THE DYNAMICS OF STAKEHOLDER PARTICIPATION IN WATER RESOURCES MANAGEMENT IN ZIMBABWE: A CASE STUDY OF THE AGRICULTURAL SECTOR

BY

KRASPOSY KUJINGA

A mini-thesis submitted to the Faculty of Sciences, University of the Western Cape, in partial fulfilment of the requirements for the Master of Science degree in Integrated Water Resources Management

SUPERVISOR: MR. LEWIS JONKER

NOVEMBER 2004

ABSTRACT

Since the early 1990s, the focus of water resources management shifted from technology transfer towards decentralised and user centred approaches. These emphasized stakeholder participation and local organizational development in the form of water user institutions (Clyma, 1989; Dube and Swatuk, 2002; Manzungu, 2004; Kujinga, 2002). During this time period, a number of southern African countries such as Malawi, Mozambique, Namibia, South Africa, Tanzania and Zimbabwe, embarked on water reform processes (Kujinga and Manzungu, 2004). The government of Zimbabwe introduced stakeholder participation in water resources management through the 1998 Water Act [Chapter 20:24], which replaced the 1976 Water Act. The concept of stakeholder participation was limited to a minority under the 1976 Water Act. The major aim of this study was to analyse the dynamics of stakeholder participation in the agricultural sector during the first five years of the water reform process in Zimbabwe. Specific reference is made to water allocation, conflict management and the payment of costs related to water use. Data presented in this study was collected through the administration of a standard questionnaire to stakeholders from the agricultural sector, and by conducting unstructured interviews with various government officials and representatives of the Middle Manyame Subcatchment Council and attendance of stakeholder meetings. The major findings of the study are: (1) the majority of stakeholders in the agricultural sector do not have knowledge about water management transformation (2) stakeholders in the agricultural sector are not participating in water allocation (3) the majority of irrigators are not paying for water, nor participating in determining the rates that should be paid (4) stakeholders in the Middle Manyame Subcatchment Council have not had an opportunity to resolve water issues. The study recommends that the water reform process be communicated to all the stakeholders, enabling them to effectively participate in water resources management. The other conclusion reached in this study is that stakeholders from all categories should be organized at the grassroots level, to allow for participation in water allocation and conflict management.

DECLARATION

I declare that this mini-thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other university.

Full Name: KRASPOSY KUJINGA

Date:

Signed:

DEDICATION

I dedicate this thesis to my lovely wife, Maud and daughter, Rumbidzaishe Rachel for their love and support during the period I was undertaking my studies. May their right to participate in water resources management be respected.

ACKNOWLEGEMENTS

My sincere gratitude goes to the people of Middle Manyame Subcatchment area. Without their cooperation this study would not have succeeded. I am most grateful to Mr. Conrad Zawe and his assistant, Phebion Mamhunze who facilitated my entry into the Middle Manyame Subcatchment area. Special thanks also go to the representatives of the Middle Manyame Subcatchment Council who supported me when I was carrying out my fieldwork.

To my supervisor, Mr. Lewis Jonker, I say thank you for giving me confidence and constructive comments throughout the period I was doing my fieldwork and when I was writing this thesis. I really benefited from your invaluable suggestions, method of supervision and the extra time you spent with me discussing the subject matter. To Dr. Emmanuel Manzungu, I say thank you very much for being my mentor with regards to academic issues over the last four years. I am very grateful to Bonita Kleyne for reading this thesis and for providing constructive comments.

I would like to thank Waternet for funding my studies and fieldwork in the Middle Manyame Subcatchment area.

I thank my wife and daughter for tolerating my prolonged absence from home during my two years of studying and fieldwork and for bearing with me when I was busy writing this thesis. I thank my parents; Mr. Mushumani-Shava and Mrs. Diana Kujinga, who saw it fit to send me to school and denied themselves certain luxuries. I say to them, you have given me an inheritance that I will never be able to repay. God has blessed your efforts.

Above all, I would like to thank the Lord Jesus Christ for leading me this far and for giving me strength, confidence and grace throughout my academic career. For sure Lord, you have been my light and comforter, may your name be glorified, honoured and praised from henceforth and forevermore.

TABLE OF CONTENTS

List of tables

List of figures

CHAPTER 1: INTRODUCTION

1.1. Background to the study

Since the early 1990s, the focus of water resources management shifted from technological approaches toward decentralised and user centred approaches. The new approaches emphasize stakeholder participation and local organizational development (Clyma, 1989; Dube and Swatuk, 2002; Manzungu, 2004; Kujinga, 2002). A number of countries within the southern African region (Malawi, Mozambique, Namibia, South Africa, Tanzania and Zimbabwe), embarked on water reform processes during the 1990s (Kujinga and Manzungu, 2004). In all cases, stakeholder participation was recognized as an important component of sustainable water resource management (Global Water Partnership, 2000). The focus of this thesis is on stakeholder participation in water management in Zimbabwe, with particular focus in the Middle Manyame Subcatchment area.

The government of Zimbabwe introduced stakeholder participation in water resources management through the 1998 Water Act [Chapter 20:24], which replaced the 1976 Water Act. The concept of stakeholder participation was limited to minority white commercial farmers under the 1976 Water Act. The major aim of the Water Act of 1998 is to provide for the development, management and utilization of Zimbabwe's water resources (Zimbabwe, 1998a). The 1998 Water Act broadened stakeholder participation to include everyone with an interest in the resource thereby including communal and resettlement farmers who did not previously participate. Under the Water Act of 1998, Catchment and Subcatchment Councils had to be established. These councils allowed stakeholders to take an active role in the development, management and utilization of the country's water resources. The ZINWA provides technical expertise to the stakeholder water institutions (Manzungu, 2001). Another act passed alongside the 1998 Water Act was the ZINWA Act [Chapter 20:25]; the aim was to establish a national water authority by the same name and to provide for its functions (Zimbabwe, 1998b). One of the main objectives behind the establishment of stakeholder institutions and ZINWA was to improve water resources management in the country.

The formation of Catchment and Subcatchment Councils was premised on the decentralization of water resources management. Stakeholder representatives on Catchment and Subcatchment Councils are supposed to being involved in a wide range of

water issues, and partake in decision-making regarding the management of water resources in their areas (Derman, 2000). Stakeholder participation in water management in Zimbabwe encompasses issues such as equitable water allocation, conflict management, water quality monitoring, catchment planning and payment of costs related to water use (Zimbabwe, 1998a). This thesis focuses on stakeholder participation in water management at the Subcatchment Council level in the agricultural sector. Focussing on the agricultural sector is vital because agriculture in Zimbabwe uses more than 80% of the developed water resources in the country (Manzungu, 2003). It is therefore important to investigate how the different categories of stakeholders in this sector contribute to the management of water resources.

Stakeholder participation in water resources management requires that everyone utilizing a basin, catchment or subcatchment partake in the decision making process on how the water resources are used. The stakeholders are grouped into sectors, each having a role in water management, with representation in water management institutions such as Catchment Council and Subcatchment Council levels in Zimbabwe. The different stakeholders identified in Zimbabwe include those from agriculture, industry, mining, forestry and urban areas (Zimbabwe, 2000a and 2000b).

This study analysed the dynamics of stakeholder participation in water management in the agricultural sector in Zimbabwe with specific reference to water allocation, conflict management and payment of costs related to water use. Stakeholders investigated are those in communal smallholder irrigation schemes, large-scale commercial white and black farms and those resettled under the government's fast track land resettlement programme, namely the A1 and A2 resettlement schemes. The study was undertaken in the Middle Manyame Subcatchment area, which falls under the Manyame Catchment area.

1.2. Problem statement

Prior to the promulgation of the Zimbabwean Water Act [Chapter 20: 24] in 1998, much of the literature and research focused on the operations of Catchment and Subcatchment Councils without focussing on the participation of ordinary stakeholders from different sectors such as agriculture (Kujinga, 2002; Latham, 2002; Tapela, 2002). Issues that have been investigated in relation to water institutions include, ensuring their financial

viability and proper stakeholder representation with active participation in meetings and catchment planning (Mtisi, 2002; Kujinga and Manzungu, 2004).

In the first five years of the reform process, the dynamics of participation of ordinary stakeholders such as the agricultural sector has not been the focus of much research. As previously mentioned, the literature does not cover stakeholder participation, especially in areas such as water allocation, conflict management and financial contribution. Most of the literature captures the contribution of sector representatives in the new water institutions and neglect that of the constituencies they represent (Kujinga and Manzungu, 2004; Manzungu and Kujinga, 2002; Dube and Swatuk, 2002). The land reform programme embarked upon by the government introduced new categories of farmers (stakeholders), whose participation in water allocation, conflict management and payment of costs related to water use has not been researched and documented.

1.3. Major aim of the study

The major aim of this study is to analyse the dynamics of stakeholder participation in the agricultural sector during the first six years of the water reform process in Zimbabwe. Specific reference is made to water allocation, conflict management and financial contribution.

1.3.1. Specific aims of the study

The specific aims of this study are:

- To describe the general knowledge of stakeholders from the agricultural sector about water management transformation.
- To describe how stakeholders have participated and continue to participate in asserting water rights (water allocation), resolving emerging conflicts (conflict management) and contributing to the costs related to water use.
- To understand how the different categories of stakeholders participate in the identified areas (water allocation, conflict management and contribution to financial costs).
- To analyse how government's land reform programme has affected the participation of stakeholders.

1.4. Hypotheses of the study

In pursuance of the aims of the study, the following hypotheses were formulated:

- Stakeholders in the agricultural sector in the Middle Manyame Subcatchment area are fully aware of the water management transformation process
- Stakeholder participation results in equitable allocation of water
- Stakeholder participation contributes to payments related to water use
- Stakeholder participation contributes to the management of emerging water conflicts between and among farmers

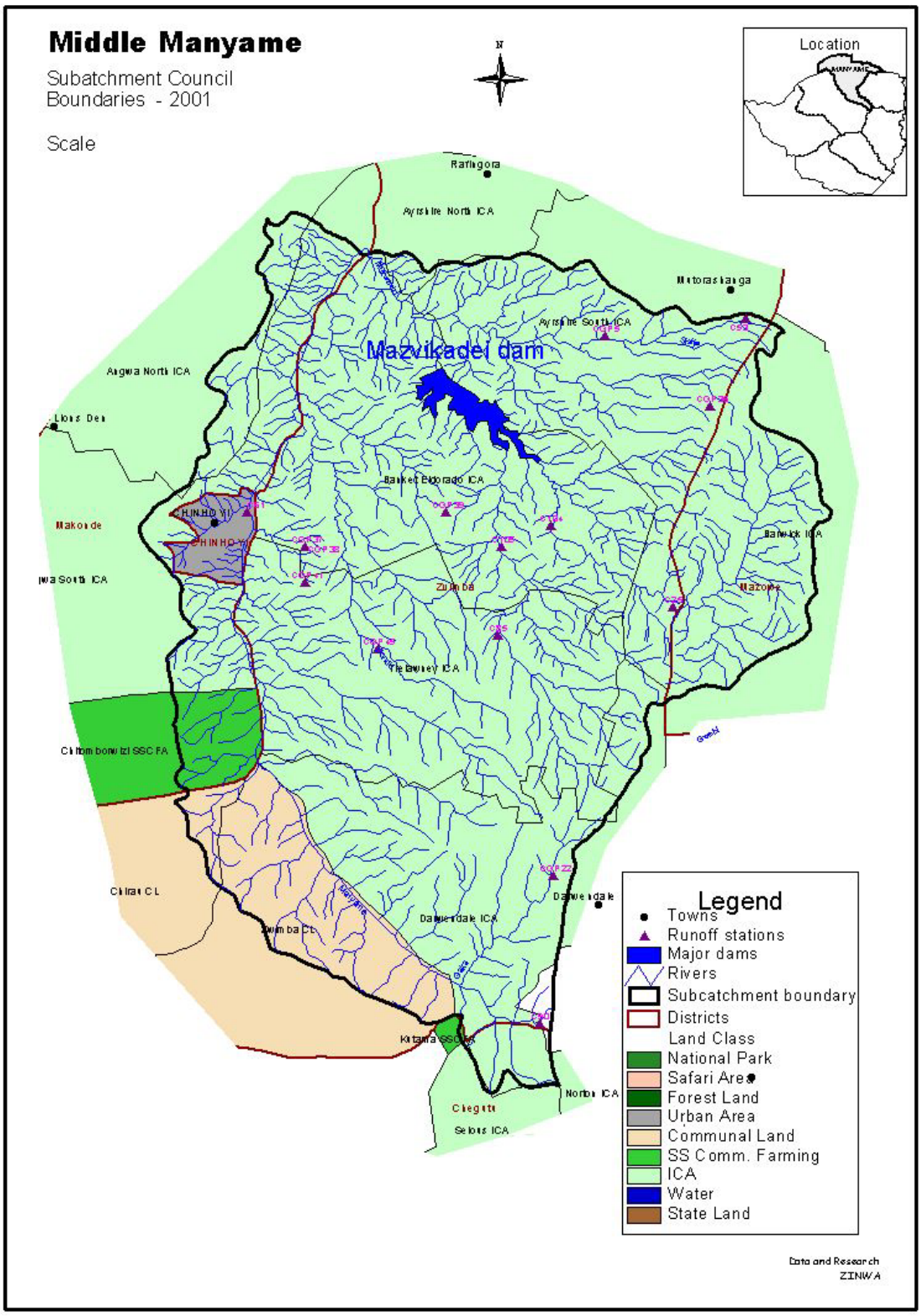
1.5. Significance of the study

Stakeholder participation is a critical component of the governance of water resources. In southern Africa, and particularly Zimbabwe, there is limited literature on the participation of ordinary stakeholder in water management. The findings presented in this study will contribute to a better understanding of stakeholder participation in the agricultural sector in the management of water resources in accordance with the provision of the legislation.

1.6. Study area

The Manyame Catchment is comprised of five subcatchment areas: Angwa-Rukomechi, Lower Manyame, Middle Manyame, Upper Manyame, and Musengezi. This study focuses on the Middle Manyame subcatchment area that is located in the Mashonaland West and Central Provinces. The districts that fall within this subcatchment area form parts of Makonde and Zvimba, all of which are located in Mashonaland West Province, as well as parts of the Mazowe district (Mashonaland Central). There is one major town, Chinhoyi, situated in the Middle Manyame subcatchment area.

The Middle Manyame subcatchment is located in Zimbabwe's farming region IIa. Rainfall in this region is confined to the summer months and is moderately high (750-1000 mm per annum). The region rarely experiences severe dry spells in summer. The area is suitable for intensive systems of farming based on crops and/or livestock (Zimbabwe, 1997). The major river in the subcatchment area is the Manyame River and the major dam is Mazvikadei. Figure 1 below shows the map of the Middle Manyame subcatchment area.



Source: Zimbabwe National Water Authority

Figure 1: Map of the Middle Manyame subcatchment area

According to the 2002 national census, the districts of Zvimba and Makonde (including Chinhoyi Town) and Mazowe have a combined population of 593 186. The breakdown of

the population in the three districts that fall under the Middle Manyame subcatchment area is shown in table 1 below[1].

Table 1: Population of the Middle Manyame Subcatchment area

District/Town	Males	Females	Total
Chinhoyi	23 741	25 862	49 603
Makonde	61 880	61 700	123 580
Mazowe	98 905	100 503	199 408
Zvimba	110 828	109 767	220 595
Total	295 354	297 832	593 186

Source: Central Statistical Office, 2002.

1.7. Definition of concepts

Many of the concepts that form the basis of this thesis have multiple meanings. Therefore, it is important, for the purpose of this thesis that the meanings of these concepts are clarified upfront. These include: participation, stakeholder, equity, allocation, conflict and payment. The categories of stakeholders who constitute the backbone of this thesis are also defined and clarified.

1.7.1. Participation

Participation refers to a process based on the citizen's physical involvement in shaping society's developments and projects and benefiting from its results (Viera 1991, p. 17). This means that people who should be beneficiaries of a particular project must be involved in its initiation, planning, implementation, management and evaluation. Provision must be made for beneficiaries to partake in the decision-making process.

It is important to note that in practice, there are varying degrees of participation. Degree of participation refers to the extent to which stakeholders actually influence decisions taken regarding water management, for example. Salaman (1987, p. 302) and Pateman (1970, p. 67-74) identify three degrees of participation: pseudo participation, partial participation and full participation. She distinguishes between them as follows.

[1] It is important to note that the population of the Middle Manyame subcatchment area is less than what is given in table 1 since other parts of all the districts that make up this subcatchment area fall within different subcatchment areas. The figures only give a rough indication of the population of the Middle Manyame subcatchment area.

Pseudo participation occurs when development agents or government officials, for example, use participatory techniques, such as group discussions to persuade the local people to accept decisions that have already been made. This can interpreted as manipulation (Salaman 1987, p. 302; Pateman, 1970, p. 67-74).

Partial participation is when stakeholders can and do influence the outcome of decisions through a process of consultation, but development agents or government officials have the final decision-making power (Levine and Tyson 1990, p. 189-90).

Full participation exists when every stakeholder has equal power to determine the outcome of a decision. Local people thus have joint decision-making power together with development agents or government officials (Salaman 1987, p. 302; Pateman, 1970, p. 67-74). This last form of participation is difficult to achieve mainly because some stakeholders have more influence than others do. These might influence the outcome of certain participatory processes.

Participation has always been about having everyone or the majority of people within the affected locality involved. In most cases, it is very difficult to involve everyone in deciding how projects could be implemented since some people might decide not to be part of certain projects. It is also important to note that participation is not politically neutral. The process could be hijacked by individuals within a community capable of influencing certain decisions.

1.7.2. Stakeholder

What constitutes a stakeholder is a matter for considerable debate. This thesis adopts a broad view of who should be considered a stakeholder. Freeman (1984) defines it as the capacity of a group or the individual to affect and be affected by the objectives under consideration. A stakeholder, in the context of this thesis, is defined as individuals and groups that may affect, and be affected, by water management decisions. Besides being affected by the policies, decisions and actions of a particular system, the individuals, communities and groups will have interests in, or a stake or claim in the particular system (Evan and Freeman, 1988, p. 75-76; Thomson *et al*, 1991, p. 209; Savage *et al*, 1991, p. 61). It should be realised that it is one thing to be a stakeholder and another to participate in decision-making and to take certain actions pertaining to projects, resources, etc. One

can have an interest in water resources but could be denied the opportunity to participate in its management by social, economic and political factors.

Stakeholder participation in water management, therefore, entails that all the stakeholders who have an interest, claim or stake in a particular system are genuinely involved in any decision-making process that affect them. There is a need for countries to define what constitutes acceptable levels of participation (Manzungu, 2004, p. 27). It is important to note that stakeholder participation is not an end in itself but a means to an end. The end result should be improved governance of water resources (Manzungu, 2004).

1.7.3. Equitable allocation of water

The term equity is very difficult to define since what one group deems equitable may not apply to another. In this thesis, equity in water resources management entails fairness, social justice, acceptability, perception, rights and obligations, benefits and burdens, advantages and disadvantages. No one should be denied access to water resources on the basis of race, ethnicity, gender, origin, etc. Although equality is difficult to achieve, a deliberate effort should be made to ensure fairness and social justice in the process of water resources management (Boelens and Davila, 1998; Talen, 1998). Water allocation refers to the process of dividing water resources amongst the competing needs and demands in a society (Ngana, 2002).

1.7.4. Payment as a concept

Payment in the context of water resources refers to the process of contributing financially towards the costs related to the provision of water by those who use it (Manzungu, 2002).

1.7.5. Conflict

Conflict refers to resulting from divergent views between two or more parties. The situation can degenerate into open confrontation leading to the destruction of persons, properties and systems (Burton, 1990: p3; Banks, 1986: p. 2). Alternatively conflict can have a positive outcome such as helping to build relationships, create coalitions, foster communication, strengthen institutions and creating new ideas, rules and laws (Centre for Conflict Resolution, 2001). Conflicts associated with water resources are referred to as interest conflicts. This is because these conflicts involve actual or perceived competition over water resources (Centre for Conflict Resolution, 2001).

Conflict management refers to a process of addressing, containing and limiting conflict in such a way that its escalation into a more violent mode is avoided. The process of conflict resolution addresses the cause of a particular conflict and resolving these so that the conflict comes to an end (Parlevliet, 2002).

