



Water use and waste management strategies in
Sakubva, Mutare (Zimbabwe)

UNIVERSITY *of the*
WESTERN CAPE

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**Water use and waste management strategies in
Sakubva, Mutare (Zimbabwe)**

**A mini-dissertation submitted in partial fulfillment of the requirements
for the degree of Master of Philosophy (Water Studies) in the Faculty of
Economic and Management Sciences**

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Dedications

This work is dedicated to my fellow research team members, the friendly people of Sakubva and my family

“An intelligent man looks into space and does not see the great as too big, nor the little as too small” Dr Rivka Kfir



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Declaration

I, **Mosupye Gilbert Morake**, declare that the mini-thesis “**Water use and waste management strategies in Sakubva (Zimbabwe)**”, is my own work and has never been submitted to any academic institution.

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Date

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Signature



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TABLE OF CONTENTS

Dedications	iii
Acknowledgements	iv
Declaration	v
List of Figures	x
List of Tables	xi
Abstract	01

CHAPTER ONE: ORIENTATION AND STATEMENT OF THE PROBLEM 02

Introduction	02
Background of the study area	03
Statement of the research problem	06
Objectives of the study	07
Guiding assumptions	07
Research Methodology	08
The significance of the study	09
Limitations of the study	10
Organization of the write-up	10

CHAPTER TWO: LITERATURE REVIEW 12	
Introduction	12
Water as an economic good versus water as a human right	13
Stakeholder participation in water resources management	17
Demand management of water resources	22
Summary	24

CHAPTER THREE: WATER SUPPLY MANAGEMENT IN SKUBVA 25

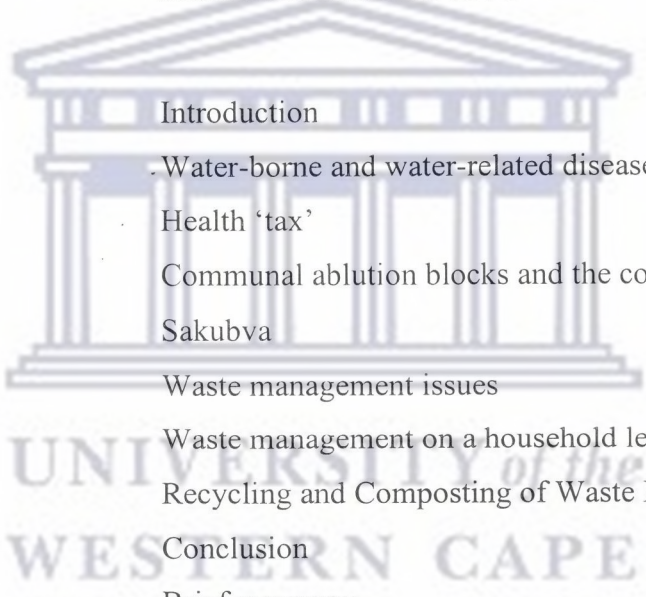
Introduction	25
What is Supply Management?	25
Why supply side is the chosen approach in Mutare (Why not Osborne?)?	27
The Pungwe-Mutare water supply project	28
Water Supply Management : Is it the best option for Sakubva	29
* City Council as part of water management structures	29
* Water loss in Sakubva	29
Conclusion	33
Brief summary	33

CHAPTER FOUR: WATER USE AND DEMAND MANAGEMENT IN SAKUBVA 34

Introduction	34
Population growth and (water) resources management	34
Water use in the households	38
Water demand management approach and strategies	39
Water pricing	43
Increment of tariffs in Mutare	45
Suitable demand management strategies	

for Sakubva	46
Overcrowding, flat rate and non-metering as unfavourable climate for water pricing in Sakubva	51
Women and water resources management	51
Proposed solutions by the City Council	53
Conclusion	55
Brief summary	55

**CHAPTER FIVE: HEALTH AND WASTE
MANAGEMENT IN SAKUBVA 56**



Introduction	56
Water-borne and water-related diseases in Sakubva	57
Health 'tax'	61
Communal ablution blocks and the consequences in Sakubva	63
Waste management issues	68
Waste management on a household level	69
Recycling and Composting of Waste Material	69
Conclusion	70
Brief summary	71

**CHAPTER SIX: RECOMMENDATIONS AND
CONCLUSION 72**

Overview of the study	72
Impediments to positive changes in Sakubva	73
Alternative approaches to problems of Sakubva	75
Concluding remarks	82

BIBLIOGRAPHY	84
APPENDICES	94
Appendix 1: Delimitation of Concepts	94
Appendix 2: Forms of Private-Sector involvement	96
Appendix 3: Typology of participation	98



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List of Figures

Figure 1:	A map of Zimbabwe with Mutare to the east of the country	03
Figure 2:	A map of Sakubva	05
Figure 3:	Pungwe- to- Mutare water supply project	28
Figure 4:	Self-made “stream” in Muchena (section of Sakubva) Flowing to Sakubva River	32
Figure 5:	Housing situation in most sections of Sakubva	37
Figure 6:	Water pricing using the water management chain	48
Figure 7:	A triangle depicting interdependence of three components: water, life and health	56
Figure 8:	Visible human wastes in most toilets in Sakubva	62
Figure 9:	Ever-flowing “shower” in a communal block in Sakubva	64



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WESTERN CAPE

List of Tables

Table 1:	Average number of people per room in Sakubva	36
Table 2:	Recommended basic water requirement for human domestic needs	39
Table 3:	Fixed and block tariff structure of Mutare	44
Table 4:	Diseases related to poor sanitation and water supply	58
Table 5:	Access to sanitation in Southern Africa	61



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Abstract

Following the severe drought of 1991/92, the city of Mutare embarked on a multi-million dollar water supply project. This project brought water from the Pungwe River via pipeline to the city of Mutare. The project was deemed to be a satisfactory solution to the water and sanitation problems in Zimbabwe's third largest city. For residents of Sakubva township, the Pungwe project has ensured a supply of clean water. However, it has made very little impact in terms of accessibility to water and sanitation facilities to those same residents.

In Sakubva there are various kinds of households and forms of home ownership – some with piped water and in-house toilets, but many more dependent on communal ablution blocks and open-access standpipes. Widespread dependence on communal ablution blocks in most sections of Sakubva raises serious questions regarding equity of access to freshwater and clean sanitation facilities. At the same time, City Council and Government's reluctance to deal effectively with these issues compromises the concept of water demand management as encompassed in the Zimbabwean National Water Act of 1998. Moreover, a combination of overcrowding in Sakubva and the high mobility of its 'resident' population has negatively impacted on planning, provision and management of water and sanitation services. As a generality, there is lack of effective participation by all stakeholders, particularly women and the disadvantaged in water resources management. This compounds the general lack of social and environmental justice arising from poor governance.

Rapid and unplanned urbanization in Sakubva is compounding waste management problems. Lack of financial resources is the main problem in provision of waste management services in most developing countries. Although the same problem applies in Sakubva and Mutare the City Council is doing little to deal with waste management and this poses a serious health threat to the residents of Sakubva.

The study concludes by looking at alternative water and waste management strategies that may be employed in Sakubva. Moreover, the researcher believes that lessons from and suggestions for Sakubva may be extended to other high-density areas throughout the Southern African region, so offering region-wide policy recommendations.

CHAPTER ONE: ORIENTATION AND THE STATEMENT OF THE PROBLEM

Introduction

In spite of adequate supply of water in Mutare and Sakubva in specific, there is a problem with management of water resources in this area. It is clear socio-economic issues have been ignored in the development of the Pungwe-Mutare water supply project. It is imperative that social issues are considered before execution of projects. This is especially the case because the negative impacts of a project might outweigh the advantages thereof. It is worth noting that over the years, Mutare has not been immune to drought. It has suffered water shortage problems that threatened to crimp development and force the relocation of citizens to wetter areas of the country. Until recently the city had to restrict its use of water to help ensure enough remains for the essentials of life. Therefore the Pungwe-Mutare water supply project was established specifically to address these water shortage problems (<http://www.ngw.nl/int/afr/mutare.htm> , Herald 2001).

The aforementioned water project involves diversion of water from Pungwe River to the city of Mutare. Through the Pungwe project, as The Financial Gazette (1998) states, at least 22 million cubic metres of water per annum is diverted from Pungwe River to Mutare. Since the completion of the project, water in the whole of Mutare is no longer a problem, but the problem is the poor use and management of water resources and waste, which threaten the health of the community at large. There is a need for equitable access to proper sanitation in Sakubva where waste is not safely managed and waste in this area should be managed in an environmentally and socially just manner. Participation of all stakeholders in water resources management, would be important to achieve sustainable development (<http://www.gwpsatac.org.zw/vision/Chapter9.html>).

Background of the study area

Mutare

The city of Mutare was established as a fort in 1890 and was originally called Umtali by the European settlers. Umtali was proclaimed a municipality in 1914 and was granted a city status in 1971. Its name was changed to Mutare on the second anniversary of Zimbabwe's independence on 18 April 1982. Mutare is located high in the beautiful Eastern Highlands in the border of Mozambique (see Figure 1) and it marks a central point between Nyanga and Chimanimani. Although the city sprawls over a fair distance, the centre is very compact, the main drag being Herbert Chitepo Street (<http://www.ngw.nl/int/afr/mutare.htm>).

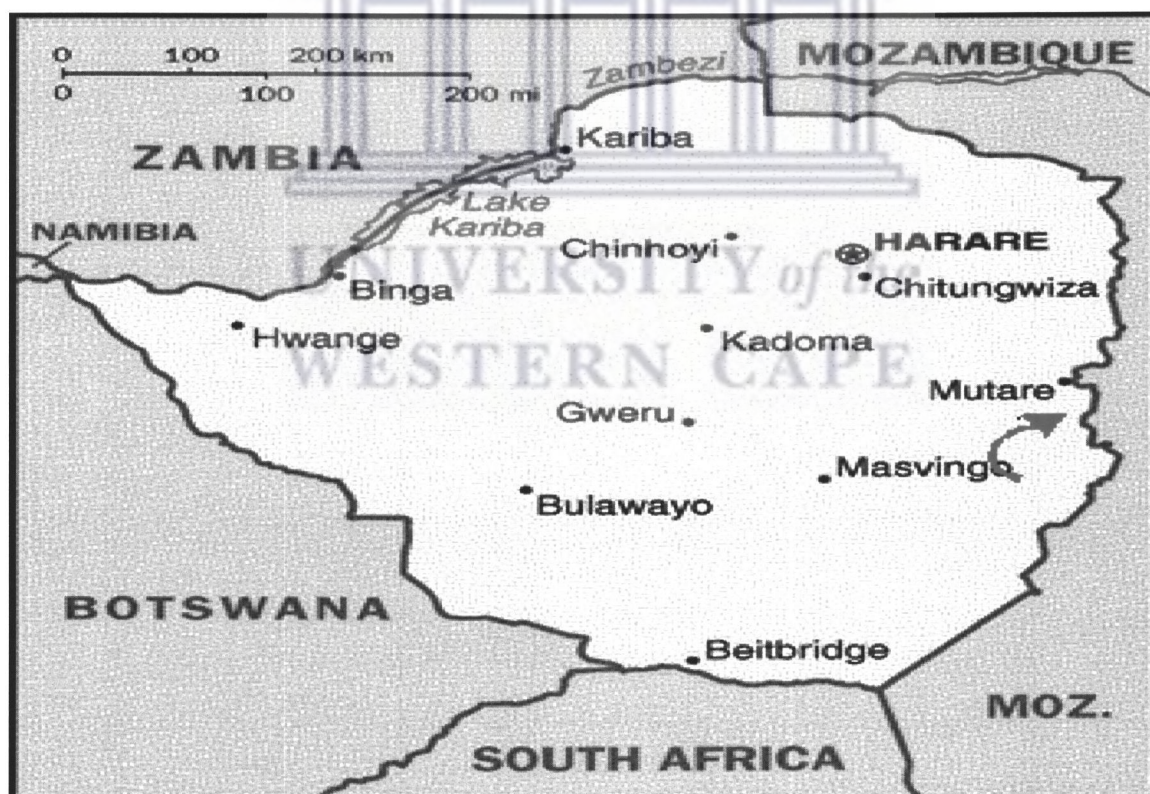


Figure 1: A map of Zimbabwe with Mutare to the east of the country

While technically land-locked, Mutare City is connected with Mozambique's Indian Ocean port city of Beira by a 287 km road and rail link. Industries in the city include metalworking, distilling, textile weaving, food processing, saw-milling, and the manufacture of furniture, flour and apparel. Mutare also has auto-assembly plants and railroad workshops and is also a resort center, surrounded by scenic mountains. Over the years Mutare, not immune to drought has suffered water shortage problems and until now, had to restrict its water use of to help ensure enough remains for the essentials of life. The prolonged droughts of 1991-2 and 1996 made Mutare and the region suffer from the greatest drought in living memory. This issue further moved question of water supply to the top of the national and regional political agenda¹.

Sakubva

Sakubva is a low-income high-density suburb located approximately five (5) kilometers south of the city of Mutare. The area covers 129 km square is divided into various sections: Mazhambe, NHB, Muchena, Mundembe, New Zororo and Old Zororo (see Figure 2).

With the exception of New Dangare, Devonshire, and New Zororo, which have private water and sanitation facilities, the rest of the sections use communal ablution blocks for their water and ablution purposes. Sakubva falls under the City Council of Mutare and was the first residential area to be built in the city around 1910. According to Chirawu (pers. comm., 2001) there are 6 225 legal houses in the area. It was expected that each family would have two children, so the population of the area would be around 24 900 which is the population for which facilities was planned. Presently the population of Sakubva is estimated at approximately 221 000 owing to the proliferation of shacks. Tagwira et al. (2000) point out that this area has an average of 5.4 people per room, 14 people per house and 5264 people per km².

¹ See <http://www.ngw.nl/int/afri/Mutare.htm> and Mukheli, A, G.M .Mosupye and LA Swatuk (2001)

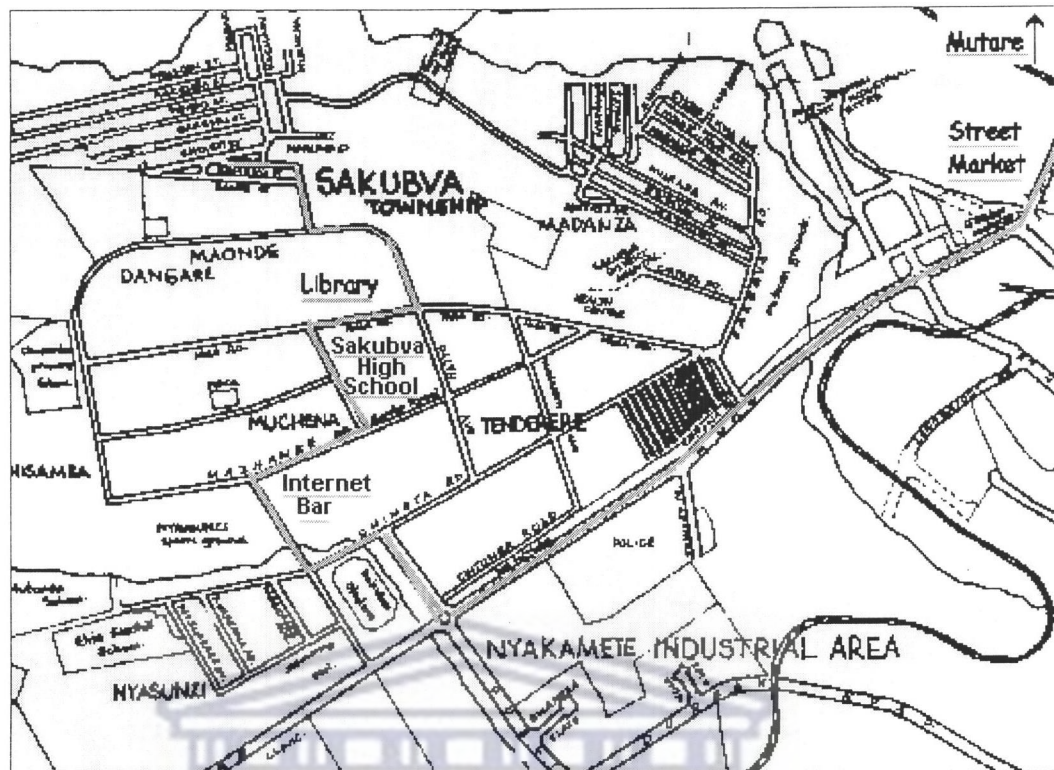


Figure 2: A map of Sakubva

According to Chirawu and Muskwe (pers. comm. 2001) the township was established during the colonial era to accommodate/house black workers who provided cheap labour in the white-owned industries of that time. Except in New Dangare, Devonshire and New Zororo (where houses are privately owned), there is no home-ownership in Sakubva. The houses in other sections are shared by approximately four families and each of them with tenants. Flats can also be identified in some sections of Sakubva.

Majority of the people in this area is living below the poverty line, the situation having been worsened by the recent economic recession in the country. The proximity of the area to the city and the affordability of the shacks (approximately Z\$ 400-00 per month) makes it the target of people from rural areas and illegal immigrants (notably from neighbouring Mozambique, South Africa and Malawi) who are looking for better job opportunities or who use it as a market to sell their produce. Sakubva has become “ the first stop for people migrating from the rural areas particularly if they have no relatives in town” (Tagwira et al., 2000:08). Sakubva is now in a dilapidated state, and as Tagwira et al. (2000) put it,

everything seems to be fast aging and receiving no attention for rejuvenation. The burgeoning population of Sakubva (3,8 % growth rate per annum) is resulting in increased socio-economic problems and is also putting a severe strain on resources. Poor water and waste management are some of the problems facing the township of Sakubva.

Statement of the research problem

Although the Pungwe-Mutare water supply project has ensured enough supply of clean water in Sakubva, there are still problems related to poor management of this resource. Prevalence of diseases and poor health resulting from poor sanitation are some of the consequences. In this study focus is being put on water management issues.

The project emerged due to the fact that even after the establishment of the Pungwe-Mutare water supply project, (commissioned in March 2000) which was thought of as a solution to the problems of water scarcity and sanitation, Sakubva has still got problems related to water demand and sanitation. Water and wastes are not well-managed and there is lack of effective participation by stakeholders, particularly women and the disadvantaged who bear the brunt of inefficient water resources management and related negative consequences of water resources management. In Thompson's words, "the water off-take scheme (Pungwe water project) has not improved the water security of the majority of Mutare's residents: the residents of Sakubva" (Thompson, 2001:16). According to UNICEF, access to sanitation facilities is a fundamental human right meant to safeguard health and human dignity. It has to be borne in mind that every human being deserves to be protected from the many health problems – including dysentery, cholera, and other serious infections – posed by poor disposal of excreta (<http://www.unicef.org/sanitation/>)

Derman and Whiteford (1985:4) show that even if the explicit goal of projects is to assist the poor, it does not follow that the poor will indeed be assisted. In fact, as Derman and Whiteford (1985) say, it has been the experience of many people working in development that a greater number of projects and programmes have had the opposite effect. The expensiveness of the Pungwe Water Supply Project (i.e. USD 100 million) does suggest

increased water tariffs for the residents and there might be a need for the City Council of Mutare to increase tariffs to recover the costs of this project.

