Water as a Public Good in Indonesia:

An evaluation of water supply service performance in an Indonesian water supply enterprise as a means to address social and environmental justice concerns

Andy Fefta Wijaya

(Dokterandus in Public Administration, Brawijaya University, Indonesia; Master of Development Administration, Australian National University)

A thesis submitted to satisfy the requirements for a Doctor in Philosophy Flinders University, South Australia

July 2005

Abstract

A water supply service can be seen as a public or private good, but this thesis makes the argument that water is vital for society and so to ensure accountability it is important that water governance includes citizens' participation for social and environmental justice concerns. Public goods are generally defined as goods and services that are provided by 'means of public policy' (Lane, 1993, p. 21), or 'collective political choice' (Stretton & Orchard, 1994, p. 54) rather than by means of an individual market mechanism in which private goods are usually provided.

This thesis addresses the function of water as a public good. If social and environmental goals of water use are ignored, the implications can be detrimental particularly for the poorest members of society. An organization's goal effectiveness is usually related to its success in achieving desired outcomes of the organization's goals through a systemic management interaction across organizational aspects at the input, process, output, and outcome/impact stages. This thesis argues an evaluation model of performance measurement can be developed to reflect the characteristics of a public good for a water supply utility, and this model of performance measurement can assist in addressing issues of social and environmental justice.

Harris et al argue that better governance can only be achieved by working for democracy in multiple arenas (Harriss, Stokke, & Tornquist, 2004, pp. 7-8). This study considers multidimensional performance measures taking on board the values of many stakeholders with different backgrounds. It 'unfolds' and 'sweeps in' in many dimensions in an attempt at systemic representation (Ulrich, 1983, p. 169). McIntyre-Mills states that "service need to reflect the values of the users and for this to occur the users need to participate in and decide on policy design and governance" (McIntyre-Mills, 2003, p. 14). Performance measurement systems can be used to detect a gap between services supplied by providers and various needs demanded by stakeholders.

The thesis develops an outcome performance measurement model for evaluating social equity and environmental justice concerns. It draws on and adapts four performance measurement models of the International Water Association, World Bank, Indonesian Home Affairs Department and Indonesian Water Supply Enterprise Association.

A complementary combined method was developed that addresses qualitative and quantitative governance concerns as they perform to water supply performance problems. Three research methods were used, namely the case study, survey and focus group discussion for collecting qualitative and quantitative data from the three governance sectors. These were triangulated. Five research tools in the case study method were used for collecting information from stakeholders in the three governance sectors including interview, personal communication or email, document analysis, direct observation and documentation. The survey was used to investigate 431 respondents from three case study locations in Cinusa¹ city, and the two focus groups were conducted in the city's water supply company management for discussing problems of water supply performance as summarized from the survey.

The locus of this study was concentrated in the Cinusa city jurisdiction area, and the focus was the performance problem of the water supply company in Cinusa during 2001-2004. However, a comparative study of water supply performance nationally and internationally is presented for analyzing relative performance gaps.

¹ A pseudonym.

This research evaluates interconnections among cost inefficiency, tariff escalation and other non-financial performances: water supply quantity, quality, continuity and pressure. Inefficient costs because of corrupt, collusive and nepotistic practices in this Indonesian water supply company implicate cost burdens in the company and prevent this water local public enterprise perform its social and environmental missions. The Cinusa local government as the owner of this local public enterprise and the Cinusa local parliament hold a monopoly power in some important decisions related to this local public enterprise, including tariff policy, senior management positions and the total amount of profit share paid to the local government. Such customers from lower income household instead of being subsidized as specified in the national regulation are paying at a profitable tariff and subsidizing this enterprise's inefficiency and the government's locally generated revenue.

The inefficiency alongside the profit sharing policy also weakens this enterprise's capacity to invest and improve its service performances. Improving the service performance is essential for current and potential customers and could also benefit the society economically, socially and environmentally, besides being of economic benefit to the enterprise itself. Securing public health concerns and groundwater preservations can be conducted by improving the accessibility, the availability and the reliability of water quality, quantity, pressure and continuity.

This research presents an evaluation model for improving the accountability of water supply by means of performance management tool and it makes policy recommendations.

4

Declaration of Originality

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or a diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Andy Fefta Wijaya Candidate Date:/...../.....

I believe that this thesis is properly presented, conforms to the specifications of thesis presentation in the University and is *prima facie* worthy of examination.

Dr. Janet McIntyre Principal Supervisor Date:/...../.....

