

**WOMEN AND TECHNOLOGY IN THE
MARGINALIZED RURAL COMMUNITIES: CASE
STUDIES FROM KWAZULU-NATAL**

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ABSTRACT

Generally, rural women have lesser access to technologies that are vital in progressing with their tasks due to gender dimensions linked to patriarchy that were perpetuated by apartheid, which promoted male migration and created female subordination. This created invisibility of women's major role as food producers. Although South Africa is democratic, rural households are still far behind in terms of development. Norms and values in most traditional societies sideline women and increase the burden of work that they normally have. Duties performed by rural women demand physical energy and is generally time consuming. Access to appropriate technologies might assist in reducing energy and time spent unwisely. Traditional norms encourage male superiority and socio-cultural barriers give women limited access to certain assets such as livestock, land, credit and their decision making power is very little compared to male counterparts. This has serious implications on women's lives because these aspects are most important in meeting life challenges they face on a daily basis. Women's involvement in both productive and reproductive tasks shows that they are concerned about the lives of their families together with the community in which they live. They modify used objects in order to produce subsistence. Surplus obtained from their yields plays a vital role in generating income to sustain their livelihoods. Access to technologies might reduce time spent on reproductive tasks and diverted to produce more. This study is intended to contribute to a greater understanding and the recognition of the linkages between women's roles, responsibilities, knowledge and their participation in rural economic development, particularly looking at their use of technology. A critical concern raised in this study is whether women's knowledge of and experience with technology are adequately incorporated in development debates and initiatives, especially in an environment where the decision-makers tend to be male. The main findings of the study are that rural women utilize a range of technologies, they are involved in innovating and adapting technologies and they experience a variety of problems in relation to accessing, maintaining and using technologies at the household and community levels.

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ABBREVIATIONS

ABET: Adult Basic Education and Training
AFRA: Newsletter of the Association for Rural Advancement
AID: Agency for Development
ANC: African National Congress
EDA: Environment and Development Agency
HIV: Human Immunodeficiency Virus
ILO: International Labour Organization
NGOs: Non-Governmental Organizations
PRA: Participatory Rural Appraisal
RDP: Reconstruction and Development Programme
RTCs: Rural Training Centers
SEWA: Self-Employed Women's Association
TB: Tuberculosis
UNC: United Nations Commission
UNDP: United Nations Development Programme
UNICEF: United Nations Children's Fund
VIP: Ventilated Improved Pit latrine
WFWP: Working for Water Project
WWSD: World Summit on Sustainable Development

DECLARATION

The Registrar

January 2004

University of Durban-Westville

Dear Sir/Madam

I, Mirriam Vumile Nzimande, Reg. Number 9706342, hereby declare that the dissertation entitled:

“Women and Technology in the marginalized rural communities”

is the results of my own research and has not been submitted in the part or full for any other degree or to any other university.

Signature M. V. Nzimande

Mirriam Vumile Nzimande

Date 12-01-2004

CHAPTER ONE

1.1 INTRODUCTION

Rural women's participation in multiple roles in ensuring household and community survival in poor rural communities is well documented (Agarwal, 1997; Appleton, 1995; Bob, 1999). They spend most of their time in domestic and agricultural tasks. Their multiple responsibilities in the households oblige them to devote most of their time in reproductive tasks whereas they are also expected to generate additional income to ensure household survival. Involvement in these tasks illustrate that they have great potential in managing their families together with the community in which they live.

Kabadaki (1994) illustrates that women's participation in agricultural production and also in multiple household roles is often overlooked. They have less access to essential services compared to their male counterparts. To mention a few, they have limited access to land, credit schemes and also agricultural inputs, which is vital in the informal sector to generate additional income for livelihoods. They struggle to overcome drudgery involved in their cumbersome tasks and they manage to contribute dramatically to the economy of the country (Nkhoma-Wamunza, 1992).

The predominance of patriarchal values rooted in traditional and cultural practices results in an undervaluing of women's work and experiences as well as a neglect of women's needs. Socio-cultural barriers force rural women to have limited access and control of vital resources, especially natural resources in which they are highly dependent and technology which is also vital in reducing the heavy workloads which women experience in their daily lives. Additionally, women are generally marginalized in decision-making processes at various levels as Muro (1987 cited in Nkhoma-Wamunza, 1992:84) states that although women work hard and have multiple roles and responsibilities they are rarely represented in decision-making bodies. The lack of formal representation at the level of community decision-making means that women are unlikely to become priorities in the community. They have limited control over factors that are vital for their economic survival. However,

women have contributed significantly in the liberation of this country but they are still not given the status they really deserve. Most of the important community institutions are headed by men, which make women depend on males to participate in activities that are empowering rural communities. Rural women's crucial roles prove that they are hindered by many opportunities that would otherwise contribute a lot in poverty alleviation as it is estimated that they are responsible for 60% to 80% of food production. The food produced is not only for household consumption; the surplus is also sold (Kabadaki, 1994).

Bob and Gumede (2001) emphasize that the deficiency of studies that focus on rural women and technology related to development considerations further hamper women to be seen by the community as people who have a great potential in managing their natural resources. In this regard, articulating gender perspectives and gender specific constraints regarding women's use of technologies and knowledge about technologies in poor rural communities are centralized. Previous investigations have to some extent indicated that many of the users of small-scale technologies are women (Appleton, 1995; Baud, 1983; Carr, 1984; Gamser, 1988). However, many of these studies tend to be highly descriptive and links to technology are generally concentrated on use and not on women's roles in terms of technical innovation. The ways in which women use their knowledge and skills to develop, modify and adapt the techniques and technical processes in which they are involved are explored. There is a great deal of research that focuses on rural women and livelihood sustaining activities, especially in the agricultural sector (Ahonsi, 1995; Cross, 1996; Francis, 1997; Lipton et al, 1996; Momsen and Kinnaid, 1993; Vaughan, 1994).

Bob (1999) asserts that in rural South Africa more than half of rural households are headed by women and together with children, they make up the poorest of the poor. In the context of South Africa poor women's multiple roles have been acknowledged, but there remains a weak conceptual basis to understand women's experiences with and needs related to technology and development more generally. This is in part due

Assess the

to the prevailing invisibility of women's technical knowledge and to the lower profile overall of women as technology users and producers.

Although several adjustment programmes have been introduced to help people living below the poverty line, they have often failed to take seriously into consideration the specific needs of women. Modebe (2000) asserts that the Structural Adjustment Programme (SAP) has exacerbated the conditions of women in some cases as the subsidies from food, children's education and other important aspects for rural women were removed. There were no mechanisms in the programme through which women could have had access to the resources to improve production. For example, the SAP, which was introduced as one of the tools to eradicate poverty especially in rural areas failed to meet the targets of the rural poor.

Before democracy in South Africa, Black women had no or very little representation in any development structures including those in the workplace. A study of national social service organizations revealed that over the last several years men replaced women in administrative positions at a rate of 20% per year (Mayoux, 1995; Mitter and Rowbotham, 1995). Women are over-represented in many of the social groups affected by poverty and social exclusion. Under-representation in decision-making and other organizational structures have occurred through a variety of discriminatory practices against women in relation to salaries, promotions, job opportunities and task allocation even when variables such as career, tenure, education, family status, family commitment and job mobility were controlled (Lessing, 1994; Porter, 1999). Porter (1999) further argues that in Ethiopia among educated women who work in the formal labour force, only 11% have management posts and the majority is engaged in manual and clerical jobs. This resulted in the lack of women in top management positions, as there are few role models and this makes it difficult for women to take decisions regarding the use of technologies.