In execution of development projects, as Hunter in Fitzgerald et al. (1997) stress, it is imperative that costs and benefits are linked more closely to ensure more financial and economic sustainability. While development initiatives are rightfully posited as a means to overcome conflict by tackling the poverty and misery on which it breeds, the delivery of resources, if not handled properly, can exacerbate conflict situations and lay wasteful development efforts. The Pungwe water project must ensure that people's basic needs are being met and that the resource base is conserved. Supply and demand management approaches working in tandem and with stakeholder participation are crucial to sustainable water and waste management in Sakubva.

Objectives of the study

The objectives of the study are as follows:

- (i) To assess water use in the households in Sakubva.
- (ii) To assess the efficiency of the City Council of Mutare in providing water and waste management services.
- (iii) To assess water and sanitation facilities in the different sections of Sakubva.
- (iv) To assess the consumer satisfaction with regard to services (water and waste management) they receive and the affordability of these services.
- (v) To assess the role of women in water management and water-related-issues.
- (vi) To assess how the residents articulate their complaints upward in the (city council) system.

Guiding assumptions

- (i) Water is not treated /managed as an economic good.
- (ii) Overcrowding makes it impossible for the City Council of Mutare to plan around basic services such as provision of water.

- (iii) With communal ablution blocks, sanitation in Sakubva will always be a problem.
- (iv) There is lack of communication and a working relationship between the residents/consumers and the city council.
- (v) The socio-economic environment is not conducive for a culture of payment for services.
- (vi) With the top-down approach (city council), the people on the ground will never be satisfied.
- (vii) With increased water tariffs consumption patterns could change.

Research Methodology

The researcher spent five weeks in Zimbabwe of which two were in a household in Sakubva, enabling different living conditions to be directly observed. The informants included relevant City Council officials, residents of the township and Mutare Residents' Ratepayers Association's executive member. Secondary sources were also used in the study.

The triangulation strategy of Denzin (1970,1978) was used in operationalising the study. Triangulation refers to the combination of multiple methods of observation, which direct a researcher to utilize several different tools in the observational process. The rationale for this is that one method alone cannot adequately treat all problems of discovery and testing. Since each method has restrictions combining several methods in the same study enables overcoming the restrictions of using one tool. The greater the triangulation in a research design, the greater the confidence a researcher may have in his/her findings. According to Denzin in Mouton and Marais (1994:206), a triangulation strategy should embrace the following:

- (i) Multiple data sources, whereby the researcher goes to as many concrete situations in a setting as possible to form an observational base;
- (ii) Multiple methods, whereby any and all techniques that can better unravel the processes under study are used; and
- (iii) Multiple perspectives, where participants' accounts of their behaviour are compared with alternative theoretical schemes.

To achieve the objectives of the study, the researcher used various participatory methodologies and tools, which included:

(i) Direct observation - this involved the researcher directly observing water-related issues in Sakubva (study area) to better understand the dynamics of what he is researching on.

(ii) Questionnaires – a questionnaire was also designed and administered to relevant people especially the local residents.

(iii) Formal and informal interviews – both types of interviews were held with informants. Formal interviews were mainly held with the City Council officials, government officials and Mutare Residents and Ratepayers' Association executive member, where the environment was conducive. Informal interviews were held with any community member mainly in informal places such as pubs, taverns and “braai” places where the researcher thought he might get useful information.

(iv) Case histories – information on how the situation was like in the past regarding water and waste management and what can be done was also received from people who have been in Sakubva for some time.

(v) Transect surveys – A walk in the area of study was taken to take note of the issues that can help the researcher to achieve his objectives.

(vi) Focus group discussions – Discussions with various groups were held mainly in the communal ablution blocks and the residences as a way of gathering data related to the study.

The significance of this study

The topic on water use and waste management strategies for the households of Sakubva is important for the following reasons: -

(i) It will show the importance of treatment/management of water as an economic good.

(ii) It will stress responsibility on the part of the community to conserve water for their benefit because consumption patterns to a certain extent influence the costs of water.

(iii) It may encourage the city council of Mutare to consult and meet the needs of the consumers with regard to water and waste management services.

(iv) It shows the importance of women in management of water and related issues.

- (v) Lessons from and suggestions for Sakubva may be extended to other high-density areas throughout the Southern African region, so offering region-wide policy recommendations.
- (vi) It may contribute towards a relatively sparse literature and information base on water use and waste management on a household and community levels.

Limitations of the study

Whilst the results of this research might not be entirely applicable to all similar situations, it can better help to understand the issues surrounding water in Mutare and specifically Sakubva. Research in Sakubva was not without problems.

Here are some of the limitations:

- (i) The study was limited by lack of trust by some interviewees who might have thought of us as City Council employees and as such did not want to talk to us. This can be attributed to growing tensions between the residents and the City Council.
- (ii) The fact that some interviewees could not speak English/ or that the researcher could not speak a local language, made it difficult for the researcher to get the kind of data he wanted despite having a translator information may have been distorted.
- (iii) Fear by possible interviewees to talk to strangers due to political unrest in the country was also a problem experienced, with a number of residents not prepared to give information. This means that the study might not have been well-timed.
- (iv) The study was also limited by time as only five weeks were spent in the field, so gaining ethnographic insights as opposed to hard empirical data.
- (v) The financial resources were also not enough to allow the researcher to stay longer for the study and gather all important information.

Organization of the write-up

Chapter One: Orientation and Statement of the Problem

This chapter is dedicated to general introduction, background of Sakubva, statement of the research problem, methodology, objectives and significance of the study (i.e. mostly comprise the proposal).

Chapter Two: Literature Review

This chapter examines three kinds of literature that is important for the study. That is literature on water as an economic good versus water as a human right, literature on demand management approach and literature on participation in water resources management.

Chapter Three: Water Supply Management in Sakubva.

The concept of Water Supply Management is looked at and defined. The issue of managing supply of water by the City Council of Mutare is examined and focus is also being put on “Pungwe falls” in Sakubva.

Chapter Four: Water Use and Demand Management in Sakubva.

This chapter looks at how water is used on a household level in Sakubva and thoroughly looks at the water demand management approach and strategies with reference to Sakubva. The proposed solutions by the City Council to deal with increasing water demand and recovery costs are reviewed.

Chapter Five : Health and Waste Management in Sakubva

In this chapter focus is being put on water-borne and water-related diseases with reference to Sakubva. The issue of communal ablution blocks and their consequences in Sakubva are assessed. The management of waste and its consequences in Sakubva is also looked at. Examination is also made of the possibilities of (re-) utilization of waste (mainly organic) and the benefits thereof.

Chapter Six: Recommendations and Concluding Remarks.

In this final chapter, impediments to positive changes in Sakubva are reviewed and alternative approaches to problems are suggested. Concluding remarks are also given.

CHAPTER TWO: LITERATURE REVIEW

Introduction

Since water touches on the lives of the poor and the rich, it is important that this resource be managed in a sustainable manner. In order to achieve this, water should be managed both as an economic good and a human right. Empowerment of ordinary people in decision-making regarding the use and management of this resource is important in order to realize the concept of integrated water resources management and water demand management strategies. Full participation of all stakeholders should be taken seriously as it is a prerequisite for successful water demand management.

According to Campbell (1996:01), conflict related to natural resource management in development situations seems to be a common occurrence. In today's context of finite natural resources, the intensity of that conflict appears to be rising exponentially, as more interests than ever before are competing for use of and access to both renewable and non-renewable resources. In an attempt to mitigate resource development conflict, a new arrangement has been gaining popularity among many of those involved in resource management, and this new approach is known under several names such as co-management, joint management or joint stewardship. Co-management is described in Campbell (1996:03) as "the sharing of decision-making power with non-traditional actors in the process of resource management". In Southern Africa, water security has attracted attention of planners, managers, policymakers, experts, farmers and all users simply because of the scarcity of this resource in the sub-Saharan region and mainly because without water there is no life. Since this resource touches on everybody's life it therefore calls for all users' involvement/participation in its provision, use, planning and management.

It is clear as Fitzgerald et al. (1997) state that lack of access to basic water supply and sanitation does not exist in isolation from other poverty-related issues. It forms part of the poverty syndrome and is both a cause and a consequence of impoverishment. Illiteracy and poor education result in an ignorance of the consequences of personal and family hygiene

custom and practice. If development is to be truly responsive to the needs of impoverished communities, then it must be a participative, interactive, integrative, and continuous process, which acknowledges the linkages between all activities that constitute the development process.

This review focuses on three (3) main types of literature: (i) water as an economic good versus water as a human right; (ii) demand management of water resources; (this is an issue to which I return in Chapter Four) and (iii) participation and participatory management. Literature on water as an economic good is reviewed mainly because there are contending views as to whether water should be treated/managed as an economic good or as a human right. The treatment of water as an economic good can better help to manage the demand for this resource and in doing so, it is imperative that the rights of the poor to have access to water are not overlooked.

The fact that water is a source of life and a human right might also promote wastage of this resource when the supply is plenty (details in Chapter 3 & 4). Demand management has got water pricing as one of its strategies and this, has been found in many situations to promote conservation of this resource. Demand management approach focuses mainly on conservation of the available water resources by all means possible before tapping on other water sources. Demand management measures need to be appropriate in Sakubva and must be coupled with sustainable approaches to supply management, not just big budget pipelines. Literature on participation and participatory management has also been looked at because full participation of all stakeholders is necessary if demand management is to be successful and for people to participate fully, they have to be empowered in decision-making and feel that they are part of the whole process.

Water as an economic good versus water as a human right

The issue of water as an economic good as McNeill (1998) argues, often creates disagreements: between economists, who see water primarily as a resource, ecologists who see water as a natural phenomenon, and other social scientists who emphasize it as a basic need (and fear that economic approach is necessarily a threat to this view). These

disagreements are encapsulated in WINER (Water Is Not an Economic Resource); WIER (Water Is an Economic Resource) and WISER (Water Is both a Social and Economic Resource) paradigms that Tony Allan is currently developing (www.up.ac.za/academic/libarts/polsci/awiru/). The existence of the latter means that purely economic instruments will surely fail to meet the desired change in consumption patterns and effective WDM strategies will have to embrace a range of instruments ranging from the economic to the social and physical.

Treatment of water as an economic good may have its drawbacks and advantages. WRMS (2001:82) warns that the principle of “water as an economic good”, if not properly planned and implemented may have negative social consequences especially for women. This is especially the case when one considers that women make up the majority of the unemployed population. According to Bond in Swatuk (2001:05) treatment of water as an economic good is “... a recipe for ‘residual water apartheid’ based not necessarily on race but clearly on class”. According to Savenije and Van der Zaag (1998), consideration of water as an economic good relates to making the right choices about the utilization of water in the broadest socio-economic context. They state that this is something completely different from water pricing. The proponents of “water as an economic good” argue that the past failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of water. They believe that water as an economic good is an important way of achieving efficient and equitable use and of encouraging conservation and protection of water resources. Bauer (1997) sees this fourth principle of the Dublin conference as contradicting itself, because this principle adds that “access to clean water and sanitation at an affordable price” is a “a basic right of all human beings”. As Bauer (1997) states, at one level, this contradicts the logic of treating water as an economic good by putting social values above supply and demand. At another level, however, it recognizes that market incentives and mechanisms depend on their wider social contexts and preconditions.

Savenije and Van der Zaag (1998) strongly believe that there is a misinterpretation of “water as an economic good principle (the fourth Dublin principle)”, which led to a serious misunderstanding during the debate both at the Dublin conference and at the Earth Summit in Rio de Janeiro. The implication of “water as an economic good” according to them, is that decisions on the optimum use of water and the allocation to different potential uses

should be taken on the basis of socio-economic trade-off analysis that is independent of the ability to pay. If a society values environmental, cultural, sustainability and social considerations sufficiently, then it will give water a high economic importance, even if there is a low ability to pay. In other words, considering water as an economic good implies that governments subsidize those uses of water that have a high value but a low ability to pay.

According to Savenije and Van der Zaag (1998), the fourth Dublin principle “ Water has an economic value in all its competing uses and should be recognized as an economic good” was inspired by the Copenhagen informal consultation, which prepared the Dublin conference (see Text Box 1).

The Ghana National Coalition Against Privatization of Water (2001) strongly believes that “water is not a commodity! Water is life and life is for all”. This organization is against the commodification of water for the profit and benefit of a few. The Accra Declaration on the right to water states that water is a fundamental human right, essential to human life to which every person, rich or poor, man or woman, child or adult, is entitled to and that water is not and should not be a common commodity to be bought and sold in the market place as an economic good.

Box 1: The economic value of water

‘ whoever has some water available has the choice between using that water or offering it to the highest bidder among alternative users. If he[sic] decides to use the water himself for whatever activity he is engaged in (household, agriculture, industry, or using the water as a sink for residuals from production or consumption activities), he abstains from an income he could have earned by selling this water to someone else in the community he could have earned by selling this water to someone else in the community or downstream. This means that the user decides that the value of the water to him is higher than the income foregone. By not selling the water he abstains from an income opportunity; thus the concept of opportunity income or opportunity cost’

Source: CIC, 1991 in Savenije & Van der Zaag, 1998)

According to the Centre for Economic and Social Rights², it has become increasingly important to develop global standards for promoting universal access to water as a human right in the face of rapid industrialization and privatization which are already causing severe water shortages. International law, international agreements and evidence from the practice of States strongly and broadly support the human right to basic water requirements (Gleick, 1999; Barlow, 2001). The reworded Article 22 (now Article 25) of the Universal Declaration of the Human Rights (UDHR), was thus adopted unanimously and states:

Everyone has the right to a standard of living adequate for the health and well-being of himself[sic] and of his family, including food, clothing, housing...

(UN General Assembly, 1948 in Gleick, 1999).

Gleick (1999) argues that satisfying the standards of Article 25 cannot be done without water of a sufficient quantity and quality to maintain human health and well-being. He further states that meeting a standard of living adequate for the health and well-being of individuals requires the availability of a minimum amount of clean water necessary to prevent death from dehydration, to reduce the risk of water-related diseases and to provide for basic cooking and hygienic requirements.

In practice, as Winpenny (1994) stresses, treating water as an economic resource means less waste of this precious resource, confining its use to where it is really valuable, and preferring reallocation to new supply schemes where these are costly in economic and/or environmental terms.

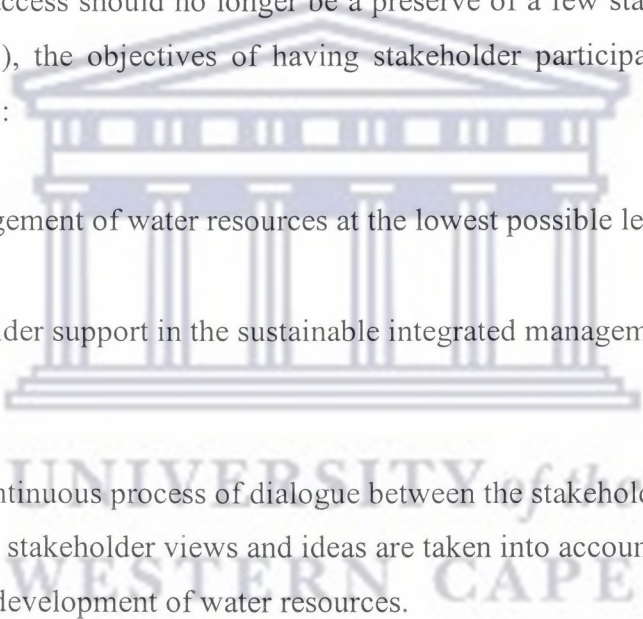
Taking into consideration different living standards of different people, it is imperative that water be treated both as an economic good and a human right. Management of this resource as an economic good will ensure conservation of the resource and also ensure that the supply is extended to under-serviced areas. Its treatment as a human right will ensure that the poor are not denied access to this resource that is a necessity for survival.

² Information from <http://www.cesr.org/PROGRAMS/>

Stakeholder participation in water resources management

The issue of participation has always been a difficult one in the management of resources. This is particularly the case, because it is constructed and interpreted differently by different agents. This is also explained by the statement “ Although it has been top of the agenda for twenty years it is still far from clear what community participation is, how it comes about, and what it is actually for” (Dudley, 1993: 08).

In the management of water resources, it is imperative that all stakeholders participate (Commonwealth, 1999). As WRMS (2001) stresses, water is a basic necessity such that its management and access should no longer be a preserve of a few stakeholders. According to WRMS (2001:111), the objectives of having stakeholder participation in water resources management are to:

- 
- (i) Promote management of water resources at the lowest possible level.
 - (ii) Solicit stakeholder support in the sustainable integrated management of water resources.
 - (iii) Establish a continuous process of dialogue between the stakeholders and the technocrats so that stakeholder views and ideas are taken into account in the management and development of water resources.
 - (iv) To ensure that stakeholders’ views, skills and knowledge are taken into account in the planning and management of the resource, and a two-way communication system and a continuous dialogue between the technocrats and the stakeholders will be promoted. Such a dialogue should be maintained at all levels of water management and throughout the process rather than in the closing stages.
 - (v) Consultation has to be as broad based as possible and avoid consultation of the same people all the time.

(vi) Availability of relevant information is a prerequisite for effective stakeholder participation. Information on water resources management will therefore be made available to the stakeholders in a timely and appropriate form as much as possible.

(vii) In recognition of the historical imbalances to the access of vital information on the various aspects of water resources management, a concerted effort will be made to build capacity in those formerly deprived segments of the stakeholders so that they can participate on an equal footing with others. A programme of education and awareness to empower stakeholders will be put in place.

(viii) The position of women in the consultation process has to be carefully considered. A failure to provide adequate opportunities for the equal participation of women in the management of water will compromise the long-term objective of the development and efficient utilization of the resource.

If water planning and management are to meet the numerous demands and concerns of increasingly vocal and diverse publics, new forms of cooperative working relationships among citizens, scientists, planners and decision-makers will need to occur. However, Willy in Sithole (2000:02) states that there is less agreement on how involvement by local communities and other previously disempowered stakeholders should proceed.

