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ASSESSMENT OF THE SUSTAINABILITY OF COMMUNITY MANAGED RURAL WATER SUPPLY SYSTEMS IN LESOTHO: A Case Study of Makeneng Village, Mafeteng District

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE

REQUIREMENTS OF MASTER OF SCIENCE. DEGREE IN INTEGRATED WATER RESOURCES MANAGEMENT

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Zimbabwe a thesis entitled: Assessment of the Sustainability of Community Rural Water Supply Systems in Lesotho: A case study of Makeneng Village, Mafeteng District, in partial fulfillment of the requirements of the degree of Master of Science (Integrated Water Resources Management) of the University of Zimbabwe.

……..
C.C. Mabiza

Date ……

DECLARATION

I, Mahlalele Eunice Tlali, declare that this thesis is my own original work except where acknowledged and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature……

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DEDICATION

This piece of work is dedicated to my dad, Mr. K. Tlali, and to the memory of my mum, Mrs. M. Tlali, who taught me to always work hard and strive for the best; and to my brothers and sisters whom I hope, will be inspired by this work to reach greater heights in life.

ABSTRACT

The major challenge facing most community managed rural water supply projects in developing countries, including Lesotho is lack of sustainability. Over the past two decades, community management has become the prevalent model for the management of rural water supplies throughout sub-Saharan Africa. Low water supply sustainability levels throughout the sub-continent indicate that community management is not improving rural water supply. Many community-based rural water systems in Lesotho have failed. There is lack of clarity on whether community-based management works or under which conditions community management contributes to sustainable rural water services. This study was carried out between January 2008 to April 2008 in Lesotho and its major objective was to assess the sustainability of community managed rural water supply systems. A case study of Makeneng water supply system which was implemented by the Department of Rural Water Supply in 2000 was used. Focus group discussions, key informant interviews and observations were used to assess the sustainability of the water system. The indicators of sustainability that were looked at were; community participation in the project cycle; - the capacity of the local institutions to manage the system, the ability of the community to manage the type of system installed specifically looking at the choice of technology; functioning and state of the system; - availability of water; - breakdown times as well as operation and maintenance issues. The study established that community participation varied across the project cycle, from the inception to the monitoring stage. The chief, VWC and the Community Councillor were the main institutional actors and they showed signs of capacity on managing the system. The type of technology used in Makeneng, was chosen by the community and functions well except in times of electricity cuts that happen twice a week and determine the availability of water. It was concluded that there should be continuous community participation and increase in the number of actors trained to manage the system to enhance sustainability.

Keywords: water resources management;- sustainability;- community participation;- institution;- community management

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ACRONYMS

CBM	Community Based Management
CBO	Community Based Organisation
CSS	Coverage Scenario Study
DRWS	Department of Rural Water Supply
GOL	Government of Lesotho
IDWSSD	International Drinking Water and Sanitation Decade
IWRM	Integrated Water Resources Management
IWSC	International Water and Sanitation Centre
NGO	Non Governmental Organisation
VWSS	Village Water Supply Section
VWC	Village Water Committee
VLOM	Village-level Operation and Maintenance
SKAT	Swiss Centre for Development Cooperation in Technology and Management
WSA	Water Supply Agency
WASA	Water and Sewerage Authority
WHO	World Health Organization
LHDA	Lesotho Highlands Development Authority
SADC	Southern African Development Community
LWSP	Lesotho Water and Sanitation Policy
LEC	Lesotho Electricity Coorporation

CHAPTER 1: BACKGROUND

1.1 Introduction

Sustainable rural water supply is a good indicator of development, especially in the third world countries. It means time saved for women and children who normally bear the burden of fetching water to engage in other activities, improved health as well as good agricultural practices and sufficient harvest. Regt (2002) argues that improved access to water promises significant progress in the lives of many African's rural and urban poor, but few rural communities in Africa have been able to self organize in order to significantly improve their access to water. Lesotho, being one of them has had an outstanding outcry of accessibility of potable water in most of its villages.

Lesotho which is predominantly rural has experienced rapid development and most of its development projects have tended to have a component of water. In its rapid initiative to improve access to rural water supply, Lesotho responded more to people's need for easy access to safe drinking water. Many water projects have been implemented, yet the availability of abundant safe water has not had the expected impact on the rural population of Lesotho (Skat: 1988). While the projects increased the number of water points they did not develop the capacity of the community to manage the water resources.

A 1995 nation wide survey of water systems in the country indicated that more than 30% of the water systems in the rural areas were not functioning. This was associated with the fact that the programmes in the previous decades had been focusing very much on output and on the construction of water supply systems (Hall, 1995). Community Action Plans continue to show a need for a water management component as the present effective rural water supply coverage is approximately 45% (Kingdom of Lesotho National Report: 2006). The unattended breakdowns, the inability of villages to maintain and perform minor repairs, and lack of a well-developed governmental maintenance and repair structure makes it evident that the aim of sustainability of improved water supply systems has not been reached yet in the villages in the lowlands nor in the mountainous areas of Lesotho. The focus of this thesis is on assessing sustainability of community managed rural water supply systems in Lesotho, with particular focus in Makeneng village in the Mafeteng district.

Lesotho is working hard in trying to reduce the intensity of the development challenges it is faced with as a developing country. The government of Lesotho completed its Vision 2020 document in 2005 as well as the Poverty Reduction Strategy, which are the two documents that address the challenges that face the development process and poverty reduction. The Kingdom of Lesotho National Report of 2006 further highlights that in its pursuit to improve socio-economic and rural development; Lesotho is faced with some challenges from different sectors and within the water sector. The challenges are as follows:

- Proper coordination of water supplies, sanitation and hygiene
- Sustainable water supply

- Rationalisation of water tariffs for rural water systems
- Strengthening the role of women in irrigated agriculture

In its pursuit of providing access to safe water for all its citizens, the Lesotho government is faced with problems of constructing new water supply facilities and maintaining already constructed water facilities. Preserving already constructed water supply facilities is critical in increasing access to safe water because without sustainable rural water supply, the number of people having access to safe water will continue to decline, while the number of people depending on unsafe sources of water, and those exposed to water related and water borne diseases will continue to rise (WRI, 1998).

Lesotho decentralized water resources management and service delivery, for instance in a statement given by the Lesotho Minister of Tourism and Culture on the 23rd UNEP Governing Council and Global Ministerial Forum that was held in Nairobi (2005), the government of Lesotho recognized that people are central to the development of water supply systems particularly in the rural areas. Local communities, under the guidance of the technicians from the Department of Rural Water Supply (DRWS) of the Ministry of Natural Resources, are provided an opportunity to decide the best means of supply system that suits their particular locations. This initiative has however been able to improve water supplies to only few communities.

In line with the unfolding decentralization process underway in Lesotho, critical capacity building of the national, regional administration and local communities in the context of rural social service delivery, especially rehabilitation of water supply and sanitation, small scale irrigation and water resources management is envisaged in order to improve the livelihood of the rural community, ensure environment sustainability, food security and alleviate poverty. Lesotho adopted the new water policy known as the Lesotho Water and Sanitation Policy in February, 2007. This policy was succeeding the Water Resources Management Policy which had been adopted in 1999 and was set to be updated every five years to accommodate domestic and international changes and challenges (LWSP, 2007).

This research sought to assess the sustainability of community managed water supply systems in Makeneng and this was done by highlighting three aspects of the rural water supply systems. It first looks at how water organizations arise within the communities and with what participation by users. The interest is on the social relations that exist within the communities with respect to the management of water resources. The second is focused on water and livelihoods, specifically how access to adequate water affects the way that people earn a living and the quality of their lives. The third aspect is on government intervention on the management of the water supply systems.

1.2 Problem Statement

The challenges facing most rural water supply projects in the developing countries including Lesotho is lack of sustainability. Over the past two decades, community management has become the prevalent model for management of rural water supplies throughout sub-Saharan Africa (Harvey & Reed 2006). Low water supply sustainability levels throughout the sub-continent indicate that community management does not improve rural water supply to the expected levels. Many community-based rural water systems in Lesotho are increasingly failing. It is therefore important to find out if or under which conditions, community management contributes to sustainable rural water services. This study is meant to contribute knowledge to the GOL on how community management of rural water supply can be improved in order generate sustainable results.

1.3 Research Questions

The research is focused on assessing sustainability of community managed rural water supply systems management of rural water supply systems the researcher is interested answering the following questions;

- What is the capacity of the Makeneng community in managing the water supply system?
- What institutions have been put in place in the Makeneng community to manage the water system?
- How does the type of technology provided to the Makeneng community affect the management of water supply systems?
- What is the impact of the system on the livelihoods of Makeneng villagers?
- What are the roles of the government and donor organisations on the sustainability of water resources?

1.4 Objectives

1.4.1 Main Objective

To investigate how local communities in Lesotho's rural areas in general and Makeneng community in particular, play a management role in the sustainability of rural water supply systems.

1.4.2 Specific Objectives

- To evaluate the community participation of the Makeneng community in the water supply project cycle.
- To identify institutions that are found within the community and evaluate their capacity to manage the water supply system.

- To investigate the possible linkage between the type of system installed and its sustainable management by the Makeneng community.
- To assess the impact of the installed water supply system on the livelihoods of the Makeneng villagers.
- To explore the roles of funding agencies on the sustainability of water resources.

1.5 Justification

This research is aimed at assessing the present state community-based rural water supply systems in Makeneng village and evaluating their prospects and constraints for sustainable management. Therefore the study is meant to contribute knowledge on why community management of rural water supply systems is not improving the sustainability of the systems as expected in Lesotho and, how the management of such systems can be improved.

1.6 Definition of Key Concepts

Sustainability

The World Commission on Environment and Development (Bruntland, WECD 1987:47) defines sustainability as "development that meets the needs of the present generation without compromising the ability of the future generation to meet their own needs". In context of rural water supply systems, sustainability refers to the ability to maintain efforts and derived benefits both at community and agency level even after the assistance (managerial, financial and technical) is withdrawn (Ball & Ball, 1991). Furthermore Lammerink (1998) points out that sustainability of drinking water supply depends on various factors such as:

- Continued delivery of services
- Regular maintenance of the physical infrastructure through the participation of users.
- Long-term institutional capacity of user groups, inter-institutional support, and technical soundness of the programme.

Community: - refers to a group of households in a particular area that share one or more water supply facilities. According to Kirby *et al* (1994), a community is a group of people who are socially bound and influenced, within a geographical context (From village to planetary proportions).

Community Management: - refers to the capacity of a community to control or at least strongly influence the basic decisions over construction and management of its water supply system (Mc Common and Yohalem 1990).

Community Based Management

WHO (1996) defined community based management as a situation where beneficiaries of water supply and sanitation services have responsibility, authority and control over the

development of their services. In other words the community is able to control, or to at least strongly influence, the development of its water and sanitation system **(**McCommon et al, 1990). McGarry (1991) noted that, since the community will also have the authority and responsibility for operation and maintenance, this will be more effective and efficient, leading in turn to improved sustainability.

Operation and Maintenance: - (O & M) refers to the mechanisms put in place for efficient management and repair of water supply facilities. IRC (1995) has defined the two concepts separately.

Operation: - refers to the everyday running and handling of a water supply. This involves several activities:

- Major operations required to convey safe drinking water to the users, e.g. starting and stopping a motorized pump, the supply of fuel and the control of valves.
- The correct handling of facilities by users to ensure long component life, e.g. the handling of a rope and bucket at a well, handpump use, the use of taps at a standpost.

Maintenance: - refers to the activities required to sustain the water supply in a proper working condition. Maintenance can be divided into:

- Preventive maintenance- regular inspection and servicing to preserve assets and minimize breakdowns.
- Corrective maintenance-minor repair and replacement of broken down and worn out parts to sustain reliable facilities.
- Crisis maintenance- unplanned responses to emergency breakdowns and user complaints to restore a failed supply.

Rural Water Supply (RWS): -refers to provision of clean and safe water to rural communities through construction of boreholes, protected wells and springs (Pickford *et al*, 2006).

Water Supply Agencies (WSA) : - in this thesis refers to all institutions, public, private and non-governmental, which are involved in the provision of water to rural areas, through funding, implementing and monitoring of rural water supply programmes (Pickford *et al*, 2006).

Water Point: - refers to any water source where a rural community draws water. This might be a well, borehole, spring, river or a dam (Pickford *et al*, 2006).

Water Supply System/Facility: - refers to 1) boreholes- fixed with a hand pump or stand pipe or with a bucket and chain and 2) protected wells (where rural communities draw clean and safe drinking water). In this thesis water supply system is interchangeably used with water supply facility (Pickford *et al*, 2006).

1.7 Organisation of the Study

This thesis is divided into five chapters. Chapter one deals with the problem formulation, objectives and research questions. Chapter two provides a literature review around

sustainability of community managed rural water supply systems, discussing origins of sustainability and community management as well as the factors affecting them. Its adoption in Lesotho is also reviewed. Chapter three presents the methodology used in the study. Chapter four presents the results of the study and analysis. Chapter five concludes the study basing on findings and lessons learnt. It also makes relevant recommendations.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The chapter is subdivided into eight sections. It looks into the origins of the concepts of sustainability and community management within the area of rural water supply as the main variables of this research as well as the rationale behind adopting them. Furthermore it reviews the roles of funding agencies and the approaches in rural water supply. Factors influencing sustainability of rural water supply are also highlighted. Lastly the chapter also looks into the rural water supply of Lesotho.

2.2 The Concept of Sustainability

Sustainability is defined as development that meets the needs of the present without compromising the ability of the future generations to meet their own needs (Bruntland, WECD, 1987:47). As indicated by Parry-Jones (2001), sustainability is defined differently depending on the context one is looking at. In the case of rural water supply Davies and Brikke (1995) argue that sustainability refers to water facilities being maintained in a condition which ensures a reliable and adequate portable water supply and the benefits of water supply are to be continued to be realized over a prolonged period of time.

2.2.1 Sustainability of Rural Water Supply

Water can contribute to social development for individuals and communities if the water supply systems are sustainable, without which water would only be available for a short period of time. In order to understand sustainability of rural water supply, the researcher looks at the concept of sustainability in general and sustainability in rural water supply in particular. Water supply projects have impact on people's lives, which extend far beyond the expected improvement to health and reduction in time spent collecting water. Well (1998) argues that sustainability pertains to multiple aspects of rural water supply with institutional, social, technical, environmental and financial dimensions. Hayson (2006) points out that this accounts for the fact that understanding and measuring sustainability is so difficult, and why solutions are highly context specific. Conceptual frameworks such as the one below have been developed to capture the interlinkages that relate to sustainability, a weakness in anyone of them can lead to failure of the scheme.