1.8. The stakeholder groups

This study focuses on the agricultural sector. Zimbabwe embarked on a process of redistributing land in 2000. This land reform programme resulted in the formation of more categories of stakeholders in the agricultural sector. These categories are, smallholder irrigation farmers, A1 farmers, A2 farmers, large-scale commercial white and black farmers.

1.8.1. Smallholder irrigation farmers

Smallholder irrigation farmers refer to farmers who irrigate land, which is between 0.1 to 1 hectare in size. Smallholder irrigation in Zimbabwe started before independence and the post-independence government has encouraged the expansion of this sector. Smallholder irrigators operate in either government or farmer managed schemes (Manzungu and van der Zaag, 1996). Crops grown by smallholder irrigators include maize, beans, wheat and tobacco.

1.8.2. Large-scale commercial white and black farmers

Large-scale commercial farmers in the Zimbabwean context refer to those who farm land ranging in size from 100 hectares and above; these could either be white or black farmers. Until 2000, most of the large-scale commercial farmers were white (Utete, 2003). Crops grown by large-scale commercial farmers include maize, wheat, tobacco, sugar cane and vegetables. Some of the commercial farmers practice beef production and horticulture.

1.8.3. A1 farmers

A1 farmers refer to stakeholders resettled between 2000 and 2003 during the government's fast track land resettlement programme. The majority of those resettled in A1 model schemes, were the landless from the communal area (Utete, 2003). The hectarage of land in A1 schemes range from 5 to 15 hectares per household. Most A1 farmers are growing maize. However, those utilizing irrigation farming are growing wheat and tobacco.

1.8.4. A2 farmers

A2 farmers refer to people resettled between 2001 and 2003 during the government's fast track land resettlement programme in commercial settlement schemes (Utete, 2003). The land holdings in A2 schemes range from 15 to several hundred hectares. A2 farmers grow maize, wheat and tobacco.

1.9. Organization of thesis

The thesis has five main chapters. The first chapter introduces the subject and presents the problem statement, aims, hypotheses and significance of the study, as well as a description of the study area and definition of key concepts.

Chapter two reviews the literature around stakeholder participation, discussing its origin adoption by a number of southern African countries including Zimbabwe. Furthermore this chapter reviews issues on water allocation, payment and conflict management.

Chapter three presents the methodology used in the study. The data collection methods and analysis are outlined here.

Chapter four analyses the findings of the study. This chapter is divided in four main sections. These sections are stakeholder knowledge of water management transformation, stakeholder participation in water allocation, payment of costs related to water use and conflict management and resolution.

Chapter five presents an overview of the study, a revisit of the major findings, recommendations and concluding remarks.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

The literature review presented in this chapter will delve into the origins of stakeholder participation within the area of development in general. The rationale behind the adoption of the stakeholder participation approach is reviewed. The focus of the literature is narrowed from stakeholder participation in the area of development in general, to water management at the global level and in southern Africa. Factors behind the adoption of stakeholder participation in water management are discussed.

The literature review looks at water management in Zimbabwe from the colonial era up to 1998. Experiences from other countries within the region around stakeholder participation in water management are also captured in this section. The literature presented in this chapter discusses issues related to water allocation, conflict management and payment of costs related to water use.

2.1.1. Towards stakeholder participation

Stakeholder participation has its roots in community participation approaches; these approaches were influenced by the political debates of the late 1960s, and were more radical. Activists of community participation argued that if the local people are to really benefit from any programme aimed at changing their quality of life, they must be involved in its decision-making (Beetham, 1992; Midgley *et al* 1986). Community or stakeholder participation has thus been viewed as an approach that contributes to sustainable development because the views, opinions and perspectives of those affected are taken into consideration (Jaarsveld, 2001). There is a strong global belief, especially among NGO's and other donor communities, that less state intervention and more community/stakeholder participation in managing society's projects and natural resources, frees up civil society to participate openly (Dube and Swatuk, 2002). Concepts such as community participation and public participation also came into use within the development discourse since the 1960s.

Though the terms community and public participation have been used in project initiatives and implementation, the term stakeholder participation has also been used, since it encompasses everyone within a particular system, whether affected negatively or positively (Freeman, 1984). The community or the public referred to in a particular

programme or project could be a group of stakeholders. On the other hand, stakeholders within a particular system can be people from different communities.

2.1.2. Stakeholder participation in water resources management: Global to regional levels

The early 1990s witnessed a worldwide shift in conservation and natural resources management, from the costly state centred approach to those that include local people to play a more active role (Shackleton *et al*, 2002). The efforts at the global level were aimed at formulating implementable solutions to environmental problems and increasing levels of poverty (Chikozho, 2002). According to Shackleton *et al* (2002, p3):

> "These reforms purportedly aimed to increase resource user participation in natural resources management decisions and benefits by restructuring power relations between central state and communities through the transfer of management authorities to local level organizations, though reality rarely reflects this rhetoric".

In line with this worldwide trend, the Rio-Dublin Conferences of 1992 came up with four principles considered crucial for managing water in an integrated manner. The second of these principles states that water development and management should be based on a participatory approach, involving users, planners, and policymakers at all levels; the third principle states that women play a central part in the provision, management and safeguarding of water (GWP, 1999). The two principles highlight the fact that all stakeholders must be involved in water development and management. It is important to note that these two principles do not consider the fact that stakeholders of particular resources do not wield the same influence (Manzungu, 2004). By developing along these two principles, it was hoped that this would enable stakeholders to come to a common platform, thereby leading to an improvement in water governance (see Kujinga and Manzungu, 2004).

Most countries in southern Africa, such as Zimbabwe, South Africa, Malawi, Tanzania, Zambia and Namibia, have embraced the philosophy of stakeholder participation in water resources management (Manzungu, 2001b). In order to show their commitment to stakeholder participation in water management, South Africa, Malawi, Tanzania and

Zimbabwe have already introduced laws, which provide frameworks for the establishment of stakeholder water institutions (Manzungu, 2001b).

Water reforms, which introduced the concept of stakeholder participation in most of the southern African countries, were mainly influenced by international philosophies spearheaded by donors and international organizations such as the World Bank (World Bank, 1993). These organizations emphasise the decentralisation of the management of natural resources. The donor community holds the view that decentralisation of natural resources management promotes stakeholder participation and equitable access to resources such as water (Winpenny, 1994; Robinson, 1998). The question asked by authors such as Chikozho (2002), is:

"Can the global water agenda, which among other issues, calls for stakeholder participation, could effectively engage with local realities in countries such as Zimbabwe, South Africa and Malawi?"

Hardin (1985, p144) advises that "never globalise a problem if it could possibly be dealt with locally". Sharma (1996: p xiii) advocates that, based on evaluations made by Africans, of their own water resources, the current situation calls for country led water resources management built on local experiences and good practices. Initiation and leadership of reform programmes should be the responsibility of individual countries. Differences between the developed and developing countries preclude the wholesome importation of the models. Elements of the models must be selectively adopted and adapted to particular countries. The implementation of stakeholder participation in water resources in countries such as Zimbabwe was also in response to a worldwide trend of devolution in natural resources management (Meinzen-Dick, 1996). Countries such as Zimbabwe could be said to have embraced the notion of stakeholder participation in water resources management due to international pressure. The acceptance of stakeholder participation in most southern African countries, including Zimbabwe, was done without critically assessing how best it could be applied within their socio-economic and political contexts.

The view, which has been taken at the international level, is that stakeholder participation in natural resources management leads to improved decision-making by making the

process transparent, inclusive and fair. This then creates trust and a shared vision among stakeholders who are more willing to contribute their ideas, needs, suggestions and information. The goal of stakeholder participation is not consensus per se, but it is the diversity of opinion that enriches an initiative. The process, thus, brings about convergence of viewpoints because it creates the opportunity for people to share viewpoints and jointly deliberate the issues at hand (Greyling and Manyaka, 1999 quoted in Dwaf, 2001). This assertion does not take into consideration the different power relations, which exist between the different sectors of stakeholders within the same locality. It is important to note that within stakeholder groups those who are powerful and influential could have their decisions adopted and implemented. The voices of those stakeholders who are seen as being weak will not be considered when it comes to decision-making (Edmunds and Wollenburg, 2001).

South Africa is one of the southern African countries, which has already enacted a Water Act (Act 36 of 1998) that upholds the concept of stakeholder participation. This Act provides for the establishment of Catchment Management Agencies (CMAs) and Water User Associations (WUAs). CMAs have to be established in a progressive manner through the authority of the minister (Manzungu, 2001; Karar, 2003). The setting up of the CMA should illustrate that a process of public participation within the relevant water management area was undertaken. The idea of the whole process is to delegate water resources management to the regional or catchment level and to involve local communities within the framework of the national water resource strategy (Manzungu, 2001). A governing board representing all sectoral interests leads each CMA (Karar, 2003).

The major role of CMAs is to:

- ensure equitable access of water resources to all stakeholders especially to the historically disadvantaged individuals while maintaining efficiency and sustainability of the resource;
- develop a catchment management strategy;
- promote the coordination of the implementation of the strategy with the implementation of any applicable development plan established in terms of the water services Act (Act no. 108 of 1977);

- coordinate organizations and facilitate the participation of stakeholders (Pegram and Palmer, 2001).

CMAs in South Africa have powers to set up Catchment Management Committees (CMCs). These institutions provide advice to the CMAs on defined issues. The CMA might delegate some of its functions to the CMC. The CMCs are supposed to play a vital role in acting as conduits of issues of common concern from the respective catchments (Karar, 2001).

The South African Water Act also makes a provision for the establishment of WUAs. WUAs are cooperative associations of individual water users who wish to undertake water related activities for their mutual benefit at a restricted localised level. A CMA may delegate or contract specific functions to a WUA (Chikozho, 2002; Pegram and Palmer, 2001). The CMAs potentially form a third tier of water management in South Africa.

After having looked at the origins of stakeholder participation in water management at global and regional levels, the next section looks at water management in Zimbabwe from the colonial era up to the time of the reforms, which took place in the 1990s.

2.2. Water resources management in Zimbabwe: A historical overview

Developments in the water sector since independence were guided by the Water Act of 1976, a revision of the 1927 act, which legally disenfranchised the majority of the black population from accessing agricultural water. As of 1999, some 85% of agricultural water in the country was used by a mere 4 500 white large-scale commercial farmers (representing less than 1% of the country's estimated 13 million people (Manzungu, 2002).

Under the 1927 and 1976 water acts, water was allocated using the priority date system, which is "first in time, first in right" principle. This system disadvantaged the indigenous population whose legal-administrative system that regulated access to productive resources such as land, had been overthrown by the settlers. When the settlers promulgated the water right system in 1927, the indigenous population was not part of this process (Manzungu, 2002). Water rights were issued in perpetuity. This entrenched the interests of the settlers, as there was little scope to redress the situation to the benefit of the disadvantaged communities. The fact that water rights were attached to land

ownership practically excluded the indigenous people who resided in what were called tribal trust lands (communal areas) where they held no title to the land they cultivated. After independence, people in communal and resettlement areas still did not hold any title to the land they farmed (Latham, 2002).

The administration of the 1976 Water Act was the responsibility of the Water Court. The Water Court was empowered to grant water rights, investigate use of water granted in a right, revise or cancel a right for failing to beneficially use the right (WRMS, undated). In addition, the management of water was vested in River Boards (RBs), which were based on the sub-hydrological zones and intensive conservation areas. The main functions of the RBs were to supervise the day-to-day management of water and provide technical advice to mainly white commercial farmers on water issues and application for water rights. In terms of representation, RBs were composed of representatives of the white commercial farming sector, Town Council and manufacturing industry (Mtisi and Nicol, 2002). Only water right holders could participate in water management under the framework of RBs. Thus, participation in RBs was restricted to mainly large-scale white commercial farmers. The RBs charter allowed them to raise levies on water right holders in their areas of jurisdiction and to monitor the use of water by right holders. RBs were also involved in local informal arbitration and mediation in situations where conflicts would have arisen. In the event that local informal arbitration failed, the parties had to resort to the courts because the RBs had no legal authority to enforce arbitration (Latham, 2002).

The Water Act [Chapter 20:24] of 1998 broadened stakeholder participation through the establishment of Catchment and Subcatchment Councils (WRMS, undated). As mentioned earlier, recent trends in most parts of the world have indicated that success in water resources management in general and natural resources in particular is guaranteed where the level of stakeholder participation is high (Kujinga, 2002). The following subsection looks at the water reform process in Zimbabwe.

2.2.1. The water reform process and the 1998 Water Act

Against the background of inequitable access to water for productive purposes and limited stakeholder participation in water management, it was only a matter of time before pleas for water reform reached a crescendo in independent Zimbabwe (Manzungu,

2002). The impetus toward water reform was accelerated by the drought of 1991/92, the worst in the country's history. The drought posed a very serious challenge to the agricultural sector since it was the mainstay of Zimbabwe's economy. The country was reduced from being self-sufficient in food production and a net exporter, to a net importer of maize (WRMS, undated.).

Donors and international organizations such as the World Bank and the International Monetary Fund also had a significant influence on the process of water reform in Zimbabwe. The donor organizations and international organizations called for the government to decentralise the management of natural resources such as water to stakeholders as a cost cutting measure and to improve the management of the resources (Dube and Swatuk, 2002). When Zimbabwe embarked on water reform in the early 1990s, it was implementing the International Monetary Fund and World Bank's sponsored Economic Reform Programme and one of the basic tenets of these reforms was decentralisation of certain functions from central government to local communities. The management of water was one area, which was singled out for decentralisation (Kujinga, forthcoming).

In 1993, an inter-ministerial committee was set up to look at possible areas of reform. This committee laid the groundwork for the water reform that culminated in the promulgation of the new Water Act of 1998. The three major objectives of the reform process were to:

- repeal the Water Act of 1976 and replace it with another that was more appropriate to contemporary Zimbabwe;
- reform institutions involved in the water sector, increase stakeholder participation and devolve water resources management to the lowest appropriate level; and
- improve access to water for all Zimbabweans through the application of equitable access and a recognition that the environment was also a user of water (Latham, 2002).

The process of bringing about the reforms had to involve a major component of participation, that is, stakeholder consultations. Stakeholders from different sectors such as agriculture, industry, forestry, urban authorities, mining, etc. were asked to contribute

to the new act as well as the introduction of new water user institutions. There are claims that the stakeholder consultations took place (WRMS, undated). Independent research has revealed this was to a limited extent since the majority of the stakeholders who include communal and resettlement farmers were not part of the consultative process (Kujinga, 2002; Swatuk, 2002; Manzungu, 2004).

The results of the reform process manifested themselves in two major forms:

- A new Water Act of 1998 was drafted and passed by parliament
- New institutions were established for the better management of water resources in the country, namely Zimbabwe National Water Authority, Catchment Councils and Subcatchment Councils (Latham, 2002).

Before the enactment of the Water Act of 1998, a donor-sponsored project known as Water Resources Management Strategy (WRMS) was undertaken. This comprised a steering committee, which oversaw policy issues and a technical secretariat to formulate strategies and guide the reform process. One of its main objectives was to maximise stakeholder involvement. Two pilot catchment areas, namely, the Mazowe, funded by the German Agency for Technical Cooperation and Mupfure, funded by the Royal Netherlands Government, were selected for testing the efficacy of the new water management paradigm (Latham, 2002; Chikozho, 2002). Catchment Councils and Subcatchment Councils were formed in the pilot catchment areas. The Mupfure pilot catchment later became part of the Sanyati catchment.

Other catchment areas and Councils were formed in July 1999. A committee composed of senior civil servants was formed and tasked with the role of setting up stakeholder institutions, that is, Catchment Councils and Subcatchment Councils in the other six catchment areas. The committee was given only six months to undertake this task. There was thus inadequate time given to other catchment areas to form Catchment Councils and Subcatchment Councils. In some cases, the committee would call for meetings with stakeholders from different sectors and during such meetings Subcatchment Council representatives were elected. This was despite the fact that some of the stakeholders were hearing about the reforms for the first time (Kujinga, 2002). The chairperson and deputy

of each Subcatchment Council automatically became members of the Catchment Council (Kujinga, 2002).

Under the new set up for water management, Zimbabwe was divided into seven Catchment areas[2] each under the jurisdiction of a Catchment Council. The seven Catchments Councils are Gwayi, Manyame, Mazowe, Mzingwane, Runde, Sanyati and Save. Each catchment area was subdivided into subcatchment areas administered by a Subcatchment Council. ZINWAis responsible for the management of water resources countrywide on a commercial basis and provides technical expertise to Catchment Council and of Subcatchment Councils (Chikozho, 2001: p9).

Stakeholders identified in Statutory Instruments 33 and 47 of 2000 which are supposed to be part of Catchment Council and Subcatchment Councils include Rural District Councils, communal farmers, resettlement farmers, small-scale farmers, large-scale commercial farmers, indigenous commercial farmers, urban authorities, large-scale mines, small-scale mines and any other stakeholder group the Catchment or Subcatchment Councils may identify (Zimbabwe, 2000a; Zimbabwe, 2000b).

Catchment Councils in Zimbabwe are supposed to prepare an outline plan for their river systems; determine water permit applications; grant permits for water use; regulate and supervise the use of water; supervise the performance of Subcatchment Councils and resolve conflicts among water users (Zimbabwe, 2000a; Zimbabwe National Water Authority, 2001). The Catchment Manager, who is an employee of Zimbabwe National Water Authority, runs the day-to-day management and administration of the affairs of a particular Catchment Council. In performing his/her duties, the Catchment Manager acts on the advice of the Catchment Council but is supervised by the Zimbabwe National Water Authority. In some instances he has powers to act on his own without the approval of the Catchment Council as he/she could grant permits for the use of water, extend the duration of a temporary permit and cancel existing permits *(*Zimbabwe, 1998a*)*.

[2] This is defined as the area that contributes hydrologically to a river system that ends in the ocean or a terrestrial lake or inland sea. A catchment area is defined as an area that receives or catches the rain that flows into a particular river. This is similar to a watershed, which is an area from which all surface runoff flows through a common point (Hirji, *et al*, 2002).

The functions of the Subcatchment Councils are to:

- Regulate and supervise the exercise of permits including groundwater use;
- Monitor water flows and use in a Subcatchment area in accordance with the respective allocations;
- Promote catchment protection;
- Monitor waste discharge;
- Assist in data collection and participate in catchment planning;
- Conflict management
- Collect rates and fees and
- Collect water levies (Zimbabwe, 2000b; Zimbabwe National Water Authority, 2001).

Though stakeholder institutions were set up in Zimbabwe, literature documented so far has shown that stakeholder participation in Zimbabwe's water sector is more of a philosophy than an operational concept. This is mainly because no attention was paid to how stakeholder participation could be designed and practically implemented (Manzungu, 2002). From a legal point of view, stakeholder institutions have limited decision-making powers. For example, they play no part in assigning names to the Catchment Councils or setting water levies (Manzungu, 2002). Ordinary stakeholders especially those from the disadvantaged communities such as communal areas play no part in electing representatives and the representatives do not usually provide any feedback to their constituencies (Kujinga, 2002).

The Rio-Dublin principle on stakeholders participation assumes that once all the water users, planners and policy-makers meet on a common platform for the purposes of managing water resources, there will be great potential for collectively solving water resources problems and accommodating different and often conflicting objectives (Steins and Edwards, 1999). Evidence from Zimbabwe has shown that this is not so. Stakeholder representatives on water institutions, that is, Catchment Councils and Subcatchment Councils, do not operate on the same level or platform, as there is a lot of inequality between the advantaged and the disadvantaged (Mtisi, 2002). Kujinga and Manzungu (2004) highlights that within the Odzi Subcatchment Council, large-scale white commercial farmers influenced most of the decisions on the operation of the

Subcatchment Council. Stakeholders representatives from other sectors such as communal and smallholder irrigation did not have much influence on decision-making.

The experience of Zimbabwe with regards to water resources management demonstrates that stakeholder participation is fraught with many problems due to several factors. As mentioned previously, the process of setting up stakeholder institutions was hurried and under-funded. Manzungu (2002: p933) argues that since the process was hurried, stakeholder identification in the water sector was weak as it focussed on organizations that in many cases did not represent actual water users. Moreover, the urban people did not have any representatives on Subcatchment Councils such as Odzi (Kujinga, 2002).