Although participation used to be the rallying cry of the radicals (social movements), its requirement is now effectively obligatory in most policy documents and project proposals from the international donors and implementing agencies (Dudley, 1993; Sibanda in Moyo and Tavera (eds),2000 ;Vira and Jeffery, 2001)

Different authors have defined the term participation differently. According to Tavera & Moyo (2000:37), participation is “a good way of bringing people together and an excellent way for governments to abrogate responsibility to provide services and infrastructure for the people”. This is in recognition of the fact that participation is not what it should be, that is, the presence of people in a gathering/meeting is viewed as participation. Geiser in Vira and Jeffery (2001:03) suggests that “participation can be understood as the purposive interaction of social actors with other social actors with a view to achieving specific outcomes” and

Uphoff, Cohen and Goldsmith in Derman and Whiteford (1985:10) define participation as “involvement of a significant number of persons in situations or actions which enhance their well-being, e.g. their income, security or self-esteem”. The same authors go on to suggest that participation should be viewed as not as a single event, but as a process. According to Dudley (1993:07), community participation may have won the war of words but, beyond the rhetoric, its success is less evident. This is due in the main to the fact that true participation is a threat to the powerful, to the NGOs and IGOs, to the development experts, planners, practitioners and to all those who have vested interests in the status quo.

Dudley (1993) is of a belief that community participation does not serve the interests of the ordinary people in the villages, but of those who have developed these approaches and their promoters. Whilst true participation is desirable, it is also difficult where there is a history of stakeholder conflict or management. As Tevera and Moyo (2000) noticed, while communities participate, they have become less powerful and less influential in deciding and shaping their destiny. True and meaningful participation can only occur where the people are responsible for planning their own development and using their own knowledge (Sibanda, in Tevera and Moyo (2000:40).

The issue of participation by all stakeholders in water management is a desirable and a contentious one. In a study of local participation by Sithole and Edziwa in Sithole (2000), they found that despite the numerous programmes put in place by the state and NGOs to empower as well as increase actual local participation, local people still perceived themselves as powerless, ignorant and without control over the basic means of production. They also found that increased participation and devolution of power and control over resources is perceived to be coming at a time when most resources are seriously degraded or have declined.

The issue of participation of women in the management of water resources has received much attention lately. This is due in the main to the fact that there was limited participation of women in water matters in the past. At this level as WRMS (2000:83) states, it should be noted that men and women do not have equal access to decision-making processes and special measures have to be taken to ensure equitable representation of women’s needs and priorities. According to the World Bank in Fair (1995:49), women in particular have the

incentive to make water programmes work since they are generally the most affected by poor access to water. Turton et al. (2000) put it that the history of feminization in the water sector can probably trace its roots back to two primary sources. The first origin is undoubtedly the 1992 Dublin Principles, which saw the emergence of four key components of water resources management. One of these components was the recognition that women are custodians of water resources. Turton et al. (2000) in their discourse on involvement of women in water matters distinguish between two phases, that is defeminization and refeminization phases.

The defeminization phase: At this time, water service provision becomes a technical function of local government, typically in the hands of male engineers. Two main aspects can be drawn from this phase, that is, (1) The initial act of water provision via pipelines can in fact be a benefit to women by providing a reliable source of supply close to, or even within their homes. This means that the arduous task of drawing water and transporting it over great distances is no longer the direct responsibility of women, and arguably the quality of their lives start to improve, and (2) The act of making water service provision purely a technical issue isolates women from decision-making roles because the water sector tends to be dominated by male engineers and technicians.

The refeminization phase: Tentative research findings, according to Turton et al. (2000) suggest that two key issues became evident during the early to the refeminization phase, and these are: (1) The “numbers game” starts to emerge, with a clear tendency towards numerical equity at levels of water service delivery that are closest to the household level (and by implication, furthest from the locus of state power), and (2) Where women start to become prominent in the water sector, other than at the local level, is in the technical (specialist) field rather than the management (generalist) field. Notable in this phase, is that an inverse relationship seems to exist between seniority within water service bureaucracies such as departments of water affairs, and technical specialization, when expressed as a function of gender (Turton et al. 2000).

A prerequisite for stakeholders’ participation is that information should be readily available to the stakeholders so that they can make informed decisions. Decentralizing water resources management should result in a lot of information being generated on aspects such as water

availability, water demand, and water quality. Such information must be given to stakeholders in a usable form. For example, communication with the rural communities should be in their language (WRMS, 2001).

People's participation in the process of planning resource management measure is crucial in order to:

- (i) arrive at realistic, locally adjusted resource management systems, and
- (ii) to strengthen people's responsibility for their own resources

It is imperative that better mechanisms for public involvement in water resource decisions be developed. Public meetings, as Ingram (1997) puts it tend to be intimidating, overwhelming and alienating. The water industry uses the language of technical inevitability, using technical information as a justification rather than educating the press or the public about the real options that exist in water management. It is significant that poor minority communities are targeted through programmes designed to inform, engage and involve citizens in making water choices.

Generally, meaningful participation is associated with well-defined national policies for which water is either a main component or a relevant input. It is advisable for stakeholders and water users to participate in public hearings or consultations intended to discuss policies, programmes, projects or legislation.

Participation should ensure that local people are involved in decision-making and should feel that they have taken part in making decisions and changing the situation. Although self-mobilization is desirable, interactive participation on the part of the local community can be equally important. Interactive participation as defined in Vira and Jeffery (2001:03), is a kind of participation whereby people participate in joint analysis, which leads to action plans and the formation of new local institutions or the strengthening of the existing ones, and it tends to involve interdisciplinary methodologies that seek multiple perspectives, and make use of systematic and structured learning processes. These groups take control over local decisions and so people have a stake in maintaining structures or practices (see Appendix 3: Typology of participation).

Demand management of water resources

In many Southern African countries, water scarcity represents a critical constraint to food production and a major cause of hunger and poverty, and this situation is exacerbated by burgeoning populations, demand by agriculture, industries and mining. The Orange River Re-planning Study (ORRS), (<http://www.globesa.org/envsecurity.htm>) further estimates that all of Southern Africa's freshwater resources will be fully utilized between 2025 and 2030.

As GWP-SATAC (2000) states, it is significant that the people of Southern Africa recognize that the present "water world" in the region contains many situations that are undesirable, and these include:

- (i) A rapidly growing population that continues to impose increasing demands on water resources.
- (ii) A rapidly urbanizing population that places increasing demands on water resources and the necessary infrastructure needed to sustain an urban environment.
- (iii) Widespread and increasing poverty, which is both a cause and a result of environmental degradation, including the degradation of water resources.
- (iv) Disease and premature death from water-related illnesses.

Inadequate coverage of water and sanitation services especially among the urban poor, peri-urban and rural poor.

- (v) Polluted water bodies due to poor waste management and lack of accountability against a backdrop of lack of resources and inadequate capacity for effective enforcement action that is often already stipulated in national legislation in the region.

Effective water resources management is crucial to the long-term development of the continent and its entire people. This is encapsulated in the statement by Hugo et al. (1997:118), which points to the importance of this resource. "Water is central to every ecosystem in the biosphere. To be precise, without water, no life in its present form is possible on earth"

The demand for water is increasing owing to burgeoning population and expansion of economies the world over, including the SADC region. Various options for intervention to improve the management and efficiency of water use and allocation are available. Hassan et al. (1996:61) stress that balancing availability and use of water is the main goal, especially at times of difficulty and this, they say, can be achieved through either supply or demand management.

According to Gleick (1998) some new dams, aqueducts, and water infrastructure will certainly be built, particularly in developing countries where the basic water requirements for humans have still to be met. In order to meet human demands for water in the future, non-structural solutions and a completely new approach to planning and management have to be adopted. The single most important goal of this new water demand management paradigm is to rethink water use with the objective of increasing the productive use of water (Gleick, 1998).

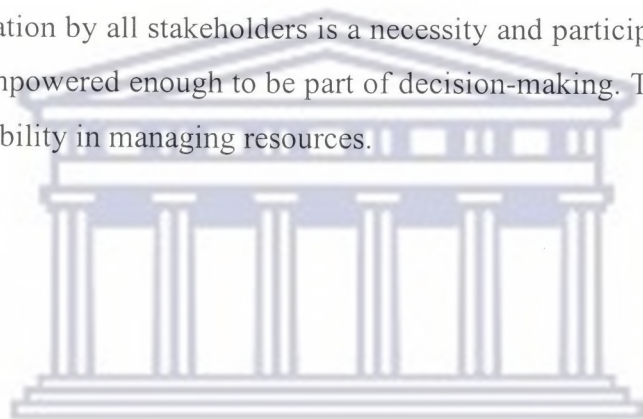
Water demand management is becoming an increasingly important aspect of water resources management. The task of demand management is to generate both physical and savings of water and economic savings by increasing output per unit of evaporative loss of water, increasing the utilization of water before it reaches salt sinks, reducing water pollution, reducing the loss of water to the economic sink, and restoring existing water in the economic sink to use. Demand management instruments such as the development of appropriate legal and institutional frameworks, regulatory policy, and incentive policies can promote environmental sustainability and water quality through recycling, reduction of excess water application in saline areas, and elimination of groundwater overdraft ([http://www/up.ac.za/academic/libarts/polsci/awiru/](http://www.up.ac.za/academic/libarts/polsci/awiru/)). According to Goldblatt et al. (1999:19), it is argued from a resource economics point of view that water demand management is simply a matter of efficient and full pricing of water. This implies that if there has to be efficient use of water then it must be priced accordingly and the price should cover all costs, including the environmental ones.

The scarcity of water in the Southern African region due to natural and man-made factors means a supply-oriented approach to the problem is not a solution since costs have to be recovered for the services by making people pay when they cannot afford to do so. On the

other hand, management of demand can benefit the people in that little amount has to be paid (if any) and will ensure enough water remains for other uses. Management of the demand for water resources will ensure responsibility and that this resource is used efficiently. Thus this approach might be a suitable alternative.

Summary

Compared to supply-oriented management, demand management seems to be the suitable alternative, especially when there is a lot of pressure on this resource from factors such as burgeoning population, dwindling water supplies and high unemployment rate amongst others. Various demand management strategies can be employed, but for this approach to work, full participation by all stakeholders is a necessity and participation should ensure that local people are empowered enough to be part of decision-making. This will in turn cultivate a sense of responsibility in managing resources.



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CHAPTER THREE: WATER SUPPLY MANAGEMENT IN SAKUBVA

Introduction

The approach to water resources management in Zimbabwe as explained in WRMS (2001), has been based on enhancing security of supply through the provision of more dams (such as Odzani and Osborne dams). It is important to consider that although such an approach might have worked in the past, the context within which increased demands must be met has changed. Water is finite and as such should be used efficiently. It is imperative therefore as the Mvula Trust (2000) states, that engineers plan with communities and design the best scheme – taking into account the available water resources, the available funding, the level and location of support, and the ability of the community to pay for the O&M (Operational and Maintenance) costs of the scheme. The acceptance of a lower quality water supply for certain activities (e.g. bathing and laundry) could assist in reducing the cost of water. Universally, as Winpenny (1994) points out, the tasks of supplying enough water of the required quality to growing populations and the safe disposal of waste water are straining many authorities to the limit, and the City Council of Mutare is not an exception.

This chapter examines what supply management is, water supply management strategies in the context of Zimbabwe/Mutare that include the non-involvement of the City Council in the water management structures and the “Pungwe falls” in Sakubva.

What is Supply Management?

According to Pallett (1997), supply management requires the development of affordable self-financing facilities for bulk water supplies, programmed to meet expected increases in requirements with an appropriate degree of assurance. Rudengren et al, (1997) view supply management as being limited to technical and financial aspects of water supply to those in need, which is not enough in the wide field of managing water resources. Due to limited resources (personnel and financial) available to governments, supply management is not

sustainable. In Southern Africa, recurrent droughts often expose weaknesses in supply with streams, wells and other water sources drying up.

According to DWAF (1999), the following are some of the obstacles and constraints identified within the water supply industry in developing countries:

- (i) Financial constraints. Money is made available for supply side management measures, but very little is made available for Demand Management initiatives.
- (ii) Resistance to change by institutions.
- (iii) Officials and industry sectors protect their personal interests.
- (iv) Water conservation measures are perceived only as drought relief mechanisms.
- (v) Supply side management appears easier to implement.
- (vi) Lack of understanding of principles, scope and potential of demand management.
- (vii) Demand Management strategies are often incorrectly perceived and implemented as punitive measures to the consumers.
- (viii) Low level of payment for services by a significant number of consumers and users.

Supply-sided management of water resources has got many problems, although in some occasions this approach might be necessary. As Winpenny (1994) states, projects to increase supply are tending to encounter hydrological limits, face increasing costs in pumping or transferring water over long distances (as has been the case with Pungwe Water supply Project that had to transfer water from Pungwe River to Mutare over a long distance, approximately 4,3 kilometers) and they also entail increasing environmental costs to which the public is increasingly sensitive. They usually demand growing government subsidies.

Some of the obstacles and constraints within the water supply industry mentioned above are visible in Mutare. Although the City Council is having financial difficulties, it nevertheless managed to get a loan for the Pungwe water supply scheme for which it will be paying for years to come. Be that as it is, the Council is putting little if anything at all for demand management initiatives. Again the City Council should ensure that water conservation measures are practiced at all times, not only when there are problems with regard to this resource. In Sakubva, if residents can be taught of the principles, scope and potential of demand management, this approach can be a suitable one for Sakubva and Mutare in

general. These as Winpenny (1994: 25) puts it, are more powerful arguments for shifting current emphasis towards careful management of the existing resource.

One of the most striking constraints of the supply-sided management in Sakubva is low level of payment for services. This phenomenon is making it difficult for the City Council to successfully manage the supply and extend services to other areas of need. With all the obstacles and constraints within the water supply industry, the Mutare City Council should consider an alternative approach that will focus reducing the water loss to the benefit of both the residents and the City Council.

Why supply-side is the chosen approach in Mutare (and why not Osborne dam?)

Following the drought of early 90s, the traumatic experience of the 1992 water crisis fuelled local politicians, residents and the Department of Water Development (DWD) to search for a new additional source of water for Mutare (Gumbo and Van der Zaag, 2001). Amidst this crisis, no questions were raised regarding the demand-side of Mutare's water problems and three supply-side options were considered. The first option was a relatively small dam on the Odzani River that would have augmented the storage capacity of the two existing dams on the same river. This option was the cheapest in terms of capital investment although it would yield relatively little water (13Mm³ p.a) (Ibid). The second option was taking water from the just completed Osborne dam on the Odzi River, 30 kilometers north-west of Mutare. DWD, which owns this dam, was in favour of this option and had reserved 28Mm³ /a for Mutare. The third option involved taking water from the Pungwe River which is not part of the Save Catchment. The City Council preferred the third option firstly, because it wanted to own the new water system in order to be fully in charge and not be dependent on central government. Secondly, despite the fact that this project was the most expensive in terms of investment (capital), it had the lowest running cost. In order to get DWD's approval, the City Council succeeded in presenting their preferred option to the Mutareans as the best, if not the only way of solving Mutare's water problems.

The Pungwe-Mutare water supply project

After the droughts that Mutare suffered (early 90s), the Zimbabwean government decided in 1996 to implement the Pungwe - to- Mutare water supply project, which will divert a portion of the natural river flow of the Mutare River through a tunnel and pipeline in order to provide water to the city of Mutare (see Figure 3).

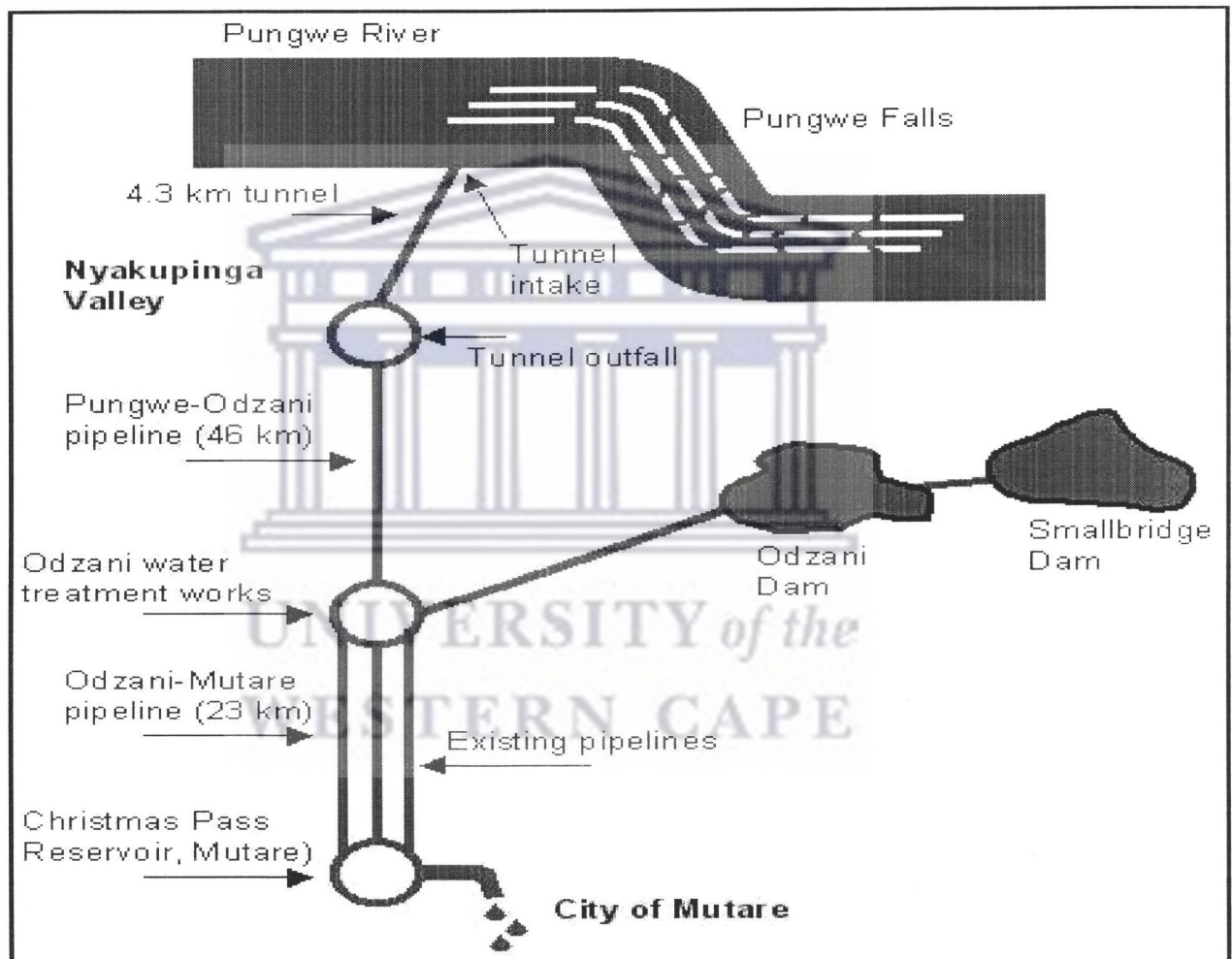


Figure 3: Pungwe- to- Mutare water pipeline

According to Gumbo and Van der Zaag (2001), tedious negotiations at government level were held between Zimbabwe and Mozambique since the Pungwe River is shared by the two countries and is the only fresh water source of the city of Beira (500,000 inhabitants). An

agreement was reached whereby Mutare was allowed to take a maximum of 700 l/s. Construction of this project, started in December 1996 and was completed in December 1999 and officially opened by President Mugabe in March 2000.