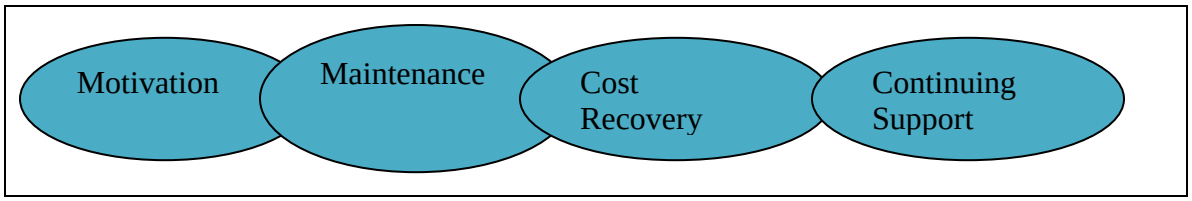

Figure 1: Conceptual Framework [Developed to Capture Interlinkages that Relate to Sustainability by Hayson (2006)]

The widespread failures in water supplies have been attributed to a number of laws in the water project, the intervention was not desired by the community, lack of ownership results in neglect of maintenance and repairs, the promised benefits do not materialize, education programmes are too short and trained members of the community move away or lose interest (Carter *et. al* 1999). Other factors such as the on-going use of traditional sources of water, poor systems of cost recovery and the disaster for the water from the improved source also contribute to undermining sustainability (Parry-John *et.al* 2001).

Challenges posed by sustainability are being tackled all over the world by practitioners. Due to the widespread trend in developing countries of the decentralisation of responsibility for water schemes from governments to villagers, many of the interventions aimed at improving sustainability are taking place at the village level. The use of appropriate technologies which are low cost, easy to maintain, simple to use and readily available is one response to the challenge of sustainability. Appropriate technologies are integral to the concept of Village Level Operation and Maintenance (VLOM) which emerged in the Water Decade (1981 – 1990). Many of its basic principles are still guiding the water sector today, though a tension persists between the ease of maintaining a system and its durability (Reynolds, 1992). The VLOM conceptualisation of the community as an island also neglects to recognise the role of external support agencies, such as the government, in achieving sustainability (Webster et al, 1999).

2.3 Factors Influencing Sustainability of Rural Water Supply Systems

When providing a water supply system to a community there are many factors that can affect its sustainability. This section focuses on five categories of critical factors that influence sustainability of rural water supply systems. These are policy, social, financial/economic, technological and management factors (Parry-Jones, Reed and Skinner 2001; Harvey and Skinner 2002). These factors are discussed in relation to the role they play in promoting sustainability of rural water supply in third world countries in general and Lesotho in particular.

2.3.1 Policy Factors

Policy factors have a significant impact in the promotion of sustainability of rural water supply because they provide a framework in which the rural water supply is implemented and also gives an indication of government's commitment to the sector (IWSC, 2003).

Policy Context

The policy context within which rural water supply projects are developed and implemented is central to providing a supportive environment that ensures long-term sustainability. In the absence of a coherent policy, different actors often employ different implementation approaches and technologies which can lead to a fragmented and unsustainable rural water supply sector (Parry-Jones, Reed and Skinner 2001). Katz and Sara (1998) argue that the problem however is that rural water supply sector policies have been poorly defined in many developing countries. This situation has been exacerbated

by the fact that donors and implementing agencies bypass governments to set up their own policies and rules for their projects. Therefore, the development of a comprehensive policy framework in the rural water supply sector helps government agencies, international development agencies, bilateral and support organisations to identify their roles vis-a vis the development of the water supply sector in the national context (Shah, 1998).

In order for policies to be effective in guiding changes, they must be developed and formulated with the involvement and participation of all stakeholders (IWSC, 2003). Success in managing policy contexts depend on more than simply defining new policies or identifying which policies are important, or negotiating with key stakeholders on those policies. Technical issues and processes are also important to the success of such policies. Policies impact on water programmes. They provide the foundation on which implementation strategy and action plan are developed. The strategy helps define details and outline of activities based on the policy principles and guidelines, thereby enabling appropriate funding to be sourced, capacity developed and progress monitored (IWSC, 2003). For example, the development of clear principles and targets for the water sector in the 1970s, led to substantial donor investment in the rural sector (Parry-Jones, Reed and Skinner 2001). Policies also set the stage for the monitoring programme implementation and help to define accountability mechanisms (IWSC, 2003).

Legal Framework

A sound legal framework in the water and sanitation sector that contains clear and mutually compatible policy statements regarding water and sanitation, gives guidance and confidence to all agencies working in the sector. This helps to determine their own policies and plans to advance activities as quickly as possible (Muller, 2002). It has been emphasised by IWSD (2003) that a legal basis is important and may take the forms of laws, legislative acts, decrees, regulations and official guideline. To be comprehensive, the legal basis should encompass the full range of legal instruments, including essential legal statuses used to implement the policies. Without a legal framework to guide overall implementation, water programs run the risk of violating societal norms and failing to address the objective for which policies were established (IWSC, 2003).

Sound water laws and policies are necessary for an integrated water resource management. However, there are many areas where these are deficient. In many developing countries ground water legislation is non-existent, inappropriate or outdated.

Institutional Capacity

Jones *et al* (2001) point out that the institutional set-up or organizational arrangements are considered to be a central factor in sustaining water supply facilities. These arrangements relate mainly to the maintenance system that is established to provide ongoing financing and repairing mechanisms of water supply facilities. They therefore stipulate the fact that no water supply facility should be installed unless a proven maintenance system is also established to support it, because the maintenance system is critical to its sustainability.

McPherson (1994) also argues that better management of water supply facilities could be achieved if responsibilities are devolved from the central government to autonomous agencies. He argues that this would really limit the extent of political interference and allow water facilities to be managed according to efficient business practice. It is therefore recommended by Brikke et al (1995) that local government has to be more suited in providing more supervision of the rural water sector due to its proximity to local communities. They however point that in African countries, local government bodies are under funded and lack capacity to fulfill this role.

2.3.2 Social Factors

In addition to policy factors sustainability of rural water supply is also influenced by social factors. In this thesis social factors refer to social interaction in a given social context.

a) Community Participation

McCommon and Yahalem (1990) define community participation as "an active process whereby beneficiaries influence the direction and the execution of the development projects rather than merely receiving a share of projects' benefits". Brikke (1993), states that in order to increase the chances of the water supply system to meet the needs of users, community participation should begin as early as possible in the project development. He stipulates that community participation should in fact begin as soon as community has requested a water supply facility. Thereafter, community members should be directly involved in planning the new scheme and deciding how it can be run, and by so doing, the prospects of its success are improved. According to Magone-Ramohatswa (1995), development is for the people and that is people themselves who must have an ultimate say and direct all development efforts.

b) Demand Responsiveness

Rural water supply can only be sustainable if it is demand driven. Communities must therefore request for the improvement of water supply facilities before the water supply facility is constructed (Davis, Garvey and Wood 1993). As a result, water supply agencies should determine what the community wants, and is able to support and sustain, instead of providing water supply facilities that have not been requested. Water supply agencies should ensure that projects that are based on effective demand are given the first priority (McPherson, 1994). Unfortunately some water supply agencies provide water facilities without consulting the communities. This is often overlooked for instance in as much as there might be a need for an improved water supply system, to improve health status of the community, communities do not always demand for improved water supply facilities for health reasons. They are more concerned about reducing the burden on women who carry water for long distances, so that they can save time for other activities. If water supply facilities are constructed based on supply and not demand, they are usually abandoned not long after they have been handed over to the community.

Thereafter, community members help themselves with some components of water supply facility, such as nuts and bolts (Briscoe and de Ferranti, 1998).
The water supply agency that has come to the aid of the community should ensure that the community is involved from the start of the project through to the evaluation stage (RSU 1999). In addition Ball and Ball (1999) argue that "active participation of the community is the process which leads to design, installation, and subsequent maintenance of the water supply system, should begin at the earliest possible stage". According to Narayan (1995) the importance of community participation is that, when people influence or control the decisions that affect them, they have a greater stake in the outcome and will work harder to ensure that they succeed.

The use of participatory approaches is one of the principles of w the Dublin convention (GWP 2001). It states that water development and management should be based on a participatory approach involving users, planners and policy makers at all levels. Other principles are that: - water is a finite and valuable resource; the important role of women in the management of water and that water should be viewed water as an economic good. These are the principles that have been adopted in the Integrated Water Resources Management (IWRM). Community involvement in the sustainability of water projects is highly emphasised in IWRM and Bell (2001) points out that one of the main reasons for ensuring community or public involvement in IWRM is to reduce conflicts and to help projects to achieve the intended objectives.

According to Musonda (2004) community participation at the inception of the project helps the water supply agency to assess the community preference of the water supply system. Pickford et al (1996) indicate that in order to ensure that community members are involved in the whole process; participatory methodologies must be employed throughout the whole development project. In addition Swanepoel (1997) points out that participatory methodologies help in the utilization of rich community knowledge about their environment. Briscoe and de Ferranti (1988) argue that assessing of consumer preference is one of the neglected aspects in rural water supply and features more prominently in reasons for project failure. Only when consumers participate actively in the selection of the service levels and decisions associated with how and why of the cost recovery, can they accept ownership.

Roark (1993), points out that community participation should also be looked at from a gender perspective, because women have a responsibility of drawing water and yet they are usually not involved in the decision making process. According to Kerr (1989), women have been consistently excluded from any dialogue about the priority of improved water supply, which has contributed to the disastrous failure of improved water supply systems. It should be borne in mind that women are the greatest providers of household water supply and are also the primary beneficiaries of any improvement and should therefore be involved in any attempt to improve water supply facilities (Churchill 1987).

As mentioned earlier one of the principles adopted by IWRM is that women play an important role in the management of water. It is therefore important to always assess the

involvement of women in water project as that element can either inhibit or promote sustainability. Churchill (1987, argues that although the role of women in rural water supply was ignored in the past, recent attempts to involve them have proved promising and should be extended. In addition there is increasing evidence that the best managed projects are those where women were playing leading roles (UNICEF, 1995). In addition Briscoe and de Ferranti (1988) argue that sustainability of water supply systems is drastically enhanced when women have key responsibilities. McCommon *et al* (1990) point out that community participation can only be sustained when there is a system for organizing the community. They therefore argue that community organisation entails that a community has the institutional capacity to manage the development and operation of the water supply facility, if it is to be sustainable (McCommon *et al*, 1990). On the other hand Mogane-Ramahotswa indicates that without proper community organisation structures, effective participation has no hope for sustainability. As result Sami and Murray (1998) argue that the responsibility to manage water supply systems should not be transferred on the community structure that does not have the capacity to operate and maintain it.

It is for this reason, that most governments, donor and water supply agencies typically require that communities establish committees to co-ordinate local management of new water supply systems (Brikke 1993). However Davis et al (1993) points out, before forming the water committee it is important that to ensure that their roles and responsibilities are clear because when the roles and responsibilities are not clear, it creates role confusion among the committee members, which subsequently affects their motivation to work on behalf of their community. They further add up that it is important to determine whether or not a water committee is necessary. If not, existing community management structures should be considered as an alternative.

2.3.3 Economic Factors

In this section the ability to meet the costs of maintenance and willingness to pay are going to be discussed as the factors that affect the sustainability of rural water supply systems.

a) Economic ability to meet the Cost of Maintenance

Davies *et al* (1993) mention that the operation and maintenance costs can either be done by the community or the water supply agency. The question that is raised with community based operation and maintenance system is whether or not the poor rural communities can meet the full cost of operation and maintenance. According to WHO (1993), some actors in the water supply sector argue that beneficiaries can fully meet maintenance costs, while others argue that meeting full costs of operation and maintenance by communities is difficult because of high poverty levels. Even in cases where communities are willing to contribute financially to operation and maintenance they are hampered by lack of resources for operation and maintenance (RSU, 1999).

Those who promote the idea that maintenance costs should be met by local communities argue that there is mounting evidence that even the poorest and unprivileged segments of society are willing to pay for water supply, as long as it is reliable (McPherson *et al*, 1994). Furthermore, they argue that water demand surveys have generally found out that poor people are willing to pay a higher proportion of their income for improved services than their rich neighbours. Churchill (1988) also supports this view. He argues that although there are undoubtedly some areas in some countries where poverty is extreme, the review on the global situation reveals that most rural communities can afford to pay for improved services, provided that appropriate technology is used. The reason for his argument is that people in rural areas are always spending large amount of time and energy in water collection.

To the contrary Davis, Garvey and Wood (1993) argues that if the community waits until the water supply facility is broken to collect funds, they might not collect enough funds from the community members. Their major concern however, has to do with keeping the funds within the community. They argue that in order to avoid corruption or misuse of funds, the money should be kept in the bank. However, the problem with this issue is that few communities in developing countries like Lesotho have access to banks.

Glennie (1983) advocates for shared responsibilities because community members in rural areas cannot meet all the operation and maintenance costs because they are too high. It is for these reasons that water supply agencies will always have to play a role in carrying out operation and maintenance that are beyond the capacity of the communities. It is important to realize that local communities only have the capacity to carry out minor repairs due to high poverty levels.

b) Willingness to Pay for the Services

In order for the communities to be able to meet the costs of operation and maintenance, the community members must be willing to pay for the services. However not every community member is willing to pay for the services. Willingness to pay is influenced by a number of factors. One such factor is the availability of alternative sources of water in the community. For example, a Bangladesh community with a river nearby is prepared to pay much less for a handpump than a Malian with similar income who has to walk kilometers to fetch water. This is why a survey should be done before the project is started to determine the willingness to pay (Roark *et al*, 1993). In Lesotho in a report of follow up and backstopping mission of 1993 that was prepared the Ministry of Interior, Chieftainship Affairs and Rural Development, it was reported that the villager's ability and willingness to pay is high if they understand the reason why they should pay and see a benefit for themselves.

2.3.4 Technological Factors

There are many factors that influence the sustainability of rural water supply from the technological view. According to Brikke and Bredero (2003), the provision of water supply and sanitation improvements can be characterised as either demand-driven or

resource driven. With a resource-driven approach, the intervention area is selected with minimal involvement of the community, and the technology is based on global policies, or replicates a blueprint or successful experience elsewhere. They point out that there are potential problems with resource driven approaches. Such problems include lack of community acceptance and poorly-functioning improvements that are underused.

With a demand-driven project, by contrast, problems and needs are identified with the full participation of the communities. This may involve using extension workers to raise awareness in the communities prior to the start of the project. Communities can choose a particular technology, with an understanding of the technical, financial and managerial implications of their choice.

a) Choice of Technology

According to Taylor and Mudege (1996), technology choice is crucial to sustainability of rural water supply sector because the type of choice of technology affects the operation and maintenance of the water supply systems. Davis *et al* (1993) also argues that if a community is to manage a water supply system, the technology used needs to be the type that the care takers can maintain with little assistance from outside. It must suit the existing locally available skills or skills that can be acquired by the community (IWSC, 1993).

Technology is considered suitable if it is socially acceptable, economically sustainable, technically effective and environmentally sound. Communities should have a say in the technology choice and not to consider technology choice to be too technical and beyond the comprehension of community members. If technology is not suitable, communities end up relying on the central government or the water supplying agency to maintain the water supplying facility, which as indicated above has not been successful (Pasha and Mcgarry, 1989).