There are several conditions and discriminatory practices that impact on women's lives. Patriarchy based on traditional and cultural practices and values are among such

discriminatory practices that reinforce women's roles as inferior and create gender imbalances within many households. Raghuram (1997) and Buvinic (1993) indicate that women have been neglected to such an extent that in some countries, especially in rural settings, it is difficult even today to speak about their rights. However, they are the ones who play a major role in capacity building and also in production, reproduction and in community managing activities. Through their indigenous knowledge that is passed from mother to daughter, they are able to do important tasks but are not given the respect and status they deserve. They are able to manage the resources for their livelihoods and the community at large.

This study is intended to look at the barriers that prohibit women from improving their quality of life efficiently, especially in terms of access to and the development of technologies. They need to understand their rights and have access to technology so that they can be able to upgrade their production and reduce time spent on domestic chores. In rural areas women constitute the majority of the population and form 80% of the agricultural producers (Nkhoma-Wamunza, 1992; Yoon, 1995) but they are the most marginalized section of the population. They have no access to land, credit, agricultural inputs and technical know-how is limited compared to that of men. The majority of women are the heads of families due to *de facto* and *de jure* reasons but they are still not well represented in decision-making structures whereas most of the household workload is the responsibility of these poor women. It is therefore crucial for them to have access to modern as well as indigenous technologies that would make life easier (Nkhoma-Wamunza, 1992).

Rural women are innovative in many aspects of their lives. Firstly, the majority of their tasks seek more energy such as carrying heavy bundles of fuel wood on their heads and they do not end in domestic tasks as their responsibilities involve them both inside and outside the household. For example, if the woman is bound to go to the forest sometimes five kilometres away from home, she then comes back very tired but proceeds with every-day chores such as cooking, fetching water and sometimes irrigating the garden, if necessary. Appleton (1995) illustrates that domestic related

technology such as coal, gas and paraffin stoves would be of great importance to assist poor women in reducing drudgery involved in their tasks. However, the most important issue would be availability and the accessibility of such technologies. Sometimes the technology can be available but due to gender bias and other taboos women may not be given the chance to utilize these technologies.

1.2 AIM:

The aim of the study is to examine rural women's use of technology and the barriers/constraints they have in accessing technology by using case studies from KwaZulu-Natal.

1.3 OBJECTIVES:

- To investigate the socio-economic conditions of rural women in the case study areas.

The needs of women are not homogenous because those who are living in remote areas generally lack even basic services such as education, access to clean water and electricity, which would enable them to improve their skills whereas those on the outskirts of cities seem to be better in terms of their exposure to certain basic services. Looking at the socio-economic conditions would therefore assist in understanding the social and material conditions of rural women in the context of the case studies.

- To evaluate rural women's access to technology.

Rural women usually face severe workloads. They spend most of their energy in performing domestic chores such as walking long distances to fetch water and fuel wood. Food production is also another responsibility facing the majority of rural women. This drudgery workload needs to be reduced by using appropriate technologies so that health problems such as the impacts on the spinal cord can be avoided.

- To examine the roles of rural women in community development institutions and their concomitant impacts on their access to technologies.

Women are generally not included in community development structures because of prevailing patriarchal attitudes and notions. They end up being told about what is important for them. Social and cultural barriers tend to hinder women's involvement in these structures. This creates biases in the use of community technologies as men are holding top positions in community institutions.

- To assess the problems rural women face in accessing technology.

Women in rural areas rarely own assets such as land and agricultural technologies such as tractors and ploughs. There are cultural barriers and traditional customs that hinder them. Thus, they do not have control over certain technologies. Therefore they have no decision making power regarding the use of these technologies. For example, in the case of ploughing using span of oxen and tractors that is owned by the male counterparts, women have to wait. Roy (1995) argues that the ownership of essential tools for production causes delays because men start by ploughing the fields of their friends and women wait for their turn. Escobar (1995) asserts that although technologies are developed to encourage community self-reliance but there are barriers to women's access to them.

- To examine whether rural women are innovating or adapting existing technologies in poor rural communities.

This objective is intended to explore the ways in which women use their knowledge and skills to develop, modify and adapt the techniques and technical processes in which they are involved. Another area of concern is examining the links between indigenous and modern technologies in relation to gender considerations. Appleton (1995) shows that women have contributed significantly to technical innovation at the grassroots level. The extent and nature of these types of contributions in rural KwaZulu-Natal are deemed important.

- To examine the impacts of access to technology on rural women's lives.
The emergence of appropriate technologies that is accessible to rural women may increase production because time spent on unproductive domestic chores would be reduced and converted to productive activities. This may result in generating more income when selling their produce.
- To examine different types of technologies rural women have access to in different contexts.
Since the majority of rural women might be unemployed, the presence of modern technologies might be a problem due to financial constraints. Different technologies that suit their necessities are developed and modified so as to face life challenges. Access to household technologies might be different from community technologies due to unequal participation in these structures. As mentioned earlier, women form the larger percentage of people living in rural areas due to *de facto* and *de jure* reasons, they might have more decision making power within the household than in the community.
- To forward recommendations based on the research findings and provide possible alternatives aimed at enabling women's access to technology. Some of these alternatives would incorporate the use of technology that would be less time consuming and also save energy.

1.4 Chapter Sequence

This study is divided into five chapters. Chapter two provides a literature review focusing on women and access to technology. Chapter three provides the background of the case studies and research methodologies adopted in this research endeavour. Chapter four provides the data analysis of the primary data collected in the study areas. Chapter five forwards the recommendations, summary and conclusion of the study.

1.5 Conclusion

Women living in remote rural areas where development has generally failed to positively impact their lives need to have their concerns addressed. Rural women need to be prioritised and incorporated in terms of appropriate technology development in rural contexts since women in rural areas are often responsible for the completion and/ or supervision of productive and reproductive tasks. They are central to household and community survival. These women have been and continue to be discriminated against. This promotes subordination and men's superiority.

Appropriate technologies for rural women would not assist their family members alone but the community at large. They may spend less time on domestic chores and increase time performing agricultural and other productive tasks that would help in increasing production that may be used for subsistence and the surplus can be sold to generate more income that would sustain their communities. Their low exposure to technologies due to patriarchal attitudes does not impact women alone, but the community at large as they involve themselves in different activities. To ensure that women access and optimally use technologies, gender imbalances need to be addressed.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter focuses on reviewing some of the literature that is related to the topic under study. The issue of women's use of and their access to technologies to deal with cumbersome tasks is dealt with by using different perspectives. For example, what is happening in the rural areas of India is slightly different to what is happening to rural women in Africa. Reviewing the literature of different writers would enable the researcher to have a broader idea and be able to compare and contrast the ways of dealing with the problem of rural women's access to and use of technologies.

2.2 GENDER AND DEVELOPMENT - A THEORETICAL FRAMEWORK

Research investigating the gender constraints to agricultural production experienced by women in the Third World finds its context in the literature on gender and development. This literature in turn derives its theoretical base from gender theory, feminist theory and development theory. By reviewing the contribution these theories make to gender research in Third World countries, provides a conceptual framework with which to understand the position of rural African women (Mijindadi, 1993).

2.2.1 General conditions faced by rural women

2.2.1.1 Multiple roles of women

Different researchers apprehend rural women's involvement in multiple responsibilities so as to take care of their livelihoods and their community. Their participation in agricultural production and other off-farm activities with very limited technologies are well recorded (Agarwal, 1997; Bernstein, 1992; Kabadaki, 1994; Lipton et al, 1996; Mijindadi, 1993; Momsen and Kinnaid, 1993; Murphy, 1991; Oladele, 2000; Saito and Spurling, 1992; Seager and Olson, 1997; Sen, 1990; Stichter and Parpart, 1988; Tinker, 1990; Wieringa, 1994). Moser (1993) further illustrates that in many parts of the world it is women who have multiple responsibilities, which includes survival, household and income generating tasks.

