



# **IDENTIFICATION OF COMPETITIVE REGIME FOR WATER INDUSTRY IN SRI LANKA**

By

M.G.Hemachandra

Supervised by

Professor R. Rameezdeen

This dissertation was submitted to the Department of Civil Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Master of Business Administration.

Department of Civil Engineering  
University of Moratuwa  
Sri Lanka

2009

93938



## Abstract

National Water Supply & Drainage Board, under Ministry of Water Supply & Drainage, functions to provision of safe drinking water and facilitating the provision of sanitation in Sri Lanka as a state owned monopoly. The Organization evolved up to the present status from 1965 as a sub department of the public works department. Presently as the principle organization for Water Supply and Sanitation to the nation, the NWSDB operates through eleven Regional Support Centers. Currently NWSDB employs around 8950 staff and operates 308 water supply schemes. Pipe borne water coverage is 32% of total population. Hand pumps and tube wells gives a further coverage of 8%.

Water sector reforms were initiated by successive governments in Sri Lanka in the last thirty years focus on improving Water Supply and Sanitation Services. Over the world, reforms are undertaken to help deliver better and more efficient services and to protect consumers against potential abuse of monopoly power by public or private operators. This includes creation of regulatory agencies, open up market for private participation or public private partnerships, institutional reforms etc. However, evident suggested that there is no single fit best practice model for Water Supply Sector reforms. A check box approach to introduce regulation has often failed. A better approach might be to incorporate country-specific sector characteristics and make room for politics and pragmatic design features in reform in considering institutional evolutions.

Regulatory initiatives often should occur simultaneously with organizational reforms or reshaping the monopoly to fall in line with regulation. Reform or reshaping of state owned NWSDB can take place gradually with different forms in regulation and maturity. Water sector reforms have often sought for decentralized service delivery to introduce operational efficiency and regulatory monitoring.



Related literatures show the importance of analyzing the institution under perspectives of the institutional environment and the internal functioning of the NWSDB. Institutional environment looks into external autonomy and accountability. The internal functioning of utility looks at factors such as corporate culture, customer orientation, internal accountability for results, and the ability to delegate within the organization.

Public Private Partnerships as reform tool have three motives to attract private capital investment (often to either supplement public resources or release them for other public needs); to increase efficiency and use available resources more effectively; and to reform sectors through a reallocation of roles, incentives, and accountability.

Two questionnaires to analyse the institutional environment and to assess the management and other sector specialised stakeholders view converge to derive Competition Regime for Water Industry in Sri Lanka.

Based on the findings, it is recommended that Water Supply Sector reforms in Sri Lanka should start with regulation by contract. This shall initiate having public vs. public contracts with each Regional Support Centres (RSC) so called Independent Service Units (ISU) with decentralised service delivery. However some function should remain in NWSDB central unit to be developed them as commercially oriented businesses.

## Declaration

I certify that this thesis does not incorporate without acknowledgement of any material previously submitted for a degree or diploma in any University to the best of my knowledge and belief, it does not contain any material previously published, written or orally communicated by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations.

.....  
Signature of the Candidate

(M.G.Hemachandra)

04/07/2019  
.....  
Date

Date

University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
www.lib.mrt.ac.lk

To the best of my knowledge, the above particulars are correct.

### ***UOM Verified Signature***

.....

Supervisor

(Professor R. Rameezdeen)

04/07/2019  
.....

Date

## Acknowledgement

Identification of Competitive Regime for Water sector in Sri Lanka supposes to give initiatives and road map to policy makers and decision makers in the sector.

Research was mainly a output due to MBA in Infrastructure course which architecture by Professor Amal S. Kumarage; course Director- MBA in Infrastructure of the Department of Civil Engineering should be thankful. His thoughts and advice lighted my research.

My research supervisor Professor R. Rameezdeen had given me extensive support and guidance me to complete this research project. His continuous persuasive advice was support to enhance the quality of the research.

Professor Rohan Samarajeewa gave us valuable opportunity to participate South Asian Forum for Infrastructure Regulation (SAFIR) that enhances our knowledge while giving good exposure. Professor Rohan Samarajeewa and Doctor Harsha de Silva had given valuable comments to my research. Therefore I gratefully remind them.