Umgeni Water (1993), on the other side points out that although it is appealing to water supply agencies to involve communities in deciding the type of technology, it is important to ensure that the communities make informed decisions by providing them with information on the different types of technologies, their advantages and disadvantages. If this is not done communities are bound to not manage the system sustainably because certain types of technology may not be suitable for certain areas.

b) Availability of Spare Parts

Lack of spare parts has been the major constraint in the sustainability of water supplies and has been a recurring problem. In some cases it has led to the complete abandonment of the water supply system (Brikke *et al,* 1995). If sustainability is to be achieved, it should be ensured that after appropriate technology is chosen, spare parts for that type of technology is chosen, spare parts for that type of technology are made readily available.

c) Operation and Maintenance

Brikke and Bredero (2003), argue that often critical aspects of operation and maintenance development have been neglected in short-term, agency managed projects, yet effective operation and maintenance brings about important health benefits by sustaining accessible water supplies in adequate quantity and quality; thereby reducing the time and effort spent on water collection. The realization of the importance of O&M has come about due to scarcity and maximization of their use. There is also insufficient appreciation of the magnitude of O&M problems and skills required within the water sector to properly operate and maintain the water supply facilities, mainly due to lack of data (McPherson, 1994).

Governments and External Support Agencies, as well as local communities therefore, are more and more becoming concerned about the importance of integrating operation and maintenance components in the planning, implementation, management and monitoring of project activities, since operation and maintenance is a key factor of sustainability (WHO, 1995). Professionals in the sector are also realizing that operation and maintenance is not just a technical issue. It also encompasses social, gender, economic, institutional, political, managerial and environmental aspects. Moreover, there is a tendency in developing countries to redefine the roles and responsibilities of the various actors involved in operation and maintenance. Governments, because of heavy financial burdens and efficiency problems, are gradually changing their role of provider of services to that of facilitator of processes. Communities have increasing responsibilities, not only in the operation and maintenance of their water supply systems, but also in the financial management of these systems. New actors, such as private entrepreneurs from the informal or formal sectors, are now being considered as potential actors for operation and maintenance.

Properly planned projects should incorporate O&M at the beginning stage, and as the water supply facility is completed, O&M activities begin and benefits start to be realised (Roark *et al* 1993). Since failure to maintain functionality of the water supply facilities leads to community members again relying on unprotected sources of water, which has serious health implications (Sami & Murray 1998). In addition Taylor and Mudege (1996), mention that it is impossible to achieve sustainability of water facilities without considering how crucial operation and maintenance is.

Carrying out an effective operation and maintenance system depends on three factors. The first being the one that is managed by the central body, the second being the one with regional responsibilities and the third one consists of the local community (Sami & Murray, 1998). The first two tiers are not suitable for community managed water supply facilities because they are centralised which have lamentably failed. In order to ensure that sustainability is promoted, the third tier would be more effective. This means that community takes up the day-to-day running and management of their water supply. Davis *et al* (1993) point out that the actual operation and maintenance can be given to the water points care-takers, who would be responsible for preventive maintenance on daily basis while an area mechanic can be contracted to take carry out major repairs.

It is therefore important that communities are fully involved and aware in the operation and maintenance of their water supply facilities failing which sustainability cannot be fully realised.

2.4 Community Management of Water Supply Systems

Community management of water supply systems is a concept that has been on the agenda of development for ages. For instance at the Earth Summit in Rio de Jainero which took place in June 1992, world leaders committed themselves to a comprehensive programme to provide sustainable water supply and sanitation services to the hundreds of millions of the world population who lacked them. At the summit all states and support agencies were urged to implement activities aiming for universal coverage outlined in Agenda 21 in the 21st Century. Among the guiding principles in the achievement of Agenda 21 was the one that states: "Community management services, backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes". Lockwood (2004) stipulates the fact that two decades of experience with participatory approaches, decentralisation, cost sharing and technological adaptation mean that donors, NGOs and National governments have all the evidence they need that the driven community-led approaches delivers better results than the supply driven government-led models that prevailed up to the 1980s.

In the 2003 IRC book on scaling up service delivery for community management, Schouten and Moriarty propose a key distinction between strategic decisions about how a service is developed and the "nuts and bolts" of day to day operational issues. They go on to say: "*We believe that community management is…… about communities making strategic decisions: what level of service they want, how they want to pay for it, where they want it. The community may also be involved in day-to-day operation and maintenance, in collecting money from users and in buying spare parts, but they do not have to be. They may choose to hire a professional to do this for them. Community management is about power and control*" (Schouten and Moriarty, 2003).

Evans and Appleton (1993) distinguished community management from other concepts by arguing that unlike its forerunner — community participation — community management firmly places control over the development and upkeep of the water system with the community itself. Before that can be achieved, the community has to be equipped and empowered to take on its changed role. At the same time, the roles of the water agency and central government, and those of non-governmental and private sector organizations, need to be adapted so that they can provide timely and cost-effective supporting skills and resources as needed. Also the basic principles of community management include participation, control over decision-making, ownership and cost sharing.

Different authors view community management as the key to sustainable water supply. For instance, Lockwood (2004) argues that there is little doubt that community management will be the predominant model for those striving to reach the Millennium

Development Goal of reducing by half the proportion of people without sustainable access to safe water. The community management brings many benefits. It has been seen as answer to the failure of previous, supply-driven approaches to providing RWS services which often did not meet the real needs of users and resulted in systems which broke down for earlier than the end of the design life. There is a growing body of evidence to suggest that better quality participatory planning and management leads to better performing community water supplies (Narayan, 1995; Gross et al., 2001; Wijk, 2001).

Community management like other concepts still has its shortcomings. Lockwood (2004) points out that it is by no means problem free. Despite strong investment in capacity building in many projects, a significant number of systems still run into problems. Widespread evidence suggests that after a number of years of operation (less in some cases), many rural systems will face a variety of problems and obstacles if they are to maintain services, even under the community management approach. The problems include-

- Implementing projects using community management model is generally more time consuming and complex than traditional approaches in which there is minimal participation
- In spite of the many positive examples of community management, there are still problems in sustaining services over the long-term and it is now accepted that it has limitations
- It is increasingly recognised that the majority of communities cannot maintain their systems alone and that they require some form of external assistance over the long-term.

Lockwood broadly identifies two sets of factors that can lead to problems for community-managed RWS:

- Limitations within the community: community dynamics, political or social conflict, failure to generate sufficient tariff revenue, lack of preventative maintenance, lack of cohesion and lack of capacity (technical, managerial, financial etc).
- Constraints external to the community: poor designs, poor implementation, political interference in planning and resource allocation, lack of spare parts supply, lack of supportive policies and legislation and, very importantly, the lack of long term support to help communities through major repairs, conflicts and other problems with extension upgrading.

2.5 Roles of Funding Agencies on the Sustainability of Water Resources

Many projects, whether private sector or community based cannot proceed without funding or some form of assistance to support the period between developing a project and attracting a loan (Cardone & Fonseca, 2006). Therefore in its attempt to meet the 10th MDG of supplying sustainable rural water, Lesotho highly depends on donor funding.

Considering the limits of community management that were widely discussed at the conference on scaling up community management of RWS hosted by IRC in 2002, a

useful concept emerged for explaining the limits of community management which is the need for external support to community managed RWS systems. According to Lockwood (2004), donors become the voice of the community and happily seize an opportunity to increase their role, becoming in many countries a parallel provider of services and in that respect a kind of parallel government is achieved. Lockwood argues that it is increasingly recognised that the majority of communities will be unable to manage their own water supply systems without some form of external assistance. Even with improved approaches focusing on increasing management capacity, it is simply not realistic to expect rural communities to be completely self-sufficient, especially in the first years after the systems have been constructed.

Looking at the community management model on rural water supply, rural communities should be able to carry out tasks such as regular preventive maintenance, tariff collection, book-keeping and sanitary inspections. However, there are major repairs, when specialized tools or major system components are required, where there is a breakdown of the management structure, some level of external assistance will usually be required. Lockwood (2004) states that it is important to be aware that water supply projects are often implemented and driven by donors and international NGO's who tend to work with an emphasis on their own particular concepts and objectives.

It is therefore important for governments and donors to have an understanding of the objectives and the working conditions of projects as IRC (2002) points out, some international NGO's and donors often see the government as an obstacle to efficient implementation, yet even their long-term presence is no substitute for their trying to develop local capacity. It is therefore critical for the government to be actively involved in order to provide political will and to ensure the aspects of providing water supply.

2.6 Overview of Rural Water Supply in Lesotho

This section gives an overview of water supply sector in Lesotho, in order to provide an understanding of the context in which the rural water supply sub-sector operates. The section is divided into three major sub-sections: Historical context and Organisational development of rural water supply, Access to water that has a subheading of policy and legal frame work will be discussed.

At least five distinct phases can be identified in the history of improved rural water supplies (Tams, 1996).The phases were originally described in a paper prepared for ODA (Hall, 1995). These phases will be briefly presented below.

2.6.1 Phase 1: Early Mission and Trading Store Systems

The first phase goes back to the water management period in the middle of the 19th century when missionaries and traders started importing the technology required to build simple water systems to serve their needs and those of the institutions established. These systems were gravity-fed, bringing water down from springs on the hillsides. Villagers living near the missions or trading stores were often given access to the piped water.

Although many of these old systems are now defunct some have been maintained or upgraded and continue to provide water. This is particularly true of those systems serving trading stores.

2.6.2 Phase 2: Pre –Independence: District Council

A second phase that was identified in the 1960's when the first community water supplies were built in the period leading to independence. During this period lipitso (public gathering) were held all over the country and villagers were encouraged to be self-reliant and organize themselves. In 1965 the Government promised that those villages which raised funds for the construction of water systems would be met "half-way", that is if the raised half the required amount of money and the government would provide the other half. Funds were provided through the District Councils to match the cash and labour value of those villages which responded. Unfortunately many of the systems which were built by the villagers themselves did not prove to be sustainable because of poor design standards and materials and lack of community management structures and governmental back up. However, the idea of raising funds to meet the Government "half-way" has prevailed in the time with many communities still believing that they can only attract Government services through raising some funds on their own.

2.6.3 Phase 3: Department of Community Development Systems

A more coordinated third phase began in 1968 when District Councils were abolished and responsibility for rural water supply was taken over by the Department of Community Development. The newly independent Government continued to encourage villagers to initiate requests, provided unskilled labour and makes some contributions. The Government then sought donor funding for the projects and sent skilled technicians (many of them Peace Corps volunteers) to design and supervise construction. Between 1968 and 1978 over 200 village water supplies were built, mostly in the Lowlands (Tams, 1996).

During this phase a number of problems became evident. First of all demand soon far exceeded the Government's capacity to respond. By the mid-1970's there was a backlog of over 700 requests waiting for attention. Villagers who had been motivated to apply for water systems found that when they did so they had to wait years for response.

Secondly misunderstandings arose over the collection of funds. Villagers usually had no idea of the actual costs of a water supply and tended to believe that the collection of a few hundred Maluti was enough to entitle them to be met "half-way" by the Government. Delays in responding to their requests resulted in increased suspicion regarding the Government's use of the funds the villagers collected. Until 1975 these were deposited into the sub-accountancy (tax collecting office) and absorbed into the general government funds. In the eyes of villagers, who had yet to get a water system, the government had "eaten their money" (Gay, 1984)

A third problem as Gay (1984) points out was maintenance. The systems built during this phase were often well below the standards required today: damage-prone plastics pipes and corrugated water tanks were frequently used. Villagers were expected to maintain the systems, but without training, spare parts or technical backup this rarely happened and within a few years many had ceased to function.

Finally the process of mobilizing villagers to construct water supplies became increasingly politicized following the 1970 coup and the creation thereafter of politically based village Development Committees which served the interests of the ruling party (Gay, 1984).

2.6.4 Phase 4: The Development of the Village Water Supply Section

The recognition of these problems led to major review of policy by government and donor agencies in 1978. An inter-disciplinary team critically reviewed the rural water programme as it had developed and made recommendations which laid the foundations for the fourth phase (Feachem *et al*, 1978). The changes made during this phase can be grouped into three categories: institutional, technological and community related.

a) Institutional Changes

As the International Drinking Water Supply and Sanitation Decade (1981-1991) got underway, Lesotho was able to attract increasing donor support (this was also possible given political developments in the Republic of South Africa at the time). Responsibility for rural water supply moved to the newly-created Village Water Supply Section (VWSS) within the Ministry of Cooperatives and Rural Development (MCRD). VWSS was soon able to attract donor funding from a wide variety of sources; most significant in the 1980's was the USAID support, which enabled very rapid progress to be made.

Following the recommendations of the Feachmen Report (1977) some of these funds were used to concentrate on institution building. VWSS grew rapidly, moving within a few years, from being a Maseru-based operation to having offices and stores in all ten districts. Construction rates soon exceeded expectation. The rural population covered grew extremely fast.

The largest, most accessible communities were tackled first. Inter-district competition, to serve the most people in the shortest time, was promoted by VWSS and motivation levels were raised in the villages. In the first half of the 1980's construction rates far exceeded expectation in a position which it had not been expected to reach until 1994. Construction work was revised to 20 years. An evaluation in 1988 *suggested* that if current construction rates were maintained "the ultimate goal of *Water for All* might more or less be achieved by the year 2000" (GoL/Hevetas, 1988).

b) Technological Changes

It was recognized that many systems built in previous phases had not been sustainable because of the poor designs and materials used. At the start of this phase new design standards were introduced and published as a guide for all those working in the sector.

Included in these were a set of specifications designed to ensure that a minimal level of service was provided. In keeping with WHO guidelines VWSS accepted a target of providing 30litres per capita per day. It was also agreed that collection points should be within 150 metres of all rural households and should serve between 80 and 120 people (Tams 1996).

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c) Community- Related Changes

Given the long waiting list that built up the previous phase it was decided to establish village selection criteria. New lists of villages were drawn up by the DRDO based on new, seemingly more objective criteria than those used in the past.

Perhaps the most significant development was the establishment of non-political Village Water Committees (VWCs) to be elected by the community and trained by Government. This was done to ensure that the VWCs were not identified with the Village Development Committees (which were seen as instruments of the ruling party) and did not become entangled in party politics. Once established the VWC's were given responsibility for organizing community labour contributions during the construction period and for collecting village funds to be set aside for maintenance purposes and the management of the systems. To support the VWCs, village water minders were trained and provided with tools for minor repairs.

This fourth phase lasted approximately 15 years starting from 1977, when the Feachman report laid the foundations for a new programme, to the early 1990s when VWSS began moves to upgrade to the level of a Department under the Ministry of Natural Resources.