In addition, it was assumed that the different groups of stakeholders were being brought to a common platform where they would interact equally and communicate water resources issues effectively. Experience has shown that within and Subcatchment Councils and Catchment Councils there has been a lot of power imbalance and dominance by certain stakeholders groups (Kujinga and Manzungu 2004; Dube and Swatuk, 2002). There was a lot of domination by white large-scale commercial farmers in a number of Subcatchment and Catchment Councils across the country, mainly because issues such as water allocation, permits and levies raised in these meetings were of direct interest to them (Latham, 2002). Large-scale white commercial farmers also managed to dominate Subcatchment Councils and Catchment Councils affairs between 1999 and 2002 mainly because most of them had more experience in water management compared to the other stakeholders (Kujinga, 2002).

Some of the areas that encompass stakeholder participation in water resources management include water allocation, conflict management and payment of costs related to water use. The next three sub-sections review literature on these three issues.

2.3. Water allocation

Water resources comprising of surface water (rivers, lakes and reservoirs), ground water and floodwater are essential inputs for various economic activities in the municipal, industrial, agricultural, hydropower, recreation and environmental sectors. With increased population growth rates, improved lifestyles and dwindling supplies (both in terms of quality and quantity), the competition over scarce water resources is increasing in most

parts of the world. It is thus of increasing importance that the existing water resources in any area be allocated efficiently and equitably (Dinar *et al,* 2001).

The water acts of countries such as Zimbabwe and South Africa passed in 1998 are meant to, among others, achieve equity in the allocation of water resources through the established stakeholder institutions (Republic of South Africa, 1998; Zimbabwe, 1998a). To some extent, the Water Act of 1998 passed by the parliament of Zimbabwe hopes to achieve equity in the allocation since the right to use water is no longer attached to land rights. As long as someone meets certain requirements, such as having the right irrigation infrastructure and irrigable land, that person can apply to the Catchment Council in his/her area for a permit to use water. The permit is valid for a period not exceeding 20 years.

The equitable allocation of water through stakeholder participation in Zimbabwe might be difficult to achieve given some of the provisions of the legislation. For, example, section 23 (1) (b) of the Zimbabwean Water Act states that:

In granting a permit for the use of water for agricultural purposes, the Catchment Council must take cognisance of the following:

- The suitability of irrigation of the land concerned; and
- The efficiency of the proposed method or possible ways of using the water concerned.

This effectively pushes the equity issue to the background as it is overly concerned with the technical issues of efficiency of water use. Given that smallholder farmers and the majority of resettled farmers cannot afford the sophisticated equipment that ensures high water efficiencies, it could be said that the regulation contradicts one of the main objectives of water reform, which is the achievement of equitable water allocation (Manzungu, 2003).

There are a number of water allocation mechanisms, which shall be discussed in this section. These include public allocation, water markets and user based allocation (Dinar

et al, 2001). They can be applied in the agricultural sector although the first two do not encompass stakeholder participation.

2.3.1. Public water allocation

In the case of public (administrative) allocation, it is the government or the public sector that allocates the water resources to various sectors. Most governments the world over, including those in southern Africa emphasize equitable allocation of water. Some countries that include Zimbabwe and South Africa have put in place legislation that emphasizes equitable allocation of water resources (Zimbabwe, 1998; South Africa, 1998). The establishment of stakeholder institutions is actually meant to ensure that the stakeholders of each sector get a fair share of the available water resources.

The main reasons why government get involved in water allocation are firstly, it is generally difficult to treat water like most economic[3] goods, so the idea would be to ensure that everyone has access to the resources. Secondly, water is perceived as a public good[4]. Public allocation is seen in the majority of large-scale irrigation schemes such as those found in Pakistan and India where the state decides what water resources can be used by the system as a whole and allocates and distributes water within the different parts of the system (Dinar *et al,* 2001).

Although public allocation of water resources tends to create a certain degree of equitable allocation of water resources, there are some disadvantages associated with this form of water allocation. Supplying water to deficient areas leads to expensive, publicly financed water projects, which preclude any need to purchase water rights based upon the scarcity of the resource. It has also been observed that public allocation often does not support user participation as bureaucrats take most decisions. The structures of fees for water use under public allocation often do not create incentives for users themselves to save and use it more efficiently. The vast majority of irrigation systems, and even many domestic

[3] Eeconomic theory states that water should be considered as a normal economic good. This can be concluded from the fact that water is a (relatively or absolutely) scarce good, and therefore an economic good. Moreover, the supply of water is associated with a number of costs such as storage and purification which can be termed the production of water (Meijerink and Ruijs, 2003).

[4] Public goods are those that can be used by one person without diminishing the opportunity for use by others. Water supply systems are public goods because, in most circumstances, delivery of water to one household or farm does not prevent delivery of water to another household or farm (Rogers, de Silva, and Bhatia, 2002).

water supply systems, charge a flat rate per hectare or household served (Dinar *et al*, 2001).

2.3.2. Water markets

The second method of water allocation is the water markets. From the view of economists, water must be treated as an economic good subject to competitive market pricing. If this is done, there would be efficient allocation and distribution of and any water stress scenario would be avoided or at least postponed. Thus, according to economists, water markets are the best appropriate means of allocating water resources to different sectors within a society. Although water is not "produced" in the conventional sense, it still has to be stored, piped and cleaned at a cost. It is these activities of ensuring a consistent supply of appropriate quality water that can be regarded as the "production" of water. It is argued that water prices should reflect these costs. The method of allocating water through the market does not involve stakeholder participation nor is equity achieved through this method. Only those with financial resources can access the water (Dinar *et al*, 2001).

The water market encourages increasing water availability since the seller would like to maximise profit through selling the resources to more buyers. Water markets could ensure that there is improved management and efficiency in agriculture (Winpenny, 1994). Those who advance the concept of water markets argue that this method of water allocation provides security of water rights and tenure to the water users. If well-defined rights are established, the water users can invest in water-saving technology knowing that they will benefit from the investment (Zwartenveen, 1997). This system induces water users to consider the full cost of providing water, including its value in alternative uses. This provides incentives to efficiently use water to gain additional income through the sale of saved water (Dinar *et al*, 2001).

2.3.3. User based water allocation

The third form of water allocation is the user-based allocation that is very common in farmer managed irrigation systems. Studies have shown a wide variation of rules for allocation within such systems; by timed rotation, depth of water area of land or shares of the flow (Yoder, 1994). User-based allocation requires local institutions with authority to make decisions on water rights. It has been observed that such institutions can develop

spontaneously or through an external catalyst and the institutions are not always in place or strong enough to allocate water efficiently (Meinzen-Dick *et al*, 1997). The institutions to manage the allocation of water need to enforce the rules to avoid excess consumption and waste.

A major advantage of user allocation is the potential flexibility to adapt water delivery patterns to meet local needs. This is because those directly involved in water use, either for agriculture, home consumption or industry, have more information on local conditions than the agency staff possesses as they do not have to rely on rigid formulas for allocation (Dinar *et al*, 2001). For example, certain fields may be given more water than others, based on the water retention capacity. User-based allocation carries with it a degree of equity in water allocation. Thus, for user-based allocation rules to operate efficiently a transparent institutional structure is required and this might not be present among many farmers who use water.

2.4. Conflict management and resolution

There is a long history of conflict and tension over water resources between nations/ states, between communities and within communities (Gleick, 2001). Sources of water conflicts are numerous. Some of the conflict may stem from a drive by one nation, community and individuals to control all the available water resources in an area. The other source of conflict around water is as a result of the inequitable allocation and use of water resources; the result of a regulatory framework that favours one party, or water development projects which may give one party more access to water resources than others (Gleick, 1993, 1998). Water conflicts resulting from control over water resources, that is, where water supplies or access to water is at the root of the tension, have been recorded the world over (Gleick, 1993; Gleick, 1994; Murphy and Sabadell, 1996; Kujinga, 2003).

One of the mandates of stakeholders and their institutions in the water sector is to manage and resolve conflict. All stakeholders are supposed to be involved in this process of conflict management, prevention and resolution. The most important thing is that it should be effectively addressed when it arises. Conflict can both be constructive and destructive. The latter is the one that must be carefully managed, prevented and resolved (Centre for Conflict Resolution, 2001).

There are different ways of managing and resolving conflict. These include negotiation, mediation, cooperative problem solving, and arbitration (CCR, 2001). These conflict management and resolution mechanisms can be applied in water related conflicts. According to the available literature on water resources management (under the newly established stakeholder institutions in countries like Zimbabwe), none of the mentioned conflict resolution methods has been documented. This despite conflict over water scarcity and inequitable allocation.

2.4.1. Negotiation

Negotiation is a voluntary attempt (by parties involved in a conflict) to resolve and manage conflicts that arise from competing needs, interests and goals. It is a problem solving approach in which the parties seek agreement rather than resorting to violence and force. In a situation where relationships are threatened or have been harmed, high mistrust exists and violence has occurred, negotiation as a problem-solving approach is particularly difficult, but all the more relevant (Bloomfield *et al*, 1998). This is mainly because in negotiation, the parties involved in the conflict are the ones who should come together and try to resolve the conflict without a mediator.

2.4.2. Mediation

Mediation on the other hand refers to a process through which a third party provides procedural assistance to help groups or individuals to resolve their differences. The mediator has to be an independent and impartial person who has no decision-making authority. His role would be mainly to structure the process in a way that creates a safe environment for parties to discuss the conflict and find solutions that satisfy their interests (Centre for Conflict Resolution, 2001).

2.4.3. Cooperative problem solving

Cooperative problem solving is an unassisted procedure that includes formal or informal discussions between individuals or groups involved in conflict. With this process, parties work jointly to determine the nature of their differences and look for creative alternatives that will allow them to meet their needs, desires or concerns. Parties using cooperative problem solving do not need to have a strong relationship but they must acknowledge a need to collaborate with one another to solve their differences (Centre for Conflict Resolution, 2001)

2.4.4. Water conflict management in Zimbabwe

In Zimbabwe, there are examples of water conflict, but seldom have the above mechanisms successfully been used. Access to water and its use for agricultural purposes in Zimbabwe is arguably the next most controversial issue in the country - after land distribution and indigenisation/ affirmative action. Recurrent droughts severely impact on the availability of water throughout the country, increasing competition and tension among various water users, particularly among commercial and small scale commercial, resettlement and communal farmers (Chenje and Johnson, 1996: p20).

Bolding (1997 and 1999) noted that the Nyanyadzi river catchment area in the Eastern Highlands of Zimbabwe has more than 100 informal irrigators. Irrigators at Nyanyadzi irrigation scheme use the same water source downstream. The Nyanyadzi irrigation scheme started experiencing water shortages in the 1980s because of decreased flow of water to the scheme due to droughts and the abstractions by upstream informal irrigators.

During May 1994, officials from the Department of Agricultural Technical Extension (Agritex), Natural Resources Board (NRB), the police and some Nyanyadzi irrigation scheme irrigators and labourers went upstream of the Nyanyadzi River and forcefully closed canals of informal irrigators. The canals were closed simply because the upstream informal irrigators were abstracting water from the Nyanyadzi River and its tributaries without formal water rights and were causing water shortages for the irrigation scheme that had a water right. The District Administrator of the area later on condemned this forceful closure. An agreement was then reached that stipulated that informal irrigators upstream will use water for a week and would let it flow to the scheme the next week. This arrangement only worked for a few weeks, as the informal irrigators upstream did not adhere to what was agreed upon (Bolding, 1999).

Most of the documented water conflicts in Zimbabwe happened prior to the enactment of the 1998 Water Act, which put in place Catchment Councils and Subcatchment Councils to assist in the management and resolution of conflicts. Literature on how the new water institutions are managing conflicts could not be located for documentation in this study.

2.5. Paying for water

The argument that water should be treated purely as an economic good, originated at the 1992 Dublin conference in Ireland. However, there are several views regarding the role of water. Access to water is also viewed as a basic human right, a financial obligation, a social necessity and a critical environmental resource. This means that no one should be denied right to water even if he/she does not have the capacity to pay for it. Moreover, there must be water for the environment. These various views make the selection of a set of prices and pricing mechanism that adequately address all the views exceptionally difficult (Abu-Zeid, 2001). The water charges, which users pay, are very important especially if they contribute toward the operation and maintenance of the water supply system. Those who support the idea that water users pay for the water supplied to them argue that payment usually encourage higher efficiency in both the provision and the use of the resources (Abu-Zeid, 2001).

Although the issue of making water users pay could be seen as legitimate, charging users for irrigation water services is a sensitive issue in many parts of the world. This usually involves political, historical, social, religious and economic dimensions. Water beneficiaries, especially farmers, tend to believe that low or zero charges are justified and this belief is usually reflected in their political system (Abu-Zeid, 2001). Though some irrigation farmers do not generally like to pay for water, there is a general belief that the purpose of making farmers pay is to ensure sustainability of services, water conservation, and mitigation of damages (Gorriz *et al*, 1995).

In order to ensure sustainability of water supply and delivery system, continued provision of services is accomplished by generating enough funds to cover the administration, operation, maintenance and replacement of water system facilities. It is thus important that infrastructure for water supply and delivery is sustained at levels that ensure the continued provision of services in order to avoid severe hardships on society (Abu-Zeid, 2001). Financial resources to sustain water services are thus critical and one source of such funds, are the water users themselves. If water users do not pay anything towards the sustainability of water services, it would be difficult to provide efficient service to them.

In Zimbabwe, under the Water Act of 1998, any person who uses water for commercial purposes must pay levies to the ZINWA and the Subcatchment Councils. These payments

should be made irrespective of whether the user receives services from ZINWA and the Subcatchment Councils or not. ZINWA classifies water for commercial purposes as the use of water whereby an individual derives a benefit out of accessing that water (Zimbabwe National Water Authority, 2001). All commercial users thus, require water permits that give them the right to access water. ZINWA also uses these permits to charge the water users its levies (Kujinga, 2002). The water levies paid by commercial water users to ZINWA go into the Water Fund which is administered by the Minister of Rural Resources and Water Development. This money is supposed to be used to fund water related projects such as the construction of dams and development of irrigation schemes (Manzungu, 2001).

The rates paid to the Subcatchment Councils are meant to help them undertake their operations (Kujinga, 2002). In 2004 the ZINWA levy was pegged at Z$500 per mega litre for those who abstract water straight from a river and Z$82 000 per mega-litre for those who use agreement-water from state dams managed by ZINWA or water that is released from these dams (Zimbabwe National Water Authority, 2001). Agreement-water refers to all water released from the Zimbabwe National Water Authority's storage dams. All those who would like to use this water enter into an agreement with the ZINWA who holds permits of all the water stored in these dams (Zimbabwe National Water Authority, 2001).

Commercial farmers who have been paying water charges under the 1976 Act using their water rights did not resist these payments unlike the smallholder irrigation farmers and other communal farmers who use water for commercial purposes (Kujinga, 2002). Most of the smallholder irrigation farmers in the Manicaland area have refused to pay water levies to the ZINWA and Subcatchment Council rates. Their argument was that water is a natural resource that comes from God and not from the government. They also argue that even if they pay, none of that money will be reinvested in their schemes which they have been managing themselves for years without government assistance (Kujinga, 2002). Machingambi and Manzungu (2002) carried out a study in the Save Catchment area and found that most water users in Zimbabwe consider water as a free good.

Ruling party supporters who invaded large-scale commercial farms between 2000 and 2002 negatively affected the payment of water levies by white large-scale commercial

farmers to the ZINWA and Subcatchment Councils *e.g.* most of the commercial farmers who had their farms invaded or designated for resettlement, stopped paying water levies and rates to both the ZINWA and the Odzi Subcatchment Council. The Chairperson of the Odzi Subcatchment Council stated to the Council that there was nothing he could do, since the issue was political. The land invaders on some of the occupied farms vowed that they would use the available water to irrigate their crops even if they did not have water permits (Kujinga, 2002).

It should be realised that the sustainability of water supply and delivery systems to ensure continued provision of services is accomplished by generating enough funds to cover the administration, operation, maintenance and replacement of water system facilities. The funds for this could come entirely from the state budget or from users. However, if none comes from the users, there will be no incentive to conserve water or use it rationally (Abu-Zeid, 2001).

2.6. Summary

This chapter has reviewed literature around stakeholder participation and water management. The chapter has shown that the 1990s witnessed a worldwide shift in conservation and natural resources management away from the costly state-centred approach, towards approaches in which stakeholders play a more active role in the management of resources (Shackleton, *et al*, 2002). Most countries in southern Africa embraced the philosophy of stakeholder participation in water resources management promulgated at the Rio-Dublin conferences (Manzungu, 2001b).

The view taken at the international level is that stakeholder participation in natural resources management, leads to improved decision-making by making the process transparent, inclusive and fair.

A historical overview of water management in Zimbabwe has been documented here. Prior to the promulgation of the 1998 Water Act, stakeholder participation in the management of water resources was limited to large-scale white commercial farmers who held title to land and water rights. The majority of the black farmers who did not hold title to land nor water rights could not legally participate in the management of the country's water resources (Latham, 2002).

The water reform process undertaken in Zimbabwe during the 1990s culminated in the passing of the 1998 Water Act. The reform process resulted in the repealing of the 1976 Water Act and the broadening of stakeholder participation in water management through the establishment of Subcatchment and Catchment Councils. Though stakeholder institutions were set up in Zimbabwe, literature documented so far has shown that stakeholder participation in Zimbabwe's water sector is more of a philosophy than an operational concept (Manzungu, 2002).

This chapter has also reviewed literature on water allocation, payment of costs related to water use and conflict management. Under the water reform programmes undertaken in countries such as Zimbabwe and South Africa, water allocation provisions put in place are meant to achieve equity in the allocation of the resource. A number of water allocation mechanisms are available; these include public allocation, water markets and user-based allocation (Dinar *et al*, 2003).

Literature on conflict management and resolution has shown that there is a long history of conflict and tension over water resources between nations/states, between communities and within communities (Gleick, 2001). It is thus important for effective water governance to ensure that stakeholders have mechanisms in place to deal with emerging water conflicts.

Under the current water reforms embarked on in most southern African countries, water is now being viewed as an economic good and all those who are using it for productive purposes must pay some charges and levies. Water users in Zimbabwe are liable for a number of charges. These include the ZINWA levy and agreement-water charges and Subcatchment Council abstraction and storage charges (The Zimbabwe National Water Authority, 2001). Most stakeholders, especially those in smallholder irrigation schemes and communal farmers, have resisted paying water charges. They argue that water should be a free good. Moreover, payment of water charges in Zimbabwe has been affected by the political climate. Most large-scale white commercial farmers, who previously paid for water, stopped paying when their farms were illegally invaded by ruling party supporters (Kujinga, 2002).

CHAPTER 3: METHODOLOGY

3.1. Introduction

Research can be described as "…systematic and organized effort to investigate a specific problem that need a solution (Sekaran, 1992, p4). It involves serious thought and carefully executed activities that enable one to know how certain problems can be solved or at least minimised. In essence, research provides relevant information required for decision-making. Researchers utilize various methodological paradigms in conducting research. Qualitative and quantitative methods are among the most important research methods. This chapter identifies the research design and methodology employed in collecting data for the study.

3.2. Research design

A research design is simply a framework or plan of study used as a guide in collecting and analyzing data - it is a blueprint that is followed in completing a study. In general, research methods or approaches are divided into two broad divisions: quantitative and qualitative ones. Both methods differ in their orientation to social life and use different techniques in collecting appropriate data for their purposes, yet may also complement one another (Neuman, 2000, p122).

A quantitative approach to research mainly focuses on quantifiable data in terms of numbers and measures that can be analyzed statistically. "Quantitative researchers are more concerned about issues of design, measurement and sample because their deductive approach emphasizes detailed planning prior to data collection and analysis" (Neuman, 2000: p122). In quantitative research validity is concerned with whether or not the study indeed measures that which it is intended to measure and reliability with whether the study can be replicated by other researchers in the same context (Allan, 1991).

In contrast, a qualitative approach to research is not only interested in numerical data that can be used for statistical analysis. In support to this statement, Neuman, (2000, p122) states that:

> Qualitative researchers are more concerned about issues of richness, texture and feeling of raw data because their inductive approach emphasizes developing insight and generalization out of the data collected.

For the purposes of this study, it was decided to utilize both quantitative and qualitative methods although most of the data was collected using the former method. This was done to compliment the two methods in data collection.