Dr. Tiffany Morrison Co-Supervisor Date:/...../.....

Acknowledgements

I am deeply indebted to my principal supervisor, Dr Janet McIntyre, and my cosupervisor, Dr Tiffany Morrison, for their encouragement, support, clear guidance and understanding during my study in the Flinders Institute of Public Policy and Management (FIPPM).

My great appreciation also goes to many academic staff at Flinders University. I can not do justice to all of them but I would like to record my sincere thanks to Professor Bruce Guerin, Associate Professor Colin Sharp, Professor Andrew Parkin, Professor Colin Brown, Associate Professor Anton Lucas, Associate Professor Carol Tilt, Dr Jim Schiller, and Dr Lionel Orchard for their valuable discussions, and to John Summers, Joe Bolderstone and Kerrin Craft for their administrative assistance. I also thank to Dr Mike Metcalfe from University of South Australia for his valuable inputs.

My great thanks for the ongoing and enthusiastic support is given to the CPWSE senior management and all staffs, the Cinusa governmental institutions, BPKP, PERPAMSI, all respondents and participants involved in this study.

AusAID made this research possible through its scholarship. Without its financial backing this four and half year long study would not have eventuated.

Heartfelt appreciation is extended to Dr Roger Wiseman for his editorial service and valuable inputs to this thesis and to my supervisors for their proof reading.

A special acknowledgement is given to my research assistants: Rahayu Rahmawati, Mas Bukhin, Yuyun Harmono, Aang Kuniawan, Khusnul Farsi, Rinta Aditya and Tauran in helping me in the 2004 survey data collection.

My sincere appreciation is given to my mother: Siti Halimah and my father: MS Hasan for their faith, cheerfulness Chantal, and blessing all the time in my life.

I am also grateful to all my colleagues at Brawijaya University, Malang, Indonesia especially in the Faculty of Administrative Science for their supports and helps.

My thanks also go to friends in Flinders University for their warm friendships and supports: among others: M. Masud Said, I Gusti Ngurah Darmawan, Paisal Udontani, Lincolin Arsyad, Helen Dubberley, Hefrizal, Afrizal, Himawan Bayu Patriadi, Fincencio Dugis, Edi Winarko, M. Wayong, Hetifah, Johny Mahrosa, Felix Wanggai, Lisman Manurung, John Soeprihanto, Tori Thamrin, Rahmi, Hajar P., Mochtar, Sudarmo and Andre.

List of Contents:

Abstract ii
Declaration of Originalityv
Acknowledgements vi
Lists of Contentsviii
Lists of Diagrams xi
Lists of Histograms xi
Lists of Tablesxii
List of Appendicesxiv

Chapter One Challenge to Meet Public Value ------ 1-40

I. 1. Introduction: Rationale for the Water Supply Case StudyI. 2. Statement of the Problem Investigated in this Water Supply Case Study	
I. 3. A Nationalized Water Supply Enterprise within the Indonesian Political Contex	-
I. 4. Significance and Challenges of Water as a Public Good and a Public Value for	
Social and Environmental Justice in Indonesia	12
I. 5. Explaining the Ineffectiveness of the Public Goal Achievements in Indonesian	
Public Enterprise	17
I. 6. Explaining Cost Inefficiency in Public Enterprise	26
I. 7. Governing a Water Supply Service	29
I. 8. Accountability and Control in Public Enterprise	32
I. 9. Scope and Limitation of the Study	36
I. 10. Overview of the Chapters	39

Chapter Two Developing Outcome Performance Measurement of Water Supply Enterprise for Social and Environmental Justice ------ 41-73

Chapter Three Research Methodology ------ 74-107

III. 1.	Introduction	74
III. 2.	Using Evaluation Research	74
III. 3.	The Complementary Combined Methods: a Combination of Qualitative	
	and Quantitative Methods	78
III. 4.	Case Study and the Process of Data Collection	81
III. 4.1.	Case Study Method	81
III. 4.2.	The Progress of Data Collection	86
III. 5.	Descriptive Survey, Process of Sampling and Data Collection	91
III. 5. 1.	Descriptive Survey Method	91
III. 5. 2.	Process of Sampling and Data Collection	93
III. 6.	Focus Group and the Process of Data Collection 1	103
III. 7.	Data Analysis 1	104
III. 8.	Summary 1	05