2.6.5 Phase 5: Reflection and Reform: The Start of DRWS

This is a recent phase and Tams (1996) point out that the start of it is more difficult to pin-point. However, in the late 1980's (ten years after the Feachmen report) and during the early 1990s a process of reflection began which was to result in a number of important changes that characterize the start of new, on-going phase. This process has been strongly supported by Helvetas who, in addition to supporting the construction of new systems, provided technical assistance to help develop the capacity of the organisation as a whole.

The fifth phase has been characterised by the process of reflection and reform and this has resulted in changes in different domains. Noted below are the changes that were introduced during this phase as well as a discussion for their reasons.

a) Upgrading to Departmental level

In the fourth phase VWSS operated within the Ministry of Cooperatives and Rural Development, this later became the Ministry of Interior, Chieftainship Affairs and Rural Development (MICARD) before being given a more manageable of Ministry of Home

Affairs. The name changes reflect rather the cumbersome nature of a large Ministry with many responsibilities.

Provision of rural water supply was certainly a priority for the Ministry throughout the fourth phase. In time as VWSS grew, it became quite apparent that the section would benefit from being up-graded to the level of a department. In 1995, after years of lobbying, VWSS was finally upgraded and became the Department of Rural Water Supply (DRWS) under the Ministry of Natural Resources.

b) Balancing Construction and Maintenance

Throughout most of the fourth phase VWSS efforts focused primarily on extending coverage to the unserved population as rapidly as possible. Although this resulted in impressive results, there is wide-spread agreement (recorded in numerous evaluations) that in the rush to construct new systems, inadequate attention was given to build either VWSS or community capacity to maintain and repair the new systems. In the 1980s VWSS operated without a maintenance Section and although Village Water Committees and elected water minders they were given only limited training in the maintenance of their systems. The concerns of Moran (1990), who worked as a District Engineer in the Southern parts of the country for a number of years, typify those of other observers:

"It is the clear experience of VWSS that production priority has always dominated maintenance considerations. VWSS now has some 1500 systems most of which were built under a production priority system. In the rush to fill donor quotas, insufficient attention has been taken in educating villagers of their role to play in maintenance. The vast majority of attention to community involvement has been directed instead of enhancing participation during construction only… VWSS has a most unsatisfactory structure in maintenance. The most important recommendation is the creation of a properly structured Maintenance Section to operate in parallel with the Construction Section".

In this phase VWSS (and later DRWS) moved to start addressing these concerns. Increasing emphasis was placed on Maintenance and a Maintenance Unit was established. Construction rates slowed down and more funds were diverted towards maintenance and rehabilitation.

c) Introducing Cost Recovery

Concerns about the increased need for maintenance were accompanied by discussions on cost recovery for repairs carried out by VWSS. During the fourth phase (in 1986) a draft cost recovery plan, based approximately 50% recovery, was put forward. It took a full five years for the plan to be debated and redefined.

Establishing a Data Base for Monitoring & Evaluation, Policy and Strategy

By the early 1990s VWSS found itself in a position where it was unable to say with any certainty, how many systems it (or NGOs) had constructed were in fact functioning or what condition they were in. In short, after a decade of rapid population requirements of the existing systems; nor did it have any accurate information on the number of served and userved villages.

The lack of such information was identified as a constraint to effective programme planning, project implementation and organizational development (GoL/Helvetas, 1988). In 1993 VWSS began, with support from Helvetas, to identify the type of information need and in May that year Consultants were contracted to conduct a Coverage Scenario Study (CSS).

DRWS is currently reflecting on the findings, of the CSS and considering the implication of these for planning and strategy. Other important information being used in this process is obtained from Annual Revenues, which reflect inputs and outputs, and the recent Drought Assessment showing the impact of drought on water supplies in different parts of the country and various evaluations.

2.7 Rural Water Supply Coverage in Lesotho

Since independence in 1966 to date the government of Lesotho has installed many community based rural water supply systems throughout the country under the auspices of the Department of Rural Water Supply (Mashinini & Mokhothu, 2001). The majority of Lesotho's population lives in the rural areas. Although there are clear indications that this will change as population moves from the Maluti to the Lowlands a significant proportion will continue to live in relatively small villages scattered through the mountains. The government of Lesotho, through the Department of Rural Water Supply (DRWS) of the Ministry of Natural Resources, is committed to improving health of rural communities, regardless of their circumstances, through the provision of ample quantities of clean water (30 litres peer capita per day) within easy reach (150 metres) of their home (Tams, 1996).

Since 1976 coverage has been increasing at different rates until it reached about 58% of coverage in 1995 (Hall, 1995). Most villages in rural areas do not have private water supplies. Public water supplies from streams, rivers, springs, wells, boreholes and standpipes are used. It becomes difficult to maintain a public/communal system such as water supply where most people have free access. Nobody feels committed to the management and the timeous proper maintenance. This causes delay in reporting breakages and repairs (Mashinini & Mokhothu 2002). Hall (1995) reported that the DRWS system consists of some 9,300 standpipes, 3,900 boreholes and over 1,500 collection points, with some 20-30% of collection points believed to be out of order. The overall coverage of rural sanitation of a variety of types is around 50%. There is a trend towards higher levels of service, over 70% of water points are based on reticulated systems, and there is increasing demand for private connections. In the last 4 years DRWS has not constructed a single hand pump-based project, because of the restrictions of Water and Sewage Authority's (WASA) activities, DRWS has played a substantial part in provision in the expanding peri-urban areas.

Helvetas (1999) highlights that DRWS has built up a vast technological know-how and experience. The emphasis of work in the past was mainly on the engineering side, and the provision of hardware was core to the programme. This enabled DRWS, with the

financial support of donors (USAID, SDC, KFW, ODA, IA, Care, and others), to supply a large number of people with safe water. At its maximum performance in the late 1980s, DRWS provided up to 100'000 people a year with new water supplies. However, the number of people being provided with water dropped during the 1990s. This was mainly due to three reasons:

- The villages of the lowlands, being larger and easier to access, had been supplied in the previous years
- Funding was more difficult to obtain
- The motivation of staff was decreasing

2.8 Institutional Framework

The water resources sector is charged with the responsibility of managing, monitoring, and supplying water demanded resources in urban, rural and cross boundary water supply. The main players in the Lesotho water sector are as shown in table 1.

Table 1: Institutional Framework

Agency	**Main Activities and Responsibilities**
Government Departments	
Department of Water Affairs (DWA)	Overall planning, management, monitoring of water resources and policy and legislative framework
Department of Rural Water Supply (DRWS)	Provision of water supply and sanitation in rural and some peri-urban areas
Parastatals	
Water and Sewerage Authority (WASA) Lesotho Highland Development Authority (LHDA)	Water supply and sanitation in gazette urban areas Water transfers to South Africa from the LHWP and HEP generation for Lesotho
Regional Organisation	
Southern African Development Community (SADC) Water Sector Coordination Unit	Regional water issues and co-ordination

Source: Mashinini and Mokhothu (2002)

All these organisations come under the Ministry of Natural Resources. Also involved in the sector are a small number of national consultancies, contractors and NGO's.

2.9 Rural Water Supply Policy in Lesotho

Due to rapid population growth, there has been a need for government intervention in supplying water to both the rural and urban population in Lesotho. The Government of Lesotho is committed to providing clean water to all Basotho as one of its social

objectives (Ministry of Finance and Economic Planning, 2000). The question that one asks is whether the government intervention has really facilitated access to water for all. There are several policy issues that need consideration before one can respond to the question. It is therefore, against this background that this section aims to give an outline of the water supply policy in Lesotho with specific reference to the community management of rural water supply systems of Lesotho.

The overall objective of the DRWS is to contribute, in a sustainable way to improvements in the health status and well-being of the rural population of Lesotho through the provision of safe drinking water. The question of sustainability is central to the policies and strategies of the DRWS and has a direct impact on three key areas: community involvement, choice of technology and operation and maintenance.

Lesotho has also adopted the new water policy known as the Lesotho Water and Sanitation Policy in February, 2007. This policy was succeeding the Water Resources Management Policy which was adopted in 1999 and was set to be updated every five years to accommodate domestic and international changes and challenges (LWSP, 2007).

2.9.1 Water Resources Management Policy

The water resources management policy (1999) identified and committed the country to six policy statements each with a number of strategies for its implementation, as this thesis is based on community managed water supply schemes, focus will be on policy statement VI and it is stated as follows:
Stakeholders will be involved in every stage of the design and implementation of water resources development projects. The expansion of water supply systems will also be demand driven.
In order to implement this policy the following strategic objectives were set:
6.1 Promote community-based for a on a water resource developments and increase consultation to customers in the identification of their needs.
6.2 Improve coordination between water sector and other water sectors of the economy
6.3 Promote village water committees and improve coordination between them.

2.9.2 Lesotho Water and Sanitation Policy (2007)

The Lesotho Water and Sanitation Policy (2007) identified and committed the country to seven policy statements each with a number of objectives and strategies for its implementation. The policy statement that is focusing on community involvement is policy statement 6 and it is stated as follows:

Ensure participatory approach with effective involvement of all stakeholders at different levels in water resources management and development in order to ensure sustainability of sector programmes.

Objectives

1. To promote effective stakeholder participation in the formulation and implementation of all sector programmes;
2. To ensure participation of all gender groupings in the formulation and implementation of all sector programmes;
3. To facilitate the involvement of the private sector as an important stakeholder in the management of water resources and in the provision of water services.

Strategies

a) Adopt and prepare guidelines for participatory approach at different phases of development programmes and projects with focus on traditional leaders; women, youth groupings, the disabled, orphans and all other vulnerable groups in affected communities;
b) Promote and facilitate the participation of Non-Governmental Organizations (NGO's), Community Based Organisations (CBOs) and Civil Society in integrated water resources management;
c) Identify options and opportunities for the participation of the private sector in the management of water resources and in the provision of water services; and
d) Facilitate the role of private sector by creating an enabling environment for public private partnerships in water resources management and water services provision.

Although the Lesotho water sector has been reformed, more problems of sustainable rural water supply are still arising.

The current chapter has defined sustainability, community management of rural water supply and shown the factors that affect sustainability of rural water supply system. The chapter has also presented the institutional arrangement of water supply in Lesotho looking specifically at rural water supply. The following chapter looks into the research methodology.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the area where the study was carried out and the methods used to collect data. It covers research design together with research sampling procedures. It also provides a detailed description of the methods that were be used in the study.

3.2 Location of the Study Area

The study was carried out in Makeneng which is a village in Lesotho. Lesotho is in Southern Africa. It is a small mountainous country covering a land area of approximately 30,000 km². Landlocked and completely encircled by South Africa, it is at an altitude of 3,500m above sea level. About 80% of the country's 2.14 million inhabitants live in the rural areas while only 20% lives in the urban areas. Females make 51% and males make 49% of the population. Lesotho generally has a temperate climate. Some 85% of the annual precipitation of approximately 780mm p.a. falls between September and April. Average precipitation is spatially unevenly distributed, ranging from 450mm p.a. in the South and Western lowlands to over 1000mm p.a. in the northern lowlands and eastern lowlands.

Lesotho is divided into four ecological regions based on elevation and agroclimatology. Their distribution and altitude ranges are shown in Table 2.

Table 2: Lesotho's Ecological Regions

Description	Lowlands	Senqu	Foothills	Mountains
Area (km²)	5,200	2,753	24,588	18,047
Country Proportion	17%	9%	15%	59%
Altitude (metres above sea level)	<1,800	1,000-2,000	1,800-2,000	2,000-3,488
Topography	Flat to gentle rolling	Steeply sloping	Steeply rolling	Very steep bare rock outcrops and gentle rolling valleys

Source: SADPMA Inception Report by ISNAR 1989.

3.2.1 Water Resources

As a consequence of the abundant rainfall in the highlands, Lesotho's main natural resource is water. Surface water resources are estimated at 4.73 km^3/year, far in excess of the country's requirements. The major river systems in Lesotho are (i) the Senqu (also known as the Orange River), and the Makhaleng. The Senqu River drains two-thirds of Lesotho (24 485 km2). The Makhaleng has a catchment area of 2 911 km^2 and originates in the vicinity of Mount Machache and leaves the country near Mohale's Hoek; and (iii) the Mohokare (or Caledon) has a catchment of 6 890 km^2. It springs from Mount Aux Sources, and leaves Lesotho near Wepener. All its major tributaries are located in Lesotho.

3.2.2 Key Environmental Limitations

The key environmental limitations add up to increased development terrain, drought and poor soils. Lesotho is a mountainous country with rough terrain characterised by steep slopes and deep canyons. These physical features restrict access, limit options for land use and make the country prone to erosion.

3.2.3 Location of Makeneng Village

Lesotho is divided into ten administrative districts, one of which is Mafeteng. Mafeteng is situated in the Southern part of Lesotho's lowlands. The district lies about 80 km southwest of Maseru which is the capital city. It is one of the districts that are graded as prone to drought. The supply of adequate and good quality water is essential for people's livelihoods especially in the communities. Mafeteng has 22% of the total number of boreholes in Lesotho with an average yield of 41% of the national average. In Mafeteng, Makeneng village has been used as the study area. Makeneng is situated 8km east of Mafeteng town.

The village is supplied with water from both springs and boreholes. During the dry seasons of the year the flow from the springs become too low to supply people in the village, it then becomes necessary to supply them with water from tankers from Mafeteng. In most instances this means that the community members have to go to Mafeteng to get water from the tanks and this is possible for those people who have means of transport, for those who cannot afford, it means going to alternative sources which in most cases are unprotected. Figure 2 shows the location of the study area.