3.2.1. Data collection methods

In order to fulfil the objectives of the study, data was collected using structured questionnaires, unstructured interviews and records of attendance of stakeholder meetings. A structured questionnaire contains a lists of questions to which an individual has to respond by choosing his/her best appropriate answer from the options provided (Ogunniyi, 1992). Interviews can be defined as a conversation with a purpose of gathering information (Behr, 1983: 145). Meeting attendance involved the researcher being an observer in stakeholder meetings with the intention of gathering more information on issues about stakeholder participation in water management.

One standard questionnaire was administered to ordinary stakeholders from the agricultural sector (see appendix 1 for the questionnaire). The ordinary stakeholders interviewed included the newly resettled A1 and A2 farmers, large-scale black and white commercial farmers who have been in farming before the commencement of the land reform programme in 2000 and smallholder irrigation farmers. Officials interviewed were from the Department of Agriculture, Research and Extension, ZINWA and Subcatchment Council representatives.

The questionnaire focussed on getting information concerning the general knowledge of stakeholders on water management transformation, water allocation, payment of water and conflict management. See appendix 1 for more details about the questionnaire administered. The unstructured interviews and the meetings attended were aimed at capturing similar information but sought to gather more explanations from selected respondents on the issues under investigation.

A total of 150 questionnaires were administered to ordinary stakeholders. The sample size for each category of stakeholders was decided taking into consideration the total number of the stakeholders in the Middle Manyame Subcatchment area. Table 2 provides

a breakdown of the total number of stakeholders in each category and the sample size taken.

Table 2: Survey sample

Sector	No. of farms	Beneficiaries	Sample size	% of total sample size
A1 farmers	191	6 784	71	47.3
A2 farmers	344	1 134	35	23.3
Smallholder Irrigation	3	180	31	20.3
Large-scale black farmers	13	13	8	5.3%
Large-scale white farmers	19	19	5	3.3
Total	**570**	**8130**	**150**	**100**

Source: Department of Agriculture, Research and Extension

The above table shows that there are more A1 farmers from which a larger sample size was taken. The second largest sample was drawn from A2 farmers. There are only three smallholder irrigation schemes in the Middle Manyame Subcatchment area and it was decided to get some respondents from all these schemes since they were easily accessible. Only five large-scale white commercial farmers were interviewed mainly because most of them are no longer residing on their properties and some were not accessible despite the fact that they were on their farms. Large-scale black commercial farmers were more accessible than the white farmers and thus produced a higher response rate.

Unstructured interviews were conducted with farmers from all categories, officials from the Zimbabwe National Water Authority, Department of Agriculture Research and Extension, Department of Irrigation, District Development Fund and stakeholder representatives on the Middle Manyame Subcatchment Council. In these unstructured interviews, the respondents were asked to comment on issues of water management transformation, water allocation, payment of water charges and conflict management and resolution.

3.2.2. Data analysis

Quantitative data collected was entered into statistical package for social sciences data files (see Appendix 2 for the table of results). Data was analysed using the statistical package for social sciences (SPSS) version 10. The Chi-square test was used to analyse collected data since it was categorical. The chi-square test is a non-parametric procedure

used to test categorical data with a distribution that is not known (Neuman, 2000). Data was analysed according to the categories of farmers (A1, A2, large-scale commercial white and black farmers and smallholder irrigators) at 0.05% significance level. Descriptive statistics were used to summarise data. Cross tabulations were used to compare the different groups of stakeholders with regards to knowledge on water management transformation, participation in water allocation, payment of costs related to water use and conflict management. Data is presented in the form of tables.

Data collected through qualitative methods was analysed using the thematic approach. The themes used include knowledge about water management transformation, stakeholder participation in water allocation, participation in payment of costs related to water use and participation in conflict management and resolution.

3.2.3. Ethical considerations of the study

Ethical issues in research are concerned mainly in balancing the right of people for privacy, safety, confidentiality and protection from deceit with the pursuit of scientific endeavor (Polit and Hungler, 1998). Berg (2001, p. 34) writes that confidentiality is an active attempt to remove from the research records any elements that might indicate the subjects' identities. Thus, it is important to provide participants with a high degree of confidentiality. Researchers commonly assure participants that anything discussed between them will be kept in strict confidence.

In doing this research, permission was sought from the ZINWA and the Middle Manyame Subcatchment Council. The researcher assured the respondents that the study was being conducted solely for academic purposes. Furthermore, confidentiality and anonymity were assured.

3.3. Summary

Data presented in this study was collected through the administration of a questionnaire to all the stakeholders from the five categories mentioned above. The information collected from the questionnaires were complemented with unstructured interviews held with some of the stakeholders, officials from the Zimbabwe National Water Authority, Department of Agriculture, Research and Extension and representatives of the Middle Manyame Subcatchment Council. The researcher also attended stakeholder meetings of the Middle Manyame Subcatchment Council between April and August 2004.

CHAPTER 4: STAKEHOLDER PARTICIPATION IN WATER MANAGEMENT IN THE MANYAME SUBCATCHMENT AREA

4.1. Introduction

This chapter presents and discusses the findings of the data collected from the Middle Manyame Subcatchment area regarding the general knowledge of water management transformation, stakeholder participation in water allocation, stakeholder payment of costs related to water use and participation in conflict management and resolution.

4.2. Knowledge about water management transformation

4.2.1. Knowledge of the 1998 Water Act

Of the 150 questionnaires administered, 31 (20.7%) respondents said that they were aware that there is a new Water Act, which emphasizes stakeholder participation in water management. The other 118 (79.3%) respondents claim that they had never heard anything about the 1998 Water Act. A hypothesis for this question was formulated stating, “Stakeholders have knowledge of the 1998 Water Act”. Results of the Pearson Chi-Square test showed that stakeholders possessed different knowledge on the water act ($p=0.00$). The chi-square test showed that the majority of respondents (79.3%) do not have any knowledge at all about the Water Act of 1998.

The cross tabulations done on stakeholder group and knowledge of the 1998 Water Act showed different results for the different categories. These are represented in Table 3.

Table 3: Knowledge of the Water Act by various stakeholder categories

Stakeholder group	Knowledge of Water Act		Total
	Yes	No	
A1 farmers	2 (2.8%)[5]	69 (97.2%)	71 (100%)
% of total	(1.3%)[6]	(46.0%)	(43.7%)
A2 farmers	5 (14.3%)	30 (85.7%)	35 (100%)
% of total	(3.3%)	(30.0%)	(23.3%)
LSWCFs	5 (100%)	0 (0%)	5 (100%)
% of total	(3.3%)	(0%)	(3.3%)
LSBCFs	5 (62.5%)	3 (37.5%)	8 (100%)
% of total	(3.3%)	(2.0%)	(5.3%)
Smallholder irrigators	14 (45.2%)	17 (54.8%)	31 (100%)
% of total	(9.3%)	(11.3%)	(20.7%)
Total	31 (20.7%)	119 (79.3%)	150 (100%)

As presented in Table 3, knowledge as to the existence of the 1998 Water Act by the majority of stakeholders is very low. The reasons as to why the majority of A1 and A2 farmers do not know about the water act of 1998 are similar. The process of drafting the 1998 Water Act, which was supposed to be participatory with the lowest appropriate level being involved, was mainly top-down (Swatuk, 2002: p50). A number of A1 and A2 farmers in the Middle Manyame Subcatchment area said that they were never involved in the drafting of the current water act; they were also unaware that drafting of a new act was underway. During this process, the majority of A1 and A2 farmers were not consulted nor did they have information about the drafting of the 1998 water act.

Sithole (2001) demonstrates that it was only after the enactment of the new water act, that some efforts were made in catchments such as Mazowe to inform the stakeholders. Swatuk (2002: p50) states that the approach taken in the Zimbabwean water reform process was as a result strict timelines stipulated by donors in setting up the Subcatchment and Catchment Councils. This left insufficient time to consult with the majority of the ordinary stakeholders. The A1 and A2 stakeholders who knew about the Water Act of 1998 said that they had heard about it from various sources such as the media, and informal discussions with officials from the Department of Agriculture, Research and Extension.

[5] This percentage in all the tables represents the percentage within the stakeholder group.
[6] This percentage in all the tables represents the percentage of the responses for the particular question.

The large-scale white commercial farmers are aware of the 1998 Water Act because they were involved in water management under the 1976 Water Act. Some of them even participated in the drafting of the 1998 Water Act, as they wanted to preserve their interests as shown by Kujinga and Manzungu (2004) and Latham (2002). Four of the white commercial white farmers interviewed admitted that they were once members of the Manyame Water Board and attended consultative meetings held during the 1990s, prior to the enactment of the 1998 Water Act. Sithole (2001) shows that most of the meetings to discuss the water act were mainly attended by large-scale white commercial farmers mainly concerned with security of tenure over stored water and how the proposed water allocation system would impact on investment in agriculture. The stakeholders from communal areas who attended such meetings said that they did not understand the act. They referred to traditional methods of using and allocating water and were not aware that any use was illegal (Sithole, 2001, p6).

Some of the large-scale black commercial farmers in Middle Manyame Subcatchment area became aware of the 1998 Water Act only when they were approached by ZINWA officials to pay for water. They were informed about the new water law under which they now have to pay for water. The large-scale black commercial farmers who were unaware of the Water Act of 1998 said they started their farming operations during the 1990s, and were never informed about a new act governing water resources management. Five of the large-scale black commercial farmers interviewed do not reside on their farms. They reside in areas such as Harare where they are either employed or running other businesses. This contributed to them being unaware about the drafting of the Water Act of 1998.

The stakeholders in the smallholder irrigation categories, especially those at Musarurwa and Chomutamba irrigation schemes only became aware of the Water Act of 1998 when they were informed by the Zimbabwe National Water Authorities to obtain water permits. Other stakeholders from the smallholder irrigation-farming category who did not know about the water act said that no authority had informed them about this new development.

4.2.2. Knowledge about Subcatchment Councils

The majority of the stakeholders in the Middle Manyame Subcatchment area are not aware of the Subcatchment Councils that should represent them in water management issues. Only 27 (18%) respondents said that they are aware of the existence of Subcatchment Councils. The other 123 (82%) said they did not know of councils on which they could have representation on water use and management issues. A hypothesis regarding stakeholder knowledge of Subcatchment Councils was formulated stating that stakeholders in the Middle Manyame Subcatchment Council have full knowledge about the existence of Subcatchment Councils. This hypothesis was rejected by the Pearson chi-square test conducted. Results of the chi-square test, showed a significant difference between responses provided. The majority of respondents (82%) do not possess any knowledge of the existence of Subcatchment Councils.

Table 4 shows the number of stakeholders in each category with knowledge about the existence of Subcatchment Councils.

Table 4: Knowledge of Subcatchment Councils by stakeholder category

Stakeholder group	Knowledge of SCCs?		Total
	Yes	No	
A1 farmers	2 (2.8%)	69 (97.2%)	71 (100%)
% of total	(1.3%)	(46.0%)	(47.3%)
A2 farmers	5 (14.3%)	30 (85.7%)	35 (100%)
% of total	(3.3%)	(20.0%)	(23.3%)
LSWCFs	4 (80.0%)	1 (20.0%)	5 (100%)
% of total	(2.7%)	(0.7%)	(3.3%)
LSBCFs	3 (37.5%)	5 (62.5%)	8 (100%)
% of total	(2.0%)	(3.3%)	(5.3%)
Smallholder irrigators	13 (41.9%)	18 (58.1%)	31 (100%)
% of total	(8.7%)	(12.0%)	(20.7%)
Total	27 (18.0%)	123 (82.0%)	150 (100%)

As is the case with regard knowledge of the Water Act, the majority of A1 and A2 farmers in the Middle Manyame Subcatchment area do not know of the existence of the Subcatchment Councils (shown in the table 4 above). This could be attributed to the lack of information transfer from the Subcatchment Council to all the stakeholders in the subcatchment area. This mirrors the drafting process of the 1998 Water Act, in that not

all stakeholders were included. The A1 and A2 farmers, who were aware of the water act, also knew about the Catchment Councils on which they could be represented. An A2 farmer said that he learnt this information though the media while an A1 farmer said he heard about this from an official of the Department of Agriculture, Research and Extension.

The majority of large-scale white commercial farmers have knowledge about the Subcatchment Councils because of their involvement in its formation. Many of these farmers occupy positions in these new institutions. According to a Subcatchment Council representative, the chairperson of the Middle Manyame Subcatchment Council was held by a large-scale white commercial farmer between 1999 and 2002 (see Kujinga, 2002; Dube and Swatuk, 2002; Latham, 2002). The four white commercial farmers said they attended the inauguration of the Middle Manyame Subcatchment Council. The only white large-scale commercial farmer who was unaware of the Subcatchment Council had recently returned from abroad to take up farming on his late father's farm.

As shown in table 4, more large-scale black commercial farmers do not know about the Subcatchment Councils. This is mainly due to their lack of involvement in the drafting of the 1998 Water Act and has similarly not yet heard about the formation of the Middle Manyame Subcatchment Council. Those who know about the existence of the Council learnt this from Zimbabwe National Authority officials.

Smallholder irrigation farmers at the Musarurwa irrigation scheme, who know about the existence of Subcatchment Councils, learnt about its existence from ZINWA officials who visited their schemes in 2002 in connection with water permits and payments. These officials also informed them about the Subcatchment Council and their need to elect respresentation on this forum. Those who do not know the councils did not receive these visits.

Subcatchment Councils, such as the Middle Manyame Subcatchment Council, are aware of the ignorance among the majority of stakeholders regarding its existence, and this issue was discussed at one of its meetings. The vice-chairperson of the Subcatchment Council said that:

It is pointless for us to sit here when in actual fact we are not representing anyone out there. We need to make all the stakeholders aware about our existence so that we can levy them and include them in water management. I think if we employ an outreach officer this would help (01/07/04).

Other councillors felt that although this was a good suggestion, there were no financial nor other resources for them to undertake outreach meetings.

4.2.3. The name of the Subcatchment Council

The 27 respondents who said that they were aware of the existence of Subcatchment Councils were eligible to answer the subsequent three questions. This included naming their Subcatchment Council. Only five (18.5%) respondents were able to do this (see Table 5) for the Middle Manyame catchment. No stakeholders from A1, large-scale black commercial and smallholder irrigation farming categories could name the subcatchment council.

Table 5: Stakeholder knowledge of the name of the Subcatchment Council

Stakeholder group	Name of your Subcatchment Council?				Total
	Lower Manyame	Middle Manyame	Angwa-Rukomechi	Don't know	
A1 farmers	0 (0%)	0 (0%)	2 (100%)	0 (0%)	2 (100%)
% of total	(0%)	(0%)	(7.4%)	(0%)	(7.4%)
A2 farmers	1 (20.0%)	1 (20.0%)	0 (0%)	3 (60.0%)	5 (100%)
% of total	(3.7%)	(3.7%)	(0%)	(11.1%)	(18.5%)
LSWCFs	0 (0%)	4 (100%)	0 (0%)	0 (0%)	4 (100%)
% of total	(0%)	(14.8%)	(0%)	(0%)	(14.8%)
LSBCFs	0 (0%)	0 (0%)	0 (0%)	3 (100%)	3 (100%)
% of total	(0%)	(0%)	(0%)	(11.1%)	(11.1%)
Smallholder irrigators	0 (0%)	0 (0%)	0 (0%)	13 (100%)	13 (100%)
% of total	(0%)	(0%)	(0%)	(48.1%)	(48.1%)
Total	1 (3.7%)	5 (18.5%)	2 (7.4%)	19 (70.4%)	27 (100%)

Most A2 farmers were unable to name of their Subcatchment Council. A number of reasons have been provided for this. Firstly, there has never been an attempt to communicate with the stakeholders about the Middle Manyame Subcatchment Council.

Secondly, the Middle Manyame Subcatchment Council has never considered the new stakeholders, namely A1 and A2 farmers, who needed to be informed of water management issues and the role of the Council.

Most white large-scale commercial farmers know the name of the Subcatchment Councils because they participated in the establishment of the Middle Manyame Subcatchment Council in 1999. One farmer said that between 1999 and 2002, their representative on the Middle Manyame Subcatchment Council held regular feedback meetings informing them about the Subcatchment Council decisions. They were thus enlightened about council issues.

4.2.4. Function of Subcatchment Councils

Among the 27 respondents who were aware of the existence of Subcatchment Councils, 15 (56%) commented on the role of these institutions while 12 (44%) respondents said did not know. The functions of the Subcatchment Councils identified by the respondents are listed in Table 5 below. Although 15 stakeholders were able to identify the functions of the Subcatchment Councils, there are still a substantial number unaware of the role of these institutions.

Table 6: Stakeholder knowledge of major responsibility of Subcatchment Councils

Stakeholder group	Major responsibility of the Subcatchment Council					Total
	Allocate water	Resolve conflicts	Conserve water	Don't know	Water management	
A1 farmers	0 (0%)	1 (50%)	0 (0%)	0 (0%)	1 (50%)	2 (100%)
% of total	(0%)	(4.0%)	(0%)	(0%)	(4.0%)	(7.4%)
A2 farmers	0 (0%)	0 (0%)	0 (0%)	5 (100%)	0 (0%)	5 (100%)
% of total	(0%)	(0%)	(0%)	(18.5%)	(0%)	(18.5%)
LSWCFs	1 (25%)	0 (0%)	1 (25%)	0 (0%)	2 (50%)	4 (100%)
% of total	(3.7%)	(0%)	(3.7%)	(0%)	(7.4%)	(14.8%)
LSBCFs	2 (66.7%)	0 (0%)	(0%)	1 (33.3%)	0 (0%)	3 (100%)
% of total	(7.4%)	(0%)	0 (0%)	(3.7%)	(0%)	(11.1%)
Smallholder irrigators	2 (15.4%)	0 (0%)	2 (15.4%)	7 (53.8%)	2 (15.4%)	13 (100%)
% of total	(7.4%)	(0%)	(7.4%)	(25.9%)	(7.4%)	(48.1%)
Total	5 (18.5%)	1 (3.7%)	3 (11.1%)	13 (48.1%)	5 (18.5%)	27 (100%)

The hypothesis generated for this section stated "stakeholders who have knowledge of Subcatchment Councils know what their major functions are". Results of the chi-square test done showed that more than half (55.5%) of the stakeholders have some knowledge ($p=0.16$) of what the functions of the Subcatchment Councils are.

Even though more than half the stakeholders who know about the functions of the Subcatchment Councils, none of the A2 respondents could answer this question. As previously mentioned, this could be attributed to the failure of the Middle Manyame Subcatchment Council to ensure that all stakeholders were aware of its existence and functions. This is further exacerbated by the absence of these farmers in the drafting of the 1998 Water Act and establishment of Subcatchment Councils.

Other categories such as the A1 farmers, large-scale black commercial farmers and smallholder irrigators have some respondents who knew what the functions of the Subcatchment Council are. The A1 farmer who answered positively had read about the role of the council in the media. The A1 farmer who did not know the function of the Subcatchment Councils gave the following response:

"I think the idea behind the establishment of these Subcatchment Councils was not to benefit water users but to enable a few prominent people to misuse funds which they control".

The large-scale black commercial farmers felt that the officials from ZINWA informed them that water allocation was the major function of Subcatchment Council. One of the farmers was told by an official from the ZINWA that if he wanted to abstract water from a river nearby, he has to apply to the Subcatchment Council. Those large-scale black commercial farmers, who do not know the council's functions, never had this explained to them.

The interviewed smallholder irrigators who knew the functions of the Subcatchment Councils learnt this through their local agricultural extension workers who assisted their scheme to obtain a water agreement. During the processing of the papers for this agreement, the issue of the existence and functions of Subcatchment Councils was raised. They do however mention that it was never taken seriously.

Again, the knowledge and understanding about the functions of Subcatchment Councils by large-scale white commercial farmers was attributed to their participation in the formation of these institutions in 1999. Moreover, white commercial farmers discussed issues pertaining to the Subcatchment Councils in their Commercial Farmers Union meetings between 1999 and 2002.

4.2.5. Representation on the Middle Manyame Subcatchment Council

Table **7** shows the responses generated from the 27 respondents when asked whether they knew who was representing them on the Middle Manyame Subcatchment Council.