Chapter Four Cost Inefficiency and Price Policy ------ 108-149

IV. 1.	Introduction 108
IV. 2.	Cost Inefficiency in the CPWSE: analyzing the Efficiency or
	Operating Cost Ratio and cost allocation 109
IV. 3.	The Unmerited Recruitment System in the CPWSE: implications of
	collusive and nepotistic practices on costs 114
IV. 4.	Political Interference from Local Government and the Legislative Assembly
	into the CPWSE management: implications of corruption on costs 121
IV. 5.	Price Policy and Subsidy Scheme: evaluating social economic and
	environmental implications 128
IV. 6.	Summary 14

Chapter Five Water Quantity, Quality, Pressure and Continuity --- 150-198

V. 1.	Introduction	150
V. 2.	Water Quantity	152
V. 2. 1.	Coverage Level	153
V. 2. 2.	Idle Capacity, Production Capacity and Raw Water Quantity	158
V. 2. 3.	Unaccounted-for Water, Leakage Problems and Organizational	
	Resources	160
V. 3.	Water Quality	166
V. 3. 1.	Bacterial Standard	167
V. 3. 2.	Chemical Standard: the case of chlorine and contaminated water	173
V. 3. 3.	Water Physical Performance	182
V. 4.	Water Pressure and Continuity	185
V. 5.	Summary	196

Chapter VI	
Conclusion	• 199-211
References	212-219
Appendices	220-247

Lists of Diagrams

Diagram I.1:	Public Policy, Implementation and Measurement in Indonesian Water Supply Enterprise 1	8
Diagram I.2:	Governance for the Water Supply Encerprise3	
Diagram II.1:	Outcome Performance Measurement Web	54
Diagram II.2:	Outcome Performance Indicator Web of Cost Inefficiency And Price Policy	68
Diagram II.3:	Outcome Performance Indicator Web of Water Quantity, Quality, Continuity and Pressure	70
Diagram III.1:	A Research Evaluation Framework of Water Supply Service Performance7	77
Diagram III.2:	Investigating Water Supply Performance of the CPWSE in the Cinusa city through Case Study, Survey and Focus Group	81
Diagram V.1:	Evaluating Water Supply Service Performance 1	51

Lists of Histograms

Histogram IV.1:	Ten Financial Indicators of the CPWSE in	
	2001, 2002 and 2003	111
Histogram IV.2:	Scores of the CPWSE's Monthly Working Ratio in 2003	125

Lists of Tables

Table II.1:	Model of Performance Measurement	- 50
Table II.2:	Performance Indicators for Water and Sewerage	
	Supply Service in Four Institutions	62
Table II.3:	Some Examples of Interconnections among Indicators as Inputs, Outputs, Intermediate Outcomes and End-Outcomes/Impacts	- 66
Table III.1:	Five sub-districts, 2002 water coverage levels and	02
T-1-1- III 0.	January-October 2003 cases of water-borne disease	- 93
Table III.2:	Three sub-districts, nine townships and water-borne disease cases,	0.4
	January to October 2003	- 94
Table III.3:	Three townships, thirteen neighborhood areas and	0.5
T 11 III 4	water coverage, 2002	- 95
Table III.4:	Numbers of Respondents Based on Townships and	0.0
	Customer Classification	98
Table III.5:	Respondents and their Customer Classification in	00
	Three Neighborhood Areas	- 99
T-11. IN 1.	Efficiency of Oresting Cost Deting of Weter Country	
Table IV.1:	Efficiency or Operating Cost Ratios of Water Supply	100
T_{1}	Companies in Several Countries 2001, 2002 and 2002	
Table IV.2:	CPWSE Direct and Indirect Expenditure 2001, 2002 and 2003	112
Table IV.3:	The Growth of the CPWSE Expenditure in	110
	2001-2002 and 2002-2003	113
Table IV.4:	Staff/1000 Connections of Water Companies in	110
	Several Countries	116
Table IV.5:	The CPWSE Employee Cost and Operational Cost	110
	2001, 2002, and 2003	116
Table IV.6:	Ratio between Labor Cost and Operational Cost	
	in Several Countries	117
Table IV.7:	Direct and Indirect Cost of the CPWSE Employees	110
	2001, 2002 and 2003	118
Table IV.8:	The Growth of Direct and Indirect Employee Costs in	
	the 2001-2003 periods	119
Table IV.9:	The CPWSE Water Levy and Production in 2001, 2002 & 2003	123
Table IV.10:	Other Unidentified Costs (OUC), Other Identified Costs (OIC)	
	and Indirect Costs of the CPSWE 2001, 2002 and 2003	126
Table IV.11:	Average Tariff, Operational Cost/Cubic Metre Sold,	
	Average Profit/Cubic Metre Sold and Profitability among	
	Water Supply Companies in Several Countries	130
Table V.12:	Respondents, Case Study Location and Well Ownership (%)	132
Table IV.13:	CPWSE Customer Numbers and Classification	
	(January and December 2003)	
Table IV.14:	Tariff Water Sold and Water Use by Household Customer Type	
Table IV.15:	Family Members per Household	
Table IV.16:	Income by Household Customer Type (%)	138