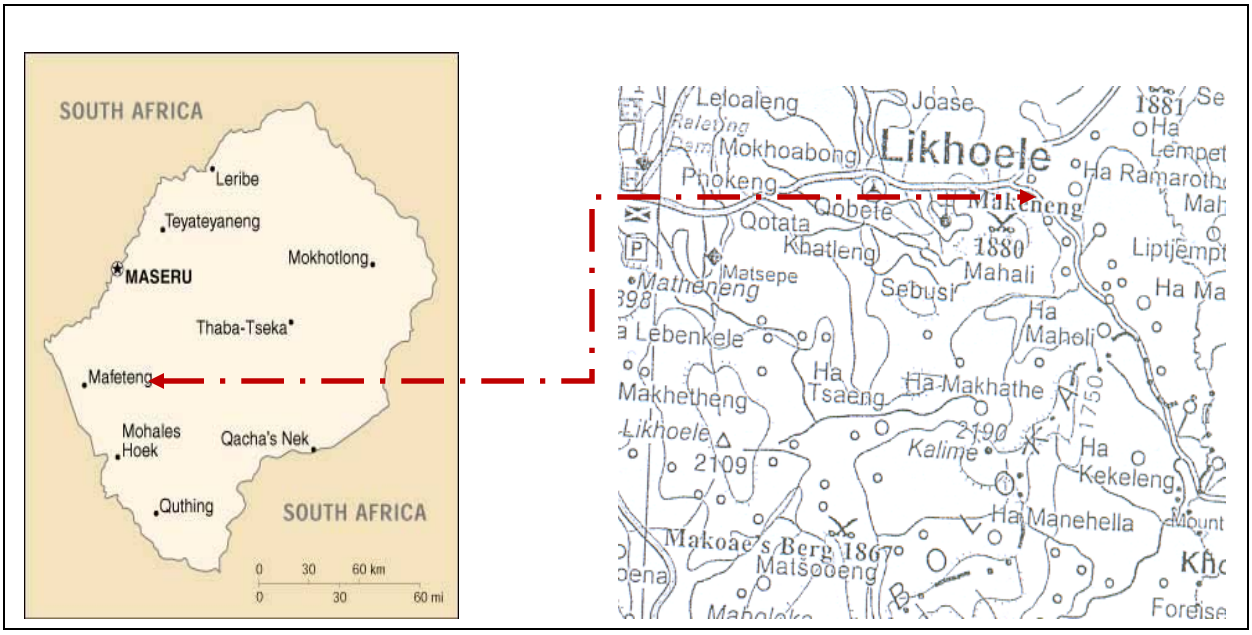

Figure 2: Map of the study area in Makeneng

3.2.4 Background of the Makeneng Water Supply System

The Makeneng water supply system was constructed in 2003 with the help of the Department of Rural Water Supply as the main department under the Ministry of Natural Resources that supplies water to the rural areas in Lesotho. Water that is used from the system is pumped from a spring by an electric pump to the tank and from the tank it goes to 12 communal stand pipes which are located with in the distance of 150 metres in the village and serve between 80 and 120 people. According to the DRWS the system serves 1,418 people. The system was not efficiently working after construction due to the technology that was used to operate it which was the diesel pump. The technology was converted into an electric pump in 2007 and ever since, the system has been effective and the community members appreciate its presence.

3.3 Research Design

As this study was dealing with people's perceptions and their participation in the project cycle, it was mainly qualitative and descriptive in nature and it was conducted within the case study framework. Qualitative approaches attempt to define the phenomena from the participants' perspectives (Babbie, 2001). A case study is another strong research plan for studying one unit of analysis. It dwells on the individual case. Case study method has guided the plan of the study to facilitate the whole research strategy. The researcher gained the consent through the chief and the community councils.

The unit of analysis was the Makeneng community and the stakeholders in their water supply, whom in this case are the DRWS staff in Mafeteng and Maseru. The study was

extended to all the Makeneng community, including the DRWS staff and other stakeholders in the community council which its jurisdiction covers the area of study. The final number of the respondents consisted of 45 people. There was an 18 percent decrease from the initially proposed number of 55 people. This was because nurses and AIDS teachers, the minister and two principal secretaries were not available.

3.3.2 Selection of Participants in the Study

The participants in this study were purposively chosen. They were selected mainly because of their involvement during the construction of the water supply system and their role in the use and maintenance of the system. The selection was done with the help of the VWC, chief and ordinary village water users

Table 3: Composition of the Focus Groups and Key Informants

Focus Group Members	Reasons for being Selected
Village Water Committee (VWC)	Main actors who are responsible for the management of the water supply system.
Chief & Village headman	Being the head of the village and involved in the management of the water system by enforcing laws.
Village Health Workers	They take care of the sick and know the problems they face concerning water. They were therefore representing the sick.
Ordinary Village Water Users	They have been involved since the inception of the project and they are the daily users of the system.
Department of Rural Water Supply (DRWS) Extension Staff	Responsible for mobilization of the communities.
Senior Officers DRWS	Based on their involvement within various different water supply policy activities and their desire to engage in improvement of water and sanitation activities as well as capacity building for rural communities.

This combination was intended to enable the researcher to draw the conclusion that would be generaliseable to the population and to some extend what is peculiar in the Makeneng village. The emphasis was on the issues of population elements and the outcome of the research objectives.

3.4 Data Collection Techniques

Different research techniques were used by the researcher to collect data. In this study focus group discussions, key informant interviews and participant observation were employed. These techniques were chosen because they provide direct evidence about similarities and differences in the participant's opinions and experiences opposed to

reaching conclusions from post hoc analyses of separate statements from each interviewee.

3.4.1 Focus Group Discussion

Terreblanche and Durrheim (2002) point that focus group discussion is typically a group of people who share a similar type of experience, they continue to emphasise that the group is not "naturally" constituted as an existing social group. Morolong and Lemphane (2000) echo the contention by saying focus group discussion is a method, which a small group of people is brought together to discuss a topic. In this regard the participants are guided by a set of detailed questions. Four focus group discussions that consisted of members of the community council, 2) village water committee, and 3) ordinary community members (two groups) were held in the Makeneng village. The participants were chosen because of the key roles they play towards effective functioning of the water supply system. Also, they form part of core management of rural water supply systems. Selection of FDGs was done in collaboration with the chief.

3.4.2 Key Informant Interviews

Key informant interviews were undertaken with DRWS extension officers in Mafeteng who were selected because of their responsibilities of community mobilization in DRWS. The water supply senior officers based in the head office of the DRWS in Maseru were also key informants in the study and their selection was based on their involvement within various water supply policy activities and their desire to engage in improvement of water and sanitation activities as well as capacity building of rural communities. These were conducted by developing a check list that served as a guide in order to maintain the direction of the interview.

3.4.3 Participant Observation

Overt observation is a systematic observation of objects, events, processes, relationships or people, and recording of these observations (Juta, 2002). It is a collection of data where one is a researcher and an observer. It is valid and reliable because data gathered can be verified by the researcher and can also be discussed with other people (Morolong & Lemphane, 2002). In this study there was a set of objectives identified as well as indications for the issues to be observed. It complemented the focus group discussion data. The researcher had set to observe the water practices; the behaviour of water users at the water points, water uses, as well as the physical state of the communal stand pipes.

3.4.4 Discussion and Interview Guides

Interview and discussion guides enable the researcher to be systematic about asking questions and not to leave out certain issues. The discussion guide was used for the focus group while the interview guide was used for the key informant interviews to channel the dialogue.

The use of these tools assisted to find out the key policy issues that could contribute towards improving the sustainability of rural water supply systems. Both of them are often reliable because the researcher is able to set communication clues, probe and follow up the question under discussion.

The two guides were mainly on the identified topics of interest to the participants. These included why the water supply projects are not sustainable, attitudes of the community regarding the water supply system and the impact of funding agencies on the operation and maintenance of the water supply facility. The use of this method was meant to ensure that all key topics are sufficiently dealt with; it was also intended to formulate easy responding in the diverse members of the research.

3.5 Data Analysis

Data analysis was done using a thematic approach. This means that the researcher came up with themes and analysed the data accordingly. The interviews were first transcribed and from the transcription a content analysis was done. Responses were categorized in different ways in relation to the research techniques used to collect data.

Interview guides

- Common submissions
- Differences in responses

Observation data

- Reflected perceptions in relation to the identified topics and the ones emerging from the focus group discussions.

CHAPTER 4: RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the main research findings. As the main objective of the thesis was to investigate the role of Makeneng community in sustainably managing their water system, the chapter describes the general setup of the water supply system in Makeneng. It answers the research questions and covers aspects such as community participation in the project cycle, capacity of local institutions to manage the water system, the ability of the community to manage the type of system installed specifically looking at the choice of technology, functioning and state of the system, availability of water, breakdown times as well as operation and maintenance as indicators for sustainability. Impacts of the system on the livelihoods and the role of the funding agencies on the sustainability of the project are also included. All these aspects form major themes of the study and they also have subthemes that explain them clearly.

4.2 Background to the Development of the Makeneng Water Supply System

The Makeneng water supply system was built in 2003, with the help of the Department of Rural Water Supply System (DRWS). DRWS is the main institution which is mandated with supplying rural areas with potable water by the Government of Lesotho. The initial idea was to install a system that uses electric pump to pump water from the source to a tank then distribute it to the communal standpipes. Plate 1 below shows the tank which stores water in the area. The community members were expecting the Lesotho Electricity Co-operation (LEC) to have installed electricity in the community before the project was finished. However the project got to its final stage before electricity was installed, so in order for the system to start functioning the contractor installed his own diesel pump. Two Ministries, the Ministry of Natural Resources and the Ministry of Science and Technology were implementing two related projects (water and electricity) in Makeneng village but they never communicated with each other and this shows how integration is difficult at the Ministerial level in the GOL. This lack of integration has a bearing on sustainability because for the system to be operated there is need for electricity, especially when the system was going to be left in the hands of the community members as the main managers.

Plate 1: Water Tank in Makeneng

Soon after its installation the system showed signs of having problems. It was unable to supply water to the whole community efficiently, because most of the times the pump was broken. The community members and the DRWS officials reported that this was due to the fact that the diesel pump was old and small. It was not bringing any difference in the water supply of the community but instead it was causing problems. One of the conflict which was reported arose a as result of the availability of water. Since the pump was small it could not pump enough water to fill the tank and supply the whole community with water. As a result some parts of the community, especially on the lower side would get water, while the taps on the high slopes would be dry. This gave rise to complaints between the community members as some thought the operator was favouring other parts of the village more than the others. The operator stays on the lower side so people thought that taps on the lower side were open often than the taps on the upper side. The operation and maintenance of the system were a problem because it needed to be repaired time and again.

Sustainability of the system was also looked at from the ability of operating and maintaining the system. The pump needed diesel which was supposed to be bought by the community members. It was the task of the Village Water Committee to collect

contributions which would be used to buy the diesel. This caused many problems because some people did not want to pay for a system which was not meeting their needs. Those who contributed towards the purchasing of fuel were not happy because those who refused to pay would still come and draw water at their expense. Sometimes the system would breakdown and take months not working, so people would resort to alternative sources of water such as unprotected wells and buying water from people who have boreholes in their yards. In some cases some people would be forced to go to Mafeteng (town) to fetch water from tanks but this was possible for those who had vehicles only. At the time the study was conducted, electricity had just been installed in the village and the technology of the water supply system had been transformed from to diesel to electric pump.

4.2.1 Makeneng Village Water System

The village has 12 communal standpipes which are sited within proximity of 150m from the households (Plate 2). The source of the stand pipes is the borehole which is situated at the down side of the village. It is 2 km from the water tank which is on the upper side of the village. Water is therefore pumped with an electric pump from the borehole to the water tank then distributed to the communal stand pipes. This distance was set by the Ministry of Natural Resources in trying to keep up with the WHO guidelines and each stand pipe is supposed to serve between 80 and 120 people (Tams 1996).

Plate 2: Types of Communal Standpipes Installed in Makeneng *(Source: Field Data)*

The whole system serves 1,418 people and the water is used for domestic purposes only and these include household purposes and small garden irrigation as mentioned by the community members.

Accessibility is an indicator that was considered when assessing the sustainability of the water system. It was determined by assessing the distance water users walk to access water, the times they have to queue and the time they have to spend to fetch water. If users spend a lot of time fetching water, their social activities suffer, their consumption

levels are low and hence they are forced to look for alternative sources of water which might not be healthy (WUP). Most community members indicated that the walking distance is long especially for the elderly (60-70 years) and for the sick. The community councillor also complained that the taps are few; one tap serves too many people. They end up queuing for water especially in the morning (6-8 am) and in the afternoon (2-6 pm). Makeneng water system was designed according to the WHO standards of locating the system within 150m of walking distance from the household and one stand pipe being used by 80-120 people. Due to the complains of the participants, this shows that there is a need to revise the standards taking into consideration the HIV/AIDS pandemic that is hitting many households, leaving the elderly and the little children who do not have strength to fetch water from far. This shows that there is a need for the DRWS to do a baseline survey on the type of communities it is serving before implementation of the project

4.3 Community Participation in the Project Cycle

Community participation was given more attention in this study. Being daily managers of the project, their participation is critical for the sustainability of the project. Attention was given to their participation at each and every stage of the project cycle (Appendix I). These stages are project; initiation, feasibility study, design and capacity building, construction, monitoring and operation and maintenance. Community participation was determined by assessing the levels of participation, the degree of involvement of both men and women and the attendance of meetings and public gatherings throughout the project cycle.

4.3.1 Project Initiation

According to Brikke (1993) in order to increase the chances of the water supply system to meet the needs of uses, community participation should begin as early as possible in the project cycle. He stipulates that community participation should in fact begin as soon as community has requested a water supply facility. Thereafter, community members should be directly involved in planning the new scheme and deciding how it can be run, and by so doing, the prospects of its success are improved.

In Makeneng the community members participated in the water supply project in different ways. “They started participating from the day they realised that there was a need for improved water supply”, pointed out the community councillor. This was in 1996. The community had a gravity water supply system since the 1980’s which was constructed by the Village Water Supply Service (VWSS). It only had four taps which broke down at different times and these were not repaired until none of them was functioning by 1995. There was no provision for operation and maintenance, and the VWC operating at that time ended up not existing because there was no water supply system to manage. The community members ended up relying on two wells that were found within the village. One was protected the other one was not. As the problem exacerbated the chief convened meetings under the advice of women who were the most

bearers of this burden of water problem in the community to discuss how the problem can be solved. After identifying improved water supply as a major need the community elected a VWC that would help in leading how a new water supply system could be acquired. They first decided that they would make contributions of M21.50 per household for the new system. However the chief and the community councillor pointed out that at first the mission was not successful. There were people who did not want to contribute, while some delayed contributing. The aim was that after the contribution had been made the VWC would go and ask for assistance from the DRWS as it was one of the requirements that before the village or community go and ask for assistance M500.00 must be set aside.

The process took some time due to the inconveniences caused by the community members whom the chief said were uncooperative. However, in 1998 the VWC went to the DRWS and submitted the Makeneng application for the improved water supply system. It took two years before the village could be helped and the DRWS officers from the main office in Maseru pointed out that this happened because there are usually many applications from different villages and they are served on the first come first served to their basis. This happens because it is not always that the department has funds and it is in the policy of GOL that before announcement of the national budget all Ministries submit proposals for development projects and they are assessed on which ones are urgent and need to be attended quickly, so after approval the funds comes from the government pool to different Ministries then to different departments.

When the Makeneng water supply proposal was approved, the DRWS through its extension officers visited the village to assess the community's readiness for the project to ensure that the project would be sustainable. This was done through meeting with the chief first, then meeting the village leadership structures being the community councilor who is responsible for the developments that take place in the village and then the VWC. A needs assessment workshop of three days was then held for all these structures and then information "pitso" (gathering) was then convened for the whole community to assess their views on the project and the DRWS project manager points out that the community was ready for the project, after that a formal application was then forwarded to the head office in Maseru. Reports indicate that women have always been active in these processes including the attendance of the public gatherings; this therefore indicates that women are a sustainable institution in water resources management. The kind of community participation that was done in this stage was active participation although it was dominated by women. They expressed their opinions and took initiatives that lead to the project initiation.