Table 7: Knowledge of representatives on the Middle Manyame Subcatchment Council

Stakeholder group	Know your representative on the Middle Manyame Subcatchment Council?		Total
	Yes	No	
A1 farmers % of total	0 (0%) 0 (0%)	2 (100%) (7.4%)	2 (100%) (7.4%)
A2 farmers % of total	2 (40.0%) (7.4%)	3 60.0%) (11.1%)	5 (100%) (18.5%)
LSWCFs % of total	2 (50.0%) (7.4%)	2 (50.0%) (7.4%)	4 (100%) (14.8%)
LSBCFs % of total	1 (33.3%) (3.7%)	2 (67.7%) (7.4%)	3 (100%) (11.1%)
Smallholder irrigators % of total	3 (23.1%) (11.1%)	10 (76.9%) (37.0%)	13 (100%) (48.1%)
Total	8 (29.6%)	19 (70.4%)0	27 (100%)

As shown in the above table, the study revealed that few respondents (29.6%) know whom their representatives on the Middle Manyame Subcatchment Council were while 70.4% could not provide an answer. None of the A1 farmers knows their representatives on the Council. The reason for this was that the representatives were not democratically elected. The representative of A1 farmers also admitted that he has never made an effort to meet the people he was representing.

The A2 farmers who answered positively to knowing their representatives, learnt about this through a farming field day at a neighbouring farm where the person was mentioned. Even though they knew they had representation, the person was never met or tried to communicate council issues. Those in the 'did not know' category stated that they were unaware that they needed representation on the Middle Manyame Subcatchment Council.

As shown in Table 7, only half the large-scale white commercial farmers know their representatives. According to this representative, some white farmers no longer know their representative because of the impacts of the land reform programme. Prior to the reform programme, they used to meet regularly at their Commercial Farmers Union meetings where the representative would discuss Subcatchment Council issues with other farmers. This has ceased since the Commercial Farmers Union no longer exists.

The smallholder irrigators of Musarurwa irrigation scheme who knew their representative on the Middle Manyame Subcatchment Council was informed an official of the Department of Agriculture Research and Extension. A ward councillor in the Zvimba Rural District Council represented them on the Subcatchment Council. Although the councillor resides in the same area, he has never visited the irrigation scheme to discuss possible issues to be raised at council. One respondent from the Musarurwa Irrigation scheme stated they had no representation on the Middle Manyame Subcatchment Council. This is despite the fact that the above-mentioned councillor is the representative. Similarly, the councillor is an irrigation farmer at Kutama smallholder irrigation scheme in his locality, but all the respondents here stated that they did not know their representative on the Middle Manyame Subcatchment Council.

Some of the representatives on the Middle Manyame Subcatchment Council are aware that they are not known to the people they are representing. One Middle Manyame Subcatchment Council representative for communal farmers said:

> *"I have never gone around the Subcatchment area to meet the people that I represent mainly because of lack of time and resources to do so. I should have been introduced to the people, but this did not happen".*

The fact that very few respondents know their representatives on the Middle Manyame Subcatchment Council shows that they are not in regular contact. All the categories of stakeholders interviewed have representation on the Middle Manyame Subcatchment Council. Kujinga and Manzungu (2004) indicated that most Subcatchment Council representatives are more interested in the travel and subsistence allowances when attending Subcatchment Council meetings than making themselves visible to the people they represent. All the 5 meetings of the Middle Manyame Subcatchment Council attended revealed that the issue of travel and subsistence allowances for the councillors ranked among the most debated issues[7]. Most of the officials interviewed using unstructured interviews said that the Subcatchment Council has no financial resources to allow the representatives to go around in their constituencies to hold meetings. This also explains the lack of feedback meetings with stakeholders.

[7] This was observed by the research in the monthly meetings of the Middle Manyame Subcatchment Council for meetings held in May, June, July and August 2004. These issues were not captured in the official minutes of the Subcatchment Council by the minute taker.

All of the stakeholders who know their representatives question their election onto this Council. According to the law, each stakeholder group is supposed to elect one or two representatives each year on the Subcatchment Council (Sithole, 2001; Zimbabwe, 2000). One stakeholder from the smallholder irrigation sector said that:

> *This so called representative on the Middle Manyame Subcatchment Council was supposed to be elected by us the farmers and yet we do not know how he was chosen. We just heard that he represents us on the Middle Manyame SCC but we have never met him.*

The representatives for A1, A2 and smallholder irrigation farmers were either seconded from Zvimba Rural District Council or co-opted on the Subcatchment Council without the knowledge of the ordinary stakeholders. The representative of smallholder irrigation farmers is a councillor in the Zvimba Rural District Council who was seconded to the Subcatchment Council. The A1 farmers' representative was seconded from the ruling party, the Zimbabwe African National Union Patriotic Front (ZANU PF) without the involvement of the stakeholders. Kujinga (2002) observed a similar method of selecting representatives for the Odzi Subcatchment Council when it was decided that the Zimbabwe Farmers Union would represent all the communal stakeholders in the subcatchment area. This was despite the fact that Zimbabwe Farmers Union did not have effective structures on the ground and that not all communal farmers were members of this organization.

Since the majority of stakeholders in Middle Manyame Subcatchment area do not know about the water act, Subcatchment Councils, and their representatives, none of them have ever participated in any council activities. Only the four large-scale white commercial farmers mentioned that they participated in council activities. This demonstrates the absence of wider participation.

The white large-scale commercial farmers were the only category that participated in the formation of the Middle Manyame Subcatchment Council in 1999. Between 1999 and 2002, these farmers would discuss issues such as water allocation, pollution and water conservation with their representative, which in turn would be taken up with the

Subcatchment Council. The four large-scale white commercial farmers last actively participated in Middle Manyame Subcatchment Council in 2002 when the Commercial Farmers Union was still in existence. However, subsequent to the implementation of the land reform programme, their participation ceased.

4.2.6. Summary

It has been indicated that the majority of respondents do not have knowledge of the 1998 Water Act (79.3% of the respondents). As has been mentioned before, most of the stakeholders do not know about the 1998 Water Act, mainly because the process of drafting this act was to a large extent non participatory (Manzungu, 2004).

The majority of the respondents from the A1, A2, large-scale black commercial farmers and smallholder irrigator categories demonstrated that they are unaware as to the existence of Subcatchment Councils. This is because they were not given the opportunity to participate in the formulation of the 1998 Water Act and the formation of Subcatchment Councils. The situation has been worsened by the fact that the Middle Manyame Subcatchment Council has not been able to communicate with all the stakeholders about its existence and activities. The large-scale white commercial farmers are the only group to have participated in its formation through the Commercial Farmers Union.

Stakeholders from the A1, A2, large-scale black commercial farmers and smallholder irrigators are not aware of the name of their Subcatchment Council, because of the absence of contact between the two. On the contrary, large-scale white commercial farmers are knowledgeable because of their participation in the formation of the Middle Manyame Subcatchment Council in 1999 and through the contacts they had with their representatives between 1999 and 2002.

More than half of the respondents who are familiar with the existence of the Subcatchment Councils were able to state the major functions of these institutions. Though this is the case, they have not been given an adequate opportunity to participate in its activities. Some stakeholders still do not know the major functions of the Middle Manyame Subcatchment Council.

As presented here, almost all the categories of stakeholders are not properly represented on the Middle Manyame Subcatchment Council. The large-scale white commercial farmers seem to be the only group that have proper representation since they held regular meetings that discussed water management issues at the Commercial Farmers Union. This highlights the importance of local organizations for other categories of stakeholders, which could facilitate participation. Alternatively, stakeholders in a particular area can form their own water user associations as enshrined in the Water Act of South Africa, which will then facilitate stakeholder participation (South Africa, 1998).

The lack of knowledge about the water act and Subcatchment Councils makes it difficult for stakeholders to meaningfully participate in the governance of water resources (Manzungu, 2004). All the findings presented in this section bear testimony to a breakdown in governance of water resources in Zimbabwe, particularly in the Middle Manyame Subcatchment area.

4.3. Stakeholder participation in water allocation

4.3.1. Involvement of stakeholders in irrigation farming

In the area of water allocation, it emerged that although some stakeholders are using water for productive purposes they are not participating in its allocation. The study also revealed that the Middle Manyame Subcatchment Council is not playing a pivotal role in ensuring that all stakeholders are involved in the equitable allocation of water. Table 8 gives a breakdown of stakeholders who are currently irrigating.

The majority of the respondents indicated that they are irrigating. This is confirmed by the fact that out of the 150 respondents, 62.7% of stakeholders from all categories are irrigating while 37.3% are not irrigating (Table 8). Results of the chi-square test conducted indicated a significance difference between farmers irrigating and those who are not irrigating ($p=0.00$).

Table 8: Stakeholders and irrigation farming

Stakeholder group	Are you currently irrigating?		Total
	Yes	No	
A1 farmers	40 (56.3%)	31 (43.7%)	71 (100%)
% of total	(26.7%)	(20.7)	(47.3%)
A2 farmers	11 (31.4%)	24 (68.6%)	35 (100%)
% of total	(7.3%)	(16.0%)	(23.3%)
LSWCFs	5 (100%)	0 (0%)	5 (100%)
% of total	(3.3)	(0%)	(3.3%)
LSBCFs	7 (87.5%)	1 (12.5%)	8 (100%)
% of total	(4.7%)	(0.7%)	(5.3%)
Smallholder irrigators	31 (100%)	0 (0%)	31 (100%)
% of total	(20.7%)	(0%)	(20.7%)
Total	94 (62.7%)	56 (37.3%)	150 (100%)

The findings presented in Table 8 show that most of the farmers in the A1 and A2 categories are not irrigating. However, the majority of the non-irrigators are in the A2 category. Those resettled farmers who are irrigating, such as the A1 and A2, managed to protect irrigation infrastructure from theft and vandalism (Utete, 2003). According to three officials from the Department of Agriculture, Research and Extension, former commercial farmers who were protesting the acquisition of their farms by the government for resettlement vandalized most of the irrigation infrastructure. Other valuable equipment was taken for re-sale.

As shown in Table 8, all respondents from large-scale white commercial farmer category are irrigating. Stakeholders in this category have always had access to water for productive purposes since the colonial period. A respondent from the white commercial farmer category stated that the majority of white farmers managed to invest in irrigation equipment and dams with loans obtained from financial institutions.

Seven (87.5%) large-scale black commercial farmers are irrigating mainly because they acquired farms formerly owned by white farmers and equipped with the irrigation infrastructure and available water. One of the black commercial farmers concurs that when he purchased his farm in the late 1990s, it already had the necessary irrigation infrastructure.

All the respondents from the smallholder irrigation category are irrigating because they are members of formal irrigation schemes established by the government. Schemes such as Musarurwa, Kutama, and Chomutamba were deliberately set up by the government to enable some of the communal farmers to have access to water for productive purposes.

Although there are 37.3% of the respondents not irrigating, all of them (100%) have access to water. Table 9 highlights the reasons why some of the farmers are not irrigating.

Table 9: Reasons for not irrigating

Stakeholder group	Why are you not irrigating?		Total
	No irrigation infrastructure	Being denied access to water by fellow farmer	
A1 farmers % of total	28 (100%) (50%)	0 (0%) (0%)	28 (100%) (51.9%)
A2 farmers % of total	16 (64%) (28.6%)	9 (36.0%) (16.7%)	25 (100%) (46.3%)
LSBCFs % of total	1 (100%) (1.9%)	0 (0%) (0%)	1 (100%) 1.9%
Total	45 (83.3%)	9 (16.7%)	54 (100%)

Table 9 shows that the majority of stakeholders (83.3%) not irrigating, have access to water, but lack irrigation equipment such as pumps, pipes and sprinklers. As previously mentioned, in the case of A1 and A2 farmers, the irrigation infrastructure went missing at the height of the fast track land reform programme in 2000 and 2001. The other 16.7%, all A2 farmers, are not irrigating because fellow farmers are denying them access to water. The large-scale black commercial farmer who is not irrigating was concentrating on livestock production and therefore not a priority on his farm.

4.3.2. Stakeholder knowledge of water allocation

The respondents not irrigating were not required to answer the other questions on water allocation. It was assumed that since they are not irrigating, they do not have interest in issues around allocation of water. Table 10 summarises the knowledge of different stakeholder categories as to who are currently irrigating and how the water is allocated to the farm. The majority of the respondents who are involved in irrigation farming said that

they do not know how water is allocated to all the farms in the area (54.3% of the irrigators).

Table 10: Stakeholders' knowledge of water allocation

Stakeholder group	Do you know how water is allocated		Total
	Yes	No	
A1 farmers	11 (25%)	30 (75%)	40 (100%)
% of total	(10.6%)	(31.9%)	(42.6%)
A2 farmers	11 (100%)	0 (0%)	11 (100%)
% of total	(11.7%)	(0%)	(11.7%)
LSWCFs	5 (100%)	0 (0%)	5 (100%)
% of total	(5.3%)	(0%)	(5.3%)
LSBCFs	6 (85.7%)	1 (14.3%)	7 (100%)
% of total	(6.4%)	(1.1%)	(7.4%)
Smallholder irrigators	11 (35.5%)	20 (64.5%)	31 (100%)
% of total	(11.7%)	(21.3%)	(33.0%)
Total	43 (45.7%)	51 (54.3%)	94 (100%)

The A1 (10.6%) farmers who knew how water was allocated in their area are from two separate farms utilising the same borehole. These farmers farm collectively to take advantage of the centre pivots and sprinklers they inherited from the previous white owners. The officials from the Department of Agriculture Research and Extension who oversee operations at these two farms decided that each farm would have water for twenty-four hours, before allowing the other farm access to the water. This arrangement makes it possible for farmers to have knowledge about how water was being allocated to their farms.

Other A1 farmers do not know how water is allocated to the farms because officials from the Department of Agriculture and Research and Extension are the ones who allocate water on their behalf. Moreover, most A1 farmers have just been resettled and do not have adequate information about water allocation. Magadlela (2000) found that the Department of Agriculture Research and Extension officials in smallholder irrigation schemes have more information about water allocation than the farmers. Sithole (2001) states that most irrigators, with the exception of large-scale white and black commercial farmers, just utilise water without knowing how the resource is allocated.

As shown in Table 10, all respondents from the A2 farming category who are irrigating have knowledge about water allocation because most of them abstract water from dams shared by different farmers. The water in these dams either come from tributaries of the Manyame River or small streams. Since more than two A2 farmers can share a single dam, this allowed most farmers to familiarise themselves with the allocation mechanisms that have developed because of this arrangement. On some of the farm dams visited, there could be five pumps of varying capacities stationed at different points abstracting water. Each farmer just knows that the other has a right to abstract water. Those A2 farmers who receive agreement-water or water released for them from the ZINWA dams are informed of their allocation, as well as the days and times they get their water. These farmers have pumps along rivers such as the Manyame from where they pump the water.

All respondents from the large-scale white commercial farmer category are aware of how water is allocated because they are members of local level water syndicates in the Middle Manyame Subcatchment area. These organizations developed and managed some water bodies for their personal benefit. A farmer who owns a farm called Wakefield, stated that his farm received water from a dam located along Falcon stream, a tributary of the Manyame River. The dam was built in 1983 by a syndicate[8] of three farmers (including the respondent). The capacity of the dam is 3648.8 megalitres. Each farmer has access to 912.2 megalitres per year when there is no drought. The remaining 912.2 megalitres is for evaporation. The farmers have a dam manager who is responsible for maintaining the dam and keeping records of water abstracted by each farmer. Each owner has pumps to abstract water from the dam. At the start of each agricultural season or during periods of water shortage, the farmers convene a meeting where they agree on an equal allocation. Since the three farmers started accessing water from the Falcon dam, they have not experienced major allocation problems as the resource is shared equally.

Some of the large-scale white commercial farmers receive agreement-water from the ZINWA dams such as Mazvikadei and Darwendale. The agreements stipulate their allocation and how they receive it.

Large-scale black commercial farmers have knowledge about water allocation mainly because they have private dams on their farms from which they abstract the water they

[8] Association of commercial farmers established to manage water at a local level.

require. These respondents said that they ensure that their farms get sufficient water. This gives them the opportunity to know how water is allocated in the area. There are also large-scale black commercial farmers with Zimbabwe National Water agreements, accessing water from the Mazvikadei and Darwendale dams. These farmers know their allocation and the days and times, they are allowed access. The farmer who was unsure of water allocation felt that issues such as these were the responsibility of his farm manager.

Smallholder irrigation farmers who are knowledgeable of water allocation are mostly members of water management committees of the three schemes, namely Kutama, Musarurwa and Chomutamba. They work closely with the officials from the Department of Agriculture Research and Extension or District Development Fund (in the case of Kutama) who ensure that the schemes abstract adequate water from the Manyame River. These stakeholders said that their water comes from Darwendale dam, but it is used by other irrigation schemes and farms in the area as well.

Those smallholder irrigation farmers who do not know much about water allocation were not concerned as to how they received the water, as long as they had adequate water for their crops. One farmer said

> *"It is the business of the Department of Agriculture Research and Extension and our Irrigation Management Committee to know all about water allocation. They must ensure that my field has water. That is why they are there. I must not be worried about who else is using this water"*

This subsection has shown that there are different water sources and allocation mechanisms for the various stakeholder categories in the Middle Manyame Subcatchment area. All the categories appear to be getting the required amount of water. However, should the resource come under stress from increased abstraction, allocation problems might be encountered.

4.3.3. Equitable allocation of water

Although more than half of the respondents do not know how water is allocated, 71.3% felt that they are getting an equitable share of the water available in their areas. This was

attributed to the fact that they rarely experience water shortages. Table 11 summarises the responses to the question of fair allocation.

Table 11: Fair allocation of water to stakeholders

Stakeholder group	Does farm scheme get a fair allocation of water?			Total
	Yes	No	Not sure	
A1 farmers	39 (97.5%)	1 (2.5%)	0 (0%)	40 (100%)
% of total	(41.5%)	(1.1%)	(0%)	(42.6%)
A2 farmers	2 (18.2%)	4 (36.4%)	5 (45.5%)	11 (100%)
% of total	(2.1%)	(4.3%)	(5.3%)	(11.7%)
LSWCFs	4 (80.0%)	0 (0%)	1 (20.0%)	5 (100%)
% of total	(4.3%)	(0%)	(1.1%)	(5.3%)
LSBCFs	4 (57.1%)	0 (0%)	3 (42.9%)	7 (100%)
% of total	(4.3%)	(0%)	(3.2%)	(7.4%)
Smallholder irrigators	18 (58.1%)	3 (42.9%)	10 (32.3%)	31 (100%)
% of total	(19.1%)	(3.2%)	(10.6%)	(33.0%)
Total	67 (71.3%)	8 (8.5%)	19 (20.2%)	94 (100%)

From Table 11, it is evident that most stakeholders except the A2 farmers feel that they are receiving a fair allocation of water. Large-scale white commercial farmers and some black commercial farmers felt this way because they have information about the available water in their dams (as in the case of the Wakefield farm owner). These farmers keep records of the amount each farmer is using. Those farmers using agreement-water felt that water allocation was fair, because they are receiving what they would have paid for.

Farmers from A1 and smallholder irrigator categories felt they were getting a fair allocation mainly because water shortages are rare. An A1 farmer was quoted as saying:

> *"If I was getting less water for my crops, that is when I was going to say that I am not getting a fair allocation of water. Maybe with more farmers coming in as a result of the land reform programme we will be soon be talking about fair share".*

The farmers are generally happy with the allocation since the catchment has sufficient water for all users.

A number of organizations were cited as being the owners of water sources from where different stakeholders draw their water. These organizations include Zimbabwe National Water Authority, Department Agriculture Research and Extension, farmers' syndicates, smallholder irrigators, A1 farmers, Ministry of Water, Natural Resources Board and Irrigation Management Committees. The majority of stakeholders, especially the A1 category (65%), said that the Ministry of Water through the District Development Fund, allocates water to them; 45% of smallholder irrigators received their allocation from the Zimbabwe National Water Authority; 60% of the large-scale white commercial farmers allocation is done by farming syndicates; 63% of the A2 farmers did their own water allocation.

4.3.4. Participation in water allocation meetings

Most (89.4%) respondents involved in irrigation farming never attended water allocation meetings. These meetings are for irrigators from surrounding farms who take water from a common source. Only 10 (10.6%) respondents have attended at least one meeting. Table 12 illustrates the percentage stakeholders in each category who have attended water allocation meetings. Large-scale white commercial farmers have the highest attendance record usually because they are arranged by water syndicates.