2.2.1.2 Survival tasks

Women especially those in rural areas have the daily tasks of fetching water and fuel from distant areas as we know that water and fuel is among the scarcest resources in South Africa. These are often physically demanding resources. Also, women traditionally have the duty of family health maintenance. Family maintenance includes child bearing and rearing responsibilities as well as care of the sick and aged. Health care is another physically and emotionally demanding task that often requires access to medical facilities that are often few and far (Murphy, 1991).

2.2.1.3 Household tasks

Murphy (1991) indicates that women are also responsible for cleaning the households and preparing food, which may be time consuming and also demand more energy. Carr (1987) illustrates that rural women are tied up by domestic chores that are not easy to handle and the lack of appropriate technologies is a major problem they usually face.

2.2.1.4 Income generating activities

Murphy (1991) further argues that rural women engaged in multiple strategies so as to generate additional income for their households. In rural areas the productive work takes the form of agricultural work where the surplus left from subsistence is sold within or outside the community. In many parts of the world *de jure* and *de facto* women-headed household are increasing rather than declining. Their workload tends to increase at any time due to the above-mentioned reasons. It is therefore rural women's responsibility to ensure that they participate in several income-generating activities such as beer brewing, sewing and selling little items in order to generate income that would sustain themselves and their families.

2.2.2 Gender hierarchy in access to productive resources

According to the Mail and Guardian (2002), during the World Summit on Sustainable Development (WSSD) in Gauteng, it was revealed that food security requires the sustainable use of productive resources because unsustainable use would mean

production decline in the long term. In Africa, where agriculture is a dominant sector, decline of access to productive resources such as land, water and credit would mean farmers fail to produce sufficient food for the dramatically increasing population.

Young (1993) indicates that the capacity of women to be independent producers depends on a number of factors and secure access to these productive resources. Many women's lives are shaped by family responsibilities where they are expected to take care of children and elderly people and also maintain the home. These tasks push women into financial dependence upon men or upon State benefits. It is often assumed that women do not need an income of their own and that money, food and other resources are shared among the family. For many women neither employment nor welfare benefits can keep them out of poverty. Women have no or little access to vital resources including land and credit (Ahmed 1985; Porter, 1999). Thus, the first variable to examine for gender hierarchy should be the access to the major economic resource such as land, credit and other agricultural inputs.

2.2.2.1 Land as one of the valuable resources for food production

Davison (1988) and Fitzgerald (1995) indicate that rural dwellers live agrarian lives, which needs an adequate supply of land for people to survive. Marcus (1996), Maxwell and Wieber (1999) and Yoon (1995) illustrate that land is vital for agricultural production, both crop production and animal husbandry. They further reveal that women produce about 40% to 80% of the world's food, but they have access to only 3% of land. Bernstein (1997) and Young (1993) emphasize that in rural societies land is the core determinant of agrarian relations and people's status. It is also a crucial determinant in influencing women's roles and status in the family and the community.

In most Third World situations women's rights in land are use-rights rather than outright ownership rights. Where full rights to ownership of agrarian resources exist in traditional legal codes, a woman's share is not usually equal to that of a man. She is often entitled to part of the inheritance, which is specifically a proportion of that

which is received by her brothers. Young (1993) further argues that new codes and legal rulings may reduce women's rights to succession. The Colombian land reform law, which ignored women's needs by confining land redistribution to married males over the age of eighteen contained a new inheritance law in which the land may be inherited only by married males over eighteen.

Cross (1996) illustrates that even where a woman has the right to own land in theory, there are a number of factors that reduce her real access to it. Custom may take away rights enshrined in law. What is striking is that women's access to use-rights in land is that they come most often through an individual relationship with a kinsman. Cross (1996) and Bonnin (2000) further argue that in most African countries land access is closely defended by power.

According to Overhalt (1991), Kenyan women after marriage are given access to plots for food crop production by their husbands or, if unmarried, by their fathers. With land reform in recent years in Kenya, title for land is being registered in individual names and this ownership is almost always granted to male family members. Sometimes mature widows may be in a position to gain title to land. These women may also be owners and managers of other resources, such as herds or farm equipment, usually managed by men. Younger widows on the other hand may not have sufficient status and may be forced to rely on male family members for managing of, and decisions about major productive resources.

McIntosh and Vaughan (1996) illustrate that although studies of women's access to land and other productive resources and the factors that affect this are few, the generalisations that emerge are that the size of women's land-holdings is less than that of men; their occupancy is insecure; and the socially dominant position of men is critical in determining access where there is competition for land. However, it is difficult to explicate the factors that give women greater or lesser access or leverage in situations of scarcity. If the issue of land ownership in the Third World is of itself a minefield of complexities, land ownership in relation to women is a particularly

entangled web. Women are suffering negatively from technological and socio-economic changes brought about by the development processes including land reform.

Despite being key agents of development, women comprise the majority of poor people who are largely found in rural areas. The key factor, which contributes to the failure of women to overcome poverty, is the lack of access and rights to own and control land. Discriminatory, customary and other social practices have prevented women from getting access to land. Women clearly do not have equal access to social benefits, training, the legal system and resources that would make them economically self-sufficient and they are largely excluded from any decision-making process (Bob, 1999).

2.2.2.3 Access to credit

While women are creative and innovative, their access to resources and opportunities to realize their dreams and ensure household needs are very limited. Most of the inputs needed to increase agricultural output are costly. Therefore, women like all other farmers deserve the right to credit, whereas in many traditional areas women are not well exposed to such issues. Lack of collateral that enable woman to have credit is one of the fundamentals that hinder them from generating additional income for their households (Kabadaki, 1994). In Tanzania rural communities, particularly women, have been encouraged to alleviate poverty by means of returning to crop production. Groups were formed with the intention of using indigenous resources. Voluntary participation was essential in order to upgrade the production. This technique proved to be useful as the community was successful in fighting against poverty (Nkhoma-Wamunza, 1992; Legum and Marri, 1995).

Overhalt (1991) emphasizes that women are active in small-scale trade of food commodities and other household products. Studies by the Ministry of Transport and Communication showed that over 90% of sellers in area markets are women. Frequently, however, they are excluded from access to more formal and larger scale

marketing channels. Mitter and Rowbotham (1995) argue that in Zaire a woman must have her husband's consent to open a bank account. This hinders women from progressing efficiently with their tasks to develop themselves and their community as Vaughan (1994) pointed out that the needs of rural women are highly dependent on access to different technologies.

2.2.2.4 Other important resources such as agricultural inputs

Bob and Gumede (2001) illustrate that rural women have limited access and/ or rights to technology and other related resources. In this regard traditional attitudes and customs often define who uses, develops and accesses different types of technology. Rights to technology affects women's decision-making authority as well as their ability to access services to increase production or even view agriculture and other types of activities as viable options. Young (1993) states that the ownership of equipment or resources hinders women from progressing with their daily chores. For example, in the case where the equipment belongs to the father as the head of the household, it is truly unacceptable that the family members may not use the tool until the owner permits them to do so.

Some problems that hinder rural women from progressing efficiently are the lack of income to purchase agricultural inputs such as seeds and crop fertilizers. In South Africa most rural residents are in congested areas with arid soils largely due to the colonial and apartheid practices. Creevey (1996) points out that the high rate of male migration from rural areas to cities also increase women's workloads because they are in charge of all aspects of their lives and of those dependent on them. Women in polygamous families experience the problem of husbands who cannot afford to support large families. Therefore, women heavily depend on the soil to ensure that children do not die of hunger. They lack important agricultural inputs so as to produce more yields. Coyler (1994) and Erskine (1992) reveal that the use of technology to produce more yields may help in culminating the accelerating poverty levels when used sustainably.