Water Supply Management: Is it the best option for Mutare/Sakubva?

The City Council as part of the water management structures

The Zimbabwean Water Act has presented all water users (stakeholders) within a Catchment area with a platform to get involved in the management of water resources. The new institutional structure includes Catchment and Sub-Catchment Councils, River boards and, it is anticipated, water point committees. It is at the Catchment Council level where relevant stakeholders take decisions on how water can be equally distributed and efficiently used. The City Council of Mutare is a stakeholder in the Save Catchment Council and the Odzi Sub-Catchment Council. Thus the City Council is entitled to sit in the meetings of the two Councils, since Mutare gets water from both the Odzi and Pungwe Rivers. However, they do not attend most meetings arguing that their water supply is purchased directly from ZINWA (Zimbabwe National Water Authority). The non-involvement of Mutare City Council in these (Sub-) Catchment Council meetings compromises the country's initiatives of moving towards integrated water resources management (IWRM). It is significant for the Mutare City Council to realize that to better manage the water resources, the participation of all stakeholders is important.

Water loss in Sakubva: A result of poor supply management

*day after day, day after day the same –
a weary waste of waters*

(Southey, R in Winpenny, 1994)

The Pungwe project has been heralded by politicians, technocrats and Zimbabweans in general as an answer to water resource vulnerability of Mutare. This is demonstrated by the slogan “Pungwe Project Saves Mutare” displayed on a large billboard outside the City Council buildings. It may however be more accurate to say “Pungwe Project Saves Sakubva River”. The poor management of water in Sakubva specifically, but also in Mutare in general, tempts one to cynically conclude that the City Council is extracting 0,7 cubic meters per second from Pungwe River to fill Sakubva River. It is imperative as Morrison et al. (2001) point out that the residents and the City Council in particular realize that water lost through leakages leads to increased pumping, loss of revenue, loss of pressure and increased risks of contamination by bacteria and corrosion products (e.g. copper, iron and zinc). The control of leakage not only decreases costs and increases revenue; it may also prove a vital way of increasing the water supply in ‘dry’ regions, without having to increase the withdrawal from scarce water sources.

Presently, Mutare cannot account for more than 50% of delivered water. That is to say, of all water delivered to consumers only 50% of that is accounted for as billed water. It is unclear what is happening to the rest of the water. What is clear, however, is the massive visible water losses in Sakubva which, one city engineer estimated to be 90% of all water delivered to Sakubva (City Engineer, pers. comm., 2001). Unaccounted-for-water in Sakubva is unacceptably high and this is confirmed by Gumbo and Van der Zaag (2001), Muskwe (pers. comm., 2001) and Marunga (pers. comm., 2001). In South Africa, according to the regulations under the Water Services Act of 1997, a water services institution must repair any major, visible or reported leak in its water service system within 48 hours of becoming aware of it (DWAF, 2001). It is this kind of approach that is needed in Sakubva and Mutare in general to help deal with the leakages that can be spotted in many sections of this area. While it might be difficult for the City Council to repair leakages given the high crime rate in Sakubva and the shortage of resources, if the costs of the water loss are high, security personnel can be placed at water points (mainly communal blocks). According to Steel and McGhee (1979), unaccounted-for-water is due to meter and pump slippage, unauthorized water connections and leaks in mains. This is the situation in Sakubva and it can be counteracted by employing various strategies such as ongoing repair programmes and others like educating the people on the importance of water conservation (see Box 3). Goldblatt et

al. (1999) regard unaccounted-for-water as a key component of successful WDM programmes at the level of the water service provider.

Box 3: Reduction of Unaccounted-for-water in Windhoek, Namibia

In a case in Namibia, Windhoek has kept UFW losses at about 10% which compares very favourably with international experience, especially that of developing countries. The programme includes leakage detection on a continuous basis; an ongoing repair programme; water audits; proper water meter management and a systematic pipe replacement programme.

Source: Goldblatt et al. (1999)

Water from the communal blocks is flowing 24 hours a day; it is flowing as you read this no matter when you do the reading. In all the communal ablution blocks taps without heads can be found. Sometimes residents use small sticks of sugar cane or rags and elastics to stop the flow from open pipes. These 'conservation' measures are rare, however. More often than not, the water is left to flow freely. Through the drainage system and through open self-made "streams", water from the communal blocks flows to Sakubva River (see Figure 4).

Clearly, City Council is not doing enough to repair leakages and replace old pipes. This could be caused by the knowledge on the part of City Council that replacing tap heads today means losing them tomorrow (Chirawu, pers. comm., 2001). Quite simply, this is poor supply management.



Figure 4: Self-made “stream” in Muchena (section of Sakubva) flowing to Sakubva River

The Pungwe project therefore did not “save” all people of Mutare. The presence of every flowing water means more malaria, more cholera, and more dysentery. The wasting of water in Sakubva also means deprivation of the people of Fern Valley and Murambi of water. People in the high-lying areas of Murambi and Fern valley only get their water during the night. This is largely because the free flow of water in Sakubva combined with high usage during the day reduces the pressure of water that flows to these areas. People in these areas are quite rightly asking the question “Where is the Pungwe water?”

The stealing of tap heads is common in Sakubva. They are sold in the open market. These tap heads, for they are made of copper, are smelted and used for coffin handles. Sometimes the entire fixture is removed and sold in the open market, often ending up in home-ownership dwellings in New Dangare, Devonshire and New Zororo. The Sakubva situation shows that the management of water scarcity by supply-oriented projects raises many more questions than it provides answers. “Supply” for example, does little to alter problems of

access. Indeed, it can create other problems – e.g. water-borne diseases – unanticipated in the rush to “secure” a steady supply.

The water loss in Sakubva is undoubtedly depriving the City Council of revenue that could be used for other purposes to improve the life standards of the residents. Replacing infrastructure without dealing with issues such as educating the residents about the consequences of water loss and agreement with the residents on tariffs will surely prove useless. Periodically shutting off flow to different sections of Sakubva due to debts has proved to be non-sustainable and this measure also fails to recognize human rights to water. Although the City Council did well by undertaking the Pungwe-Mutare water supply scheme, it should realize that this project is not an end to itself but that it must be factored into an integrated approach that treats questions of demand as well.

Conclusion

In short, supply-sided management of water resources does not offer solutions to problems related to water as has been shown in Sakubva where poor management of the supply is threatening the security of the community. To draw on Wimpenny's (1994) work, “investments in supply augmentation along traditional lines is increasingly costly in financial, economic and environmental terms”. This means that there is an urgent need for a management approach of these resources that is sustainable. So far demand management seems to be the alternative.

Brief summary

This chapter has looked at what supply management is, the constraints in the water supply industry and the issues that led to the establishment of the Pungwe-Mutare water scheme. It is shown how supply management by itself is not enough to deal with water resources management in a sustainable manner. High water loss in Sakubva is a consequence of poor supply management. In the next chapter, the impact of population growth on water resources and the use of water in the area are examined. Various demand management strategies and their applicability to the situation in Sakubva are assessed.

CHAPTER FOUR: WATER USE AND DEMAND MANAGEMENT IN SAKUBVA

“Everything and everyone needs water for survival”

From a 12-year old girl who lives in Grabeni, (Mail & Guardian, 2001:21)

Introduction

It is imperative that water is used and managed wisely and efficiently since Southern African “water world” is susceptible to droughts and unfavourable climatic conditions. According to Gleick (1998), successfully meeting human demands for water in the future will increasingly depend on non-structural solutions and a completely new approach to planning and management. He further states that the single most important goal of this new paradigm is to rethink water use with the objective of increasing the productive use of water. In Sakubva, there is enough supply of clean water since the establishment of the multi-million dollar Pungwe Water Supply Project. The problem lies with the way this resource is managed. Water in this area is used for many purposes for which it was not meant. Water in Sakubva is meant for primary/survival purposes.

This chapter, examines the impact of burgeoning population on water resources, water use on a household level, what demand management is and what sort of strategies might be employed and what the City Council is doing with regard to water resources management. Brief examination is also made of the consequences of overcrowding, flat rate and non-metering on water management and the role of women in water resources management.

Population growth versus (water) resources in Sakubva

According to Hassan et al. (1996:61) and Chenje and Johnson (1996:76), the demand for water is increasing proportional to population growth and the expansion of economies the

world over, particularly in the SADC region. A clear example is that of Tanzania, where demand for water supply in urban areas outstrips supply mainly due to population growth and obsolete infrastructure (Ibid).³ Gross urban water demands continue to grow because of significant population increases and the establishment of urban centers (cinemas, sports grounds, community halls, etc). In Sakubva, the population is increasing at an alarming rate, thus putting more pressure on already inadequate water and sanitation facilities.

Following independence in 1980, there was a large influx of migrant labourers into Zimbabwe's cities, many with their families. According to the City Council of Mutare (1992), there were 4 300 illegal shacks before 1992 in Sakubva, housing approximately 11 000 people and thus causing unacceptably high density levels. This was due in the main to this influx of immigrants mainly from Mozambique (close to Mutare) and rural areas of the Manicaland Province in addition to the natural increase of 3.8%. Sakubva was originally established for migrant workers who provided cheap labour in the white-owned industries of that time. Thus the Sakubva of today is a legacy of colonialism.

According to Tagwira et al. (2000), stakeholders have suggested decongestion of Sakubva by moving people to another serviced area where they can erect shacks, thus limiting the number of shacks per household. However Muskwe (pers. comm., 2001) points out that different strategies have been devised to decongest Sakubva. For example, Hobhouse, Dangamvura, and Chikanga suburbs were established. This only worked for a short period of time as it, in effect, simply created space in Sakubva for more people from rural areas and neighbouring countries. The uncontrollable and unknown population of Sakubva has made planning and provision of services difficult on the part of the City Council of Mutare. This is evident in a statement by Marunga (pers. comm., 2001), " You cannot plan for a population you do not know". Landlords/landladies in Sakubva have contributed to overcrowding by renting shacks. In one study, it was estimated that an average of 14-16 people per stand were to be found in Chisamba (Tagwira et al, 2000: 7) (see Table 1) for the average number of people per room in Sakubva). Whereas the township has 6225 legal housing structures, many properties also contain 4 or more shacks erected in a haphazard fashion (see Figure 5).

³ Ibid, Chenje and Johnson (1996)

Shacks according to the City of Mutare (1992:09) are a health and fire hazard and as such should be removed in order to improve living conditions in Sakubva. In 1995/6, the City Council of Mutare thought of demolition of shacks as part of the solution of overcrowding. The Minister of Local Government gave the Council a go-ahead and it was only after demolition of 50 shacks that they were stopped (Muskwe, pers. comm., 2001).

Table 1: The average number of people per room for the different areas in Sakubva.

Location	Average number of people per room
Chisamba singles	8
Chisamba ownership	4
Chineta	3
Zororo	6
Tenderere	3
“NHB”⁴	5
Mazhambe	5
OTS (Old Township)	6
Chimoio	8.5

Sakubva township has various kinds of households and forms of home-ownership – some with piped water and in-house toilets, but many more dependent on communal ablution blocks (bava)⁵ and open-access standpipes. For residents with home-ownership, access to

⁴ The full name of this section of Sakubva is not known to the researcher

⁵ Bava is a Shona word for communal ablution block

water and sanitation facilities is better, since most of these people can afford to pay for the services. The residents with home-ownership have a sense of responsibility to resources and most of the housing structures in these sections have been constructed after 1990 (for example, New Zororo was established in 1997).

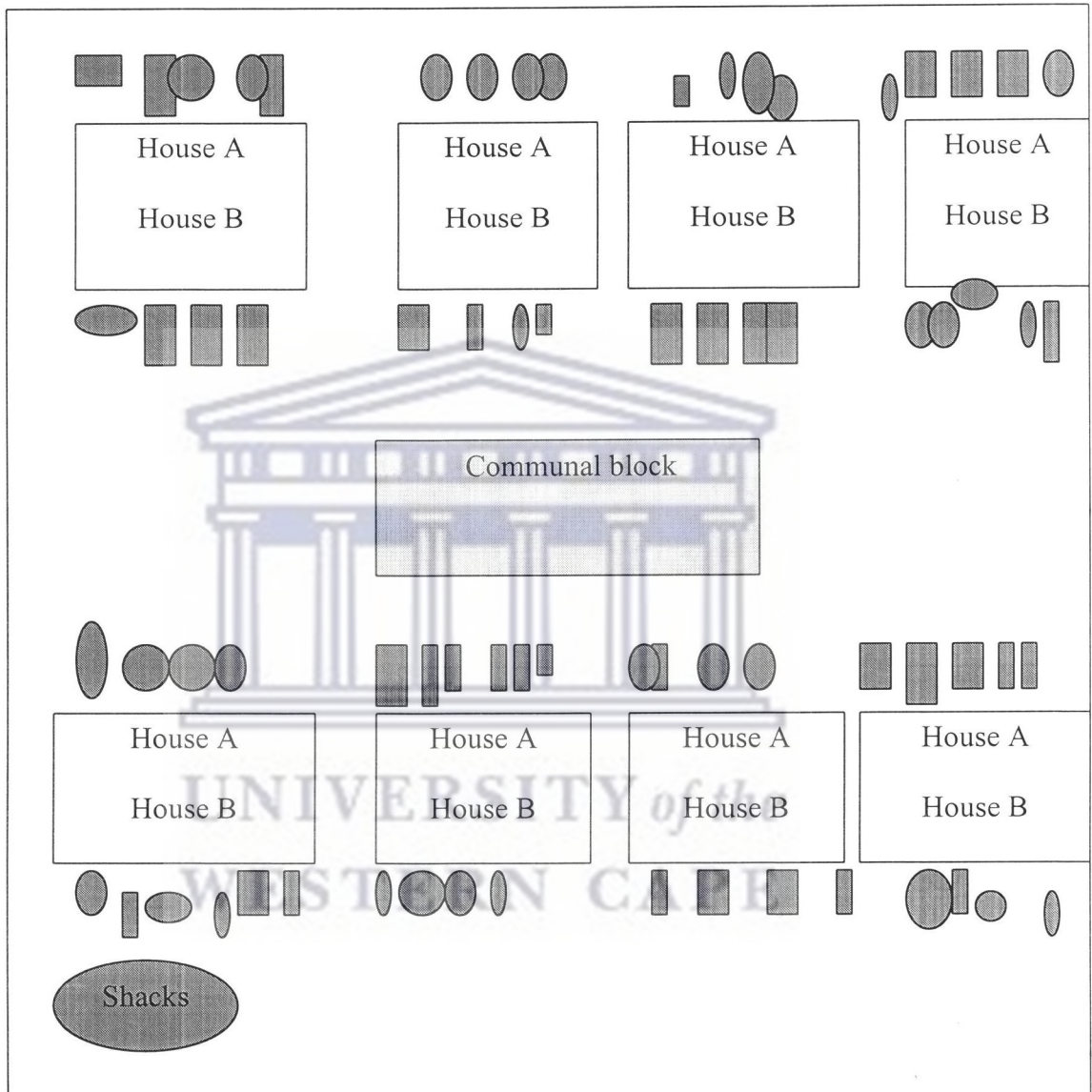


Figure 5: Housing situation in most sections of Sakubva (with one house being divided into two and shacks around the houses) where there is dependency on communal blocks

Water use in the households

Water supply in Sakubva is mainly for domestic purposes since this area is meant for residential purposes. However the per capita consumption of water in the area varies from section to section, according to accessibility, standard of living and efficiency of use. Water use in Sakubva is not for recreational purposes (for example, swimming, fishing, etc) or industrial purposes. It is also worth mentioning that water use in this area, and in most areas for that matter varies according to seasons, with high demand for water in winter (when rainfall is low) and a lower demand in summer when rainfall is higher and crops and gardens can use rain water. The use of water in the domestic environment is common to all consumers and probably provides the widest direct experience of the effects of water quality. Domestic water is used for a number of purposes in and around the home. These are:

- (i) for survival – drinking and food preparation,
- (ii) for personal hygiene – washing clothes, bathing and sewage removal, and
- (iii) for gardening – watering a vegetable patch or beautifying the surroundings.

Water use in Sakubva other than for primary purposes is illegal. Hence the City Council's move to levy informal businesses that are mushrooming in this area. Water that is consumed by the domestic user (for drinking and food preparation purposes) usually represents only a small portion of the water used in and around the home. However, it is the most important aspect when considering the quality of water as it directly affects the health of the consumer.

It is also important as the Department of Water Affairs and Forestry (South African) (1998:07) stresses, that water which is unfit for consumption (drinking and food preparation) may still be safe for other domestic uses such as for personal hygiene (bathing) or laundry. This explains the fact that different water uses require different intake water quality and result in varying degrees of water quality degradation. According to Gleick (1999: 09), international organizations and water providers should adopt an overall basic water requirement for meeting domestic basic need, independent of climate, technology and culture. He believes that 50 litres per person per day is justifiable and appropriate (see Table 2).

Table 2: Recommended Basic Water Requirement for Human Domestic Needs

Purpose	Recommended Commitment (Liters per person per day)
Drinking water (a)	5
Sanitation services	20
Bathing	15
Food preparation (b)	10

(a) This is a true minimum to sustain life in moderate climatic conditions and average activity levels.

(b) Excluding water required to grow food. A rough estimate of the water required to grow the daily food needs of an individual is 2 700 liters.

(Adapted from Gleick (1996) in Gleick (1999:14)

Water demand management approach and strategies

If I put my views into a single sentence, I would say that demand management remains at once the best option yet the least understood option for water in the coming decades

(Brooks, 1999)

Rand Water (South Africa) correctly states in Sunday Times (30 September, 2001) that the paradox of water supply is that the necessary infrastructure demands ever-growing revenue, but the constraints of a water-deprived region mean that every effort must be made to conserve water - which reduces revenue. In recognition of the fact that there is no longer bottomless government funding, the public cannot afford the high water tariffs and so demand management can be part of the adequate water supply solution.

Goldblatt et al. (1999) define water demand management as “a management approach that aims to conserve water by controlling demand which involves the application of selective incentives to promote efficient and equitable use of water”. Water demand management is not an easy thing to do, as it is linked with human perceptions of water. Demand management is not simply charging a tariff for water or detecting and repairing leaking pipes, which is what the City Council of Mutare is doing. It has to be recognized that charging a tariff for water or detecting and repairing leaking pipes are just components of the strategy, but not the entire strategy. (Hence this water demand management paradigm as Winpenny (1994) explains entails taking into account the value of water in relation to its cost of provision, and introducing measures which require consumers to relate their usage more closely to those costs). It also entails treating water more like a commodity, as opposed to an automatic public service. The city of Kwekwe in Zimbabwe is a classic example of a successful Water Demand Management programme, which used demand management as a means of displacing a supply augmentation project (see Box 2).

