the method for its better implementation, and this will raise the skill of employees by giving them any new and useful knowledge necessary for their working environment, the outcome being an increase in efficiency and productivity. The concept of training was developed during the model's validation whereby it is obligatory for the POCO to have a training programme for improving understanding, acceptability and good implementation. Therefore, the POCO contributes additional knowledge the practice of water services provision.

v. In Tanzania, the adoption of the POCO will effectively clear the tension and existing confusion as to which management style is appropriate for water services in the country. The private and public styles have failed to solve the water problems in Tanzania; the effect of such failures has left a permanent sense of confusion with a number of different arguments taking place in the country.

The discussion covered in chapter 2, sections 2.2.1 and 2.7 ii on the history of water management in Tanzania, has critically analysed the failure of each methods - private and public - and concluded that the conflict between the supporters of private and public water services is yet to be solved because each has resulted in certain failures and some success in other areas. Therefore, the POCO, as a practical solution, will take all of the effects left behind from the failure of private and public water services in Tanzania.

vi. The discovery of the POCO has opened up new areas of research for the benefit of the water sector whereby new studies can be carried to comment, criticize, reinforce and challenge the POCO as to its existence or else its application.

10.3.3 Appraisal of the POCO's contribution

The discussion covering the contribution of the model interpreted the potential of the POCO in terms of both theoretical and practical approaches. This justifies the assertion that the POCO is an appropriate solution for water problems in Tanzania (and sub-Saharan African countries). The ability of the POCO for establishing capital funds from local sources marks the unique contribution of the model which is fundamental to the provision of change and a new vision of better water services for all. As seen in sections 10.2.1 and 10.2.2, the availability of capital funds for water development will not only speed up affordable water services to all but will

also make sub-Saharan African countries independent and free from loans with conditions. Furthermore, the POCO's ability to raise water project investment internally will improve the quality of services so as to make enough water available for domestic and commercial use; the availability of tap water for all will eradicate the existing periodic water borne diseases in Tanzania. Excess agricultural water will not only make plenty of food available but will also improve soil fertility so as to make a greenish environmental which is attractive for investment and which will increase the land's value. The POCO eliminates water borne diseases, provides for more food and increases the land's value, all of which together make a great contribution to improving the economy. Moreover, the growth of commercial activities due to the availability of good water services under the POCO will increase employment for Tanzanian people. Altogether, encourages the growth of government income through tax collection on water charges and all other commercial activities. Therefore, the POCO is an appropriate solution not only for water problems but also in making a significant contribution to boosting the public and private economies.

10.4 Recommendations for future Research

The competence of one study alone is not enough for the concluding what is the appropriate solution for water supply and sewerage service problems in all developing countries. Countries differ from one another and, therefore, the results from one study can be adopted as references (secondary data), challenges or else as a starting point (the end of the old is a beginning for the new) for developing other, new, studies both in and outside the sector. The author has identified a number of areas for further research with potential value for this research as well as others, as follows.

1. This research did not cover the generation of funds from local financial institutions. Therefore, this area is worth researching so as to see how much these local loans can be made affordable to consumers without affecting public ownership.

2. This research recommends the provision of training before and during the changes from one water management style to another; hence, stakeholders are required to understand and accept the various changes and only through that successful transaction can meeting the objectives be assured.

3. The control and monitoring of performance and implementation are vital functions in water services management. For review and evaluation, the POCO was structured with a periodic contract of performance. Therefore, for future plans and decisions, this research recommends that the periodic evaluation of implemented work should be a part of any efficient water management model.

4. The block water tariffs system should be studied and this should not only be taken as a way of controlling the good use of treated water but also it could be adopted as a potential method for generating capital funds. Hence, the method does not need capital investment.

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