Table IV.17:	Ratio between Income and Expenditure	
	by Household Customer Type (%)	138
Table IV.18:	Respondent Groups and Customer Opinion	
	about Water Tariff (%)	139
Table IV.19:	Respondent Groups and Customer Opinion	
	about Water Tariff (%)	140
Table IV.20:	Respondent Groups and Customer Satisfaction	
	about Water Bill (%)	145
Table V.1:	Water Coverage Performance Indicator in Several Areas	154
Table V.2:	Water Coverage Performance Indicators in	
	Several Indonesian PDAMs	154
Table V.3:	Respondent Groups and Water Quantity in	
	Wet and Dry Session (%)	156
Table V.4:	Respondent Groups and Customer Satisfaction	
	about Water Quantity in Wet and Dry Season (%)	157
Table V.5:	Performance Indicators in Productivity of Production	
	Installation Capacity in December 2001, 2002 and 2003	158
Table V.6:	Performance Indicator of Uncounted for Water in	1.60
	Several Countries	160
Table V.7:	UfW from Water Production and Distribution in	1.64
T 11 X 0	the Company in 2003	
Table V.8:	Pipe Leakage Reports from January to July 2003	
Table V.9:	Bacterial Test Results of Water Quality from the Company	- 169
Table V.10:	Bacterial Test Results of Water Quality from	170
$T_{a}h_{a}V_{a}11$	Several Alternative Water Sources	1/0
Table V.11:	Respondent Answers about the Hygiene of Well Weter Compared with Tep Weter	170
Table V.12:	Well Water Compared with Tap Water Respondents, Case Study Location and Well Ownership (%)	
Table V.12. Table V.13:	Respondent Groups and Well Ownership in	170
	Their House in Percentage	176
Table V.14:	Respondent Household Groups and House Land Area (%)	
Table V.14. Table V.15:	Respondents, Case Study Location and an Individual	
14010 1.15.	Septic Soakage Tank Ownership (%)	
Table V.16:	Distances between Wells and Individual Sewerage Systems (%)-	
Table V.17:	Ratios between the Number of Water Borne Diseases and	177
14010 1111	Respondents in Each Neighborhood Location (%)	181
Table V.18:	Respondent Experiences with Water Smell, Taste,	101
	Clarity and Sediment	182
Table V.19:	Respondent Groups and Water Pressure in Wet and	-
	Dry Seasons (%)	187
Table V.20:	Respondent Groups and Water Continuity in Wet and	
	Dry Seasons (%)	190
Table V.21:	Respondent Groups and Water Tank Ownership (%)	
Table V.22:	Respondent Groups and Customer Satisfaction on	
	Water Pressure in Wet and Dry Seasons (%)	194
Table V.23:	Respondent Groups and Customer Satisfaction on	
	Water Continuity in Wet and Dry Seasons (%)	- 195

Appendices

Appendix 1: Pictures of Poorer and Richer Households	- 220
Appendix 2: The CPWSE Customer Classifications	- 221
Appendix 3: Survey Questionnaire	223
Appendix 4: Pictures of a Food Packet for Respondents	234
Appendix 5: Discussion Materials and Results of the First Focus Group with	
Participants from the Non-Technique Department in CPWSE	235
Appendix 6: Discussion Materials and Results of the Second Focus Group	
with Participants from the Technique Department in CPWSE	237
Appendix 7: The Scoring System of the PDAM Financial Indicators	
from IHAD	- 239
Appendix 8: The 2003 Progressive Tariff in CPWSE	240
Appendix 9: Pictures of Pipe Leakages	241
Appendix 10: Pictures of Pipe Leakages	- 242
Appendix 11: A Picture of Tied-up Break in the Pipe with a Rubber Band	243
Appendix 12: A Picture of Wells with Electricity, Pumping and Pipe Systems	
Appendix 13: A Picture of Industrial Wastes in the Stream in Ciloyo	- 245
Appendix 14: A Picture of 'Gentong'	
Appendix 15: An example of original questionnaire	- 247