Box 2: The city of Kwekwe (Zimbabwe): a successful demand side approach.

The city of Kwekwe is an example of a successful comprehensive Water Demand Management programme, which used demand management as a means of displacing a supply augmentation project.

In this city, a water loss management programme was introduced using electronic leak detection. Despite shortage of resources, the city managed to reduce losses from 30% in 1992 to 14% in 1996.

New pricing structures that were introduced, discouraged high water use as they were linked to a monthly household water restriction of 10m³. The restriction is managed by a punitive two-tier block pricing system, which charges a very high rate for usage in excess of 10m³.

Consumption was reduced by 50% by restricting flows with pressure reduction discs and demand was also managed by the banning of hosepipes.

Information was disseminated through an awareness programme using political ward meetings as well as print and electronic media.

Source: Goldblatt et al. 1999:34

Demand management as WRMS (2001:110) stresses aims to:

- (i) safeguard the rights of access to water for future generations;
- (ii) limit water demands;
- (iii) ensure equitable distribution;
- (iii) protect the environment;
- (iv) maximize the socio-economic output of a unit volume of water, and hence;
- (v) increase the efficiency of water use.

According to African Water Issues Research Institute, number of policy instruments can be implemented for demand management. These are the following:

(i) Enabling conditions, which are actions to change the institutional and legal environment in which water is supplied and used. Policies should include reform of water rights, privatization of utilities, and laws pertaining to water user associations.

(ii) Market-based incentives, which directly influence the behaviour of water users by providing incentives to conserve water use, including pricing reform and reduced subsidies on urban water consumption, water markets, effluent or pollution charges, and other targeted taxes or subsidies. These measures provide an incentive for investments in water conservation such as in technological or management means to improve the efficiency of water use production or consumption processes in question. Market-based measures are most effective when property rights are well defined and transferable to facilitate private trade and exchange through the market. Application of economic pricing or user charges will require certain characteristics in the resource or service to be valued, and the resource must be at least partially excludable and partially divisible for application of effective economic pricing policies.

(iii) Non-market instruments, including restrictions, quotas, licenses and pollution controls can help in managing the demand. Water licenses in South Africa, for example, have become one of the policy instruments that have implemented in an effort to enable water management to move away from supply management to demand management. The idea of a water license is to bring home the message that water is not a free commodity. While this

method is more suitable for situations of common property resources, it involves substantial administrative costs that can be avoided in cases where market mechanisms can be introduced.⁶

The inability of the Mutare City Council and the government in general to provide and maintain water-related services has negatively affected the management of water in Sakubva. This compromises the concept of Clause 06 of the Zimbabwean Water Bill (now the Act), which sets out the functions of the Minister in respect of water. According to the Clause the Minister will be responsible for “defining guiding policies aimed at planning the optimum development, utilization and protection of the water resources of Zimbabwe; ensuring the availability of water to all citizens and its equitable and efficient allocation; and setting national standards to be maintained in the exploitation, utilization, conservation and management of water resources” (Water Bill, 1998: 2). In Water Resources Management Strategy for Zimbabwe (2001), water demand management is defined as a water management approach that aims to reduce, restrain or reschedule the demand on water resources. This stems from the realization that water is a finite resource, which over the decades has become increasingly scarce.

The failure to implement effective, long-lasting and community approved water demand management strategies by the City Council of Mutare compromises the principles of equity and efficiency, which is at the core of the new Water Act. For example, demand management focuses solely on punitive control measures – shutting off supply in the face of non-payment or vandalized services. It is imperative that the City Council recognizes that water demand management embraces a wide range of measures leading to sustainable management, and these are: i) protection of water quality; ii) reduction of wastage; iii) improved allocation of water among competing users; iv) appropriate pricing mechanisms; and v) water conservation measures. In Sakubva, there is little recovery of costs for water

⁶ For this information the researcher is indebted to African Water Issues Research Unit in the Department of Political Sciences, University of Pretoria web-site <http://www.up.ac.za/academic/libarts/polsci/awiru/> and James Winpenny (1994) (see Bibliography)

supplies as water is under-priced. As such, water services cannot be improved or extended to other areas due to shortfalls in revenue.

Water pricing

Charging or pricing water is a vexing problem. This is mainly because there are technical complications about what is the price that would best reflect the value of water. According to Van Wyk (1998), there is no agreement on water's true value. Economists specializing in water resources notice that water has relatively low economic value at the margin. This means that while the value of the first unit of water to be used by a city may be very high, the value of additional units may be quite low (Solanes & Gonzalez-Villarreal, 1999). It is important that the use of water be balanced with a realization of the dangers of overuse and inappropriate disposal and community organizations must receive training in water management and ensure such management is integrated into overall planning. Payments for services in Sakubva is difficult as many cannot afford. This does not mean that people are not willing to pay for services. The phenomenon is attributable to the present economic situation and high unemployment rate in the area. Most residents expressed their concern about increasing water tariffs.

Urban pricing structures often include such economically inefficient practices as: i) using average-cost rather than marginal-cost pricing; ii) using decreasing block rates – in which the cost of the last units consumed is lower than the cost of initial blocks; iii) recouping a significant fraction of facility costs through property taxes rather than through charges based on water use; iv) failing to meter individual consumers; and v) failing to use seasonal pricing if marginal costs vary by season. These common practices provide inappropriate price signals to consumers with the results being overuse of water. They also lead to overinvestment in water-supply facilities relative to investment in other methods of providing or conserving water and relative to expenditures on other goods and services (<http://www.enso.unl.edu/ndmc/mitigate/policy/ota/demand.htm>).

In light of the above-mentioned economically inefficient practices, the City Council of Mutare should strive to meter individual consumers, which can be the basis for water pricing. Although it is not possible to introduce increasing block rates in most sections of Sakubva due to non-existence of water meters, this practice can help conserve water. The City Council should also consider seasonal pricing if marginal costs vary by season. To achieve this, the City council should communicate with the residents and explain the reasons for the consideration of this practice. Through these practices, the City Council might recover the costs of water and help the residents to conserve water. This might also divert energies and finances to other important services.

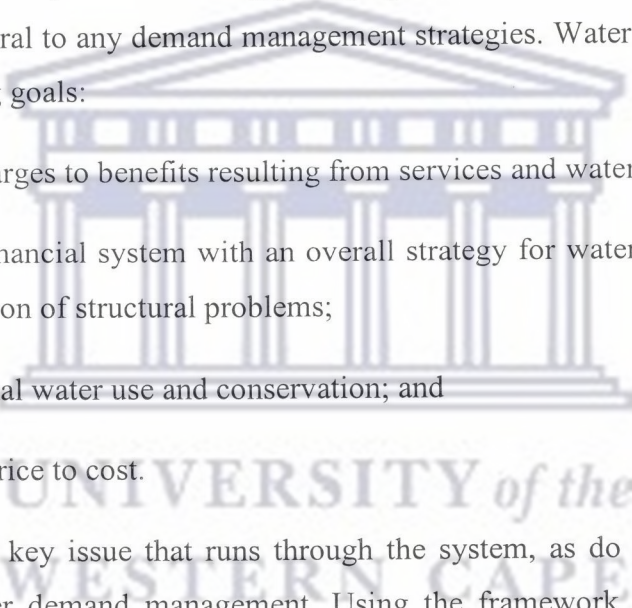
When setting the price for water the guiding principles that apply are “water as an economic good” and “users pay” (WRMS, 2001). There is agreement amongst water managers, experts and academics that water users should pay the economic price in order to control the demand of water. This reflects the position taken at the Hague as articulated in the World Water Vision: “The single most immediate and important measure is the systematic adoption of full-cost pricing for water services” (in Kasrils, 2001: 52). But Zimbabwe, like South Africa, is a deeply unequal country. So, “providing access to basic clean water supply is a direct attack on poverty” (Kasrils, 2001: 52). To this end, the City Council in April 2000, adopted the mixture of fixed and block tariff structure to ensure that (i) people of different social status have equal access to basic safe water; and (ii) costs are recovered from those who use more water (see Table 3).

Table 3: Fixed and block tariff structure of Mutare

Domestic	Commercial	Industrial
Fixed - Z\$25.00/month	Z\$102.00/month	Z\$84.00
0-10m ³ - Z\$3.69/m ³	1 – 300m ³ - Z\$10.20/m ³	>0m ³ - Z48.40/m ³
11-30m ³ - Z\$5.45/m ³	>300m ³ - Z\$12.00/m ³	-----
31-60m ³ - Z\$12.00/m ³	-----	-----

This structure was developed with the assumption that not everybody has metered water in Mutare. This is the case in Sakubva as we have already stated. The low flat monthly rate is charged for water in areas with communal blocks. The block tariff structure only applies to areas where people have a metered tap on their yard. The low flat rate in these areas of Sakubva has jeopardized the principle of managing water by demand, as this encourages the inefficient use of water in the area. This idea is also shared by Morrison et al. (2001) who state that “ the idea of paying a flat rate does not encourage people to minimize wastage of drinking water from leaking and broken pipes, and it does not minimize cost of repairs and maintenance of sewer systems due to careless disposal of wastes”.

Water in Mutare is not priced accordingly. Appropriate water pricing, according to Goldblatt et al. (1999) is central to any demand management strategies. Water pricing should therefore attain the following goals:

- 
- (i) Relate water charges to benefits resulting from services and water works;
 - (ii) Integrate the financial system with an overall strategy for water resources management, including the solution of structural problems;
 - (iii) Promote rational water use and conservation; and
 - (iv) Adjust water price to cost.

Water pricing is a key issue that runs through the system, as do the issues of equity and awareness of water demand management. Using the framework of a water management chain, with different levels having different imperatives, it becomes easier to assess where water demand management (WDM) may be effective, what are the best means to implement it, and what level should be targeted (see Figure 6).

Increment of tariffs in Mutare

The Pungwe-Mutare water supply project remains Zimbabwe's most expensive water scheme (US\$100 million). According to Gumbo and Van der Zaag (2001), Standard Bank engineered with Swedish International Development Agency an innovative financing

modality whereby US\$5 million of aid money generated US\$45 million of local financing from the private sector and to add to that, a Nordic financier provided the foreign component (US\$50 million) as a loan to the Zimbabwe government

According to the published reports (Herald, 12 July 1996; Financial Gazette, 18 July 1996) the Nordic countries put one conditionality on the foreign loan: the city of Mutare would have to introduce a three-year rolling tariff structure to enable it to realize more revenue. The water tariffs would have to increase by 35% at the start of the construction, 27% during the second year and 17% in the third year. So tariffs by 1999 had already increased by almost 80%. These increasing tariffs have made paying for services more difficult owing to socio-economic conditions in Sakubva and the whole of Zimbabwe in general.

Through this time of increasing tariffs, it is imperative of the City Council to consult with the residents and explain the reasons for increment of rates for services (i.e. explain the costs of the Pungwe water scheme and the amount the Council has to pay per year to service their foreign loan and also explain the impacts of the depreciating Zimbabwean dollar on the tariffs) so that people can see that there is a need for increasing rates for services.

According to Zimbabwe Standard (23 December 2001), the domestic water rates will rise by 125%, and Geoff White states that as opposed to 125% increases claimed in the summary, the actual increase in fees will be 200 - 300%. He further points out that for domestic users the cost of 25 cubic metres will rise from Z\$213 to Z\$843, for 45 cubic metres, which is an average for high density household consumption the cost will rise from Z\$430 to Z\$1734 (Ibid).

Suitable demand management strategies for Sakubva

In ensuring effective water demand management in Sakubva, it is the responsibility of the Mutare City Council to make sure it sets up appropriate tariff structures, educates and makes residents aware of the importance of water conservation and controls the pressure on water resources. Education can play an important role in water conservation as shown in the statement by Rand Water in Sunday Times (30 September, 2001:17), “We need to explain to consumers why water is not free. We need to show them the processes water goes through from the time it rains until clean water comes out of the tap in the home”.

Though the benefits of proper pricing can be huge, this practice is impossible in Sakubva since most households do not have water metres. Where there are water metres, these are usually not working. Thus the City Council should devise a way of installing water metres and counteracting vandalism that can render this practice less/not helpful.

There is no doubt that increasing tariffs is the consequence of the costs of the Pungwe scheme coupled with the declining economy of the country. The City Council therefore, by increasing the tariffs to finance the loan, cannot help the situation in the present economic climate as the residents would not afford and the facilities and services for which they are expected to pay are getting worse.

Clearly, ensuring a continuing safe water supply for all Mutare's citizens involves an integrated water resources management strategy. Key to this strategy is determining where and why water is lost. As stated earlier, roughly half the delivered water is unaccounted for (Van der Zaag, e-mail correspondence, 09-09-2001). Are pipes leaking? Are people stealing water? Is industrial usage grossly underestimated? Rather than blame the people of Sakubva for wasting water, the City Council must first determine where all of its Pungwe water is going. The community should as much as possible minimize water loss. To do this, appropriate technology and more efficient appliances should be utilized (e.g. functioning meters; low flow shower heads and low flush toilets in private residences; ecological sanitation facilities – e.g. waterless toilets -- in communal blocks). However, community members must be made partners – not adversaries – in this process. This means that a sustained educational awareness programme is necessary as a minimum starting point.

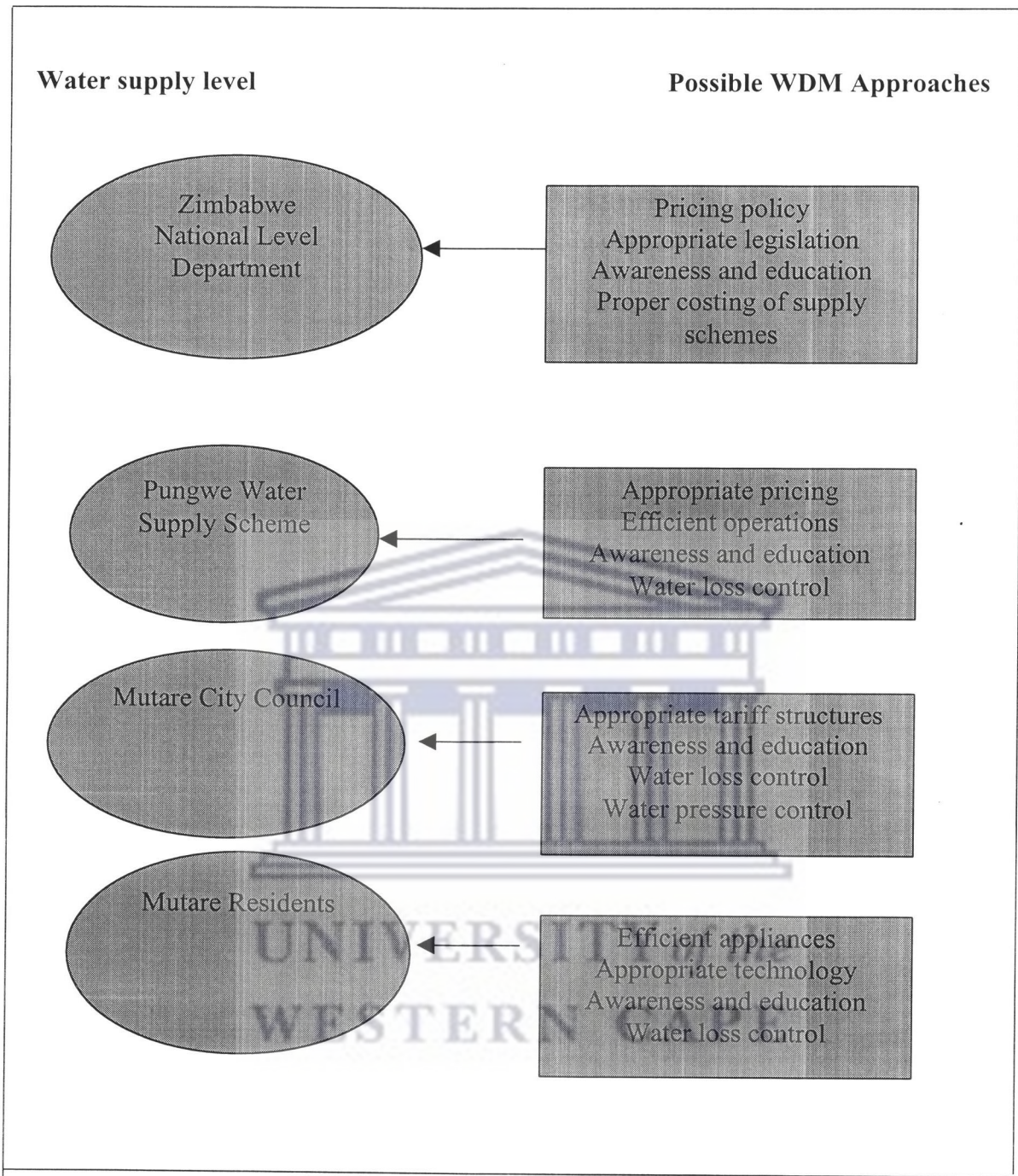


Figure 6: Water pricing using the water management chain (Adapted from Goldblatt et al. 1999)

The Dublin Conference of 1992 stressed that water has an economic value in all its competing uses and should be managed as an economic good. In Sakubva, the City Council

of Mutare should reconsider these principles to ensure that this commodity is used efficiently and that sufficient revenue is raised to ensure that water authorities operate viably.

Overcrowding, flat rate and non-metering as unfavourable climate for water pricing in Sakubva

In the sections where people use the communal blocks, a flat rate of approximately Z\$ 500-00 for the services is paid to the City Council per month. This amount includes water services; refuse collection; rent; the management of communal toilets and property tax. In one “household”, one can find that there are +/- seven families that are renting the shacks and spare rooms of the main house (if there are any). In a situation in Matida flats (NHB, Sakubva), it was found that an average of four families are sharing one room. It is this situation of overcrowding that puts a strain on water resources. This means that the other three families which are “squatting” in the room are living under the “free-rider phenomenon” since they pay nothing to the city council for the services they get. They only pay the rent of Z\$ 400 to the landlords/landladies. This payment makes them feel entitled to use the common block facilities and to any other service rendered by the city council. It is clear that the erection of shacks in Sakubva is encouraged by the low flat rates the landlords/landladies are paying to the City Council and the substantial amount of money to be made by renting space. Presently leaseholders are only paying Z\$500-00 per month for all the services they get from the City Council, the amount they can raise from one tenant. The sad reality is that these landlords/landladies are “stealing money” from the City Council, considering the number of families paying Z\$400-00 a month when they are only paying Z\$500-00 per month to the City Council.