Table 12: Stakeholder attendance of water allocation meetings

Stakeholder group	Ever attended a water allocation meeting?		Total
	Yes	No	
A1 farmers % of total	3 (7.5%) (3.2%)	37 (92.5%) (39.4%)	40 (100%) (42.6%)
A2 farmers % of total	2 (18.2%) (2.1%)	9 (81.8%) (9.6%)	11 (100%) (11.7%)
LSWCFs % of total	5 (100%) (5.3%)	0 (0% (0%)	5 (100%) (5.3%)
LSBCFs % of total	1 (14.3%) (1.1%)	6 (85.7%) (6.4%)	7 (100%) (7.4%)
Smallholder irrigators % of total	0 (0%) (0%)	31 (100%) (33.0%)	31 (100%) (33.0)
Total	11 (11.7)	83 (88.3)	94 (100%)

The three A1 respondents attended water allocation meetings organized by officials from the Department of Research and Extension. The meetings were attended by farm committee members from two farms that share the same borehole.

A2 stakeholders who attended water allocation meetings wanted to discuss how they could share water in the farm dams and the irrigation infrastructure. The meetings were organized by farm committees.

The large-scale black commercial farmer who indicated attending a water allocation meeting was invited to a water syndicate meeting of white commercial farmers. These farmers had invited him to be part of the syndicate since all were utilizing a common source.

Stakeholders who never attended water allocation meetings indicated that these were never organized. The absence of water allocation meetings at the local level demonstrates that the participation of stakeholders in this area (Middle Manyame Subcatchment) is limited. These meetings are open gatherings used to present information and exchange views on specific aspects; the stakeholders could view this as a legitimate form of communication (Department of Water and Forestry, 2001).

4.3.5. Water allocation and application of water permits and agreements

As shown in Table 13 below, 57.4% of the respondents never applied for water permits or the ZINWA agreements to use water. Permits are issued by Catchment Councils such as the Manyame Catchment Council with recommendations from the Subcatchment Council and Catchment Manager. According to the 1998 Water Act, the Catchment Manager can issue water permits without the approval of the Catchment Council (Zimbabwe, 1998). The ZINWA issues water-agreements.

It emerged that of the 94 irrigators, 13.8% have water permits and 17% have ZINWA agreements. This implies that 28.7% of the respondents are certain that they have legal documents for water use. A small component (13.8%) of the irrigators were unsure about whether they were using water legally or illegally.

Table 13: Type of water use documents held by stakeholders

Stakeholder group	What do you have?				Total
	Water permit	ZINWA agreement	Nothing	Don't know	
A1 farmers	0 (0%)	0 (0%)	38 (95%)	2 (5%)	40 (100%)
% of total	(0%)	(0%)	(40.4%)	(2.1%)	(42.6%)
A2 farmers	1 (9.1%)	3 (27.3%)	4 (36.4%)	3 (27.3%)	11 (100%)
% of total	(1.1%)	(3.2%)	(4.3%)	(3.2%)	(11.7%)
LSWCFs	4 (80%)	1 (20%)	0 (0%)	0 (0%)	5 (100%)
% of total	(3.2%)	(1.1%)	(0%)	(0%)	(5.3%)
LSBCFs	2 (28.6%)	2 (28.6%)	3 (42.9%)	0 (0%)	7 (100%)
% of total	(2.1%)	(2.1%)	(3.2%)	0 (0%)	(7.4%)
Smallholder irrigators	5 (16.1%)	10 (32.3%)	8 (25.8%)	8 (25.8%)	31 (100%)
% of total	(5.3%)	(10.6%)	(8.5%)	(8.5%)	(33.0%)
Total	12 (13.8%)	16 (17.0%)	53 (57.4%)	13 (13.8%)	94 (100%)

No A1 farmer respondents have water permits or the ZINWA water agreements. The majority of the A1 farmers indicated that they are unaware they are supposed to have water permits to use water. Some did not want the permits mainly because they will be required to pay various water charges. It is important to note that most of the A1 farmers in communal areas do not have knowledge about legal documents such as water permits (Kujinga, 2003).

The A2 farmers with water agreements obtained these documents to be ensured of a reliable supply of water. If they had not obtained these documents, they were not going to be in a position to farm during winter. The large-scale black commercial farmers and smallholder irrigators using agreement-water provided similar reasons. Those respondents from the A2 category not in possession of documentation believed it to be unimportant.

Most large-scale white commercial farmers have had legal documents since the colonial era to use water (Kambudzi, 1997). When white farmers wanted to develop dams on their farms under the 1976 water act, they had to apply for water rights documents. This urged most of them to acquire water rights, which were then changed to water permits under the 1998 water act.

Most A2 and large-scale white and black commercial farmers in possession of water permits and water-agreements had applied for these documents on their own at ZINWA offices in Harare without going through the Middle Manyame Subcatchment Council first. Smallholder irrigation farmers, who have water agreements documents, made their applications via the Irrigation Management Committees or Department Agriculture Research and Extension officials. Applications were also directed to ZINWA Manyame Catchment offices in Harare.

According to the Water Act of 1998, water permits are approved by Catchment Council with recommendations from the ZINWA and Subcatchment Councils under whose jurisdiction the water is to be abstracted. However, the same act states that the Catchment Manager, who is an employee of the Zimbabwe National Water Authority, can approve water permits when the Catchment Council is not sitting (Zimbabwe, 1998). Since the Catchment Manager could approve water permits, this means that participation by stakeholders is stifled.

The majority of the respondents, as shown in table 14 below, felt that they are not familiar with the process of applying for water permits and agreements.

Table 14: Stakeholders' knowledge of applying for water permits/agreements

Stakeholder group	Know process of applying for a permit/agreement			Total
	Yes	No	Not sure	
A1 farmers	0 (0%)	36 (90%)	4 (10%)	40 (100.0%)
% of total	(0%)	(38.3%)	(4.3%)	(42.6%)
A2 farmers	2 (18.2%)	9 (81.8%)	0 (0%)	11 (100.0%)
% of total	(5.3%)	(9.6%)	(0%)	(11.7%)
LSWCFs	5 (100%)	0 (0%)	0 (0%)	5 (100.0%)
% of total	4.3%)	(0%)	(0%)	(5.3%)
LSBCFs	4 (57.1 %)	3 (42.9%)	0 (0%)	7 (100.0%)
% of total	(4.3%)	(3.2%)	(0%)	(7.4%)
Smallholder irrigators	0 (0%)	31 (100%)	0 (0%)	31 (100.0%)
% of total	(0%)	(33.0)	(0%)	(33.0%)
Total	11 (11.7%)	84 (84.0)	4 (4.3%)	94 (100.0%)

As represented in Table 14 above, 84% of the irrigators do not know the process of applying for water permits and water agreements. Reasons provided are mainly due to a

lack of instruction. Applications for documentation among respondents from smallholder irrigation schemes were submitted by officials from the Department of Agricultural, Research and Extension. One of the stakeholder representatives of the Middle Manyame Subcatchment Council is quoted: “Since there has never been contact between the Council and the grassroots, it has been impossible for the ordinary people to know how they could apply for water permits and agreements”.

The 11 respondents familiar with the process of applying for the water permits and agreements had submitted applications. The process is summarised as follows: (1) visit the Zimbabwe National Water Authority, Manyame Catchment Council offices in Harare to collect the application forms (2) the applicant must appoint an engineer to draw a plan on how the water will be abstracted (3) application is returned to ZINWA offices in Harare, which will then send a hydrologist to assess water availability and if it could be abstracted through the proposed means (4) the hydrologist will make their recommendations and the application is passed on to the catchment manager who has to issue the permit. None of the applicants really experienced problems when undertaking the process.

4.3.6. Water allocation problems

A number of water allocation problems have been identified. However, more than half the respondents felt that they are not facing major water allocation problems. Among the major problems cited are the high costs of water charged by the ZINWA for both the water permits and agreements. Table 15 highlights the water allocation problems experienced by stakeholders in the Middle Manyame Subcatchment area.

Table 15: Water allocation problems

Stakeholder group	Water allocation problems				Total
	High water charges	No problems	Irrigation System failure	Sharing of irrigation infrastructure	
A1 farmers	0 (0%)	18 (45%)	20 (50%)	2 (5%)	40 (100%)
% of total	(0%)	(19.1%)	(21.3%)	(2.1%)	(42.6%)
A2 farmers	5 (45.5%)	6 (51.5%)	0 (0%)	0 (0%)	11 (100%)
% of total	(5.3%)	(6.4%)	(0%)	(0%)	(11.7%)
LSWCFs	3 (60%)	2 (40%)	0 (0%)	0 (0%)	5 (100%)
% of total	(3.2%)	(2.2%)	(0%)	(0%)	(5.3%)
LSBCFs	2 (28.6%)	5 ((71.4%)	0 (0%)	0 (0%)	7 (100%)
% of total	(2.1%)	(5.3%)	(0%)	(0%)	(7.4%)
Smallholder irrigators	3 (9.7%)	24 (77.4%)	4 (12.9%)	0 (0%)	31 (100%)
% of total	(3.2%)	(25.5%)	(4.3%)	(0%)	(33%)
Total	13 (13.8%)	55 (58.5%)	24 (25.5%)	2 (2.1%)	94 (100%)

The majority of the respondents (58.5%) feel that there are no major water allocation problems because they are receiving sufficient water for their crop requirements.

Irrigation system breakdown was identified by 25.5% of the respondents as being a major problem. They cannot irrigate when the water pumps or other components of the system break down. Repairs can take a few days, thus affecting the allocation of water to the scheme.

A small percentage of the irrigators (13.8%) feel that they are paying too much. Furthermore, eight of the respondents revealed their unhappiness about the ZINWA not ploughing money into water development.

Another problem observed downstream of Darwendale dam is illegal abstraction of water meant for those with water agreements. An example involves stakeholders from Musarurwa, Kutama and Chomutamba irrigation schemes. Musarurwa is the only scheme with a water agreement and is positioned downstream of Kutama and Chomutamba irrigation schemes. The ZINWA releases water for Musarurwa scheme from the dam regularly but part of the water is illegally pumped by Chomutamba and Kutama schemes. ZINWA and the Middle Manyame Subcatchment Council have never tried to stop the

illegal abstraction of water. A farmer from the Musarurwa irrigation scheme felt that the Authority would remain happy as long as they received the full cost of the released water. Particularly during winter, when the demand for water is high, the Musarurwa scheme runs short of water. This problem will persist as long as the stakeholders at the Musarurwa irrigation scheme do not get the Authority to take action against illegal users.

The fact that anyone can pump water demonstrates the lack of participation in its equitable allocation. If the other two schemes can be convinced to apply for permits, then each scheme would receive its fair share of the water resources.

A further water allocation problem is a result of the subdivision of formerly large-scale farms for resettlement purposes. Some of the farmers who were resettled on farms with dams and irrigation infrastructure have claimed the available water thereby denying other farmers access to the resource. One stakeholder from the A2 farmers' category who is also a Subcatchment Council representative on the Middle Manyame Council said that he has reported numerous cases to the Subcatchment Council that has failed to provide a solution.

4.3.7. Summary

The respondents who are involved in irrigation farming have access to water and the necessary infrastructure. The other 37.3% of the respondents not involved in irrigation farming is mainly attributed to a lack of irrigation infrastructure.

Even though the Middle Manyame Subcatchment area respondents are involved in irrigation farming, the majority do not have knowledge about how the water is allocated. There is lack of communication from the Middle Manyame Subcatchment Council as to how the water users could be involved in water allocation. The Middle Manyame Subcatchment Council has never organized meetings with stakeholders where such issues could be discussed. This has had a negative impact on the knowledge of the majority of stakeholders concerning water allocation. Despite the fact that the majority of the stakeholders do not have knowledge about how water is allocated, most of them feel that they are receiving a fair allocation of the resource.

Local stakeholder organizations such as the water syndicates formed by white commercial farmers are important in ensuring that stakeholders in a particular area are familiar with how water is allocated to them. The existence of water syndicates among this group helps to improve governance of water and ensure that equitable allocation of water is guaranteed. The case of the farmers sharing a dam has shown that each one does not have to assume that he is getting an equitable allocation of water since consumption is regularly recorded.

This study revealed that the majority of stakeholders in the Middle Manyame Subcatchment area have never attended water allocation meetings. The Middle Manyame Subcatchment Council has never organized such meetings. Meetings for water allocation have been organized by large-scale white commercial farmer syndicates, Department of Research and Extension officials and A2 farmers.

Lack of participation in water allocation by the majority of stakeholders has resulted in them not acquiring knowledge as to the need for having water permits and agreements. Once in possession of these documents, there is a greater probability of ensuring the right allocation of water. The fact that a person with these documents will be paying for the allocation makes them an active participant.

More than half of the respondents do not have water permits or agreements to use water. Some of the stakeholders without legal documents do not want them because they will be required to pay for water. The majority of stakeholders do not know the process of applying for water permits or agreement-water. This is because no one has informed the stakeholders about the steps taken when applying for these documents. Some of the stakeholders with documentation had their applications submitted by government officials on their behalf.

No major water allocation problems have been encountered in the area. Most stakeholders feel that they are receiving a fair allocation of water. The water allocation problems that have been cited include high water charges, failure of irrigation systems, sharing of irrigation infrastructure and the illegal abstraction of water. The Middle Manyame Subcatchment Council and the ZINWA has not taken any action against illegal water usage.

Having shown the limited stakeholder participation in water allocation in the Middle Manyame Subcatchment area, the following section looks at the participation of stakeholder in paying costs related to water use.

4.4. Participation and the payment of costs related to water use

4.4.1. Stakeholder and payment of water charges

This section was answered by 94 respondents involved in irrigation farming. Of those, 24 (25.5%) are paying water charges such as the ZINWA levy, agreement-water charges and Subcatchment Council storage and abstraction charges. There are 70 respondents not paying for water (74.5% of respondents irrigating). Table 16 gives a breakdown across the different categories of stakeholders about how many are paying or not.

Table 16: Stakeholders and water payment

Stakeholder group	Are you paying for using water?		Total
	Yes	No	
A1 farmers % of total	0 (0%) (0%)	40 (100%) (42.6%)	40 (100%) (43.0%)
A2 farmers % of total	2 (18.2%) (2.1%)	9 (81.8%) (9.6%)	11 (100%) (11.8%)
LSWCFs % of total	5 (100%) (5.3%)	0 (0) (0%)	5 (100%) (4.3%)
LSBCFs % of total	6 (85.7%) (6.4%)	1 (14.3%) (1.1%)	7 (100%) (7.5%)
Smallholder irrigators % of total	11 (35.5%) (11.7%)	20 (64.5%) (21.3%)	31 (100%) (33.3%)
Total	24 (25.5%)	70 (74.5%)	94 (100%)

Table 16 shows that the majority of the respondents are not paying for the water. The issue of non-payment was raised in five Middle Manyame Subcatchment Council meetings attended between April and August 2004. The vice-chairperson of the Middle Manyame Subcatchment Council complained in one of the meetings that the Council did not have any finances to cover travel and subsistence allowances of the representatives mainly because stakeholders were not paying their water charges. The vice-chairperson further said that the Subcatchment area has a potential to generate more than Z$100 million annually, yet the Council had limited funds. The treasurer reported that there was Z$2 461 443 available in the account. These funds were only sufficient to pay the travel and subsistence allowances for one meeting[9].

[9] Information gathered from meetings of the Middle Manyame Subcatchment Council attended by the researcher between April and August 2004 held at the Chinhoyi Municipal Councils.

None of the A1 farmers is paying water charges and cited three main reasons for doing so. Firstly, those not paying felt that water should be a free good (45% of the A1 farmers). Water is a free good because it rains naturally and then flows in rivers. Because of this, no one has a right to make people pay for water. This view of water as a free good is also held by stakeholders across the country (Kujinga, 2002; Manzungu, 2003). Secondly, A1 farmers said they do not know they have to pay any water charges since no one has ever told them (37.5% of the farmers). This could be true given the fact that they do not know about the Water Act of 1998, which highlights the payment issue. The Middle Manyame Subcatchment Council has never communicated such information to them. Lastly, stakeholders in this category acknowledged that they would like to pay but do not have documents, which they could use to make the payments (17.5% of the A1 farmers). They do not even know where and how to apply for the permits and agreements. One of the A1 farmers said that:

> *As long as they do not give us water permits or agreements we will just use the water for free.*

The two A2 farmers who are paying costs related to water use gave different reasons why they are paying. One of them is paying agreement-water charges to the ZINWA to ensure that he receives his allocation. The other stakeholder is merely paying because the government instructs all commercial water users to pay for water.

A2 farmers not paying for water also provided reasons for their actions. Forty four percent did not know that they had to pay and that it was illegal to use water for irrigation without paying. Some (33.3%) wanted to pay but did not have any permits or agreements, which would enable them to pay for water. Eleven percent of the non-paying A2 farmers stated that water is a free good - no one is supposed to claim money for the resource.

All respondents from the large-scale white commercial farmer category are paying costs related to water use. Four respondents are paying because it is a government requirement, which they have been observing for years. Some have to pay for using water despite not receiving any service from the ZINWA and the Middle Manyame Subcatchment Council. One respondent using agreement-water is paying to ensure that he receives his allocation

of water from the Zimbabwe National Water Authority. Large-scale white commercial farmers also have a history of paying for water. They paid water charges under the 1976 Water Act using the water rights (Manzungu and van der Zaag, 1996). They also paid water levies to their River Boards (Gonese, 2002). A white commercial farmer interviewed said that he does not find it strange to pay for water, especially if the charges are justified and there are services provided for the payments.

Three large-scale black commercial farmers are paying for water in order to guarantee their allocation from the ZINWA since they are using agreement-water. Two farmers are paying charges to fulfil a government requirement and for fear of prosecution. The other paying farmer in this category does not understand why he has to make payments for a natural resource. He said that:

> *I am paying but I do not know the reason why they are making us to pay. They just want us to give them money for nothing so that they can drive around in nice cars and live in upmarket areas*.

The only non-paying large-scale black commercial farmer does not have a permit or agreement and is discouraged by the fact that he has to go to Harare to collect the application forms, complete them and return them there again.

All the smallholder irrigators paying are from the Musarurwa irrigation scheme. They have two main reasons for paying. They are paying because to ensure a reliable supply of water from the ZINWA with whom they have an agreement. Prior to entering the agreement in 2002, they experienced water shortages during the dry seasons. This problem has since ceased as Water Authority now regularly releases water for the scheme from Darwendale dam. Other irrigators were merely instructed by their Irrigation Management Committee to pay the ZINWA agreement-water charges, as it was the law. If one fails to pay the water charges they risk losing their irrigation plot. Some irrigators feel they are being made to pay mainly because there is nothing for free. One of the smallholder irrigators said that:

> *I think the government realised that we are making money out of farming and it was decided that we must pay for water as a way of taxing us.*

The smallholder irrigators not paying for water, especially those at Kutama and Chomutamba irrigation schemes provided the following reasons for their actions. Almost half the respondents said they were exempt from paying by the government; this grace period was from 2002 to 2005. This was denied by an official from the ZINWA and representatives of the Middle Manyame Subcatchment Council. The Water Act of 1998 does not make provision to give commercial water users a grace period (Zimbabwe, 1998). The vice-chairperson of the Middle Manyame Subcatchment Council said:

> *No one was ever given a grace period not to pay for water. The law says that everyone who is using water for irrigation purposes must pay and it is not true that some stakeholders were given a grace period or that the District Development Fund is paying for them*.

Smallholder irrigators from other irrigation schemes not paying for water did not have any permits or agreements in order to make payments. They also don't know the procedure to obtain these documents. About 15% of the respondents from this category thought the District Development Fund were paying for them. An official from this fund confirmed that they were not paying on behalf of the farmers, but merely assisting with farming operations such as abstraction. Some of the smallholder irrigators said that they would never pay for water since they regard it as a gift from God and therefore a free good.

One of the main reasons for non-payment is that the Middle Manyame Subcatchment lacks a mechanism to bill farmers and collect the revenue. The Subcatchment Council currently relies on the ZINWA to collect water charges on its behalf. There are no records of the total user for the area of jurisdiction. As a result, the Subcatchment Council approached the ZINWA to assist with collecting the levies. The Water Authority bills sent to water users now include the Subcatchment Council charges. However, Water Authority officials feel that the Middle Manyame Subcatchment Council should collect its own revenue or pay an administrative fee.