Finally I would like to gratefully remind Ms. M.D.R.P Jayaratne Course Administrator for her various supports during the course.

## Table of Contents

<b>Chapter 1 Introduction.....</b>	<b>1</b>
1.1 Background.....	1
1.2 Research Problem.....	2
1.3 Purpose of study.....	3
1.4 Research Objectives.....	3
1.5 Significance of the study.....	4
1.6 Scope of Study & Limitations.....	4
<b>Chapter 2 Literature Review .....</b>	<b>5</b>
2.1. Introduction.....	5
2.2. Characteristic of well performing Public Water Utilities.....	5
2.2.1. The Classification of public Water Utilities.....	6
2.2.2. Analysis of public Water utilities.....	7
2.2.3. Institutional Environment.....	9
2.2.4. Internal Functioning of the Utility.....	10
2.2.5. External Autonomy.....	10
2.2.6. External Accountability.....	12
2.2.7. Internal Accountability.....	13
2.2.8. Market Orientation.....	14
2.2.9. Customer Orientation.....	16
2.2.10. Corporate Culture.....	17
2.2.11. Conclusions of the Cases.....	19
2.3 Public-Private Partnerships.....	22
2.3.1 Motivation for Engaging in PPPs.....	23
2.3.2 Role of Different Stakeholders in the PPP Process.....	23
2.3.3 Structuring a PPP and Available PPP Options.....	24
2.4 Regulation.....	26
2.5 Regulatory process History in Water Supply Industry in Sri Lanka.....	28
<b>Chapter 3 Methodology.....</b>	<b>30</b>
3.1 Introduction.....	30
3.2 Research design.....	30
3.3 Questionnaire Design.....	30
3.4 Data Collections and Analysis.....	30
3.5 How to achieve the Research Objectives.....	32
<b>Chapter 4 Presentation and Analysis of Data .....</b>	<b>33</b>

4.1	Introduction .....	33
4.2	Scanning of External and Internal environment of the NWSDB .....	33
4.2.1	External Autonomy .....	33
4.2.2	External Accountability .....	35
4.2.3	Internal Accountability .....	36
4.2.4	Market Orientation .....	38
4.2.5	Customer Orientation .....	39
4.2.6	Corporate Culture .....	40
4.2.7	Key details of the organization .....	42
4.3	Determination of NWSDB top Management Perspectives .....	43
4.4	Competitive Regime .....	61
4.4.1	NWSDB Present Operating Model .....	61
4.4.2	Regulatory Model .....	62
4.4.3	Price Subsidy Formula .....	65
4.4.4	Level of Service Improvement .....	66
4.4.5	Determination of Water Tariff .....	66
4.4.6	Business Planning .....	67
<b>Chapter 5 Conclusions.....</b>		<b>69</b>
5.1	Introduction .....	69
5.2	Competitive Regime .....	69
5.3	Regulatory Model .....	69
5.4	Price subsidy Formula .....	69
5.5	Level of service Improvement .....	69
5.6	Determination of Water Tariff .....	70
5.7	Business Planning .....	70
5.8	Future Research Needs .....	70

## List of Tables

Table 2.1	The Classification of public Water Utilities	6
Table 2.2	Details of the companies considered in case study	8
Table 2.3	External Autonomy	11
Table 2.4	External Accountability	13
Table 2.5	Internal Accountability	13
Table 2.6	Market Orientation	14
Table 2.7	Customer Orientation	16
Table 2.8	Corporate Culture	18

Table 2.9 PPP Process	23
Table 2.10 Summary of Key Features of the Basic Forms of Public-Private Partnership (PPP)	25

## List of Figures

Figure 2.1 The Vicious Spiral of Performance Decline of Utilities	6
Figure 2.2 Factors that Influence Effective Autonomy of a Utility	9



University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)