Davis et al (1993) recommend that for rural water supply to be sustainable it has to be demand driven, they point out that communities must request for the improvement of water facilities before the water supply facility is constructed. As a result, water supply agencies should determine what the community wants, and is able to support sustain, instead of providing water supply facilities that have not been requested. The Makeneng water supply project was demand responsive because it is the community that initiated it. At this stage the Makeneng community was involved in an activity participation. Women

expressed their opinions to the chief and the chief solicited by convening a public gathering where a decision was arrived at, of raising funds and making an initiative of requesting for assistance from DRWS.

4.3.2 Feasibility Study

This is the second stage where a demand assessment is done and at this stage the DRWS assesses on how much resources like tanks, taps and boreholes will be needed by the community looking at the number of users as well as their lifestyles and in the case of Makeneng they decided that one tank would be built and 12 stand pipes will be sited as the water was planned to be used for domestic purposes only and was to serve 1,350 people. The feasibility study also involves conducting a source survey. This is a survey of the water sources and other resources that are found within the community. They pointed out that they try as much as possible to use resources that are found within the community and in the case of Makeneng village they found out that sand stone was in abundance and it could be used to build the tank.

The community was informed through the public gathering about the demand assessment and the source survey then a recommendation report was written by the DRWS and send to the headquarters were funds are granted. The chief reported that when they were told that the sand stone was going to be used people offered to help to get it from the mountain to the place of work, as well as to process it by cutting it so that it can be easily used by the tank constructors. After the recommendation report, there was a borehole drilling procedure where the surveyor was going to assess where water is. At this stage the VWC was highly involved with community members and this included a rough design of where the community standpipes would be sited, after that the design concept and a feasibility report about the finding of the assessments all that were done from the beginning till the design concept is presented to the community members in a public gathering. In the process the DRWS extension workers were teaching the community members about the operation and management plan, they were making them aware that the system will need to be maintained and all this will need full participation either in terms of labour or money and a plan of how it is going to be done is drawn with the participation of the community. As the system uses electricity the community members agreed that they will continue contributing M21.50 every month to cater for the operation (paying electricity bills) and maintenance costs.

All these plans and concepts were written down and presented to the villagers in a public gathering and when they accepted an agreement form was signed by the chief, the VWC and the DRWS project manager. In all these stages the VWC was physically involved

while the rest of the community members were informed through the public gatherings either by the DRWS extension workers or the VWC. This was a good plan of sustainable management for the water supply system.

4.3.3 Design and Capacity Building

Beneficiaries in the Makeneng water supply project participated in many activities at the design and capacity building stage. The local institutions comprising of the VWC, community councillor, the chief and the village headman participated in the siting of boreholes and some community members. To ensure capacity the project manager reported that DRWS engaged a consultant that went to the village to train the local institutions on operation and maintenance of the water supply system. The assumption was that the local institutions will then trickle down the information to the community members. The project manager mentioned that before training starts, an assessment on the need for training is done by the extension officers and at this stage the villagers made it clear that they wanted to be trained on how to manage their water supply system because they did not want it to fail. According to him this was a good indication that the system would be sustainably managed by the community, he pointed out that *"they were very enthusiastic about their system and they had a sense of ownership even before it was constructed"*. Then three workshops were held on implementation, monitoring and evaluation as well as design of the water supply system. The workshops took five days each.

From the discussions it was reported that the local institutions were the ones mainly involved in the choice of location of standpipes and few community members. It was also noted that from these groups men were the ones who were mostly involved in the siting of the standpipes. This was noted by Kissa (2004) when he said that, consultation with community "organisations" generally signifies consultation with men as community leaders or heads of households

4.3.4 Implementation

This is the actual implementation of the project and most of the community members reported that they were involved at this stage. Prior to the construction the project manager indicated that there was first a visit to the village to assess the readiness of the construction, the sites were inspected and the contractor was introduced to the community in a pre-construction gathering. The villagers pointed out that in this stage they could help by accommodating the contractor and his workers, The chief made sure their working materials were well secured and that they had accommodation. Some of the community members offered unskilled labour of getting stones, water and digging trenches, while others offered some skilled labour for building the tank and taps. Men were the ones involved in digging the trenches, building the tank and the taps. Women were involved in getting stones and water. The DRWS officers reported that during the construction there was a continuous monitoring by the DRWS engineers and extension workers. The community was monitoring the progress through the VWC and the DRWS engineer; this was to avoid the construction mistakes that may lead to the unsustainability of the system after handing it over to the community. When the construction was completed the system was handed over to the community, but it was still under the monitoring of the DRWS to assess if there are any faults and this meant that DRWS had

to visit the village after every four weeks for six months. On this one the project manager indicated that the monitoring was not done as it was supposed because the department did not have transport. However he pointed out that they were helped by the community councillor.

4.3.5 Monitoring

This is the monitoring of the functioning of the water supply that has to be done by the DRWS, but it is not effectively done due to lack of resources. However the project manager once more applauded the people of Makeneng by mentioning that they always came to report about the functioning of their system.

In all the stages of the project cycle, the Makeneng people were involved and were actively participating, this is an indicator that they have a sense of ownership over the system and they are aiming to sustainably manage their system. Most of them pointed out that after the system was handed over; they fenced the water point sources to avoid vandalism. They also bought covers that are used to cover the top part of the tap to avoid any vandalism and cases where taps were left running.

One of the community members pointed out that *"we have suffered enough during in the past and we are not willing to experience the same thing anymore. We are prepared to work hard to keep our system functioning well"*. Narayan (1995) therefore points out that the importance of community participation is that, when people influence or control the decisions that affect them, they have a greater stake in the outcome and will work harder to ensure that they succeed.

4.4 Main Institutional Actors in the Management of the System

In each and every community there are institutional actors in the management of the water resources management. According to Katz and Sara (1998) the existence of a formal community organization that operates the system affects the overall sustainability of a water system. In their study, Katz and Sara (1998) showed that sustainability was significantly lower in communities that lacked such organizations. In the case of Makeneng water system there are three main institutional actors and these are; the traditional leaders, village water committee and the community councillor.

Jones *et al* (2001) point out that the institutional set-up or organizational arrangements are considered to be a central factor in sustaining water supply facilities. These arrangements relate mainly to the maintenance system that is established to provide ongoing financing and repairing mechanisms of water supply facilities. They therefore stipulate the fact that no water supply facility should be installed unless a proven maintenance system is also established to support it, because the maintenance system is critical to its sustainability.

4.4.1 Traditional leaders

The traditional hierarchy concerning water management comprised the chief being at the top; below him is the village headman, then the chief's advisor. However the main actors in the water resources management are the chief and the village headman. During the discussions the chief seemed to be active and more informed about the water resources as well as the water supply system in the community than the headman and his advisor. Table 4 highlights the functions and roles of the traditional leaders in Makeneng village

Table 4: Functions and Roles of the Traditional Leaders

Category	Functions and Roles
Chief	- Ensuring availability of water to everyone through planning of water resources with the help of the village water committee - Setting bi-laws on the management of the water supply system and enforces them together with the headman and the village water committee - Assist the water committee to enforce management rules as well as collecting operation and maintenance fees - Requesting for more water sources like piped water - Managing water related conflicts and disputes - Warning and punishing culprits caught breaking the rules - Ensuring maintenance and protection of the water sources - Supervising the headman and the advisor
Headman	- Substitutes for the chief or acts as the chief when the chief is not there - Ensure maintenance and protection of the water resources - Ensure peace in times of conflicts; ensure that people do not fight at the taps - Setting the bi-laws for the management of the waters supply system together with the chief and the village water committee

In Makeneng village the chief is very active in issues concerning development of the village. Through out the focus group discussions he seemed to have much information about how the system functions, how it is managed and the problems it has experienced. He has contributed to the project in a number of ways for example the community members pointed out that he accommodated the contractor and his workers, always attends meetings and public gatherings concerning the water system. The researcher observed that most of the VWC meetings are held at the chief's office and in three meetings that were held the researcher observed that the chief was actively participating.

The VWC trust his opinions because they kept on asking for his opinions in issues that were discussed. During the time that the research was conducted the chief was mobilizing all development committees that existed in the community being the Village Water Committee, the Sanitation Committee and the Electricity Committee to prepare for one big ceremony to thank the Government of Lesotho for the developments it has brought to their village. All the community members agreed to the suggestion and the committees were preparing for the ceremony and it was supposed to be in April although the date was not set. Most of the community members were aware of the chief's role in the management of the system and they pointed out that in the public gatherings he is always concerned about the management of the system. One of the VWC members pointed out that "*he is a chief with a vision he wants good developments in this village and this what motivates us to work hard"*. The chief and the headman always help the VWC to enforce the rules by punishing the deviants and because of these people obey them.

The DRWS officials also pointed out that the chief was at the fore front amongst people who influenced the replacement of the diesel pump with an electric pump. As LEC was always promising to come to the village, he made an effort and went to the head offices of LEC in Maseru to complain and after that electricity was installed and the pump was converted. Most of the community members also pointed out the chief also helped in solving conflicts that arise on the water system.

The involvement of the traditional leadership as an identified institution in the management of the Makeneng water system is an indicator of sustainability in the management of the Makeneng water supply system as the results show that it has capacity to manage the system through the roles played in the management of the system. This is a good aspect of sustainability because if the leaders are determined to see to it that the system is well managed then the rest of the community members will also be determined. Narayan also noted that institutional development requires strong leadership at the top.

4.4.2 Village Water Committee (VWC)

Regarding management of the water supply system, the Village water committee is the highest institution in the community. Umgeni (1993) stipulates that the importance of these water committees is that they act as a medium for a community to manage the rural water supply facility. This is a committee that was elected at the village level to liaise with the Department of Rural Water Supply (DRWS) on the management of the water

supply system. The committee was elected before the implementation of the project as this is one of the requirements set by the DRWS for the villages before they apply for the supply of water. The office bearers of the VWC are changed after 5 years; however it is not all of them who vacate the office at the same time. Key people like the chairperson, treasurer and operator are absorbed in the new VWC so as to teach the new members the work. These people may however hold different positions in the new VWC. The committee is made up of seven members; 4 men and 3 women. Women are highly empowered in this group although they are fewer than men. They are involved in the decision making about the management of the system. Figure 3 shows that the VWC organisational structure has six levels of management, i.e. chairman, secretary, treasurer, operator, water minder and committee members. The chain of command is both top-down for the information from the management to the water point minders. It is bottom up for complaints and other issues which need to be sorted by the management.

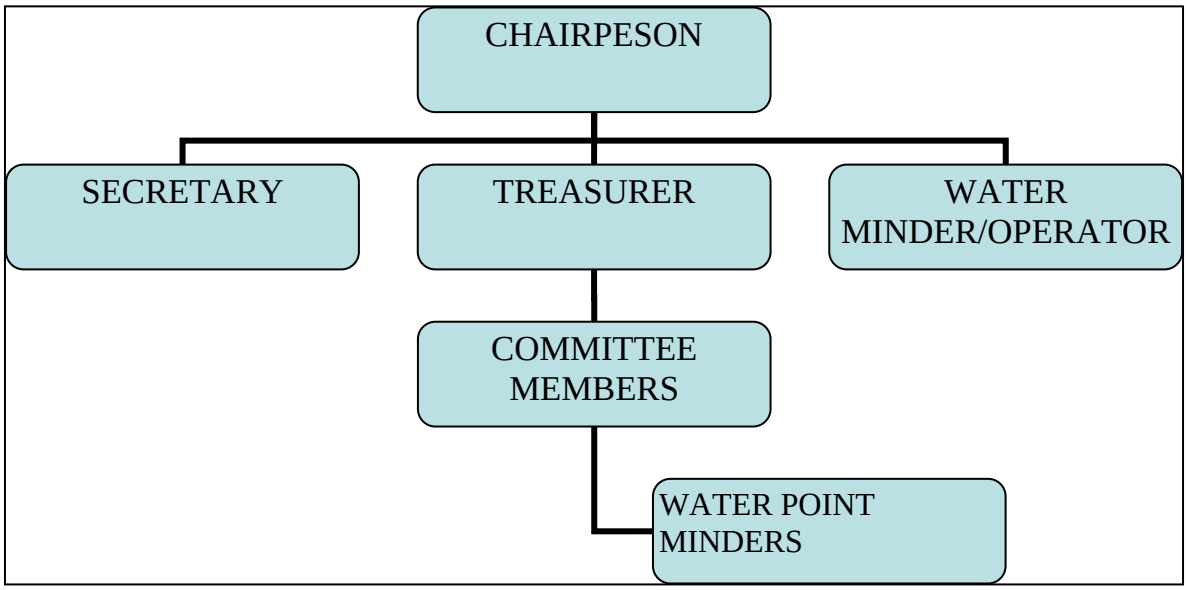

Figure 3: Organizational Structure of VWC

The DRWS insists that the villages have these committees at the beginning so that during the construction they can:

- Facilitate the security of materials for construction
- Liaise between the contractor, community and DRWS
- Draft guidelines for hiring/firing of village labour and represent community in the hiring and or otherwise of labour need paid for construction work
- Continue to mobilize any outstanding financial resources for community contribution to project
- Oversee the proper keeping of labour and material records
- Co-operate with the construction supervisor to monitor progress of construction work
- Represent community interests at the biweekly site meetings
- Sign necessary documents for finalization of project implementation

Table 5: Roles and Functions of Committee Members

Category	Roles and functions
Chairperson	• Arranging time and venue for regular meetings • Calling for committee meetings as well as special general meetings • Coordinating and organizing the training of caretakers, builders and committee members • Controlling meetings but allowing open discussion of matters relating to water management • Motivating people to work together and participate in the management of the water supply system
Secretary	• Gives notice of the meetings • Prepares an agenda for the meetings • Keeps minutes of meetings • Keeps a register of members of the community benefiting from the water supply system • Keeps a record of subscriptions and expenditure • Maintains a duty roaster
Treasurer	• Collects and keeps funds intended for maintenance • Makes payments for the work carried out in maintaining the water system • Keeps records of the income and expenditure for the water supply system • Reports to the general meeting on the funds such as income and expenditure
Operator	• Takes care of the pump, by simple maintenance procedures and making sure it is properly used • Makes sure that water is pumped into the tank so that people can have access to it on the taps • Takes care of the tank. Always makes sure that the tank is cleaned in the correct way • Takes care of the tools and

	maintenance manual • Responsible for the tool kit • Reports to the committee if there are any problems
Water point minder	• Takes care of the taps • Makes sure that the taps are locked and unlocked at the set time • Keeps the area around the tap clean and makes sure that animals do not graze near it. Also makes sure that the community do not do other activities like washing near the taps • Monitors on how water is drawn from the taps • Reports to the committee if there are any problems

Source: Field data and document analysis

Most villagers were aware of the existence of the VWC and appreciated them. They were also aware of their roles in the management of the system and pointed out they are reliable. The chief and the DRW's project manager pointed out that the VWC are very active in the management of the water supply system. The DRWS indicated that the VWC is always reporting to them about the functioning of the system he mentioned that *"as we do not have transport we sometimes just see ntate Motlalemetsi (chairperson) and ntate Simon (water minder) getting to our offices at their own expenses to report about the system. This shows real commitment to the VWC members"*. He therefore recommended that communities have to take the issue of appointing the VWC seriously as it is the main institutional actor that determines whether the system will be sustainable or not. The VWC was trained and made aware on the operation and maintenance of the system. Technically the operator is able to repair faults and monitor the functioning of the system with the help of the toolbox he was given by the DRWS. They are also able to mobilize people to contribute their O&M monthly fee. For the convening of public gatherings the VWC uses a load speaker that was bought with the contributions made by the community members

When asked about their roles and functions, the VWC seemed to be aware of them and this is an indication of management that can be sustainable as Sami and Murray (1998) argue that the responsibility to manage water supply systems should not be transferred on the community structure that does not have the capacity to operate and maintain it. Davis et al (1993) points out, before forming the water committee it is important to ensure that their roles and responsibilities are clear because when the roles and responsibilities are not clear, it creates role confusion among the committee members, which subsequently affects their motivation to work on behalf of their community. They further illustrate that it is important to determine whether or not a water committee is necessary. If not existing community management structures should be considered as an alternative. Continuous training was recommended by one of the VWC who is a woman. She pointed out that the

role of the water minder is strenuous so they have appointed an assist who is still not familiar with how the system, so in the absence the water minder they sometimes run out of water.