On the other hand, one of the people at the forefront of advancing the notion of water as a free good within the subcatchment area is a prominent cabinet minister who is also an

irrigator. He has told farmers at political meetings that it does not make sense that anyone should claim payment for water that falls from the sky as rain and flows in natural rivers. In support of the previous statement, many people have refused to pay. In response to a question posed by a Subcatchment Council representative, most representatives agreed that it was difficult to deal with an influential person such as the cabinet minister.

4.4.2. Stakeholder rate of payment of different water charges

The study revealed that among the paying stakeholders, few are paying more than two charges. A water user should pay at least three charges - the ZINWA Levy, Subcatchment Council storage charges and abstraction charges. Those using agreement-water should pay this charge as well. The table below shows payment of different water charges by the various stakeholder categories.

Table 17: Payment of water charges by stakeholder category[10]

Stakeholder group	ZINWA levy	ZINWA agreement-water charges	SCC storage charges	SCC abstraction charges
A1 farmers	0	0	0	0
A2 farmers	2	1	1	0
LSWCFs	4	2	1	1
LSBCFs	3	3	0	0
Smallholder irrigators	0	11	0	0
Total	7	17	2	1

For reasons previously mentioned, none of the A1 respondents is paying any water charges. The two A2 farmers felt that paying between Z$500 000 and Z$1 000 000 per year was reasonable. The A2 farmer using agreement-water from the Mazvikadei dam indicated he has no choice but to pay the charge in order to guarantee his allocation totalling Z$24 000 000 in 2004. Another A2 farmer paying Subcatchment Council storage charges mentioned that this made applying for agricultural loans easier. Banks offering this loan would require a letter from both the Zimbabwe National Authority and the Subcatchment Council with payment records. He said that for 2004, he is supposed to pay Z$8 000 000 for storage charges. Both A2 farmers are not aware of paying abstraction charges and never received bills for these.

[10] Percentages are not shown in this diagram because some of the stakeholders like the A2 farmers and large-scale white commercial farmers are paying for more than one charge.

As shown in Table 17, all the large-scale white commercial farmers are paying for at least two charges. The four white commercial farmers paying the ZINWA levy pay this because it is a government requirement. They are currently paying between Z$1 000 000 and Z$1 500 000. One of them said:

> *Given a choice, I will not pay for this levy because we are not receiving any service from the Zimbabwe National Water Authority. If I do not pay this levy, they will say see what these white farmers are doing now and in the end I will lose this farm because I will be seen as if I am going against the government. Some of our friends lost their farms over protesting the amount of money being charged for this levy. I will just pay and keep my mouth shut.*

Two large-scale white commercial farmers are paying the ZINWA agreement-water charges because they rely on water from the Mazvikadei dam. Non-payment will result in a suspension of their allocation. Amounts payable in 2004 are between Z$20 000 000 and Z$25 000 000. A farmer paying for both the storage and abstraction charges is doing so to stay out of trouble with the government. The other three are not currently paying for these charges because they cannot justify the payments and how they are calculated. They indicated that if there were clarity they would start paying.

The large-scale black commercial farmers paying the ZINWA levy are merely fulfilling a government requirement. Two of the farmers did not understand why they should pay for the levy when there is no associated service. Those paying agreement-water charges do not have a choice but to pay since they rely on supplied. Failure to pay will result in no allocation. All the black farmers are unaware of storage and abstraction charges.

The smallholder irrigation farmers paying the agreement-water charges are guarenteed a reliable allocation of water. One stakeholder said that:

> *The only reason why I am paying the ZINWA agreement-water charges is because I want to ensure that I have a reliable supply of water for my crops. If we stop paying supplies will be cut and our*

crops will die. This will leave us without anything to put on the market so that we can live.

In 2003, each farmer at the scheme paid Z$1600 and in 2004 this increased to Z$300 000. They are also unaware storage and abstraction charges.

The majority (14) of the respondents paying the various water charges were dissatisfied with the payments they were making (60.9% of the farmers paying). The table below shows the responses concerning stakeholder satisfaction of water payments.

Table 18: Payment of water and stakeholder satisfaction

Stakeholder group	Are you satisfied with paying for water?		Total
	Yes	No	
A2 farmers	0 (0%)	2 (100%)	2 (100%)
% of total	(0%)	(8.3%)	(8.3%)
LSWCFs	1 (20%)	4 (80%)	5 (100%)
% of total	(4.2%)	(16.7%)	(20.8%)
LSBCFs	2 (33.3%)	4 (66.7%)	6 (100%)
% of total	(8.3%)	(16.7%)	(25%)
Smallholder irrigators	6 (54.5%)	5 (45.5%)	11 (100%)
% of total	(25%)	(20.8%)	(47.8%)
Total	9 (39.1%)	15 (60.9%)	24 (100%)

Table 18 shows that all the A2 farmers paying for water are not satisfied with the charges and believe no one but God produces water; water is a gift from God to all his creation and no one has a right to demand payment for this gift.

A paying large-scale white commercial farmer is satisfied with the payments because it guarantees his water allocation. The amount is irrelevant as long as he received what was paid for. Four of the dissatisfied white farmers felt they were paying was too much in relation to the services they were receiving. One of them said that:

I have my own dam here, I maintain it no one has ever come here from the ZINWA to help me maintain the dams and the pumps that I installed. Why then am I being made to pay and yet I do not receive any services in return?

Two of the large-scale black commercial farmers who are paying for agreement-water said that they are satisfied mainly because payment makes them confident that they will be able to receive their allocation. The other four black commercial farmers felt they were paying too much for the allocation from the Zimbabwe National Water Authority.

Among the smallholder irrigators, five of the 11 paying for agreement-water are satisfied because of the guaranteed. Their experiences with water shortages warrant payment and solve the problem. A satisfied smallholder irrigator states that:

> *The ZINWA is doing a good job by storing water in Darwendale dam for us to use during the dry season. We need to make payments so that they can store that water and maintain the infrastructure at that dam site.*

The dissatisfied smallholder irrigators feel that water is a free good which should not be paid for. Not even the government should lay claim to it.

4.4.3. Stakeholder participation in determining water charges

All respondents paying the water charges were not consulted in determining the tariffs. Table 19 displays the level of stakeholder consultation in deciding water charges.

Table 19: Stakeholder consultation in determining water charges

Stakeholder group	Are you consulted in determining water charges?		Total
	Yes	No	
A2 farmers % of total	0 (0%) (0%)	2 (100%) (8.3%)	2 (100%) (8.3%)
LSWCFs % of total	0 (0%) (0%)	5 (100%) (20.8%)	5 (100%) (20.8%)
LSBCFs % of total	0 (0%) (0%)	6 (100%) (25%)	6 (100%) (25%)
Smallholder irrigators % of total	0 (0%) (0%)	11 (100%) (45.8%)	11 (100%) (45.8%)
Total	0(0%)	24 (100%)	23 (100%)

The results shown in the above table reflect that stakeholders do not play a role in determining water charges. Middle Manyame Subcatchment Council representatives and the Zimbabwe National Water Authorities confirmed that there has never been any consultation with grassroots stakeholders in the determination of water charges. In June 2004, the Middle Manyame Subcatchment Council approved a rate of Z$1 800 per mega litre for storage and abstraction without consulting the stakeholders[11]. A suggestion by a Subcatchment Council representative to convene a meeting among stakeholders to discuss the rate was turned down. The ZINWA also raised its levy from Z$40 per mega litre to Z$500 per mega litre in May 2004. The charges for agreement-water were also raised from Z$270 per mega litre to Z$82 000 per mega litre. The new charges were effected without consulting the stakeholders through their Subcatchment and Catchment Councils.

4.4.4. Summary

This section has established that the majority of the respondents in the Middle Manyame Subcatchment area are not paying water charges so that they could contribute to costs related to water use. Some of the main reasons for non-payment are that most stakeholders regard water as a free good and some do not know the charges they must pay. Information about the importance of paying water charges has not been effectively disseminated from the Middle Manyame Subcatchment Council to the majority of the stakeholders.

The absence of local stakeholder organizations which could channel information to users (as mentioned in section 4.2 and 4.3) make it difficult for the Subcatchment Council to collect water charges and raise awareness about paying for water. Non-payment of water is exacerbated by the fact that the Middle Manyame Subcatchment Council does not have its own mechanism of revenue collection since it relies on Zimbabwe National Water Authority. This is in sharp contrast to the procedure of other Subcatchment Councils such as the Odzi in the Save Catchment area. The Odzi Subcatchment Council bills its water users and even collects levies on behalf of the Zimbabwe National Authority and receives a seven and half percent commission of the total amount collected each year (Kujinga, 2002).

[11] This is contained in the minutes of the Middle Manyame Subcatchment Council for the meeting held on Thursday 6v June 2004 at the Municipality of Chinhoyi Council Chamber.

Those respondents paying for water do so for different reasons. Those who are using agreement-water pay mainly because they would are assured of a reliable allocation of water from the Zimbabwe National Water Authority. Other stakeholders who are paying are merely fulfilling a requirement of the government.

The majority of respondents are paying for one charge instead of three charges mentioned. Most payments received are for agreement-water, then the Zimbabwe National Authority levy and finally Subcatchment Council storage and abstraction charges. The study revealed that the Middle Manyame Subcatchment Council has not communicated effectively with stakeholders about the need to pay for all water charges

Ordinary stakeholders in the Manyame Subcatchment area do not have an opportunity to participate in determining water charges. If stakeholders are supposed to play an active role in other areas of water management such as water allocation, they should also play a part in deciding the financial contribution required (Manzungu, 2002).

4.5. Stakeholder participation in conflict management

4.5.1. Introduction

This section discusses stakeholder participation in conflict management and resolution. All respondents answered this section (n=150). Even though not all stakeholders are involved in all water related aspects, they would have been exposed to a number of water related conflicts and could have participated in the management of these conflicts.

4.5.2. Occurrence of water conflicts

Of the 150 questionnaires administered, only 24 (16%) respondents have either witnessed or been involved in water related conflicts. There is a significant difference (P = 0.004) between the stakeholders who have witnessed or been involved in water related conflicts, and those who have not. Table 20 shows that those who have witnessed water related conflicts are from all categories, except the smallholder irrigators.

Table 20: Occurrence of water conflicts

Stakeholder group	Are there any water conflicts?		Total
	Yes	No	
A1 farmers	9 (12.7%)	62 (87.3%)	71 (100%)
% of total	(6.0%)	(41.3%)	(47.3%)
A2 farmers	9 (25.7%)	26 (74.3%)	35 (100%)
% of total	(6.0%)	(17.3%)	(23.3%)
LSWCFs	3 (60%)	2 (40%)	5 (100%)
% of total	(2.0%)	(1.3%)	(3.3%)
LSBCFs	0 (0%)	8 (100%)	8 (100%)
% of total	(0%)	(5.3%)	(5.3%)
Smallholder irrigators	0 (0%)	31 (100%)	31(100%)
% of total	(0%)	(20.7%)	(20.7%)
Total	21 (15.1%)	129 (85.9%)	150 (100%)

As presented in Table 20, the majority of A1 respondents felt there are no water conflicts. Stakeholders provided a number of reasons explaining why there are not many water conflicts in the Middle Manyame Subcatchment area. There is a belief among the A1 farmers that the area has sufficient water to cater for all their requirements. As a result, there is no need to fight over the resource that is accessible to everyone. A1 farmers also believe that since quite a number of new farmers are not yet irrigating, they

are getting enough water for their crops. On the other hand, those A1 respondents who have witnessed or been involved in water conflicts felt that the major cause is maintenance of irrigation infrastructure. The farmers from Riverdale and Mountain View who share the same underground water source have been involved in numerous conflicts. Farmers from both farms accuse each other of not adequately maintaining the irrigation infrastructure. This results in a loss of water through burst pipes, especially from the main pipe running from the borehole. Efforts to ensure that both farms carry out maintenance have failed. On a number of occasions, Riverdale farmers have denied farmers from Mountain View access to water, resulting in arguments among the farmers.

The majority of the A2 respondents felt there are no water conflicts in the Subcatchment area because few people are presently irrigating. Their water requirements can thus be met. The situation can be seen because of a good allocation system whereby each farmer just uses what has been allocated. However, nine A2 farmers who have experienced conflict attribute this to inequitable allocation of water (25.7% of the A2 farmers). Since most A2 farmers were resettled on farms already having dams and perennial rivers, some farmers claim that all the water in certain dams or sections of a river belong to them. This leads to others not having access. In one particular case, a farmer pumps water from a river everyday; a few hours after he starts pumping, there is nothing available to those downstream. This particular farmer has refused to share the water with those downstream. At one time, three of the downstream farmers approached the farmer upstream, threatening to damage his pumping equipment if he did not consider sharing the water.

Those large-scale white commercial farmers who felt there is no water conflicts (n=2) believe the area has enough water for everyone and there is a good allocation system especially for those farmers using agreement-water. The three farmers who experienced conflict cited water theft as the primary cause. In the past conflict among these farmers were because of water from a common source; some farmers would tend to over pump water prejudicing others. Large-scale white commercial farmers using agreement-water have also been involved in conflicts with others whom they think illegally take water meant for them. Those who use agreement-water would have a timesheet prepared by the Zimbabwe National Water Authority, stating details of their allocation. In some cases, farmers expecting their allocation will not get it or they receive an amount that cannot

meet their demand. Some large-scale white commercial farmers have had losses to A1 or A2 farmers. The ZINWA will however bill for the total allocation and not consider the loss illegally taken by other farmers. Cases such as these have been taken to water syndicates.

The large-scale black commercial farmers provided two major reasons for the absence of water conflict in the Subcatchment area. There is sufficient water for all those who want to use the water. A farmer remarked that the area receives good rains annually and the Manyame River flows all year round, making irrigation possible. The area has few irrigators in relation to the amount of water available. Even if all the new farmers start irrigating, the situation will not change, as the same amount of land will be irrigated.

The smallholder irrigators believe the absence of water conflict in the Subcatchment area is mainly because of a good allocation system run by the ZINWA and the District Development Fund. They rarely experience water problems.

4.5.3. Stakeholder participation in conflict management

Of the 21 stakeholders exposed to water conflict, only three (from the large-scale commercial farming category) have been involved in trying to resolve these conflicts.

Table 21: Participation in water conflict management/resolution

Stakeholder group	Ever participated in water conflict management/resolution?		Total
	Yes	No	
A1 farmers % of total	0 (0%) (0%)	9 (100%) (42.8%)	9 (100%) (42.9%)
A2 farmers % of total	0 (0%) (0%)	9 (100%) (42.9%)	9 (100%) (42.9%)
LSWCFs % of total	3 (100%) (14.3%)	0 (0%) (0%)	3 (100%) (14.3%)
Total	3 (14.3%)	18 (85.7%)	21 (100%)

Table 21 shows that all A1 and A2 farmers tried to resolve these conflicts. Officials from the Departments of Agriculture Research and Extension and Irrigation usually intervene in conflict cases and try to ensure that the affected parties do not deny each other water.

The large-scale white commercial farmers who have participated in conflict resolution did so through their water syndicates. This highlights the importance of local organizations that ensure stakeholder participation in issues such as conflict management.

The fact that the majority of stakeholders have not played any role in resolving the conflict implies limited participation in conflict management and resolution. The absence of local stakeholder organizations and the invisibility of the Middle Manyame Subcatchment Council contribute to the limited participation of stakeholders. Subcatchment Council representatives and officials from the Department Agriculture Research and Extension revealed that the Middle Manyame Subcatchment Council has never been involved in resolving water conflicts among the stakeholders.

4.5.4. Conflict management mechanisms

Although stakeholder participation is limited in conflict resolution, conflict management mechanisms are available. Table 22 highlights some of the mechanisms used to resolve conflict in the Middle Manyame Subcatchment area.

Table 22: Conflict management mechanisms

Stakeholder group	How are water conflicts resolved?				Total
	Mediation or arbitration by SCC	Arbitration by government officials	Nothing done	Mediation arbitration by water syndicate	
A1 farmers % of total	0 (0%) (0%)	8 (88.8%) (38.1%)	1 (7.2%) (4.8%)	0 (0%) 0 (0%)	9 (100%) (42.9%)
A2 farmers % of total	0 (0%) (0%)	3 (33%) (14.3%)	6 (67%) (28.6%)	0 (0%) 0 (0%)	9 (100%) (42.9%)
LSWCFs % of total	0 (0%) (0%)	0 (0%) (0%)	0 (0%) (0%)	3 (100%) (14.3%)	3 (100%) (14.3%)
Total	0 (0%)	11 (52.4%)	7 (33.3%)	3 (14.3%)	21 (100%)

As shown in the table above, conflict experienced by A1 farmers was resolved through arbitration by government officials from the Department of Agriculture, Research and Extension and the Department of Irrigation (38.1%). The aim is to ensure that all affected

parties have access to water. As a result, they give an order that all the parties involved cease hostility and share the available water. At times officials ensure that conflicting farmers share maintenance work on irrigation infrastructure.

The A2 farmers don't have mechanisms in place to ensure that conflict around water do not degenerate into serious verbal or physical violence. A respondent explained that farmers are constantly arguing because water is not shared equally, and fears that the situation could worsen.

Large-scale white commercial farmers again demonstrated that local stakeholder organizations such as their water syndicates play a pivotal role in conflict resolution. An unhappy farmer can take his case to the syndicate who will arrange an informal hearing among the affected parties. Once all the parties have presented their arguments, the syndicate office bearers will come to some sort of agreement. If the resolution is still not accepted, it can be referred to the law courts.

Council representatives and government officials confirmed that the Middle Manyame Subcatchment Council has never assisted in resolving any water conflicts. This is despite the fact that there are a numerous water conflicts between farmers under their jurisdiction. A white commercial farmer stated that this fact reveals how removed the council is from water management issues at the grassroots level.

According to most stakeholders (85.7%), the conflict management and resolution mechanisms that have been applied have not been very effective (see Table 23).

Table 23: Effectiveness of conflict resolution mechanisms

Stakeholder group	How effective are the current conflict resolution mechanisms?		Total
	Relatively effective	Not effective	
A1 farmers % of total	0 (0%) (0%)	9 (100%) (42.9%)	9 (100%) (42.9%)
A2 farmers % of total	0 (0%) (0%)	9 (100%) (42.9%)	9 (100%) (42.9%)
LSWCFs % of total	3 (100%) (14.3%)	0 (0%) (0%)	3 (100%) (14.3%)
Total	3 (14.3%)	18 (85.7%)	21 (100%)

The A1 and A2 farmers provided similar responses regarding the effectiveness of water conflict management mechanisms. They felt that government officials might arbitrate today, resulting in normality for a week followed by the same conflict again. Research by Bolding (1999) highlighted a similar problem in the eastern highlands of Zimbabwe where a District Administrate arbitrated in conflict between upstream and downstream users. The former users were instructed to use water for one week and then allow most of the water to flow downstream the following week. This was observed for a few days and the same conflict erupted again.

Large-scale white commercial farmers indicated that the syndicates are relatively effective at resolving conflict. Members are bound by the constitutions of these syndicates, and therefore abide by the rulings. The approach adopted by the syndicates is to give all the parties involved in conflict an opportunity to present their cases and argue their positions before a ruling was given.

4.5.5. Summary

This section has shown that water conflicts in the Middle Manyame Subcatchment area are minimal. This is attributed to the adequate supply of water in the area and sustainable number of irrigators. Those respondents who experienced conflict cited inequitable water allocation, illegal abstraction and maintenance of irrigation infrastructure as the major causes of conflict.

The two main methods to resolve conflict are arbitration by government officials and mediation and arbitration by water syndicates. Arbitration by government officials has

been described as being ineffective as the same conflicts usually erupt again. This might be because the government officials do not hold the legitimacy of the water syndicates. The A1 and A2 stakeholders are not given an opportunity to participate in resolving the conflict. Mediation and arbitration by water syndicates is seen as being relatively effective since the farmers accept the outcome of the process. The farmers recognize these syndicates as legitimate bodies.

The Middle Manyame Subcatchment Council has not instituted mechanisms to deal with water conflicts resulting in little resolving. There is also an added risk of conflict degenerating into violence. Water syndicates have illustrated the importance of local organization in water management and conflict resolution.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

This final chapter summarises the major findings of the study and includes some recommendations regarding stakeholder participation in water management.