2.2.3 The importance of women organizations

There are various problems that hinder women in forming organizations and clubs that are vital in shaping their well being. When more than one woman come together, there are several ideas that are shared among them. Some of these ideas include improving what women have already done in the past. However, some of the ideas that may be raised can be something new and can somehow create awareness and produce new techniques (Appleton 1995).

Appleton (1995) further argues that rural women of San Miguel Afuera in South America initially organized themselves in order to learn how to knit and weave. Later they took part in the well-known Mother's Clubs, groups organized through the food charity programme. In the 1980s there was a change in the focus. The organization started a process of reflection, which determined the new point of view that food donations do not strengthen national production, but in fact are more likely to weaken it. In this way they began to reduce slowly the amounts of food donated and started the process of monetization. The community of San Miguel Afuera was concerned about getting things done in their own way because they knew that it was better to teach a person how to fish than give him or her a fish.

AFRA (1999) pointed out that women's organizations do not solely deal with domestic chores such as child rearing and child caring but can create means to generate income. An example is that of stockvels where women gather and pay little amounts to be distributed at the end of the year or earlier before the schools are opened. They allow themselves to borrow certain amounts and pay little interest. In this way, they are able to make profits out of those amounts. This does not have negative impacts on the lives of poor women as they pay the interest they agreed upon and profit is allocated back to them at the end of the year.

According to AFRA (2000), women's organizations in the Pietermaritzburg area have played a vital role in poverty alleviation. Women have been able to break the barriers

that hinder them from progressing with their tasks as they now have their own income to start their small businesses. They are involved in the organization and not scared to borrow, as they know that they are saving for their families. Wildschut (1998) outlines that in Ghana women's organizations have similar roles as in Tanzania. They have organizations that deal with funerals, as death is one aspect that needs money. Women are practicing what they call "bring and share" where every woman comes with what she will be given when it comes to her turn. They are progressing very well in dealing with difficult situations as men have migrated to cities and towns (AFRA, 2001).

Women's organizations do not focus only on food security and production but also in ensuring family security as mentioned earlier, women have multiple responsibilities. According to the World Bank (1995), women in Bolivia have various informal groups that provide help to their residents to survive. Some women started child-care centres in their houses. This is one of the strategies used to ensure that poor families are given knowledge to create income to sustain their families. The World Bank (1995) further illustrates that women's organizations play a crucial role in disseminating knowledge as the sharing of ideas among women from diverse backgrounds make other women to explore new aspects.

2.2.4 Gender constraints relating to access to education and training programmes

Generally, access to education and training are different for men and women with women experiencing greater constraints than men. Women are resource constrained not so much from a natural resources point of view, but from the fact that they need inputs, technology and information, which are critical for unlocking the potential of natural resource usage (Swanepoel, 1997).

2.2.4.1 Rural women's access to education

Robinson (1992) states that education can mean different things to different people depending on how one views it. For better standards of living, education can be

regarded to be important but this depends on people's beliefs, culture, norms and values. The main problem in terms of Third World education is that it is unevenly distributed. Education can be viewed as the process of training minds of people and ability so that they may have skills. In each and every society not all people have access to education. This leads to high levels of illiteracy in the world with almost 850 million people who cannot read or write (Karl, 1995).

Mitter and Rowbotham (1995) and McGregor and McGregor (1992) indicate that women make up two thirds of Africa's illiterate population. They are regarded as inferior to men and are not expected to aspire as high as men especially in what are considered as male fields such as engineering and architecture. In poor countries access to education and training is often difficult when the cultural and monetary costs are high or the benefits are limited. Mitter and Rowbotham (1995) further state that when families face economic problems they prefer to invest their limited resources in the education of boys rather than provide what is considered as prestigious education for girls who would eventually marry and abandon their professions anyway. Appleton (1995) argues that although women in general have less access to education, but conditions are worse in rural areas due to the structural elements of poverty, which ensures that educating a woman is not profitable.

Appleton (1995) further states that in Tanzania drop-out is associated with early pregnancies due to the absence of family life education, traditional norms and poverty. The low levels of education among female members of a family, and the traditional concept of the role of women as reproducers, mothers, and self-sacrificing wives, limits the opportunity for developing their potential, capacity and creativity. According to Hope and Timmek (1987 cited in Mitter and Rowbotham, 1995:121), education is the key for creating, adapting and spreading knowledge. Malhoutra (1992) further emphasizes that education and training are among important determinants of women's involvement in technological activities. Lack of information and skills are thus barriers to the adoption of and use of essential technologies that may be provided through education.

2.2.4.2 Rural women and access to training programmes

It is very rare to encounter projects involving technological innovation, especially in communities characterized by poverty that has resulted in permanent and stable social and economic development. The use of technology or implementation of technological innovations is used in order to improve and widen the set of knowledge. According to AFRA (2000) in an attempt to increase the number of women participating in training in Information and Communication Technology, a training project was conducted in four of the nine provinces specifically targeting those areas that would otherwise be excluded. The training materials were made available on the Women's Net website in order to increase the broad base of trainers around the country. Although these attempts were aiming at assisting women in areas confronted by lack of training programmes, there is doubt whether it reached the most needy women in remote rural areas where computers are not known. Another thing is that not all women have access to these sophisticated machines even in areas where development has taken place and some of them may have access to them but do not know how to use them appropriately. Therefore, training rural women needs more time, resources and patience. Furthermore, rural women need to be empowered with more knowledge related to these sophisticated tools. According to AFRA (2002), some rural women are even scared to touch gas and electrical appliances because they heard that they might be electrocuted. They, therefore, need to be taught how to use them properly. The researcher raises this issue because one day while she was conducting the interviews, she met a woman who asked her to light the gas stove in order to make tea. The researcher was amazed to realize that the respondent's daughter bought her that precious gift but she does not use it. The stove is only used when there are people who can assist her to put it on.

Rogerson (1999) points out that in Botswana there are numerous rural training centres. The Ministry of Agriculture's Rural Training Centres (RTCs) train men and women in a range of agricultural skills that are aimed at improving both subsistence farming and farm-based income-generating activities. These RTCs have dormitory facilities for trainees. Two of the RTCs have Rural Home Instruction programmes

designed specifically for female farmers and consisting of home economics subjects such as home management, nutrition, sewing, knitting, food processing and preservation. Such training programmes play an important role in increasing the knowledge the rural women already have. Some women may be able to open their small business within their households such as sewing school uniforms and jerseys. This will further contribute to income generating activities and reduces dependency.

New agricultural technology can provide rural women with the means to improve their traditional tasks. Such technologies can be used to encourage community self-help and to improve the lifestyles as well as developing self-reliance. Though some of these technologies are developed, there are barriers to women's access to them. For example, in Zambia while many poor households have difficulty in gaining access to agricultural credit, women face even greater constraints because of a number of attitudinal and structural barriers. It has been reported that in 1984 only 5% of agricultural loans were granted to women and that the amounts lent were very low. (Escobar, 1995 and Swift 1979).

Escobar (1995) further illustrates that women farmers in Zambia also experience the problem of having limited access to training. Their access to training has been limited by the fact that most of them were offered at the farmer training centres. Studies of the Northern, Central and Southern Province show that only 5% of women had attended farmer-training courses. This is not surprising since women farmers, especially those who are heads of the households, cannot take several days or weeks off to attend classes away from the village. The mobile training was introduced thereafter and the results proved to be very pleasing since the number increased to 25%.