4.4.3 Community Councillor

The community councillor is the other relevant authority that is involved in the management of the water resources as well as the water supply system. The councillor of Makeneng is a woman and she only occupied the position two years ago after the Ministry of Local Government decentralized the services and empowering the communities participate in the development process as well as in the decision making. The community councillors are politically elected and their main role is to oversee the developments that take place in the communities. However in the case of Makeneng the community councillor is not involved in the day to day management of the water resources. She occasionally gets involved when there is a new project like a pipeline or a new borehole or new dam being offered by the government. The councillors' role regarding water resources management also included to a certain extent, to report issues like any need for development of the water resources to the government; this could be the need for a new dam or new water supply system or the site for a new borehole. She may also intervene in solving some extreme conflicts, but this is only at the invitation of the chief.

During data collection the researcher was able to attend three public gatherings that were held in Makeneng concerning the management of the water system. The first system was on the preparation of the ceremony where the community wants to thank the DRWS for improving their water supply and working hand and hand with them. This meeting was for the VWC only, the attendance was good and it was only one member who had excused herself. The chief was also present. The meeting was mainly dominated by the VWC. The second meeting that was for the whole community was on issue of payments and rules set for the people who do not pay. The attendance was also good here; both men and women were participating in the discussions. The third meeting was also for the whole community and the VWC was giving the community members feedback on the preparation of the ceremony. All people were happy about the ceremony and most women volunteered to contribute vegetables they had grown in their small gardens.

4.4.4 Rules governing the water resources

Respondents were asked if they were aware of any rules pertaining to their water resources as well as to the water supply system; that is rules pertaining to access, abstraction and use of the water resources. These are the rules set and enforced by the VWC with the help of the chief. A large part of the water users seemed to be aware of the rules because they were listing them and explained that these rules are always announced at the public gatherings.

Table 6: Summary of Rules with Regard to the Use of the Water Supply System

Activities	Rules
Abstraction	1. Lock taps to avoid vandalism and wasting of water, so no one is expected to draw water outside the set time. - Summer they are open from 6 am- 10 pm - Winter they are open from 3 am- 6/7 pm 2. During drought periods - Summer they are open from 6 am -7pm - Winter they are open from 6 am-6 pm Water point minders are expected to lock the taps at the set time. 3. Water for animals and watering of small gardens can be drawn when the tank is full and overflowing
Designation of specific areas of water resources	1. Animals do not drink as well as graze near the areas were the taps are. 2. Community members do not wash near the taps.
Payment	1. Each household in the community is expected to contribute M21.50 every month for electricity as well as for operation and maintenance. Households that do not contribute the money are not allowed draw water.

However few people were not aware of some of the rules for instance, some were not aware that water can be drawn for livestock and small garden watering. Payment of the fee is the main factor that gives the community members withdrawal rights. This means that the people who fail to pay do not have the right to draw water from the tap and the water point minder is the one who has been given the task of monitoring of the withdrawal of water. He or she has a list of all people who have paid. However in the absence of the water point minder or during the night if the tap is not locked people who have not paid draw water. This is an indicator that there is a good communication between the leaders and the community members and the community members indicated that they obey the rules because they fear punishment and they are also committed to keep their system sustainable.

4.4.5 Penalty for Offenders

The participants were asked what punishment is given to those people caught breaking the rules, or those who failed to contribute towards any matter required. Table 7 shows the summary of the responses given

Table 7: Punishment of Offenders

Punishment	Polluters & Over abstraction (%)	Non-contributors (%)
Fined	1.3	10.1
Denied access to water	21.5	15.2
Warned	75.9	70.9
Not punished	1.3	3.8
Total	100	100

Table 7 shows that the punishment for any people who are caught polluting the area around the tap either as well as over abstracting and those who fail to contribute as required is fining. This fine was pronounced by the respondents as money; however both the community members and the village committee members did not know how much it was. This shows that the penalty is not effective or has never been put into action. However during the focus group discussions the respondents were asked if the rules were effective and they mentioned that they were effective because they fear punishment, this shows that the penalties are only announced to scare the people from engaging in deviant behaviour towards the water supply system. The respondents seemed to know of cases of where people had been denied access to water and warned and the least percentage said the offenders were sometimes scot-free. The table shows that people are aware of the rules and regulations of the water supply system.

These are strategies that have been put in place to manage the water supply system of Makeneng. The VWC, Chief, Community Councillor and the community members are working hand in hand to keep their water supply system sustainable.

4.5 Linkage between the Type of System installed and its Sustainable Management

4.5.1 Choice of Technology

According to Taylor and Mudege (1996), technology choice is crucial to sustainability of rural water supply sector because the choice of technology affects operation and maintenance. The community was consulted on the type of technology that they are using by the DRWS which was assisting in the constructing of the water supply system. Most of the participants reported that extension workers raised awareness in the communities, while the VWC was taken for a four weeks training and they passed the information to the rest of the community through public gatherings prior to the beginning of the project.

Therefore community members have the ability to handle the technology because they were trained on its operation and maintenance, for any faults a trained operator equipped with a toolbox is available to attend to. The monthly contribution of M21.50 is able to buy electricity for the system and meet other needs that arise. If there is need for more money the community members are informed by the VWC and they agree on the amount that will be contributed. So far the operator has been able to attend to the faults that needed repair and there has never been a case that they needed to call the DRWS for a repair as they did when they were using the diesel pump. The project manager from DRWS pointed out that the electric pump is the easiest technology since it does not need much attention like a diesel pump. All it needs is electricity. The system is operated in such a way that water is pumped from the source with an electric pump into the tank then distributed to the community standpipes. This is a good indicator of sustainability because even after the DRWS has left the villagers can still operate the system.

4.5.2 State of the Standpipes

The results presented in this section are based on the discussions and observations made by the researcher. It was observed that the water source was well functioning as well as all the communal standpipes in the village except for one that was reported by the water point minder that the water pressure is low due to siltation in the pipe that brings water from the tank. The VWC were not aware of that problem and they pointed out that the situation can be easily fixed by cleaning the area where the pipes are laid. It was observed that the community members were not fully aware of how the system works and how to manage it. The people who are well informed are the village water committee members including the water minder. This is not a good indicator in terms of sustainability, because in the absence of the VWC the system might collapse. The dissemination of information to the ordinary village water users is not effective Information is very critical to sustainability of the rural water supply the community members can make enlightened decisions (Swanepoel 1997).

The participants pointed out that the system is reliable; after the pump had been converted from diesel to electricity has been reliable. However there was one major problem that was mentioned in all focus groups even in the discussion with the DRWS and this was the problem of electricity cuts. When there are power cuts the system does not function and worse off the community members do not have alternative sources to use and this is a serious problem because the community members end up using unprotected sources. One of the participants from the focus group discussions of water users pointed that although the project the has helped, constructors made a mistake of connecting the wells to the systems.

"*They have turned one of our main wells that had been existing for years into a source for the system. This is the well that used to help in times of drought; the well was built with the help of a white man who used to live in the community a long time ago. This was not just a well; it was a protected, covered and fenced. Its name* ***was Boiteko, meaning an effort."*** This also shows that there was not enough consultation of community members prior to construction.

4.5.3 Availability of Water

The project manager at the DRWS pointed out that the water point in Makeneng yields a lot of water that caters for the community even during the drought periods. The participants in the focus group discussions agreed that the water point yields sufficient water for the whole community as they are able access water even during dry periods. To be on the safe side, during the dry periods there are set time that water can be drawn at. For instance during drought periods

- Summer they are open from 6 am -7pm
- Winter they are open from
  6 am-6 pm

The abundance of water was raised as a problem by a teacher who was in the focus group discussions. She pointed that the water overflows from the tank and this might cause the tank to burst. This seemed to be a concern for all the members of the focus group and they pointed out that they wish to build a second tank. However, they are limited by resources and expertise. This overflowing of water is threatens the sustainability of the system in terms of the tank that might burst also when looking into the first IWRM principle that states *"water is a finite and valuable resource"*. Water being a finite resource it is supposed to be saved in all means. In an effort to try to solve this problem the headmaster of Makena High school which is located within the village asked for permission to build a tank that would serve the school with the water in times of overflow and the community members thought this is a good idea.

When discussing the same issue with the VWC and DRWS that the problem just needs the operator to reduce the number of hours at which water is pumped at, the DRWS's project manager pointed out that there is no need to build another tank, the one that has been built is big enough. He therefore pointed out that is a problem that was supposed to picked by the DRWS officers during monitoring after the construction but it does not happen because of lack of resources like transport. He pointed out that at the department was in possession of one vehicle. He mentioned that sometimes when communities have a problem they end up picking them with their own vehicles because they cannot get to them. This issue again pins out the fact that the VWC does not pass information to the community members, it also shows that both groups do not discuss their concerns in one forum. This shows that there is a problem with community organisation and Mogane-Ramahotsoa (1995) indicates that without proper community organisation structures, effective community participation has no hope for sustainability. Therefore Brikke (1993) advices that before forming a water committee it is important to ensure that their roles and responsibilities are made clear, because when they are not clear it creates confusion.

4.5.4 Breakdown Times

Almost all the community members including the DRWS pointed out that there have never been breakdown reports of the system after it was switched from the diesel pump. During the time the system was being operated with the diesel pump, they pointed that most of the time the pump would be broken. However, since the electric pump was installed no problems have been encountered except when the electricity has been cut.

The community members reported that this usually happen when the weather is bad or when there are repairs being done somewhere by LEC. They also complained that most of the time they are not informed if there will be power cuts and this often creates inconveniences because it is not always that they keep water in their homes. The water minder raised his concern about the power cuts *"I think that power cuts will somehow damage our pump since sometimes they happen when the pump is still running"*. This is another factor that may affect the sustainability of the system. However the concern was not yet reported to the two offices; DRWS and LEC. They have to come up with a strategy that will reduce the risks of the system being negatively affected.

4.5.5 Operation and Maintenance

Brikke and Bredero (2003), argue that often critical aspects of operation and maintenance development have been neglected in short-term, agency managed projects, yet effective operation and maintenance brings about important health benefits by sustaining accessible water supplies in adequate quantity and quality; thereby reducing the time and effort spent on water collection.

Governments and External Support Agencies, as well as local communities therefore, are becoming more and more concerned about the importance of integrating operation and maintenance components in the planning, implementation, management and monitoring of project activities, since operation and maintenance is a key factor of sustainability (WHO, 1995). This was illustrated in the Makeneng water supply project because the community members were made aware about the operation and maintenance of the system during the feasibility study by the DRWS and when interviewed about it most of them pointed out the monthly contribution fee of M21.50 cater for it. The VWC indicated that most of the community members are faithful in contributing and if there is something that needs more money they explain to them and give them a chance to suggest how the need can be met. For example to avoid vandalism the community members are the ones who suggested that tap covers have to be bought. This is an indicator of sustainability because the community members are prepared to meet the costs of operation and maintenance. Also the water minder is also active in monitoring the functioning of the system and to check if there are any faults, however the chief, the community councillor and other members of the group feel that the water minder has to be given some incentives as he spends most of his time working on the system's operation, however the issue was still to be discussed.

In the operation and maintenance sustainability can also be determined by assessing the willingness and ability of the community to meet the operation and maintenance costs. As Makeneng water project is using electric pump as a technology which needs monthly contribution for electricity, the question is whether the community members will be able to contribute for the years to come. In the discussions some of the community members pointed out that they want private connections and there is a possibility that they are going to obtain them in future. This might some how affect the sustainability of the system as the VWC reported that some community members are still in debt of

contributions. It is sensible that people who want private connections are the same people who are able to pay for the operation and maintenance costs.

4.6 Impacts of the Water Supply System to the Livelihoods

All people interviewed agreed that the project had brought substantial benefits to the community. They pointed out they are able to easily access clean water, they no more have cases of waterborne diseases like in the past when they were drawing water from unprotected wells. The project has also improved sanitation because it brought along VIP toilets (Plate 3). They also mentioned that livelihoods have been improved because they are now able to grow fruits and vegetable on their small gardens for own consumption and for sale. The chief pointed out people are now bringing their businesses in the village because water is easily accessed, he made an example of a dressmaking school that had just been opened in the village. Most of the elderly pointed that their walking distance to drawing water has been reduced although they are still wishing for it to be reduced more, this was echoed by the village health workers. Most women appreciated the short distance and the reduced time that is spent in getting water, they mentioned that they are now able to engage in other activities like attending meetings, this was mainly mentioned by women who are members of committees and also working. One pointed out "*In the past we were not able to attend meetings like this one, meaning the focus group discussion*". The men pointed out that the animals are now able to drink water freely from the rivers without competing with people and the harvested water from the roof can now be used to water the gardens instead of being used for domestic purposes.

All these show appreciation of the existence of the water supply system, this is an indication that the community members of Makeneng can see the benefits and they may sustainably manage it so that they keep on enjoying the benefits.

Plate 3: The system has improved sanitation and small vegetable gardening

4.7 Roles of Funding Agencies on the Sustainability of Water Resources

4.7.1 Funding of the Makeneng water project

Many projects, whether private sector or community bases cannot proceed without funding or any form of assistance to support the period time between developing a project and attracting a loan (Cardone & Fonseca, 2006). People had different opinions on where the funds for the project came from. For instance most believed the project was funded by donor organizations, and few said the funds were donated by SADC countries to bring developments in poor countries, however all of the respondents knew that there was contribution of M21.50 that was done for start up the project fund before seeking for assistance from the DRWS. When asked this question the DRWS senior staff explained that the Makeneng water project was funded by the government of Lesotho under the government pool funds and M704, 468.00 was raised for the Makeneng water project.