5.2. Overview of the study

The study has attempted to explore the extent and nature of stakeholder participation in water resources management, focusing mainly on the agricultural sector. In order to achieve a full picture regarding stakeholder participation, four main objectives were developed. These were to:

- describe the general knowledge of agricultural stakeholders about water management transformation.
- describe how stakeholders have participated and continue to participate in asserting water rights (water allocation), resolving emerging conflicts (conflict management) and contributing to the costs related to water use.
- understand how categories of stakeholders, that is, old and new farmers/ settlers participate in the identified areas (water allocation, conflict management and contribution to financial costs).
- analyse how government's controversial land reform programme has affected the participation of stakeholders.
- contribute to scholarship and policy formulation on stakeholder participation in water resources management.

In order to achieve the above objectives, data was collected from stakeholders and Council members in the Middle Manyame Subcatchment area and officials from government departments. Data was collected using qualitative and quantitative methods. The five groups of stakeholders from which data was collected include: A1 and A2 farmers, large-scale commercial white farmers, large-scale commercial black farmers and smallholder irrigators.

5.3. Major findings of the study

The study found that stakeholder participation in water management is generally limited. This is despite the fact that there is legislation supporting the participation of stakeholders. This study concurs with Manzungu (2004) who stated that although the 1998 Water Act is in place, Zimbabwe has not yet come up with objective criteria/

parameters for stakeholder participation. There is currently no definition of what constitutes an acceptable level of participation (threshold) in the Middle Manyame Subcatchment area. As a result, stakeholders are not knowledgeable about the Water Act and therefore uncertain as to how they can participate in water allocation, conflict management and contribute to costs related to water use.

One of the issues highlighted in this study, is the best level at which to organize stakeholders (see also Manzungu, 2004). The Subcatchment Council in Zimbabwe is currently the lowest level at which stakeholders are organized. However, as revealed here, these institutions are far removed from the grassroots in terms of water management issues.

5.3.1. Lack of knowledge on water management transformation

Almost six years after the water reforms were embarked on in Zimbabwe, the majority of stakeholders do not have knowledge of the new Water Act emphasizing their participation in water management. This study has shown that almost 80% of the respondents in the Middle Manyame Subcatchment area do not know anything about the Water Act. Machingambi and Manzungu (2002) found similar results in the Odzi Subcatchment area where 97.5% of the respondents indicated never having heard about the 1998 Water Act.

It has been impossible for the majority of stakeholders in the Middle Manyame Subcatchment area to be involved in water management since they do not know how to become involved. Swatuk (2002, p178) contends that if the reform process is to succeed and lead to stakeholder participation, much effort must be put into disseminating the spirit and fact of the new Water Act to all stakeholders. In the case of the Middle Manyame Subcatchment area, it means disseminating and communicating the information to all categories of stakeholders, including those in the agricultural sector.

This study signifies the importance of local stakeholder organizations that could be used as a means of communication at the grassroots level. The white commercial farmers managed to acquire knowledge about the reforms and the activities of the Middle Manyame Subcatchment Council through their membership of the Commercial Farmers Union.

5.3.2. Limited Stakeholder participation in water allocation

According to the results, a significant number (62.7%) of stakeholders are irrigating, but many of the farmers are not participating in the allocation of the local water resource. It was shown that 54.3% of stakeholders do not know how water is allocated to the various farms. As previously mentioned, the majority of stakeholders do not know at which level they can participate and how this could possibly influence decisions in water allocation. Presently, the Middle Manyame Subcatchment Council has not been able to communicate issues relating to water allocation with farmers at the grassroots level. Moreover, most stakeholders (54% of the respondents irrigating) are using water without permits/ agreements, this shows that they are actually illegal water users who should not be allowed to participate in water allocation. Blame for this situation lies with the Middle Manyame Subcatchment Council for not communicating the reforms to the Water Act and permit/ water agreement application process to all stakeholders.

The fact that the majority of the stakeholders have never attended any water allocation meetings proves that there is limited stakeholder participation in this area (84% of respondents irrigating). The ZINWA, that is responsible for allocating water, does so without engaging all the stakeholders.

The water syndicates, established by white commercial farmers, have been identified as structures that could play a vital role in water allocation at the local level. The functioning of some syndicates has been affected by the land reform programmes. Local organization by stakeholders could ensure equitable allocation of the resource, and improve the governance of water.

5.3.3. High levels of not paying costs related to water use by stakeholders

According to the findings, most stakeholders (75.3%) using water are not paying despite the user pays principle under the 1998 Water Act. One of the major reasons for nonpayment is that water is regarded as a free good. Since the stakeholders in the Middle Manyame were not actively involved in the formulation of the 1998 Water Act, they are surprised by the fact that they are being made to pay water charges. This is similar to the findings of Swatuk (2002) in the Save Catchment.

Stakeholders from all the agricultural sector categories who took part in this study do not play a role in setting the price of water charges. Prices for agreement-water and levies are set solely by the Zimbabwe National water Authority. The Middle Manyame Subcatchment Council also sets its own charges without consulting the stakeholders.

5.3.4. Stakeholder participation in conflict management

The Middle Manyame Subcatchment area has experienced few water related conflicts. This is mainly because the area currently has sufficient water resources to meet the requirements of the stakeholders. Conflicts are also limited because some of the A1 and A2 stakeholders are not currently irrigating because they lack irrigation infrastructure that was vandalized at the height of the fast track land reform programme.

Although there has been isolated water related conflicts in the Middle Manyame Subcatchment area, there are currently no effective mechanisms in place to resolve these. Most of the conflict resolution mechanisms used among the A1 farmers have been ineffective. Moreover, other stakeholder categories stated that nothing is being done to deal with conflict. The Middle Manyame Subcatchment Council has never been involved in resolving any of the water related conflicts. Water syndicates have played a pivotal role in ensuring that conflicts between farmers are resolved. Stakeholders such as A1 and A2 farmers do not have such local organizations that could help in resolving water related conflict.

5.4. Recommendations

Based on the findings of the study, the following recommendations could assist in improving stakeholder participation in water management in Zimbabwe.

- There is a need to communicate the water reforms to all stakeholders including the agricultural sector. They should be knowledgeable about the Water Act of 1998 and understand how stakeholder institutions such as Subcatchment Councils function. The farmers need to understand the importance of their participation in water resources management.

- The government must provide financial resources to Subcatchment Councils to carry out outreach/ awareness programmes. These programmes could be aimed at

making the majority of stakeholders understand the need to participate in water allocation and conflict management and water charges.

- There is a need for all stakeholders to know the level at which they can participate in water resources management, as well as how they can participate. In this way, an evaluation programme will determine whether stakeholder participation has taken place.

- Stakeholders of the different categories should be encouraged to form local water associations. These associations can act as channels of communication with Subcatchment Councils and encourage stakeholder participation in water allocation and conflict resolution. Moreover, the associations can encourage members to pay the water charges they are liable for.

5.5. Concluding remarks

Currently there is limited stakeholder participation in the management of water resources in the Middle Manyame Subcatchment area. The majority of stakeholders do not have information about the Water Act, which forms the basis for stakeholder participation. The latter being limited in areas such as water allocation and conflict resolution. Many stakeholders are not paying for costs related to water use mainly because they regard water as a free good. It is therefore important that policy makers adopt approaches, as the ones recommended above, that would encourage stakeholder participation in water resources management.

BIBLIOGRAPHY

Abu-Zeid, M. (2001). Water pricing in irrigated agriculture. *Water resources development*, Vol. 17, No.4, pp 527-538.

Banks, M. (1984) (ed. and contributor) *Conflict in World Society: A new Perspective on International Relations*. Manchester: Wheatsheaf.

Beetham, D. (1992). 'Liberal democracy and the limits of democratization' in D. Held (ed.) *Prospects for Democracy. North, South, East, West*, Cambridge: Polity.

Behr, A. (1983*). Empirical research methods for human sciences*. Durban: Butterworths.

Bloomfield, D., Nupen, C., and Harris, P. (1998). "Negotiation process." In: Harris, P and Reilly (eds.), *Democracy and deep-rooted conflict: Options for negotiation*. Stockholm: International Institute for Democracy and Electoral Assistance (IDEA), pp 59-120.

Boelens, R. and Davila, G., (1998) *Searching for equity: Conceptions of justice and equity in peasant irrigation*. Holland: van Gorcum.

Bolding, A (1999) Caught in the catchment: Past, present and future of Nyanyadzi water management. In *Water for Agriculture in Zimbabwe: Policy and Management Options for the Smallholder Sector,* Manzungu et al (Eds.). Harare: University of Zimbabwe.

Bolding, A. (1997). Caught in the catchment: Past, present and future of Nyanyadzi water management. *Towards reforming the institutional and legal basis of the water sector in Zimbabwe: Current weaknesses, recent initiatives and operational problems*, Nhira, C and Derman, B (eds.). Harare: Centre for Applied Social Sciences.

Burton, J. 1990 *Conflict: Resolution and Prevention*. Virginia: St Martin's Press

Central Statistical Office. (2002). *Census 2002*. Harare: Central Statistical Office

Centre for Conflict Resolution. (2001). *"Skills Development Training for Conflict Transformation."* Conflict resolution manual. United Nations. New York Department for Economic and Social Affairs.

Chenje, M and Johnson, P (eds.). (1996). *Water in Southern Africa*. Harare: IUCN

Chikozho, C. (2002) "Restructuring the Commons: Water Reforms in Southern Africa in the Context of Global Water Resources Management Paradigm Shifts." Presented at "The Commons in an Age of Globalisation," the Ninth Conference of the International Association for the Study of Common Property, Victoria Falls, Zimbabwe, June 17-21, 2002.

Clyma, W. (1986). Integrated agriculture: a comparative analysis of development concepts. In: Nobe, K.C and Sampath, R. C (eds.) *Irrigation trends in development countries: Current issues and approaches*. Studies in water management policy. No 8. London: Westview Press.

Dinar, A., Rosegrant, M.W., Meinzen-Dick, R. (2001). *Water allocation mechanisms, principles and examples*.

Dube, D and Swatuk, L. 2002. "Stakeholder participation in the new water management approach: A case study of the Save Catchment, Zimbabwe". *Physics and Chemistry of the Earth, 2*7. 867—874.

Edmunds, D. and E. Wollenberg. 2001. A strategic approach to multistakeholder negotiations. *Development and change*, Vol. 32: 231-253.

Evan, W.M., and Freeman, R.E. (1988) A stakeholder theory of the modern corporation: Kantian capitalism. In Beauchamp, T.L and Bowie, N. (eds.), *Ethical theory and business*. Englewood Cliffa, NJ: Prentice Hall.

Freeman, R.E. (1984). *Strategic management: A stakeholder approach*. Boston: Pitman

Gleick, P.H (1993). "Water conflict: Freshwater resources and international security". *International security,* Vol. 18 No. 1, pp 79-112.

Gleick, P.H (1994). "Water, war and peace in the Middle East" *Environment,* Vol. 36, No. 3 pp 6-42.

Gleick, P.H. (2001). Environment and security: Water conflict chronology-Version 2000. *The World's water 2000-2001*.

Gonese, F. (2002). Experiences from the water sector reform process in Zimbabwe-Observations on equity and decentralising decision-making. In Manzungu. E (ed.) *The Process and dynamics of catchment management in Zimbabwe*. Harare: Save Africa Trust, pp 79-90.

Grimble, R, Chan, M.K, Aglionby, J and Quan, J. 1995. Trees and trade-offs: A stakeholder approach to natural resources management. International Institute for Environmental Development, *Gatekeeper Series* No. 52.

Hardin, G. (1985*). Filters against folly*. New York: Viking Penguin.

Hirji, R., Johnson, P and Matiza-Chiuta, T. (2002) (eds.) *Defining and mainstreaming environmental sustainability in water resource management in Southern Africa*. Harare/Washington: SADC,, IUCN, SARDC, World Bank.

Karar, E (2003) Governance in Water resources management: Progress in South Africa. World Wide Fund: INBO Session.

Kujinga, K .2002. Decentralizing water management: An analysis of stakeholder management of water in the Odzi Sub-catchment area, Save Catchment. *Physics and Chemistry of the Earth Vol. 27 (2002) pp 897-905.*

Kujinga, K. (2003). Impact of legislation on community based management of water for informal irrigation in Southern Africa: Case Studies of Zimbabwe and Tanzania. *Commons Southern Africa Occasional paper*, No. 1/2003.

Kujinga, K. and Manzungu, E. (2004). Enduring contestations: Stakeholder strategies in water resources management: the case of Odzi Subcatchment Council, Eastern Zimbabwe**.** *Eastern Africa Social Science Research Review,* Vol. XX, No. 1 2004, pp 67 - 91.

Kujinga, K (forthcoming). The impacts of the economic reform programme (ERP) on local level rural institutions in Zimbabwe: Case studies of Nyanga and Gwanda districts.

Latham, J. (2002). A review of the water reform process in Zimbabwe: The case of the Manyame Catchment Council. In: Manzungu, E (ed.) *The process and dynamics of catchment management in Zimbabwe*. Harare: Save Africa Publications. pp 21 – 43.

Levine, D. & Tyson, L. 1990. Participation, productivity, and the firm's environment. In A. Blinder (Ed.), *Paying for productivity: a look at the evidence*. Washington: The Brookings Institution.

Machingambi, M and Manzungu, E. (2002). The demand for clean and safe drinking water in the Odzi Sub-catchment. In: Manzungu, E (ed.) *The process and dynamics of catchment management in Zimbabwe*. Harare: Save Africa Publications. pp 99 – 108.

Magadlela, D (2000) *Irrigating Lives: Development intervention and dynamics of Social relationships in an irrigation project*. Wageningen: WAU.

Manzungu, E. (2001). A lost opportunity of the water reform debate in the fourth parliament of Zimbabwe. *Zambezia, 28 No. 1, pp 97 - 120.*

Manzungu, E. (2002). More than a headcount: Towards strategic stakeholder representation in river basin management in South Africa and Zimbabwe. *Physics and Chemistry of the Earth,* Vol. 27, pp 927-933.

Manzungu, E. (2003). Global rhetoric and local realities: The case of Zimbabwe's water reform. In Chikowore, D., Manzungu, E., Mushayavanhu, D and Shoko, D (eds*.),*

Managing common property in an age of globalisation: Zimbabwean experience. Harare: Weaver Press, pp 31-44.

Manzungu, E. (2004). Water for all: improving water resource governance in Southern Africa. *Gatekeeper series No. 113*.

Manzungu, E and van der Zaag, P. (1996). Introduction. In Manzungu, E and van der Zaag, P (eds.), *The practice of smallholder irrigation: Case studies from Zimbabwe*. Harare: University of Zimbabwe.

Manzungu, E. and Kujinga, K. (2002). The theory and practice of governance of water resources in Zimbabwe. *Zambezia* 29 (2), pp 191-212.

Meijerink, G and Ruijs, A. (2003). Water as an economic good – points of interest for policy. LEI :The Hague.

Meizen-Dick, R., Mendoza, M., Sadoulet, L., Abiad-Shield, G and Subramanian, A. (1997). Sustainable water user associations: Lessons from a literature review. In: Subramanian, A., Jagannathan, N.V. and Meizen-Dick, R (eds.), *User organizations for water services.* World Bank technical paper No. 354, Washington DC: World Bank.

Midgley, J. with Hall, A., Hardiman, M. and Narine, D. (1986) *Community Participation, Social Development and the State*, London: Methuen.

Mtisi, S. (2002). Water sector reforms and implication for livelihoods. Latham, J. (2002). A review of the water reform process in Zimbabwe: The case of the Manyame Catchment Council. In: Manzungu, E (ed.) *The process and dynamics of catchment management in Zimbabwe*. Harare: Save Africa Publications. pp 109-143.

Mtisi, S and Nicol, A (2003). *Caught in the act: New stakeholders, decentralisation and water management process in Zimbabwe*. Sustainable livelihoods in Southern Africa, Institute of Development Studies, Research paper no. 14.

Murphy, I.L., and Sabadell, J.E. (1986). "International river basins: A policy model for conflict resolution." *Resources Policy*, Vol. 12, No. 1, pp 133-144.

Ngana, J.O. (2002). Diminishing water resources and increasing water demands. In Ngana, J.O (ed.). *Water resources management, the case of the Pangani River Basin: Issues and approaches*. Dar es Salaam: University of Dar es Salaam, pp 90-109.

Ogunninyi, M. B. (1992). *Understanding research in the social sciences*. Ibadan: University Press Plc

Parlevliet, M. (2002) *Bridging the divide: Exploring the relationship between human rights and conflict management*. Center for Conflict Resolution: Cape Town.

Pateman, C. 1970. *Participation* and Democratic theory. Cambridge: Cambridge University Press.

Pegram, G and Palmer, I (2001) *Guidelines for financing Catchment Management Agencies in South Africa*. Water Research Commission Report No. 1044/1/01.

Polit, D and Hungler, B. (1998). *Nursing research: principles and methods*. Lippincott: Williams Wilkies.

Republic of South Africa. (1998). The National Water Act. Cape Town: Government Gazette.

Robinson, P. (1998). *Targeted water price subsidies*. Harare: ZIMCONSULT.

Rogers, P. R. de Silva, and R. Bhatia (2002), Water is an economic good: how to use prices to promote equity, efficiency and sustainability. *Water Policy*, 4, p. 1-17

Salaman, M. (1987). *Industrial relations: theory and practice*. London: Prentice Hall.

Savage, G.T., Nix., T.H., Whitehead, C.J., and Blair, J.D. (1991) Strategies for assessing and managing organizational stakeholders. *Academy of Management Executive*, 5, pp 61-75.

Sekaran, U. (1992). Research *methods for business: a skills building approach*. New York: Wiley and Sons, Inc.

Shackleton, S, Campbell, B, Wollenburg and Edmunds, D (2002) Devolution and community based natural resources management: Creating space for local people to participate and benefit. *Odi/PLAAS Natural Resources Perspectives*, No 76.

Sharma, (1996). *African water resources: Challenges and opportunities for sustainable development*. Washington DC: World Bank.

Talen E. (1998). Visualising fairness. *Journal of the American Planning Association*, Vol. 64, Issue No. 1.

Tapela, B. (2002). The challenge of integration in the implementation of Zimbabwe's new water policy: Case study of the catchment level institutions surrounding the Pungwe-Mutare water supply project. *Physics and Chemistry of the Earth,* Vol. 27, pp 993-1004.

Thompson, J.K., Wartick, S.L., and Smith, H.L. (1991). Integrating corporate social performance and stakeholder management: Implications for research agenda in small businesses. *Research in Corporate Social Performance and Policy*, 12: 207-230.

Utete, C. (2003) Report on the Presidential land review committee Vol. 1. Harare: Government Publications.

Viera, S. (1991). Democracy and development: Themes for a reflection on Mozambique. *Southern Africa political and economic monthly,* Vol. 4 No. 5.

Water Resources Management Strategy. (undated). *Towards Integrated Water Resources Management: Water Resources Management Strategy for Zimbabwe*. Ministry of Rural Resources and Water Development, Harare.

Winpenny, J. (1994). *Managing water as an economic resource*. New York: ODI.

World Bank. (1993). *Water resources management*. Washington DC: World Bank.

Yoder, R. (1994) *Locally managed irrigation systems: Essential tasks and implications for assistance, management transfer and turnover programmes*. Colombo: International irrigation management institute.

Zimbabwe. (1998a). *Water Act [Chapter 20: 24]1998.* Harare: Government Printers.

Zimbabwe. (1998b). Zimbabwe National Water Authority. Harare: Government Printers.

Zimbabwe. 2000a. *Water (Catchment Councils) Regulations. Statutory Instrument No. 33 of 2000* Harare: Government Printers.

Zimbabwe. (2000b). *Water (Subcatchment Councils) Regulations*. Statutory Instrument No. 47 of 2000. Harare: Government Printers.

Zimbabwe (1997) *Zimbabwe Natural Regions and Provincial farming Areas Boundary*. Harare: Surveyor General.

Zimbabwe National Water Authority. (2001). *Accessing water under the new water act* (Water Act, Chapter 20:24). Harare: Zimbabwe National Water Authority.

Zwartenveen, M.Z. (1997). Water: from basic need to a commodity: A discussion paper on gender and water rights in the context of irrigation. *World Development*, Vol. 25, No. 8, pp 1335-1349.