Women farmers need access to improved technologies as well as credit so as to employ the techniques available and to training and other forms of education that will give them the understanding of production and technological choices. Nkhoma-Wamunza (1992) and Basgall (1988) illustrate that lack of collateral from women

when in need of credit create some barriers. For the most part women farmers are significantly disadvantaged with respect to access to these services. Escobar (1995) further mentions that Zambian rural women also suffer from inadequate access to co-operative or credit facilities. Conservative lending practices in Zimbabwe including requirements for down payment, collateral, track record and husbands' approval all hinder women's ability to gain access to credit. It is also necessary to determine whether women can bear a part of the whole cost of a technology for its introduction.

Part of the problem arises from the fact that extension workers and other government officials do not perceive rural women as farmers. Despite the fact that women perform most of the agricultural work, extension workers are accustomed to dealing with a man as head of the household rather than with a woman as the primary person involved in agricultural production (Overhalt, 1991; Escobar, 1995).

Overhalt (1991) and Nelson and Wright (1995) assert that extension agents and technologists work with men and male counterparts as heads of the households as they are given the opportunity to take over the tasks that were previously done by women when the potential for commercial gains are introduced. This results in the loss of income that assists women. Gender bias in this regard needs to be eliminated. Women are generally responsible for and undertake most of the agricultural work. Their lack of access to and knowledge of relevant technologies could have potentially devastating impacts such that they may end up practicing poor methods of cultivation, which result in low yields, famine and also the depletion of the soil structure.

Appleton (1995) illustrates that at Siavonga village in Zambia the evaluation of seasonal extension messages showed clearly that men benefited more from extension than women. Men usually attended extension sessions and were elected as office bearers and received specialized training such as record keeping. They also received information about where to get loans and where to purchase seeds. Women did most of the work in the fields and at home but were either not allowed to attend meetings or had too much work to do. Women received valuable information only in women's

groups as was the case for hands-on experience in leadership positions and training in accounting and budgeting (Nelson and Wright, 1995).

Roy (1995) illustrates that the Self-Employed Women's Association (SEWA) in India concentrated primarily on credit delivery to poor women. With limited education and skills, and few employment opportunities, poor women in developing countries often turn to self-employment as the means of supporting themselves and their families. Scattered evidence indicates that an increasing number of women are creating their own jobs in very small agricultural, manufacturing services and petty trade activities. However, most of these aspects do not yield sufficient income to release women from the chains of poverty. They lack services and materials necessary to expand or even make marginal improvements in productivity and income. Numerous programmes (such as sewing and knitting programmes) have been introduced to provide the poor with missing ingredients (such as skills) to uplift their standards.

Roy (1995) further states that the credit scheme such as the Intermediary Programs assist the poor to borrow from institutions. SEWA of India adopted this but the banks they deal with had little patience with poor women borrowers and treated them with contempt. Thus the direct connection to the banking system hampers poor women's access to credit even when an intermediary assists them. Also, in Zaire (Mitter and Rowbotham, 1995) agricultural extensions and formal financial institutions are biased toward a male clientele, despite women's importance as producers. This has spurred the growth of women's groups and co-operatives, which gives loans and other help. Women end up working twice as long as men.

Rural women learn by doing. It is therefore crucial for the experts to give them an opportunity to appreciate their strengths and formulate topics and issues related to their problems. Training programs need to be developed thorough consultation and understanding of women's needs and problems and their view on these issues. Women need to learn what is defined by them, from their own perspective, rather than

by technical experts. This is supported by Erskine (1995) and Harding (1995) when they illustrate that training is among the determinants that may assist rural women.

2.2.5 Consequences of improper decision-making

Nelson and Wright (1995) pointed out that the lack of proper decision-making may lead to malnutrition and related diseases. Some women's groups in Zambia failed to market their produce since their husbands did not allow them to travel. Children remained malnourished because men, who chose which crops to cultivate the following year, did not attend the health and nutrition meetings attended by women and therefore favoured cash crops over food crops. Also, husbands who were allowed to have loans to purchase seeds could not afford to repay it as the money was spent on other aspects rather than purchasing the required seeds and had requested the issue of seeds to be women's concern.

Nkhoma-Wamunza (1992) outlines that women have limited access over aspects that are important for agricultural production. As mentioned earlier, women form more than half of the world's population and also contribute more than 80% to agricultural production but they are not given the real status and power they deserve. Through limited land and insufficient resources they manage to produce vast amounts of food. They therefore need to be incorporated in any decision-making body as the burden of producing food for the nation is in their hands.

In Kenya (Talle, 1988) the transformation of their societies' economies from subsistence to market-oriented production has meant a loss in female decision-making power. This loss has been related to the alienation of women from important means of production, that is land and livestock and from the products of their labour. Women have very little or no power to decide on land and livestock, which is essential for crop production. Also, technological innovations, skills and new forms of organization are being directed mainly at the male community. Talle (1988) further mentions that men are widening their spheres of interaction and are becoming participants in a variety of social fields. Men at the detriment of women monopolize

livestock trade as women are not allowed to own any livestock and if they do, they cannot sell them outside except to the head of the household at low prices.

2.2.6 The role of extension workers in rural communities

Saito and Spurling (1992) outline that the main aim of the extension services is to offer training with advice to those communities who need assistance. Escobar (1995) shows that woman farmers have little access to the training offered by the extension workers. The reason behind this is that the extension workers and other government officials do not perceive women as farmers. Jazairy (1996) emphasizes that agricultural extension services have the tendency to favour the larger farmer credit schemes, which proved to benefit the already wealthy people.

In Ethiopia women share equally with men in socio-economic life but women have little decision-making power and a smaller share of resources and benefits. Eighty-seven percent of women in Ethiopia are engaged in agriculture, contributing about 50% of income based on subsistence agriculture (UNICEF, 1993 cited in Porter, 1999:88). However, little attention has been given to involving women in rural development efforts and enabling them to benefit directly from agricultural extension services.

Overhalt (1991) illustrates that extension agents and technologists in Java pay more attention to men where technology innovations are introduced with the aim of increasing output. Initially, cotton production was women's responsibility but as the demand increased and new technology was introduced it became the men's domain. Training and technologies were subsequently used by men, which resulted in women being substituted by men and the benefits being primarily received by men.

Porter (1999) further outlines that another aspect to be considered in the role of extension services is the transfer of technology. Government agencies and voluntary social organizations could facilitate such transfers to some extent, provided the right methods are used. Surveys show that the installation of sanitary smokeless latrines

failed because of an inadequate implementation strategy. However, in some cases further research and experimentation is required to make new technologies commercially viable.

Appleton (1995) outlines that with regard to technical training in Chile in the La Chimba project of house-building, women had no technical advice. Women in this area revealed that the NGO had something very traditional in mind; they only wanted to say what they wanted to do with the organization instead of doing what the organization wanted. So women were never trained in building or carpentry but they learnt to build the houses by themselves. That means they were self-taught. The only training they had came from a leaflet in which they read how to build the walls and about quantities. The masons came and just counted the meters of walls. Women did all the work independently.

Sometimes the extension services and the policy environment act as obstacles as they encourage the plantations of non-indigenous fruits and vegetables. Appleton (1995) illustrates that in Binga the extension workers recommended the use of the available land, water and labour for the high breed of alien varieties, which have a high market value. The problem with these varieties is that they are not very tolerant to the high temperatures. In this manner women have a broad understanding of the nature of soils. They know what is good and bad for their environment.

2.2.7 Policy environment

Appleton (1995) illustrates that local production systems in Zimbabwe by Tonga women have been threatened by a new proposal to clear the area of native trees and bushes to enable cash crop production. Policies that are made and implemented regardless of local production systems may contribute to national disasters. Support for the cultivation of exotic crops instead of indigenous vegetables may contribute to food security crises by helping to destroy the diversity on which people depend. De Beer and Swanepoel (1997), Stockman (1994) and Gran (1983) conclude that it is therefore important to inform and incorporate the local community from planning to

the implementation of any development process because they have a broad understanding of problems they are confronted with in their areas.