The flat rate system has encouraged not merely non-conservation but commercial use of water in Sakubva. For example, most people are using water from the communal blocks (meant for primary uses) for secondary purposes like brick-making, hairdressing and other businesses. Sakubva is a place of entrepreneurs. A five minute walk is enough to spot several small businesses, the most visible of these being “spaza” shops, hair saloons, carpentry

shops, and nurseries. Seven brick and tombstone-making businesses were identified in Sakubva. These businesses use enormous volumes of water (+300m³ per month), which are meant for primary purposes. However, entrepreneurs pay no additional water costs. As a result they accrue considerable financial gains, which is unfair to those who use only a little amount of water but pay the same amount for services. It is, however, wise business practice. For example, in a brick-making business where more than 500 liters of water are used daily, a tombstone is sold for Z\$2 500-00, Z\$20-00 for airbrick, Z\$30-00 for a brick and Z\$100-00 one brick wall. These figures show that these people are making huge profits considering the fact that they also pay the flat rate of Z\$ 500 for all services, including water from common blocks. One person interviewed in the brick and tombstone-making business expressed a willingness to pay for water provided water is brought nearer to his working place. The communal block where water is accessed is approximately 50 meters away from the work place.

In areas like OTS, most people are growing vegetables along the Sakubva River for subsistence and selling. While it is a fact that this entrepreneurship has been influenced by a high rate of unemployment in the area, one can say it is also facilitated by the availability of free water.

Water metering and monitoring in Sakubva

In some sections of Sakubva, water is metered while in some it is not. The existence of effective water metering is fundamental to proper water management and pricing (Goldblatt et al., 1999). In general there is little effective water metering and monitoring. This is more so because many existing water meters are no longer working. Whereas residents feel they are charged unfairly as meter readers make estimations, the City Council freely admits that these estimations are usually nothing more than 'wild guesses' and gross underestimations (Chirawu, pers. comm., 2001). Until water in the whole of Sakubva is metered, water pricing will remain contentious. However, the City Council of Mutare needs to weigh the costs of meter installation, maintenance, and regular reading and billing against the benefits.

Women and water resources management

In Sakubva, women who are the most unemployed group have suffered and are continuing to suffer the direct effects of water scarcity and water-related problems. As has been observed that women spent most of their times in water points (communal ablution blocks) doing washing, washing themselves and children and fetching water for household chores. It is imperative that women are recognized as custodians of water resources and thus be given opportunities in planning and decision-making regarding use and management of water resources. The participation of women in water resources management in Sakubva is not enough. For women to participate in the management of this resource, formation of water committees is essential and women who are in the majority and directly affected by water-related problems should take a lead in these groups.

Women of Sakubva can also play an important role in implementation of demand management strategies. Since they are ones mainly found in these communal blocks, they can be able to report the leaks in time and also educate the young ones about the importance of water conservation (that is, using water responsibly), make them aware of the water situation in the country and at a household level. Demand management requires proactive individuals who can do their best to keep the waste of water at the lowest possible level and report to higher authorities the problems that they cannot deal with. Women of Sakubva can fill this gap if empowered. The number of young children in Sakubva shows that the fertility rate is high in this area and to deal with this issue and its impacts on water resources women should be brought on board in planning and counteracting increasing demand for this resource in the face of dwindling supplies. Curbing population growth in Sakubva can be beneficial to all residents. Without involvement of women this strategy cannot work.

It is imperative that women are involved in planning, management and provision of water services. This is especially the case because they are often the ones who bear the brunt for its scarcity. In Zimbabwe, according to Murungweni (2001), there are few women participating in formalized water management structures. Latham (2001) also agrees that the participation of women in water management structures is inadequate/meagre. For example, there is only one woman in the Manyame Catchment Council.

Policies should be elaborated to facilitate women involvement in water resources development programmes. According to WRMS (2001), women constitute 51% of the population in Zimbabwe. This implies that any policy or project that does not ensure women's full and active engagement at all levels is bound to meet with failure or only partial success. It is significant therefore as stressed by DWAF (1994) that women assume increasing roles in all spheres and levels of the water sector, particularly in the public service. World Bank quoted in Fair (1995) correctly states " women in particular have the incentive to make water programmes work since they are generally the most affected by poor access to water" this issue is also evident in the following recitation:

*All the taps are dry, the only ones running are
my eyes ---*

*When I cry because the teacher scolds me for
coming to school dirty...*

My sister also cries

When I go to the school line

And she goes to the water line...

*My mother also cries, yes my mother too, she
cries*

*When father shouts because he has no water to
bathe...*

*Or because she does not smell nice when he
comes to bed...*

Recitation by an eleven-year old boy in Nairobi (<http://www.unchs.org/unchs/>)

This recitation shows the difficulties women endure for lack of access to water. If this situation is to be rectified, women must be part of planning and decision-making for water resources.

Since women are the water providers, in India, disappearing water sources have meant new burdens and new drudgery for them. Each river and spring and well drying up means longer walks for women for collecting water, and implies more work and less survival options

(Shiva, 1989). Dankelman and Davidson (1988) point out that there are several factors that restrict women's influence over this area of their lives. Cultural traditions, for example, ensure that women in many societies are not permitted to intervene in decision-making, especially at the higher levels. Such traditions and stereotypes which perpetuate male domination of management of water resources should be challenged and discouraged if water resources are to be managed in an equitable and efficient manner. The gender division of labour, as GAP (2000) states, means that women are most likely to assume responsibility for supplying water and sanitation services to a community if these services are absent or inadequate.

Proposed solutions by the City Council of Mutare

Water kiosks

This method has been adopted from Zambia where an official from the City Council of Mutare says it is doing well. Under this proposed strategy, the City Council will sell water to one person and this person will be responsible for the management of water at a water point. In effect, this is tantamount to privatizing water provision. The residents will use water tokens in order to buy water from the water points. It is anticipated that water in these water points will cost Z\$8-00 per cubic meter. Thus it will cost a household Z\$4-00 a day since a household is thought to use +/- 400 litres/day. However, the interviewed engineer believes that Z\$4-00 is too much considering the fact that most Sakubva residents are living "below the bread line". While this method is said to be working well for the Zambians, we do not see it working in Sakubva. Instead it can exacerbate water accessibility and sanitary problems in Sakubva. The implementation of this method means that people who cannot afford Z\$4-00 per day would not get water. It will be interesting to see how many water points will be developed by the City Council in Sakubva. The question of how far the water points will be from one household is also important for water accessibility. The failure to take this into consideration during the development process will mean that people will have to queue and walk long distances for water. The question of how one can carry 400 litres of water everyday is worth raising.

Introducing levies on shacks

Following the failure to demolish the shacks in 1995/6, the City Council proposed to levy all the shacks in Sakubva. The Council has proposed monthly fees of Z\$75 and Z\$50 for metered and non-metered services respectively per residential shack. The owners of commercial shacks, such as tuck shops and hair saloons, are to pay Z\$300-00 and Z\$200-00 for metered and non-metered water respectively. Attempts by the City Council in June 2000 to enforce service charges on shack dwellers backfired after the Mutare Residents' Ratepayers Association (MRRA) led a successful protest against the proposed rates. However, the City Council (according to Kenneth Saruchera, Chairperson of the community services, housing, health and education committee) indicates that it is unlikely to reverse its decision this time. The municipality is just waiting for the relevant by-laws to be put in place. Geoff White, the leader of MRRA reacted to the above proposal by indicating that they were opposed to the idea of shacks dwellers paying a uniform amount. "He said the municipality should devise a mechanism to determine those who should pay and those who could be spared. Many of the people who live in shacks cannot afford the levies" (www.dailynews.co.zw/daily/2001/August/August9/13082.html).

The issue of levies on shacks highlights quite nicely the difficult political climate within which Mutare City Councillors operate. The executive committee of MRRA is composed of the chairpersons of the association in the high-density areas and low-density areas. The MRRA has so far proved to be an influential community association. It demonstrated legal muscle when it won a court case which declared illegal the huge hikes in rates that the city had declared earlier in 2001. This militant organization has always been a source of controversy in Mutare, and the whole issue has become very politicised. One of the association executive members in Sakubva indicates that the City Council perceives the MRRA as a political movement rather than a ratepayers' association. The leader of the MRRA, Geoff White, is a well-known local firebrand who, while himself white, quite commonly plays the 'race card', characterising issues before City Council in terms of race/class binaries. Hence, White's argument is that subsidising Sakubva is the least low density suburb residents and commercial water users can do for people in poverty.

Politics aside, this strategy of levying shacks has negative and positive implications. On a positive note it will help generate money that will go to improvement of services. On a negative side, this strategy does not change the fact of overpopulation. Levying a shack would not be a disincentive for to living in Sakubva. In any event, political considerations could make this initiative impossible to carry through.

Conclusion

In the face of continuing demands for water resources, it has to be realized that the basic resource does not alter; the total amount of water entering the hydrological cycle is limited, and hence the amount that can be withdrawn from it. This means that the traditional supply-oriented approach to meeting increased water demand is not sustainable in the long run. Therefore demand management should be considered to ensure sustainability (WRMS, 2001:39). In the case of Sakubva, demand management measures can help ensure that water remains affordable, that consumers budget for their water consumption, and that the distribution system is operated and managed in an effective and efficient way. This approach (WDM), as DWAF (1999) states, can play an essential role in ensuring the provision of sustainable and affordable services and ensuring the fulfillment of the objective of providing water services to all people. Although desirable, demand management in Sakubva should not compromise the rights of the poor to have access to water.

Brief Summary

This chapter shows how in the face of dwindling water resources and continuing demand the water demand management approach can be necessary. The chapter also tries to show the sustainability of the demand management approach and how stakeholder involvement can play a crucial role in managing demand. Although in Sakubva women's participation in water resources management is inadequate their participation can make a big difference. In the next chapter overview of waste management issues, particularly with regard to health is presented.

CHAPTER FIVE: HEALTH AND WASTE MANAGEMENT IN SAKUBVA

Introduction

Water is so closely related to health that its scarcity or lack of quality thereof can threaten human security and thus life. It is imperative that all people have high quality water for health and improved quality of life. According to CEPIS (2001), water and health behave as two strategic allies that contribute to the sustainability and quality of life. Life, water and health form a triangle: each part linked to the other, making possible the existence of living things (see Figure 7).

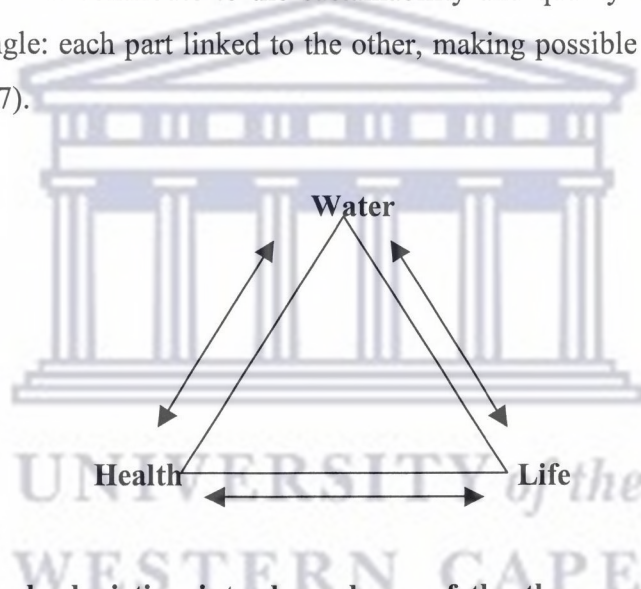


Figure 7: A triangle depicting interdependence of the three components: water; life and health

Indeed, life, that active force, that substantial inner strength of organic beings, is so closely related to water and health that when any of the allies fail, serious risks for survival occur for both humans and other species on our planet.

CEPIS (2001) explains good health as a state of complete physical, mental and social well-being -- and not merely the absence of diseases or infirmity – is an essential requirement for a good quality of life. In order to sustain human health effectively, water must be of good quality; that is; it must be safe and free of any pollutant or foreign matter that can affect public health. Although water in Sakubva is clean, poor supply management, that results in

leakages and stagnant pools of water all over and poor sanitary conditions coupled with poor quality of life in general, are a good recipe for water-borne and water-related diseases in the area.

According to Siamachira (1998), mountains of uncollected refuse on street corners and the poor disposal of industrial waste are threatening to turn Zimbabwe's urban areas into dumping yards. Due to this, the country sits on an environmental health time-bomb. This statement holds true in Mutare, especially Sakubva. Wastes as Petts and Eduljee (1994) state have universally been perceived as unwanted "useless" materials with no intrinsic value and this has dominated attitudes to their disposal. This perception in Mutare and Sakubva needs to be changed in order to realize the benefits that can be derived from these waste materials. Waste in Sakubva is not well managed and there is need for improved waste management, as its (re-) utilization can benefit the community both economically and health wise. These wastes undermine the area's aesthetic value and render it unattractive. It is imperative that the City Council improves their waste management services and that the residents help in this regard by paying for refuse collection and reutilizing some of the waste material. In Sakubva, rapid and unplanned urbanization is compounding waste management problems.

In this chapter, I examine various water-borne and water-related diseases, the health 'tax' paid by the poor and the state of the communal ablution blocks and the consequences in Sakubva. I also look at waste management issues, waste management on a household level and recycling and composting as means of managing wastes especially organic waste matter.

Water-borne and water-related diseases

Although water in Sakubva is clean, various water-related diseases can be found in this area. Most common of these diseases are dysentery, cholera and malaria (a disease transmitted by mosquitoes that are attracted by stagnant pools of water -- a common sight in the township sections where there is no home-ownership, e.g. OTS, Mundembe, Muchena, Mazhambe, McGregors and Chisamba) (see Table 4: Diseases Related to Poor Sanitation and Water Supply).

Contamination arises over long periods from inappropriate methods of water storage such as open buckets and from insufficient personal hygiene. For example, dysentery is commonly transmitted when hands with faecal contamination come in contact with stored water. This is not uncommon owing to the high number of young children in this area. Children can often be found playing in areas (e.g. near to the river banks) where human waste is openly visible. There are few recreational facilities in Sakubva so that children tend to gravitate to these open areas (see also Fair, 1995). It is significant that the City Council and the community realize that the high incidence of disease is a cost not only to the individual but to the society and economy: expenditure on treatment, time lost to work and living with chronic illnesses affects everyone, not just the person directly suffering from disease (WRMS for Zimbabwe, 2000).

Table 4: Diseases Related to Poor Sanitation and Water supply

Disease/condition	Infectious agent	Transmission
Amebiasis or Amebic dysentery	Entamoeba histolytica - protozoan	By ingestion of faecally contaminated water, contaminated vegetables, or by food handlers who are carriers and do not have adequate hygiene
Ascariasis	Ascaris lumbicoides- Roundworms	Ineffective eggs from faecally contaminated soil or contaminated raw food. Contagion among children is produced by toys contaminated with Infected soil and playing in community defaecation areas.
Balantidias	Balantidium coli - protozoan	By ingestion of oocysts found in faecally contaminated food or

		water. It especially occurs in poor sanitation areas.
Cholera	Vibrio cholerae - bacterium	By ingestion of faecally contaminated water or food; vomiting of infected people; insanitary food handling; or consumption of contaminated raw mollusks and shellfish
Cryptosporidiosis	Cryptosporidium- protozoan	Through the fecal-oral route; oocysts are highly resistant to common processes of water treatment; the infectious agent has often been identified in water sources contaminated with livestock waste
Diarrhea	Escherichia coli (bacterium)	Spread through food, water and contaminated vomiting; human beings are the principal reservoir
Giardiasis	Giardia lamblia- protozoan	Transmitted through the fecal-oral route by contaminated water or food and by the hand-mouth mechanism.
Hepatitis	Virus of Hepatitis A and E	Through the faecal-oral route, especially by consumption of contaminated water and food, particularly mollusks and shellfish.
Leptospirosis	Leptospira interrogans - order spirochaetas	Through contact of skin or mucous membranes with water, moist soil, or vegetation contaminated

		with urine of infected animals
Paratyphoid	Salmonella paratyphi types A,B and C (bacteria)	By contaminated food or water, can be disseminated by faeces or urine of infected people
Typhoid fever	Salmonella typhi (bacteria)	By contaminated food or water in similar ways as paratyphoid
Poliomyelitis	Poliovirus types 1,2 and 3	Transmitted through direct contact by close relation or by the faecal-oral route.
Gastroenteritis	Rotavirus of the family reoviridae	Transmitted through the fecal-oral route and possibly by the faecal-respiratory route.
Shigellosis or basillary dysentery	Shigella ysenteriae, flexneri, boyolii and sonnei - bacteria	Transmitted directly or indirectly through the fecal-oral route. Transmission vehicles are water, milk contaminated with faeces, and wastewater used in irrigation, as well as flies.

Adapted from CEPIS, 2001

According to Tagwira et al.(2000) the clinic in Sakubva receives 36% and 25% cases of tuberculosis and cholera per annum respectively. In my observation during my fieldwork, malaria is also one of the most common health risks in the area. Again this calls for mass education programmes on the consequences of poor sanitation facilities and the benefits of improved health.

Health “tax”

Health “tax” can be loosely defined as medical costs paid by the poor as a result of poor sanitation and related water services. The local clinic (Sakubva), according to Tagwira et al. (2000), receives approximately 150 patients per day from the local community with majority living below the “breadline”. In one of the studies, it was found that people living in areas without sanitation and hygiene education spend six times more on medical bills than do people in areas with sanitation and hygiene knowledge. These are staggering and unnecessary expenses that could otherwise be used for other essentials such as food, or education.

Providing sanitation systems in Sakubva is a daunting and expensive task that requires political will and a clear-headed understanding of the implications of failing to act. In Southern Africa as a whole, improvement of sanitation facilities is lagging behind water development, and given the consequences of lack of proper sanitation, this issue should be seriously considered (see Table 5).

In general, the development of sanitation facilities in the region is poor and is a serious cause of diseases and deaths. Lack of sanitation is more worrisome in urban areas such as Sakubva than in rural regions, mainly because of population density. To put it simply, the more people in a given space, the greater the potential for contact with human waste.

Table 5: Access to sanitation in Southern Africa

Kenya	1	Zambia	2
Mauritius	1	Zimbabwe	2
Tanzania	1	Lesotho	3
Botswana	2	Madagascar	3
Mozambique	2	Angola	4
South Africa	2	Malawi	4

1 = 75 - 100% Access

2 = 50 - 74% Access

3 = 25 - 49% Access

4 = 0 - 24% Access

(source: <http://www.unicef.org>)

Human wastes in some of the communal blocks in Sakubva were openly visible and due to high numbers of children in the area contact with these wastes is possible (see Figure 8).