4.7.2 Perceptions on the Use of Funds

Almost all of the respondents agree that the funds were used adequately in the implementation of the project; however they have reasons that support their statements. Few indicated that the funds were used adequately because they see developments (water supply system in the village). Others pointed out that the funds were properly spent because there were no queries or conflicts that aroused after the implementation of the project. However many people argued that although the funds were adequately spent they had a problem with the contractor who installed an old diesel pump, yet he had been given money to buy a new one. These are general observations by the respondents (community members) because all of them did not know the amount of funds that were provided.

4.7.3 The influence of the funding organisation on the implementation of the project

All of the people in the community wanted to connect water into their yards, but they could not because of the policies that were set by the GoL. There are others who felt that the contractor was given too much power over the project such that he never consulted them when making major decisions like the type of pump he was going to use after the implementation of the project and they believe that he was given this power by the donor organisation.

4.7.4 Problems Encountered on Acquiring the Project Funds

Acquiring of funds for the project was a problem mainly due to lack of information by the community members. Most reported that they had plans for installing a better water supply system a long time ago and to show their commitment they started contributing money (M21.50) in an attempt to raise funds and to attract donors, but they did not have

enough information about the procedures they had to follow in order to apply for funds, this caused their project proposal to take long time before being approved at the DRWS. However the VWC report that the delay was not only caused by lack of information, but by the unwillingness of some community members to contribute money.

4.7.5 Advantages and Disadvantages of donor assistance

As most of the projects in Lesotho are donor funded and their sustainability often influenced by the donor agencies, the researcher found it important to interview the respondents both the rural community and the DRWS officials about the advantages and disadvantages of donor assistance.

a) Advantages

From the focus group discussions almost all the members pointed out that donor assistance helps to speed up the development process as they do not have money. In addition they stated that they have many plans that are aimed at improving their community; the problem is money as most of them are not employed, so donor agencies normally help out. The DRWS indicated that in most instances the donor assistance coverage in the development process is higher. The project manager pointed out that:

"with the donor assistance we (DRWS) are able to supply water to more rural communities that do not have water than we do when a project is funded by the government. Government funding is always limited to a small number of communities as the funds come from the government pool where money is allocated to many different projects for a certain year." IWSC (2003) mention that policy factors have significant impact in the promotion of sustainability of rural water supply because they provide a framework in which the rural water supply is implemented and also gives an indication of government commitment to the sector (IWSC, 2003).

b) Disadvantages

The community members complained that even though the donors help that much, most of the time they do not meet their expectation, for instance many wanted to connect water into their yards, but they could not because the donor had planned to construct communal stand pipes only. The institutions (chief, community council and village water committee) that exist within the community mainly the VWC stipulated that the donor organisations disturb the existing organisation strategies within communities, because they bring donations and people end up having dependency syndrome. They do not organize things for themselves anymore, for instance in the Makeneng village, there are few people who do not want to contribute money for the operation and maintenance costs as they know and saw the system being constructed with money from outside. On the other side DRWS pointed out that most of the donor organisations come up with policies that are different from the policies that have already set by the government. This makes the government to sometimes compromise its policies.

4.8 Policy Adequacy on Sustainable Rural Water Supply

The policy context within which rural water supply projects are developed and implemented is central to providing a supportive environment that ensures long-term sustainability. In the absence of a coherent policy, different actors often employ different implementation approaches and technologies which can lead to a fragmented and unsustainable rural water supply sector (Parry-Jones, Reed and Skinner 2001). When asked about the policies that are used for the implementation of the projects and how adequate they are, the DRW officials pointed out that they are using two policies being the; Local government and the Lesotho Water and Sanitation policy.

4.8.1 Local Government Policy

The officers pointed out that the policy is very adequate with the concept of decentralisation and it has really made their work easy and the production is high. They are able to reach many communities even those that were out of reach. Conflicts have also been reduced between the government ministries as well as between the public and the government. McPherson (1994) also indicates that better management of water supply facilities could be achieved if responsibilities are devolved from the central government to autonomous agencies. He argues that this would really limit the extent of political interference and allow water facilities to be managed according to efficient business practice. It is therefore recommended by Brikke et al (1995) that local government has to be more suited in providing more supervision of the rural water sector due to its proximity to local communities. They however point that in African countries, local government bodies are under funded and lack capacity to fulfill this role.

4.8.2 Lesotho Water and Sanitation Policy (LWSP)

They reported that they are really experiencing problems with implementing the objectives of the (LWSP), especially the sanitation aspect when supplying water services. During the implementation of the sanitation project people are not paid they are expected to contribute with free labour and this becomes a problem. There is an increased awareness in sanitation but lack of community participation. Muller (2002) however advices that a sound legal framework in the water and sanitation sector that contains clear and mutually compatible policy statements regarding water and sanitation, gives guidance and confidence to all agencies working in this sector. This helps to determine their own policies and plans to advance activities as quickly as possible (Muller, 2002).

4.9 Recommendations by DRWS on Sustainability of Rural Water Supply Systems

- For increased implementation and sustainability, there is a need for increased resources within DRWS, to facilitate monitoring of existing projects and to highly involve Local government to help protect our natural resources

- Sustainable Community Management of Water Supply Systems
  Communities must take the process of selecting the VWC seriously, because they are the main actors in determining the sustainability of the system.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The focus of this thesis was on assessing the root causes to the unsustainability of community managed rural water supply systems. In order to achieve a full picture of community management Makeneng of Makeneng water supply system. Five objectives were developed and these were:

- To evaluate the community participation of the Makeneng community in the project cycle.
- To identify institutions that are found within the community and evaluate their capacity in the management of water resources.
- To investigate the possible linkage between the type of system installed and its sustainable management by the Makeneng community.
- To assess the impact of the installed water supply system on the livelihoods of the Makeneng villagers.
- To explore the roles of funding agencies on the sustainability of water resources.

5.2 Conclusion

The study established that sustainability of the community managed rural water supply system needs more emphasis of community participation and it was found out that community participation varied across the project cycle, from the inception to the monitoring stage. The chief, VWC and the community councillor were the main institutional actors and they showed signs of capacity on managing the system. However the problem prevailed from the VWC members who are working on a voluntary basis. It was indicated that in the absence of one member the sustainable management of the system is threatened.

This showed that there is need for continuous training and incentives to the actors as most of them were unemployed. The system was functioning well and all communal standpipes were in a good condition, but the management of the type of system installed might not be sustainable in the coming years depending on who the main users will be by then. This is because the system uses electric pump which requires the community to contribute funds every month for its operation.

The communities' willingness and ability to pay was fairly high, most of them were paying. However some users wanted private connection and the question is if they acquire them will the remaining users still be able to manage the system. The functioning of the system depends on electricity. Most of the times there are continuous electricity cuts which means no water for the community and vulnerability of the system to damage as reported by the operator. The community members have to liaise with DRWS and

Lesotho Electricity Coorporation for the functioning of the system; this is a heavy duty that needs an active VWC and this might not be achieved by the VWC's that will succeed the existing one. It was concluded that there should be continuous community participation and increase in the number of actors trained to manage the system, so that in the absence of others the sustainability of the system must not threatened.

On the basis of the above findings, it is concluded that the Makeneng Village water supply is not sustainable.

5.3 Recommendations

The findings of this research study show clearly that although a lot of work has been done in an effort to ensure that community management of rural water supply is sustainable, much more needs to be done to deal with inherent weaknesses that have been identified. There is a danger that if these weaknesses are not addressed, what has been achieved so far in ensuring that rural water supply is sustainable might be lost.

Outlined below are the recommendations on how to deal with weaknesses that have been identified by the research study:

- Incentives for community management should be assessed for individual communities. Appropriate tools and incentives to retain trained personnel should be considered.
- Community management is sustainable only where a strong local institution is in place to support communities. So there is a need for the local government to be fully involved in supporting communities.
- If user communities are to be empowered and granted full decision-making authority they should be given comprehensive information needed to make informed decisions without being pressured to follow the facilitator. Communities and households should be free to select technology and service levels that suit them. They should also be able to select the management system for O&M, including the option to manage this themselves should they wish.
- If community management systems are to be sustainable, they require ongoing support from an overseeing institution to provide encouragement and motivation, monitoring, participatory planning capacity building and special technical assistance.
- There is a need to lengthen the duration of training as well as extend the training period beyond the project phase.
- Government must increase resource capacity within its ministries and departments so that they can deliver goods and services efficiently to the communities.

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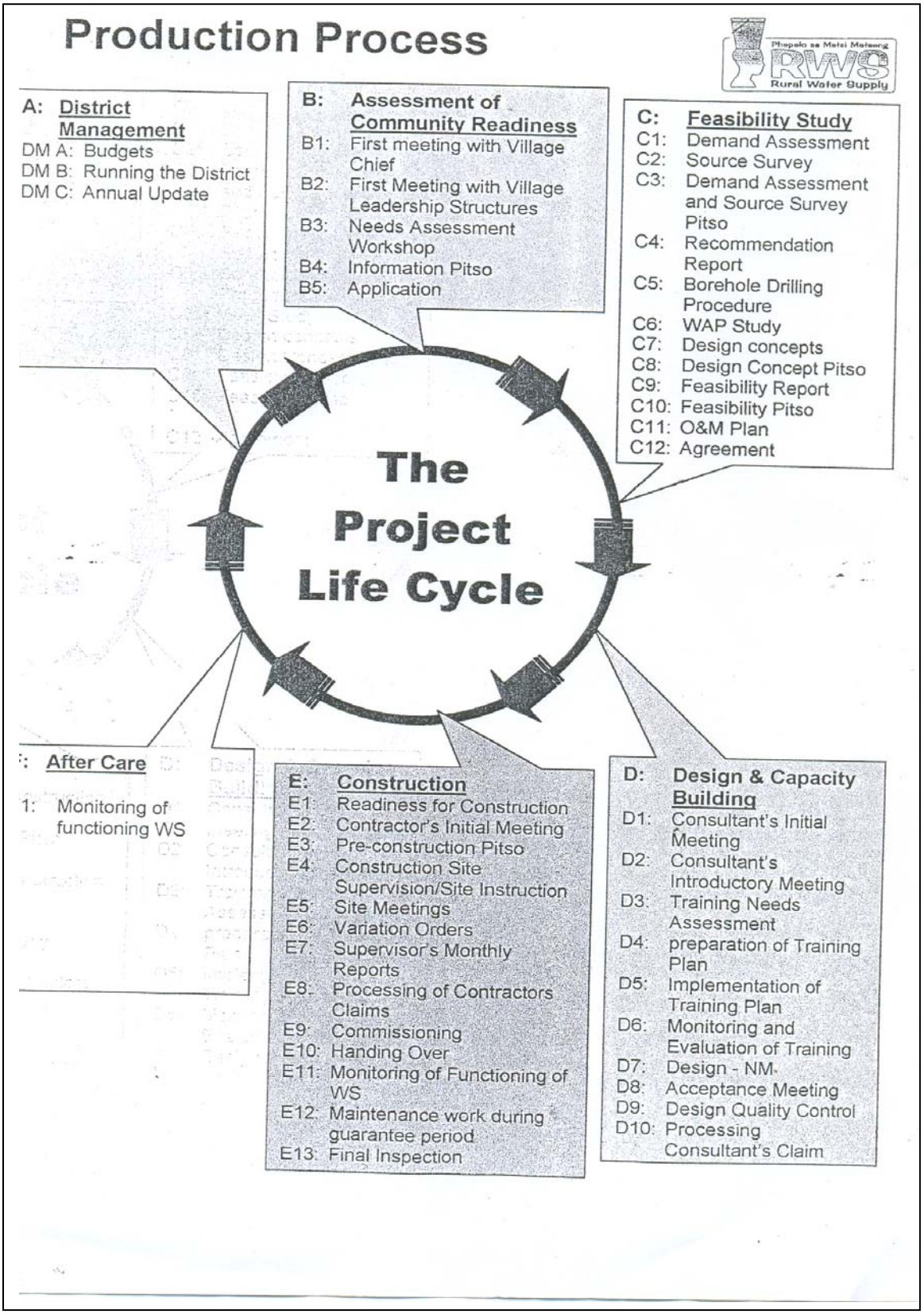
APPENDICES



Appendix I: Project Cycle

Appendix II: Observation Guide

1. Physical layout of the system

2. Tank/s
   - How many are they?
   - Where are they located?
   - What condition are they in?

3. Taps/Stand pipes
   - How many are they?
   - What is their condition?
   - Sanitation

4. Source
   - Major source
   - Other sources, are they still functioning?

5. Pipe lines
   - What are their conditions?
   - Are the pipes covered?

6. Management Practices?
   - How community members draw water from the taps?
   - How do they protect them?
   - What is the water used for?

Appendix III: Focus Group Discussion Guide

1. Community Participation

- How did you participate in the project?
- How were you involved in the planning?
- How were you involved in the actual project?
- How do you operate and manage the water supply system?
- How was the project selected? What role did the community play in the choice of technology that they are using?
- What is the ability of the community to handle this technology?

2. Ability of the Community to Manage and Sustain their Water Supply System

- How does the community contribute to the management of the system?
- How was the community empowered to manage the system?
- What are the common problems regarding the system?
- How effective is the arrangement put in place for the repair of the water supply system?

2.1 Responsibilities of the Community in Managing the System

- What are the expected duties or obligations of the people or users with access or withdrawal rights in order to ensure that the system will be managed in a sustainable manner?
- Are these duties/obligations always known to the water supply scheme users?
- Are the rules and regulations that are used to punish those who fail to abide by the obligations access rights and quantities in withdrawal rights?
- If they exist how effective are they?
- If they do not exist, what problems are caused by the absence of these rules upon defaulters for sustainability of managing the water supply system?
- How are they resolved?
- What should be done to improve the efficiency of these rules?
  Who enforces the rules?

3. Funding

- How did the community acquire funding for the water supply?
- How much did the community contribute to the acquirement of the system?
- How did the funding influence the way the project was implemented?

4. Benefits Contributed by the Project to the Community?

- What benefits are brought by the project in the community?

- How has the project improved the livelihoods in Makeneng?
- How are the payments of people working in the project?
- Are there people employed because of their skills?

Appendix IV: Key Informant Guide

1. Ability of the Community to Manage and Sustain their Water Supply System

- What criteria were used to choose the type of system installed in Makeneng?
- What say did the community have on the technology you are using?
- How appropriate is the technology you are promoting in the communities?
- What maintenance system have you put in place?
- What capacity do communities have in handling this technology?
- How does the type of the water supply system influence the communities' ability to sustain it?
- What is the ability of the communities you are supporting in meeting the cost of maintenance of their water supply scheme?
- Have you prepared communities to anticipate and be prepared for discontinuation of heavy subsidization of spare parts?
- What are the common problems experienced regarding the system?

2. What would you recommend as a solution the management problems that emanate because of the type of water supply chosen?

3. Funding

- How was the project prepared?
- How much funding was contributed to the project?
- How much did the community contribute to the project?
- What problems did you encounter with the funding of the project?
- What could be recommended as a solution to the problems?