Hagman and Kaseje (1987), Mayo (1994), Taher (1992) and Talle (1988) reveal that rural women have their own way of producing food. Despite the fact that the majority is regarded as illiterate, they know what is good for their soils. Although women do not favour cash crops instead of food crops, they manage to generate income from surplus production. Most of the policies usually blame women for environmental depletion, but they often have no alternatives as their actions and practices are generally linked to their exacting household needs. They can be blamed for environmental problems but also be praised for contributing to solutions as it happened in China in Panama village where women voluntarily assisted the engineers in identifying sources of fresh water (Appleton, 1995).

2.3 WOMEN AND ACCESS TO TECHNOLOGIES

2.3.1 Definitions and conceptual clarifications

2.3.3.1 Defining “access”

Munya (2000) points out that while access is consistently identified as a key principle in policy discussions it is not an end itself but it simply enables further discussions and activities that can partially be specified in anticipation. The availability of technologies does not guarantee accessibility. For example, Cross (1996) illustrates that land-access in many African countries is defended by power structures. Rural women's access to land is minimal whereas this is a critical resource in relation to production. They may end up being stuck with the burden of household support without the resources they need to carry it.

Webster (1998) further emphasizes that access can be defined as the freedom or ability to obtain or make use of certain equipment. Access is not just gained via singular legal or extra legal mechanisms. Powerful actors attach multiple mechanisms to produce structural complementarities that are also part of the ability to benefit.

2.3.2 Definition of technology

There is no precise definition of what technology is, as people define it according to their conceptualisation and conceptualisation related to technology use. Appleton (1995), Hilderbrand (1996) and Mitter and Rowbotham (1995) assert that technology identifies four elements: hardware (machinery, or equipment of production), software (knowledge and skills needed to produce something, including the concepts and thinking processes linked to production), the organization needed both to produce a product and to enable production to take place (including social organization) and the product itself.

Appleton (1995) asserts that in order to examine the processes of technical innovation within a broader band of activities, which are not necessarily linked to the market or to changes in machinery or equipment, the following definition of technology is useful: any change, however small in the skills, techniques, processes, equipment type or organization of production, that enables the people better to cope with or take advantage of particular circumstances.

According to Grint and Gill (1995), technology is seen as being much more than simple artefacts or hardware but also refers to the knowledge and practices that are involved in its use. Although Appleton's (1995) and Grint and Gill's (1995) definition of technology seems to be related somehow we need to understand that technology can also be innovative ideas and knowledge shared among those people who are willing to shape their lives accordingly.

Breth (1997) asserts that appropriate technology should not be viewed as a specific package of tools but rather as an approach that reflects a particular view of technology in the society. For the benefit of this study, Hilderbrand's (1996) and Appleton's (1995) definitions of technology are utilized. Due to the aim of the study that is intended to examine the barriers that prohibit rural women from accessing technology, socio-political and economic structures will be discussed. Different types of technologies such as conservation strategies, production technologies, food storage

techniques, informal trading, food processing and craft making technologies will also be examined.

2.3.3 Factors that contribute to the invisibility and overlooking of women's technical innovations

Various factors contribute to the lower visibility of women's technical knowledge and to the lower profile of women overall as technology users and producers. Appleton, (1995) states that at national and international level the heavy unpaid duties carried by women have little economic value when the Gross Domestic Product (GDP) and Gross National Product (GNP) is calculated. The World Bank (1995) indicates that some of these unpaid duties include the subsistence or cash agriculture on which the lives of most rural communities are heavily dependent are generally not valued for national income accounting. Child rearing and bearing, looking after the services of the community and also looking after the elderly people has little economic value. Although women represent 70% of the agricultural labour force, statistics on economic activities classify a large portion of women as economically inactive. Most of these tasks are burdensome, however, any work whose value is not measured or estimated is not invested in. Thus, technical assistance policies ignore many areas of women activities contributing to women's technological invisibility (Appleton, 1995). Studies carried out across many countries indicate that the value of unrecorded activities may range between one third to half of measured GNP. It is recognized that women perform a high proportion of these unpaid tasks. In fact, the United Nations Development Programme (UNDP) Human Development Report for 1995 concludes that the unvalued contribution of women is approximately \$11trillion (Raghuram, 1997).

Another contributing factor to the invisibility of women's technical knowledge is the cultural perception of not clearly knowing what is technical and what is domestic. Women perform many duties with technical components everyday. They may cook, collect water and fuel-wood from distant areas, farm, process crops and food, look after domestic animals such as goats, sheep, chicken and cattle, weave, sew and also look after sick members. Much of women's unpaid work is oriented around family

welfare and it tends to be classified as domestic rather than technical, for example, this is the case with women's subsistence farming in relation to men's cash crop production in many parts of Africa. Specialists identifying or developing technical assistance programs are unlikely to have the skills necessary to analyse the technical components of women's work, which means that women's technical expertise remain unrecognised, and the focus of technical intervention remains outside the household (Appleton, 1995).

Technical assistance is not only dependent on which areas of work are considered technical, but also on perceptions of what comprises technology. Technical assistance by donors is identified and evaluated within a context defined by outsiders. The context usually derives from the commercially oriented provision of hardware, or transfer of technology, through export from the donor country to the recipient country (Appleton, 1995; Mazza, 1987). The status derived from high spending, hardware-focused technical programs diverts attention from other areas of activity which may be less hardware dependent or contribute less directly to the cash economy. This has led to the devaluing of technical contributions, which depends more on knowledge and skill rather than on the use of machinery and equipment.

Bob and Gumede (2001) assert that the under-valuing and invisibility of women's work is also linked to the definition of what constitutes work. This results in the neglect of certain activities (and therein the technologies associated with those activities) as well as the inability for policy-makers, funders, service providers and agencies as well as planners to support women's work. Thus, resources are rarely allocated to the technical know-how associated with what women do and the conditions under which they do it.

Yoon (1995) further argues that the role of African women in production is ignored because it does not fit into existing economic models. Because women's choices regarding their economic activities have been so drastically curtailed, their allocation of labour time is considered irrational when measured using Western economic

theory. As a consequence of being considered economically abnormal, women's labour has not been computed as a measurable economic activity. However, women's tasks are time and energy consuming. In reality these tasks should be among those that are given serious attention due to emotional and physical energy demanded when they are performed. Technologies essential to reduce such tasks would be of great importance because they would contribute to the economy of the country. Fitzgerald (1995) outlines that it is imprecise to measure the economy of the developing country using the models or standards of the developed country.

Another factor that contributes to the invisibility of women's technical knowledge is that few women are involved in extension work, research and development or technical development planning. This implies that there has been little challenging of assumptions made about the nature of productive roles and responsibilities, assumptions which have tended to undermine women's roles and technical capacities, and strengthen the view that technical development has to be brought in from the outside. For example, a 1987 study on women's access to extension services conducted in Kenya, Sierra Leone, Zambia and Zimbabwe reveals common images of women, held by men, involved in agricultural extension work (Appleton, 1995).

Appleton (1995) and Grint and Gill (1995) indicate that women do not make significant visible contributions to commercial or cash oriented agriculture. This is one of the reasons that makes women agriculturists being overlooked. However, this is a myth because women play extensive roles in subsistence agriculture and also play a major role as informal traders in order to sustain their livelihoods. Grint and Gill (1995) further state that women are always tied with domestic chores and children, which further reduces their access to extension services. When a woman is responsible to take care of the children, she has no alternative except to proceed with those domestic chores. Jain (1984) pinpoints that most women are able to share their experiences and if some of them are able to attend the extension service meetings and workshops they often share the information with those who were unable to attend.