Figure 8: Visible human wastes in most toilets in Sakubva

Communal ablution blocks and the consequences in Sakubva

The majority of residents of Sakubva are without home-ownership (Muchena, Mundembe, MacGregors, Mazhambe, OTS, NHB, Chisamba Singles and old Chisamba). These people are dependent on communal blocks and open-access standpipes for their water needs. In these sections, water taps have become “ever-flowing fountains” gushing with water that can become home to disease-carrying organisms. Water from these communal blocks flows through main drainage systems that are inadequate and plugged. This plugging is mainly due to waste that accumulates in these drainage systems as they are not cleaned regularly. This often results in overflow which ends in pools of stagnant water or streams which flow directly to Sakubva River. This was a common sight in Old Townships (OTS) section. While our research was conducted during the dry season, we were informed that the situation is much worse during the rainy season (Chirawu, pers. comm., 2001).

Water drainage systems also become plugged due to the simple fact of numbers: too many people overstress the system. In addition, toilets become plugged because most people use newspaper instead of toilet paper. Small children can be seen each morning carrying “night soil” wrapped in newspaper for disposal at the common blocks. Typically, this manner of waste disposal plugs up the drains. On its way to Sakubva River, this overflow is harnessed for agricultural purposes (as can be seen in most sections of Sakubva), which is a good use of these otherwise wasted waters. As early as six o'clock in the morning, women can be seen queuing up waiting for their turn to do their washing in the washing bay (which accommodates three people) using one tap that is always “gushing” with water. The first one to come will stand next to the mouth of the tap and the other two will use the water that is first used by or flows past her. The communal block is a very animated area with many women of varying ages and many small children about.

During the colonial era each communal block in Sakubva was meant for eight individuals – all males. Typically today, each ablution block is divided into two sides: one for men and one for women. The toilet is a hole in the cinder block floor. Above this ‘toilet’ is a pipe that serves as a ‘shower’ (see Figure 9). There is also a separate room for showering, usually with two water outlets. In no case did we find an ablution facility that did not have ever-running

water. Today, these simple (and, it must be said, rather dehumanizing) facilities must cater for 50-100 people (interview, Chirawu and participant observation). It is common practice in the township for people living in one section to ‘search out’ ablution blocks that are relatively clean but which may be in another section. Local people feel that this practice contributes to ‘common pool’ resource problems, although they did not frame their answers

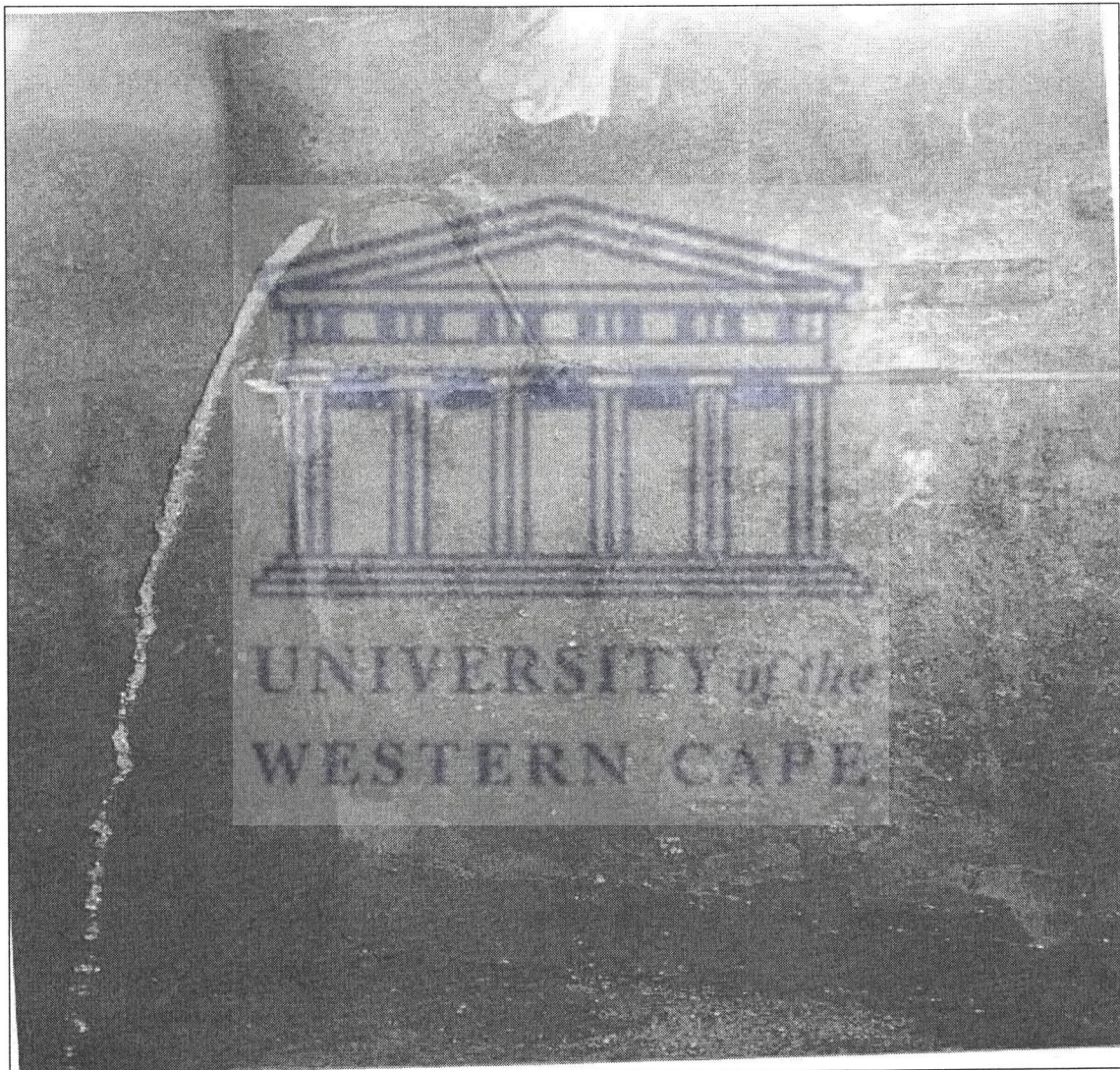


Figure 9. Everflowing “shower” in a communal block in Sakubva

in these formal terms. Queuing up for a shower in these blocks is a way of life, with many people rising as early as 4 a.m. so that they may use the facilities before their condition ‘deteriorates’ throughout the day. It is interesting to note that people coming to fetch water

for survival purposes, i.e. for drinking and food preparation, do not queue. They are given preference to water use. These people, in almost every case women, fetch water using all manner of container: from 2 liter plastic bottles to rather large buckets.

Dependence on communal ablution blocks compromises human dignity and has adverse effects on the health of the community. The City Council of Mutare, which is responsible for provision of water and sanitation services, should recognize that access to sanitation facilities (www.unicef.org/sanitation) is a fundamental human right that safeguards health and human dignity. It also has to be borne in mind that every human being deserves to be protected from the many health problems – including dysentery, cholera and other serious infections – posed by poor disposal of excreta. It may be noted that one of the researchers contracted a parasite while living in Muchena. This was only successfully eliminated upon return to South Africa. However, few people in Sakubva have the wherewithal to alleviate these problems. Some of the harmful effects of unmanaged waste are that:

- (i) the environment looks bad and smells bad
- (ii) flies, rats and other pests breed and spread disease
- (iii) plants, animals and humans are poisoned
- (iv) the air and water becomes polluted (Dept. Water Affairs and Forestry, 1998)

In Sakubva little is done in terms of managing waste. The shortage of trucks as explained by one City Council Engineer (pers. comm., 2001) makes collection of refuse very difficult. This does not augur well for the health of the residents. At the moment, the City Council is collecting refuse once a week and this is not enough, but again this can be attributed to financial problems within the City Council.

Safe drinking water and adequate sanitation are basic needs essential to health and development generally (Fair, 1995). In their absence people are prone to a number of illnesses/diseases. It is imperative that the City Council and the community at large recognize that poor water and sanitation facilities seriously compromise the health of the residents. It is not enough to provide initially clean water from the headwaters of the Pungwe

River. The communal blocks in Sakubva are a health hazard, that is, they threaten the health or well-being of the users. This is mainly due to the fact that they are unhygienic, often blocked resulting in exposure of human wastes, which attract flies. Stagnant water is a breeding ground for malaria-carrying mosquitoes, particularly in the warm and wet summer months, but not uncommon in the dry season. Children are a common sight in these communal ablution blocks, which puts them in a high-risk group of contracting and/or dying from diseases such as malaria and cholera. Clearly, the establishment of toilets within each household, as is the case in New Zororo and New Dangare, would be to the health benefit of the residents of Sakubva. However, this would be an economically expensive and logistically complicated procedure far beyond the capacity of Mutare City Council and its engineers. This is an issue the researcher returns to in conclusion.

Difference in water accessibility in Sakubva is resulting in the stealing of water in common blocks and standpipes. Reconnection of water supplies illegally after being disconnected for non-payment of accounts in Sakubva is common. Although the penalties can be heavy, the chances of criminals being caught are slim as the community has developed an “I-do-not-care” attitude. They have no sense of ownership of resources in their area thus they rarely if ever report offences. The fact that Sakubva is also a ‘dormitory suburb’ for migrant labour also makes it very difficult to instill a sense of ‘responsibility’ and ‘best practice’ among ‘residents’. This is particularly the case in areas like OTS, Chisamba, Chisamba Singles and Muchena. Moreover, leaseholders in these areas are rarely residents themselves. It is a common situation to find the leaseholder returning to his/her rural area and simply earning money from the illegal ‘sub-letting’ of his/her property. The condition of communal ablution blocks is therefore of no concern to the leaseholders. According to a notice posted by the City Council (n.d.) in the Manica Post (1999), illegal water supplies are to be dealt with as follows:

‘Water supply shall be disconnected from the mains. Supplies will only be restored upon payment of the following charges in full: water connection fee at current rates plus labour and material costs; a fine for tampering with meters; and a security deposit’.

The City Council lacks capacity to effectively implement proactive demand management strategies, the only readily available option is to shut off water. This type of demand

management through punishment only exacerbates the difficult relations that exist between residents and the City Council. The City Council should have personnel to train the residents about demand management initiatives.

In Sakubva, some of the following measures, as suggested by CEPIS (2001) can be adopted to protect family health at home against water-related diseases at home:

- (i) Boil or chlorinate water if there is doubt about its quality;
- (ii) Use safe quality water for preparing food;
- (iii) Drink only potable water;
- (iv) Use soap to wash hands thoroughly before preparing, serving or eating food;
- (v) Wash hands thoroughly after using the toilet;
- (vi) Wash hands thoroughly after every baby diaper change;
- (vii) Store drinking water in a clean container with a small opening and a cover to prevent contamination;
- (viii) Keep family kitchens, baths or latrine clean;
- (ix) Avoid insects proliferation around and inside the house; and
- (x) Keep the house clean and well ventilated.

Although these measures might be difficult to adopt in Sakubva due to overcrowding, illiteracy levels and poverty, it is however not completely impossible to do something about the situation. The public health officials should visit public schools and educate people about hygiene and make use of pamphlets and media such as radio to educate the residents of the importance of hygiene and the consequences of poor hygiene conditions.

Waste management issues

Clearly, there is a need for improved waste management in developing countries. Most governments and communities have placed a higher priority on safe water. It is imperative of all governments and communities to realize that that in itself is not a panacea for all ills. They have to realize that without a strong commitment to sanitation and waste management in general, it will be difficult to reduce the incidence of diarrhea, a leading child killer, and other diseases that flourish in unsanitary conditions (<http://www.unicef.org>). Poor waste disposal and lack of treatment facilities can have serious impact on both groundwater and surface water (Petts & Eduljee,1994).

According to International Environmental Technology Centre (1996:54), waste is usually very high in organics in low-income countries because other constituents are removed either before set-out or between set-out and collection. The implication is that if well managed, these wastes can benefit their generators in that they can be used as fertilizers (through composting).

According to Bartone (1991), making provision for municipal solid waste services is a vexing problem for local authorities in most developing countries. In the case of Sakubva, the main problem in providing services is lack of financial resources on the side of the City Council of Mutare as the councillors indicated. Service coverage in Sakubva is low and uncontrolled dumping is common with resulting pollution problems. In OTS, dumping of wastes on the nearby mountain is common and this disturbing sight often stinks thus rendering the area inhospitable. In Sakubva, solving waste problems will cost money and therefore the commitment of the people is required as Tagwira et al. (2001) stress. As has been observed in Sakubva, Council is currently collecting money for this service from a small percentage of people and this makes it difficult for the council to improve, maintain and buy facilities that can make provision of this service efficient.

Although it is mainly the City Council's responsibility to see to it that waste in Sakubva is well managed, the residents are doing little to nothing to help in this regard since they are being overlooked by the City Council when it comes to management and maintenance

issues. Improved relations between the residents and the City Council can help the situation. It is imperative that the residents of this area are encouraged to take responsibility of their waste through proper awareness campaigns that promote sustainability. This can also help cut the costs of managing wastes on the side of the City Council as cleansing (litter removal and street sweeping), as well as waste collections are the most costly components of city waste management systems. Labour, special equipments (such as trucks, cleaning chemicals, brooms, and others would be required for this purpose and given the City Council's financial position this would be too much for the City Council.

Waste management on a household level

In areas without homeownership, management of waste on a household level is difficult due to congestion, stealing of bins and a high consumption of products. The residents in these areas are complaining of plastic bags that are used as bins, and this is the best the City Council can do as the metal bins get stolen. This costs the City Council a lot financially. The main reason for the theft of these bins as Chirawu (pers. comm.,2001) says is because these bins are made of platinum and they are stolen to be sold to the iron smelters for personal gains. It is imperative that the residents in whatever way possible discourage stealing of these metal bins. This can be done by forming street committees whereby each person in the street looks after each other's properties. If the case is complicated or a street member is suspicious, police can be called for assistance. In areas with homeownership, waste management on a household level is better with people preferring to burn some of their combustible waste material. With many people sharing one bin, overflowing bins are a common sight and in some cases, excess rubbish is burnt near the yard ,thus contributing to air pollution.

Recycling and composting of waste material

In Sakubva, recycling of waste (organic and inorganic) does take place although a lot has to be done. Most waste laying around in Sakubva is organic in nature and this type of waste can be reused to fertilize the gardens which are common in the area. The residents can benefit

immensely since this can save them the costs of buying fertilizers for their crops. It is imperative that proper planning is carried out prior to recycling programmes. In South Africa, schools and other institutions have been involved in collect-a-can competition as a way of encouraging recycling of (inorganic) waste material. In Sakubva, some of the unemployed do the recycling as a means to raise incomes. For example, along the road to the City of Mutare entrepreneurs are using old tyres to make shoes and sell them there and in town. Schools in Sakubva could help with the recycling and reutilization of materials like paper and bottles and could earn an income in the process.

Home composting, although not practiced on a larger scale, needs consideration in Sakubva. Home composting as Novella⁷ states is a low cost operation that can be successful if properly managed. In most households in the area, source of most wastes is the kitchen. These kitchen wastes may be ideal for composting due to their carbon-nitrogen ratio. There is however, a health and aesthetic risk from poorly operated compost heaps. Too high a protein content as IETC (1996) states can complicate the composting and lead to unpleasant odours. It is imperative that waste materials are reused, as this saves energy and natural resources. Poor waste management within the households and in the streets of Sakubva is a cause of serious water pollution. As Tagwira et al. (2000) state, it is important that the people of Sakubva are encouraged to compost their waste since it is almost 98% organic.

Conclusion

It is clear that sanitary facilities have been put under extreme pressure in Sakubva. This is due to the fact that the facilities in the area were created for 8 000 people, not 60 000 or more. Uncontrollable population growth in the area has rendered facilities inadequate. Communal blocks which are at the moment a health hazard should be replaced by individual toilets as people are reluctant to take responsibility for their cleaning and renovation, hence the plugging of these facilities and leakages that cause pools of water everywhere in the area. It is imperative that these facilities are looked after as they impact on the health of the

⁷ Information by Novella found from www.globesa.org/

community. As the saying goes, denying people access to proper sanitation is like kicking a first step out of the development ladder. So the City Council should make proper sanitation one of their priorities in improving the living standards of the local people.

Dealing with problems related to waste management in urban settings has always been difficult. In dealing with these problems, it is imperative that the residents and the City Council work together. Most important, education and public awareness are vital cornerstones for achieving working, successful and sustainable solutions.

Brief Summary

This chapter tries to look at various waste management issues and how in Sakubva, the City Council's inefficiency in dealing with waste material is compromising the health of the residents. For example, it has been observed that the City Council is doing little in terms of managing waste. Various water-related diseases are looked at and measures to improve hygienic conditions in the area are presented. It has also been observed that the waste material in Sakubva is organic in nature as such it can be reused as fertilizers thus benefiting the community.

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CHAPTER SIX: RECOMMENDATIONS AND CONCLUDING REMARKS

Overview of the study

In Chapter Two (Literature Review) the focus was put on three types of literature that are important in discourses on water resources management. That is, the demand management approach and related issues, stakeholder participation and consideration of water both as an economic good and as a human right. With regard to the management of water resources, it is imperative that water is seen as a human right since it is an important ingredient as it touches on everyone's life, whether poor or rich. Denying people access to this resource due to their social status might imply denying them a better health which can have serious social consequences such as water theft (for survival). Although a human right, this resource needs to be managed in a responsible manner. Wasteful habits should be discouraged. It is also significant that water be managed as an economic good even though means could be made to ensure that the poor are subsidized. Managing water economically should not necessarily mean "user pay" fees especially for poor households.

The poor relations between the City Council and the residents where the former is accused of being insensitive to problems in Sakubva do not augur well for sustainable water resources management, as full participation of all stakeholders is necessary to achieve integrated water resources management and thus ensure that water is managed at the lowest possible level. The division that is visible among the residents that is based on class, ethnic, gender and geographic lines makes it difficult to get them to work together to realize sustainable water management.

Chapter Three shows how on the side of the City Council of Mutare, 'management' entails a mix of supply via Pungwe through old infrastructure and demand through penalties (e.g. shutting off the supply). All these moves by the City Council are only a partial solution as

clearly, clean water is provided for everybody which is a good thing, but it has in some ways made matters worse in terms of health related issues. More importantly it is shown in this chapter how difficult it is in conditions like those in Sakubva to manage the supply.

Chapter Four examines current and proposed management strategies that can be important in the case of Sakubva. It is shown how these strategies (demand management) can find ways to empower residents so that they feel they have a reason to better conserve/manage water in their areas.

Chapter Five presents an overview of waste management issues, particularly with regard to health. In Sakubva it can be seen that water provision in the absence of adequate demand management strategies has created many health problems in addition to providing clean water. This chapter also presents observations on the limitations behind successful water/waste management in Sakubva. It presents a number of solutions or means by which the situation may be improved.