Figure 4-1 Current Water Tariff in terms of cost pertaining to Operation & Maintenance, Depreciation expense, Cost of capital, Financing charges and Taxes and Levies	43
Figure 4-2 Present Tariff Blocks and Application Methodology	43
Figure 4-3 Existing Tariff Revision Frequency and Time Taken for Approval	44
Figure 4-4 Barriers for Appropriate Tariff Revision	45
Figure 4-5 How Agree for Different Tariff structure based on Level of Service	46
Figure 4-6 NWSDB maintain adequate supply hours in service areas	46
Figure 4-7 NWSDB maintain sufficient residual pressure in the service areas	47
Figure 4-8 NWSDB maintain Water Quality as per the standards	47
Figure 4-9 NWSDB provide water to consumers at affordable prices	48
Figure 4-10 NWSDB has position its service according to consumers choice	48
Figure 4-11 How Water Services being Planned	49
Figure 4-12 How attend Consumer Complaints	50
Figure 4-13 Market Competition can be created in Water Industry after having reformed conducive market structure	50
Figure 4-14 Do you/How do you know competition market for water industry	51
Figure 4-15 Knowledge on existence of Independent Regulatory Authority for Water Industry in the world	51
Figure 4-16 Independent Regulatory Authority is required to make Conducive Market in Water Sector	52
Figure 4-17 Regulatory process should start gradually by considering Country Sector specific Characteristics	52
Figure 4-18 How PPP/Private participation successful in Sri Lanka	53
Figure 4-19 How supportive for competitive Market in Sri Lanka	53
Figure 4.20 Major sector challenges, problems and issues	54

Figure 4.21 NWSDB Operational Efficiency is acceptable	54
Figure 4.22 NWSDB implements periodic asset renewal as necessary	55
Figure 4.23 Rearrangement of RSC is required	55
Figure 4.24 RSC can be transformed to function as independent Business Unit	56
Figure 4.25 Out sourcing of some of the function can reduce the cost of operation	56
Figure 4.26 Operating of some of the function at central Unit will give economies of scale	57
Figure 4.27 RSC should have more delegation of Authority than present	57
Figure 4.28 Present Management Information reporting System between RSC and Head Office	58
Figure 4.29 New Infrastructures efficiently manage to get return on investment by RSCs	58
Figure 1-30 NWSDB has taken satisfactory initiatives to benchmark its regional operations	59
Figure 4-31 Organizational Model	61
Figure 4-32 Regulatory Model	62
Figure 4-33 Level of Service According to Management	66
Figure 4-34 Tariff design	67
References	68
Appendix 01	73
Appendix 02	76
Appendix 03	85

## Acronyms and Abbreviation

ADB	Asian Development Bank
AQUA,	Poland City of Bielsko-Bialav Water Utility
BOT	Build-Operate-Transfer
CBOs	Community Based Organization
GDP	Gross Domestic Product
HPPC	Haiphong Provincial People’s Committee, Vietnam
HPWSC	Haiphong Provincial Water and Sewerage Corporation
ICT	Information and Communication Technologies
ISO	International Standardization Organization
ISU	Independent Service Unit
JNB Water	Johannesburg Water Utility, South Africa
KPIs	Key Performance Indicators
LOS	Level of Service
MGD’s	Millennium Development Goals
MWSD	Ministry of Water Supply & Drainage
NGOs	Non Government Organizations
NPA	National Procurement Agency
NRW	Non Revenue Water
NWSDB	National Water Supply & Drainage Board Sri Lanka
NWSC	National Water and Sewerage Corporation, Uganda
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
ONEA	National Water and Sanitation Company, Burkina Faso
PLC	public limited company
PPWSA	Phnom Penh Water Supply Authority
PPP	Public-Private Partnerships
PUB	Public Utilities Board, Singapore
PUCSL	Public Utilities Commission of Sri Lanka
PWD	Philadelphia Water Department, United States
R&D	Research & Development
RSCs	Regional Support Centers
SANASA	Water Supply and Sanitation Corporation Campinas, Brazil
Scottish Water	Scotland Water and Sewerage Corporation, UK
SEAWUN	South East Asian Water Utilities Network
SEMA	Strategic Enterprise Management Agency
SIMAPAG	Municipal Drinking Water and Sewerage System of Guanajuato
SOE	State-Owned Enterprise
SONEDE	National Water Supply Authority Tunisia
SW	Scotland Water and Sewerage Corporation, UK; Scottish Water
UFW	Un-Accounted for Water
WSRC	Water Services Regulatory Commission
WSR	Water Sector Reform