The World Bank (1995) illustrates that failure to recognize the economic contribution of women implies failure to consider the factors affecting their contribution, the ways in which they are prepared for their tasks, the tools and techniques they use and the efficiency of their efforts. The support by society, which women may need, is also ignored.

2.3.4 Relationship between gender and technology

When considering the vital role of technologies we need to focus on their design, production and use. Grint and Gill (1995) point out that the use of technology equipment should assist in the liberation of women from being oppressed by their drudgery work. Some technologies may pose threats to poor women's lives even if they are deemed to assist in reducing heavy workloads. Grint and Gill (1995) further emphasize that technology is powerful, remote, incomprehensible, inhuman, sometimes scientific and expensive and above all it is designed in a way that favours males. Interestingly, alongside the belief that technology is masculine, Grint and Gill (1995) argue that historically women could be understood to have invented early technologies and they continue to have relations to technology, which are not characterized by fear and alienation. Women's contributions to technology innovation were overlooked by male historians of the subject (Faulkner and Arnold, 1985).

Women's exclusion and alienation from technology is seen as a consequence of a number of changes, which occurred during the industrial revolution and the early development of capitalism in the West. Most noticeable among these changes were the separation of the public and private spheres and the move of manufacturing out of dwellings into factories. This resulted in the gendered division of labour, which laid the foundation for male dominance of technology (Porter, 1999).

Technologies, which emerged in the period of industrial revolution or capitalist technologies, are presented as being more masculine than previous technologies. This view stresses the idea that the shape of the contemporary relations between men and women arose as the result of the introduction of capitalism and the legislation, which accompanied it, denying women property rights and educational opportunities. In

other formulations the development of capitalism is seen as consolidating rather than originating power differences between the sexes and their relationship to technology (Grint and Gill, 1995).

Overhalt (1991) points out that technology may alter the components of a productive task, breaking it into separate functions in a way that alters the gender roles in the separate changed part of an activity. It may focus on a single component of a job rather than the entire task and by doing so alter productive relations between men and women. For example, as illustrated by Overhalt (1991), in the Upper Volta the Agency for International Development (AID) through project a installed a solar pump to save the energy wasted on lifting water. As it turned out, the lifting of water was the least time consuming and least difficult part of the water collection task by women as they spent most of their time and energy in carrying heavy buckets of water from the well to their homes. Instead of assisting women, the pump aided male cattle herders as women used only a few buckets of water a day in home consumption tasks while herders used many buckets for watering their cattle. For the technology to be useful and ease the work of women, it should have concentrated on piping water rather than pumping it.

2.3.5 Communication Technology

Gurnstein (2000) and Munya (2000) outline that the key element in any rural development application is information. It is the information that is being accessed for use as the rural development service. In order for this information to be retrievable, understandable and relevant to the rural development consumer there may need to be mediating structures linking the service available with the end user. For example, the extension worker could translate the development support needs of a local rural community into appropriate internet search criteria, interpret and translate the returned information, putting it in a form that is understandable by the local community. Two modes of communication that is telephones and computers will be discussed in relation to their use.

2.3.5.1 Telephone

Frissen (1992) argues that gender was and remains largely invisible to those involved in the development of telephone services. Moyal (1992) observed extensive and intensive telephone traffic between women, particularly between family members and between close women friends. This results in a social support system that has vital consequences for the nation. In Australia people often live far apart and women use telephones to overcome the problem of separation. In this respect women's telephone communication is crucial to create and maintain a system of social relations. This is referred to as a telephone neighbourhood.

Despite the crucial role of the telephone in women's everyday lives, the issue of using telephones by women is not taken seriously. Moyal (1992) further illustrates that even the telephone industry had a blind spot for women users of the telephone. The American and Canadian industries promoted the telephone mainly for business purposes. Although many people particularly women used the telephone mainly for social reasons, it took the industry about twenty years to realize that sociability was a goal worthy of being advertised and marketed.

Research in an Australian small rural community found that women attach great importance to the telephone to sustain relationships with family and friends and to contribute substantially to all community activities. It is obvious that technologies are not neutral; they do not function outside the social relations and cultural practices of the people using them. Technologies such as the telephone are shaping and shaped by social processes (Moyal, 1992).

Traditionally, it is considered to be women's work to put time and energy into the maintenance of close social relations, for example, for care-giving, community responsibilities and for business work which then enters the private spheres. The telephone in this manner is socially and culturally shaped since it acts as an active agent in the shaping of socio-cultural arrangements. Through the telephone, problems of isolation or restricted mobility can be overcome more easily. Furthermore, the

telephone is important because it offers women a sense of safety and security and in this respect limit feelings of restriction of space (AFRA, 2002; Gurnstein, 2000).

Rakow and Navaro (1993) studied why women use cellular phones. They report that husbands often bought these cellular phones for their wives, because they are concerned about their safety. In this manner they want to protect their wives when they are alone in the house or if they are travelling alone in their cars. Surprisingly, women often use the cellular phones for quite different purposes, for example, to keep in touch with their children and to manage their households from a distance. This use of telephones is particularly relevant to gain insight into the question of how modern women manage to commute between public and private spaces and what role technology plays in this process.

2.3.5.2 Computers

Moyal (1992) indicates that studies of technology have mainly but not exclusively grown out of science studies. She further illustrates that in Scandinavia, feminist studies of technology have rather a different ancestry coming out of industrial sociology and labour process theory. Research into the so-called office automation in the late 1970s and the early 1980s was a break-through for gender and technology as a research issue. The main argument forwarded was that the introduction of new technology was usually to the disadvantage of women. Their qualifications were neglected, their promotion possibilities decreases and their work was degraded. Mitter and Rowbotham (1995) emphasize that lack of access to relevant networks explains the historical marginalisation of women's contribution to technological innovations.

2.3.6 Taboos and Location of the technology

Overhalt, (1991) and Elson (1991) indicate that technologies may introduce processes, which because of social or cultural restraints make them inaccessible for use by a certain group. The location of technology may create barriers to their use. This may result in them being neglected and taken as if they do not exist. For example, when bicycle pumps were introduced in some societies, women were prevented from using

them because of taboos that prohibit women from sitting across the bicycle. Some women limited by culture and traditional systems, such as purdah, may not accept employment in a situation where both men and women work. A rice mill, located in a central area for ease of access may not provide employment opportunities for Bangladesh women who formerly were responsible for all rice processing because they are not free to accept work in such a location (Overhalt, 1991).

Overhalt (1991) further argues that when a technology centralizes productive activities and women may not go to this location, men move into productive activities where women previously held sway. In many societies women have different patterns of mobility from those of men. In some they are confined to certain private female places such as the household compound by social or religious traditions.

To mention a few examples, in a Zulu homestead the bride or daughter-in-law is not allowed to walk straight but crawl on her knees by the side of the hut where males sit and also walking next to the cattle kraal is forbidden. In homesteads where the grinding mill is located in such places some women may not use them while they do exist. Such processes tend to reinforce the belief that men work with technologies and women do not or men do modern work while women only work in subsistence sectors. The real issue, however, is the question of where technology is located. Changes in the location of production in situations where women are not restricted by religion or tradition but by their only home based productive obligations may cause women to move out of traditional patterns and undertake new activities (AFRA, 1999).