Impediments to positive changes in Sakubva

At this point it seems prudent to provide a summary of those impediments to positive changes in Sakubva that have been discussed in this paper. These are described under the following headings; poverty, population growth, population flux, political will, political capacity, accounting for water and vandalism.

Poverty (unaffordability of services): Poverty is rife in Sakubva. The inability to pay for improved services, chronic health problems, food insecurity – these are significant obstacles to positive changes in this area.

Population growth: Due in the main to rural depopulation, influx of foreign (often seasonal) immigrants, and the natural growth of 3.8 %, the ever-increasing population of Sakubva is putting more strain on already overstretched resources.

Population flux: The population of Sakubva is mobile thus making it difficult or impossible to manage common resources effectively. Shack dwelling populations in particular change with the growing seasons, making it difficult to create such things as stable community policing organizations or self-help organizations.

Political will: In the past (1995/6) the City Council attempted to correct the situation in Sakubva by demolishing the illegal shacks, only for politicians to halt the move in order to win votes from the residents and make the City Council an enemy of the residents. As long as short-term political gain remains the primary goal of 'development' initiatives in Sakubva, persistent problems will worsen.

City council capacity: Mainly due to financial difficulties the City Council find itself in an unenviable position and reluctant to deal with issues or complaints from the people. City Council is under-staffed and as such cannot deal effectively with problems from the residents.

Accounting for water: Water losses – from leakage, vandalism, stealing, inoperative meters – is a massive problem in Sakubva. The failure to properly bill metered water means that little money is made from that water. There is therefore little revenue generated for development of water supplies in other areas or improvement of existing systems in Sakubva. Insufficient or inaccurate data only compounds these problems.

Vandalism: This is a serious problem as it exhausts the City Council's already limited capital and human resources. As a result this goes unpunished most of the time. It also denies law-abiding residents access to resources.

Alternative Approaches to Problems of Sakubva

Proper planning for population growth

Without doubt water wastage and over-subscription, as well as poor sanitary conditions stem from the poor fit between numbers of people and scale of infrastructure and services. For the ever-increasing population of Sakubva, therefore, projects or programmes have to be properly planned now as failure to do so will only make matters worse. Effectively dealing with challenges of population include several related aspects. First, controlling influx. Second, providing space. Third, dealing with natural increase. In order for the City Council to recover the costs for the services they provide, *registration of families* with the City Council could help. Instead of levying a shack, every registered family can be made to pay a certain amount of money for the resources they use. In Sakubva, there are many families in one stand, sometimes having two or more families in one shack. Levying a shack in a stand would not help reduce overcrowding. Absentee landladies/lords would still make a huge profit. Furthermore, registration may discourage influx of illegal immigrants.

In terms of providing space, the creation of outlying suburbs has not been a total failure. *Incentives* should be put in place – e.g. site and service; lower property levies; tax holidays – encouraging people to move to other suburbs. Key here is to raise revenue in the case of registration so that it may be used not only to improve services but also to subsidise movement out of Sakubva into outlying areas. Changes must also be made to the property tax/service structure. Where leaseholders are actually absentee landlords, properties should be considered commercial ventures and taxed accordingly.

In terms of natural increase, a concerted outreach programme must be developed so that both men and women in Sakubva are educated about *choice*. Evidence shows that where women have choices made available to them, they have – regardless of social class – chosen to have fewer children and/or to space out births over a longer period of time.

Community participation at all levels of water resources management

Most Council strategies have failed because they have been met with community disapproval. Historically, few City Councils anywhere have involved local people in the planning of resources management. When asked about the extent to which the community has been involved during the development of present initiatives, one of the engineers in the City Council said 'We do not think we can get a better method from them' (pers. comm.). The residents of Sakubva discard these initiatives because they do not feel they own them. A continuing focus on punitive measures combined with an adversarial style of politics driven by particular individuals has led the people of Mutare and the township of Sakubva down a dead end road. Politics is about choices: people can choose to act differently in order to create partnerships and better working relations.

To this end, alternative sites of cooperation and community-authority dialogue must be nurtured. Granted, the highly mobile nature of Sakubva's population militates against the spontaneous emergence of this sort of social organizations and/or movements. However, there are many long-term residents who may form the core of any such organization. To undermine the negative energy of extant official relations between Council and residents – most clearly demonstrated through forums like the Ratepayers' Association – we are suggesting that coalitions be built around specific issues: e.g. refuse collection; health; vandalism of common property; management of ablution blocks

Training of community members

Training of community members can be important in Sakubva as it has been in the rural areas of Zimbabwe (e.g. Nyanga Rural District Council). For example, and as is the case in townships in South Africa, residents can be trained as community plumbers so they can always be available in times of leakages and as pump mechanics. This can save a lot unaccounted-for water and money in a sense that a lot of money is used to purify the water that is lost through leakages.

Involvement of the youth in community mobilization

In Sakubva, the youth – particularly unemployed youth – are playing an important role in the campaign against the spread of HIV/Aids and drug abuse. They are doing this by mobilizing their peers through sport, and counseling those who are already HIV positive. These youth can also play a crucial role in mobilizing the community of Sakubva towards effective use of water and, perhaps, in policing/managing water points/ablution blocks. Ways should be devised so that youth benefit both monetarily and through acquiring skills – purely voluntary activities will eventually wither and die. Based on our direct experience with these youth groups, it seems to us that the youth can form the positive core of social mobilization we anticipate above.

For example, in the streets of Sakubva heaps of rubbish are a common, unfortunate sight. This organic waste can be used productively as compost by individuals, by households or by collectives. Urban agriculture is a common practice in Sakubva. Youth can develop community gardens, producing vegetables fertilized through wastes that, at the moment, are a health hazard to the community.

Waste utilization in Sakubva

In the streets of Sakubva heaps of rubbish are a common unfortunate sight. Residents of the common block areas stage a running battle with City Council, with Council employees refusing to dispose of any rubbish not in bins. Residents ultimately sweep up all their rubbish into a huge pile that sits at many T-junctions or cross-streets. While unsightly, this waste is primarily organic in nature, although many tins and plastic articles can also be found among it. It is, therefore, an untapped source of natural fertilizers. This organic waste can be used productively by individual households for manure for their vegetable gardens which are prevalent in Sakubva. Community gardens can also be developed and fertilized through these wastes, which at the moment are a health hazard to the community. For these kind of programmes youth, the unemployed and women can be mobilized and NGOs can also provide a helping hand.

Water loss estimation and leakage detection

In Mutare unaccounted-for-water is high with losses either along trunk mains, within the treatment plant or within the distribution system or in all points mentioned. It is imperative that leaks are detected and repaired and where possible pipes be replaced. For estimation and detection of the loss of water in a water supply system the following basic requirements should be in place:

- (i) thorough understanding of the structure and functioning of the system;
- (ii) availability of adequate measuring devices for flow volumes/ flow rates; and
- (iii) availability of engineering drawings, instruction and operation manuals and/or GIS systems if available.

Installation of pre-paid water meters

Although the City Council is to blame for most water losses in Sakubva due to their inability to repair leakages, prepaid metering would be essential for fairness. Effective water metering which is lacking in Sakubva is fundamental for proper water management and pricing as stated earlier. To enable people to monitor their usage and not fall behind in their payments, the unicity of Cape Town, South Africa, in an attempt to recoup some of its R570-million in outstanding arrears installed pre-paid meters in Klipheuwel and Ladismith. The areas in which the meters have been installed are totally up to date with their payments. Ladismith reports that there is not one cent outstanding in water payments in houses with the new water meters (Sunday Times Metro, 2001: 03). Although this might be difficult to implement in Sakubva owing to high crime rate and vandalism, it is not impossible to implement. Security guards working on shifts might be employed to look after the meters 24 hours a day. There is no doubt that the money that can be recovered can be far more than the security guards' earnings and where there is homeownership, installation of these pre-paid meters would be easy to implement. Pre-payment provides an ideal solution to many of the problems faced by utilities such as non-payment (which is the case in Sakubva) and the need to expand services into new areas. This method also ensures that debts are eradicated while billing and revenue collection costs are reduced. This places the utility in a sounder financial situation, enabling it to expand basic services into new areas. Giesen has observed that many

utilities are crippled by bad debts and that following the installation of prepayment, utilities have seen increases of between 10% and 70% in the payment of services (Giesen, 2001).

Involvement of non-governmental organizations (NGOs) in the management of water

Perez (2000:13) observed that a major constraint to providing environmental services to the urban poor is the lack of political will, legal mandate, and technical and institutional capacity of municipalities. In the rural areas of Zimbabwe, NGOs are playing an important role in the management and extension of water and sanitary facilities to the rural poor. For example, the involvement of SNV (NGO from Netherlands) and Plan International in the rural districts of Nyanga and Mutasa shows that NGOs can fill the gap. In Nyanga rural district, NGOs are financing water and sanitation programmes. For example, they are financing borehole drilling projects and well-cleaning projects. They also train community members on how to manage these water points.

The involvement of NGOs in the urban areas of Haiti and Jamaica shows that they play an important role, so why not in Sakubva? The NGOs in these areas have assisted in a range of environmental services, including water supply, sanitation, solid waste management and drainage. In these countries the NGOs have played an effective role in peri-urban areas where municipal structures are weak or absent. The Haiti and Jamaican cases also illustrate that the community will provide the support needed to make community-based institutions effective if the NGO gives them full-partner status. In both countries, the NGO's have spent more time at the start of each project consulting with the communities about their needs, anticipated problems and ideas about realistic solutions. This process has created an effective relationship between the NGO's and the communities, helping to develop among the residents a sense of ownership of the solutions. The NGOs are socially committed, flexible and able to improve their ability to work effectively with poor communities. The key to their success is setting aside their normal NGO role as "implementor" for a new role as "facilitator" or "broker" between the informal communities and the formal private and public sectors (Perez, 2000: 13).

If Mutare City Council or, indeed, Zimbabwe national and provincial government remains paralyzed by politics, the only way around may be to invite NGOs in to do what government should be doing. Communities or NGOs themselves may need to initiate this sort of linkages. Government can be pressed to accept such activities as communities themselves can frame the initiative in terms of government's own 'neo-liberal' adjustments: e.g. private sector initiatives, government 'outsourcing', local 'democracy' and civil society, etcetera. Community leaders in Sakubva could establish a web-site, perhaps, and solicit 'linkages' for specific projects (sanitation, water supply) – not only with NGOs but universities, cities, companies and the like. Once again, the youth of Sakubva could play a crucial role here.

Involvement of women as common block managers.

Experience in most rural areas of Zimbabwe shows that common pool resources such as boreholes and wells, can be effectively managed by water users themselves. In these areas, water point managers are elected. Duties include ensuring that water points are clean, reporting leakages and determining the extent to which people can practice subsistence farming around the water points. These people are usually women because water has historically been regarded as 'women's domain' in Africa.

In Sakubva, women can also play a crucial role in the management of the common blocks not merely because they spend most of their time using the common blocks for doing washing, fetching water for drinking purposes and bathing. Empowering women as managers should mean giving decision making power – including fees levied and distribution of profit – to those who are primary users *because they are primary users, not because they are women or because it is the 'women's domain'*. Too often 'community empowerment' means burdening those already over-burdened with 'voluntary' tasks. Because women are relegated to the 'private domain', these 'social' activities too often fall to them. In other words, the language of 'empowerment' does nothing to alter existing structural inequalities. If water point management is to succeed in Sakubva, then, some creative combination of government (capital, technical and human resource) support, user-pay fees, and monetary- or other-incentive structures for female, youth, or a combination of

the two as managers must be put in place. To succeed in the long-term these programmes must be something other than simply relief-oriented, 'food for work'.

At the same time we feel it is important to highlight the fact that poorly managed common blocks, lacking electric lighting for example, become threatening places for women and youth after dark. To remove the threat, and to facilitate a better use of the resource for all, it is most important to empower those most threatened.

In addition, the driving force behind these new township water management structures must be something other than abdication of responsibility on the part of government, at whatever level. We therefore do not envision 'water point management' as equal to the 'kiosks' Council wishes to impose. Rather, we envision the emergence of creative networks and smart partnerships involving perhaps local residents, NGOs, and City Council.

Water privatization

In the case of Sakubva, water privatization is necessary and can help with provision of better services and getting people to pay for services. There are different forms of private-sector involvement (see Appendix 2), and for Sakubva, the City Council of Mutare can consider partial divestiture or service contract in the water and sanitation sector. With this form of private sector involvement, the government creates a new joint venture company with the private sector and the government regulates the prices to ensure that the rates for services are affordable to the residents. As Rees (1998) points out, it is inevitable that some form of continued public regulation of the private companies will be necessary. Rees (1998) further points out that involvement of private companies in the water and sanitation sector can be challenging due to:

- (i) The level of natural monopoly and the lack of substitute products;
- (ii) The public and merit goods supplied by the sector;
- (iii) The crucial relationship between water infrastructure and urban/economic development;
- (iv) The highly capital-intensive nature of the sector and the overwhelming presence of sunk costs; and
- (v) The multi-purpose and hydrologically interconnected nature of the water resource itself.

Privatization can also apply to irrigation schemes and because irrigation accounts for a high proportion of all water use, the potential efficiency gains from reform can greatly outweigh anything possible in the urban sector.

Box 4 : Cote d'Ivoire: A successful case of water privatization

Over the past 25 years the urban water sector in Cote d'Ivoire has been operated by a private company, SODECI which was established in 1960.

Privatization in Cote d'Ivoire was effective in raising urban tariffs and curbing excessive consumption, especially by industry. The company also had a strong incentive to maintain an efficient urban system, with minimal levels of unaccounted-for-water.

In the context of conservation, Cote d'Ivoire's experience shows that privatization can be a good opportunity for raising urban and industrial tariffs, improving the unaccounted-for-water ratio, and maximizing revenue collections.

Source : Winpenny, 1994)

Concluding Remarks

Water resources and sanitation facilities are under extreme stress in Sakubva. Addressing these problems is increasingly difficult. At the core is a complex matrix of population movement primarily by impoverished peoples, rent-seeking behaviour on the part of leaseholders, historically difficult relations between Mutare City Council and residents of Sakubva, and self-seeking, destructive behaviour on the part of politicians (who are interested in votes than the welfare of the people). For these reasons, Pungwe water has been no 'solution' to the problems of the township. Sustainable solutions might rest with the youth and women of Sakubva, sympathetic voices within City Council (like the Department of Health), and creative individuals and organizations in the wider world.

Solutions for Sakubva need to be found in an integrated approach to water resources management that treats demand and supply issues jointly; that locates Sakubva within the wider context of water use in Mutare; and then locates Mutare within the broader category of catchment council management.

For Sakubva there are discrete, specific interventions that can be made. These must involve residents as stakeholders. All these can be successful in the long-term if water resources management is treated in an integrated fashion.



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Appendix 1: Delimitation of Concepts

Qualitative study : It is a research method used to study social and human problems

Waste : The unwanted leftovers of any process/An undesirable or superfluous by-product, emission or residue of any process or activity which has been discarded, accumulated or stored for the purpose of discarding or processing. It may be gaseous, liquid or solid or any combination thereof and may originate from a residential, commercial or industrial area.

Cost recovery : Fee structures that cover the cost of providing the service

High density area : This is an area with people outstripping its carrying capacity.

Water demand : It is a need for water for various purposes like agriculture, mining and for primary purposes such as drinking, washing and cooking.

Water demand management : A management approach that aims to conserve water by controlling demand which involves the application of selective incentives to promote efficient and equitable use of water/ a process of building efficiency into the system by focusing on modifying the demand side of water resources management.

Operational costs : These are the costs involved in order to get services or facilities operational.

Block tariff systems : systems of pricing, in which the cost of the product increases progressively in blocks as the quantity of water that is consumed increases/These are systems composed of low rates for low bands of water consumption with increasing rates at higher bands

Triangulation : It refers to the combination of multiple methods of observation which direct researcher to utilize different tools in the observational process.

Unaccounted-for-water : The difference between the volume of water delivered to a supply system and the volume of water accounted for by legitimate consumption, whether metered or not/ Discrepancy between water flows leaving the works and the total sum of all water received by consumers; although mainly leakages, it includes significant metering errors and unknown/illegal diversions.



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Appendix 2: Forms of private-sector involvement

FULL DIVESTITURE

Full transfer of assets to private sector through asset sales, share sales or management buyouts. Private sector responsible for all capital investment, maintenance, operations and revenue collection.

PARTIAL DIVESTITURE

Government sells a proportion of shares in a 'corporatised' enterprise or creates a new joint venture company with the private sector.

CONCESSION

Government lets a long-term contract, usually over 25 years, to a private company, which is responsible for all capital investment, operations and maintenance. The assets themselves remain public sector property.

LEASE

Long-term contract (usually 10 to 20 years but can be longer). Private sector responsible for operations and maintenance and sometimes for asset renewals. Assets remain in public sector and major capital investment is a public responsibility.

BOT (Build-Operate-Transfer) / BOO (Build, Operate and Own)

Contracts are issued for the construction of specific items of infrastructure, such as a bulk supply reservoir or treatment plant. Normally, the private sector is responsible for all capital investment and owns the assets until transferred to the public sector, but in BOO schemes, private ownership is retained.

MANAGEMENT CONTRACT

Short-term contracts, typically five years. Private firm only responsible for operations and maintenance.

SERVICE CONTRACT – [BUYING IN]

Single function contracts to perform a specific service for a fee, e.g. install meters



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Appendix 3: Typology of participation

1. Passive participation

People participate by being told what is going to happen or has already happened. It is a unilateral announcement by an administration or project management without listening to people's responses. The information being shared belongs only to external professionals.

2. Participation in information giving

People participate by answering questions posed by extractive researchers using questionnaire surveys or similar approaches. People do not have the opportunity to influence proceedings, as the findings are neither shared nor checked for accuracy.

3. Participation by consultation

People participate by being consulted and external agents listen to views. These external agents define both problems and solutions, and may modify these in the light of people's responses. Such a consultative process does not concede any share in decision-making and professionals are under no obligation to take on people's views.

4. Participation for material incentives

People participate by providing resources, for example labour, in return for food, cash or other material incentives. Much on-farm research falls into this category, as farmers provide the fields but are not involved in experimentation or the process of learning. It is very common to see this called participation, yet people have no stake in prolonging activities when the incentives end.

5. Functional participation

People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organization. Such involvement does not tend to be at the early stages of project cycles or planning but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent.

6. Interactive participation

People participate in joint analysis, which leads to action plans and the formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives, and make use of systematic and structured learning processes. These groups take control over local decisions and so people have a stake in maintaining structures or practices.

7. Self-mobilization

People participate by taking initiatives independent of external institutions to change systems. They develop contacts with external institutions for resources and technical advice that they need, but retain control over how resources are used. Such self-initiated mobilization and collective action may or may not challenge existing inequitable distributions of wealth or power.