Overhalt (1991) and Peires (1998) reveal some of the actions by colonial rule that demanded cheap labour. They argue that when the owners of the wool mills of western New England wanted to attract cheap female labour, they built dormitories to house the young girls who took employment. In China when women moved into factory labour, nurseries and child-care centres were built in the factories to allow women to meet their nursing obligations and to provide substitute child-care. Overholt

(1991) further emphasizes that electronic factories in South East Asia and others in Mexico recruited mainly young unmarried women in order to avoid the provision of these services. In West Africa, urban women who undertook economic activities outside their homes worked out a variety of alternative systems for providing food for their families including the rotating responsibility for food preparation among members of their neighbourhood group. Street food vendors clearly helped meet this need as well (Ngqaleni and Makhura, 1996).

2.3.7 Technology and status

Overhalt (1991) suggests that the introduction of any device, technique or organizational arrangement, which alters the role assignments of men and women in production may have a number of ramifications in status, in access to and control over the resources and income and in the opportunity for leisure. When new technologies are introduced in an area, the ability to handle them is associated with relatively high status. Thus, those who either already enjoy high status or who are in a position to corner it may move into tasks that were previously low status when done without the benefit of the new technology.

A study conducted by International Labour Organization (ILO) for the United Nations Commission (UNC) on the status of women, came up with the illustrations of these shifts. The study analysed the impact of scientific and technological progress on employment and work conditions in the metal trades, textiles, clothing and food and drink industries. In every case where machinery was introduced in activities traditionally done by women, men either completely replaced women or the activity became subdivided and men took over the tasks that used the technology and required greater skills while women were relegated to the less skilled, menial tasks. The shifts were accompanied by loss of income earning opportunities or marginalisation and lower income for women (Austin, 1984 cited in Overhalt 1991:102).

The same obsession has occurred in Tanzania (Nkhoma-Wamunza, 1992) where rural women started the business of beer brewing under the tree with the aim of generating

income for their livelihoods. As their business progressed in an amazing manner, men became greedy and attempted to interfere with the aim of disrupting women's business. Women were marginalized since men took over the business and it became their means of generating income.

Anderson (1985) points out that in Java when the rice mills were introduced, women who had traditionally earned their monetary income from hand milling were displaced as men assumed these positions in factories. He further states that also in Korea when the government installed rice mills, men in the mills did jobs previously done by women. Anderson (1985) further illustrates that in the Ivory Coast, women were traditionally responsible for growing and spinning cotton, which men then wove into cloth. Women, however, controlled the cloth production and gained wealth, status and power from it. With the change of cotton into cash crop resulting from the colonizers need for increased supplies, technology innovations were introduced to increase cotton output. Extension agents and technologists worked with men and male heads of households were required to pay a cash head-tax for family members. Thus, cotton growing became the domain of men. However, because women were displaced from their primary role in cotton production they were subsequently hired into newly built textile mills as weavers using machinery.

Overholt (1991) argues that in colonial India the importation of cotton from England displaced many workers primarily women from the jobs of spinning and weaving on which they previously depended. The English production and transportation technologies were sufficiently inexpensive and effective to make this a viable economic alternative to Indian production. To sum up, women and children can rely only on their own capacity to generate an income via self-employment, despite the problems they face in gaining access to assets and resources. Opportunities and possibilities open to women are more limited than those for men, and frequently these must be compatible with other obligations that they have to fulfil. Gender roles (that is, the culturally determined roles of women and men) affect the division of labour, as well as access to and control over the allocation of resources and benefits. Mitter and

Rowbotham (1995) state that the uneven distribution of economic power within the household and in the community exacerbates the levels of poverty.

Bob and Gumedde (2001) argue that the majority of rural women are often impoverished yet they constitute an important source of latent productive potential and source of knowledge. Gender differentiation and discrimination in terms of roles and status within rural communities often mean that women are reliant on natural resources and technology with very little access to or control over them. Improved technologies related to land preparation, water collection and crop processing should in theory be very beneficial in respect of releasing women's time from unproductive tasks. Time that can be wasted needs to be diverted to income generating activities.

2.3.8 Technology Design

Rogerson (1999) illustrates that although some technologies have been successfully introduced to rural women but not all of these developed technologies, especially in Botswana and Zimbabwe, have been successful in design and acceptance. In Botswana technology design is based on the problems of production, which generally reflect women's problems since all operations in arable agriculture are women dominated except men predominantly do ploughing. According to the AFRA (2002), improved technology covers a wide spectrum such as land preparation, crop management and storage facilities. Under traditional systems of raising crops, land utilization involves the use of hand hoes and ploughs, which need a lot of labour and drought power respectively. The current recommendation is the use of tractor drawn implements such as mould-board ploughs with planter attachments.

Rogerson (1999) also argues that women in Zimbabwe voiced out that they are not consulted or informed when there are new aspects to be developed and introduced. Agriculture in Zimbabwe, as it occurs in Botswana, is one of the tasks that are time and energy consuming. Women argue that there was a plough that was introduced called the national plough. This plough was very heavy and made ploughing slow and difficult. The silver plough was introduced as an alternative but the problem is that it

weighs 3-5kg more than the national plough. This proves that the silver plough increases the heavy task women experience from the national plough.

However, if rural women were consulted and their needs and concerns considered during the design stage, more emphasis might have been placed on the weight of the plough. Instead the designers and engineers considered the retention of the soil moisture content and the minimization of soil erosion as the most important factors in the plough design. While these environmental concerns are important, their overall emphasis precludes successful adoption of the technology. Wajcman (1991) argues that women are still rarely involved in the design of technology, which is shaped by male power and interest. Anderson (1985) asserts that conventional evaluations of technical hardware were often based on criteria assumed by technology designers rather than the technology users or intended beneficiaries.

2.3.9 Effects of technological change on rural women

Classifying technological change in terms of its impact on income distribution appears to be a useful way of examining the economic consequences of technological change in particular contexts. Technological change can be defined as neutral if it leaves the pattern of income distribution among relevant groups unchanged. Some of the issues that lead to the bias in technological change are the sexual division of labour where women have specific tasks as well as men. In such cases women are obliged to be engaged in heavy tasks that are time consuming with limited means to reduce the work (Bryceson, 1995).

In Zambia women have formed a factory that manufacture utensils from discarded aluminium. Their work prospered to such an extent that they were able to employ other people from the community including men and children. In this manner technical innovation has contributed to the upliftment of women's lives as well as the community in which they live (Times of Zambia, 1996). Other rural women used paper to make pencil holders lampshades and bins. This does not only contribute in generating income for their families but also minimizes the abundance of waste on the

environment. There were beautiful flowers, floor mats, hats and bags that were shown in the Sunday Times (2002). All were made from used plastics.

2.3. 10 Technologies relevant to rural women's tasks

Appleton (1995) argues that when one considers the multitude of tasks that rural women perform and the limited tools they use in performing these tasks, it is obvious that the introduction of improved technologies hold out the promise of considerable benefits not just to women but also to rural families as a whole. Varying amounts of work have been done on developing or improving technologies related to crop production and processing, water supply, fuel supply, transportation and other activities that are important in the rural environment. For most tasks there is now a sizeable range of technologies available as alternatives to the traditional methods. For land preparation, there are improved hand tools, animal drawn ploughs, power tillers and tractors. For weeding and fertilizer application there are many devices of varying complexity and the costs that can do the job more quickly in a less breaking way than the traditional methods.

According to Appleton (1995), in Latin America, the population is facing the problem of high unemployment rates. Women are obliged to seek alternatives to generate additional income for their households. As a result of this they adopt a proactive attitude in trying to meet the basic needs of their families and this requires a great deal of effort. Fuel wood is one of the problems confronting communities in this area. Ahmed (1985) points out that to help with the fuel supply problem, there are now many technologies that can reduce the amount of firewood or charcoal needed for cooking or heating purposes. Improved stoves that use only two-thirds of the amount of wood needed with the traditional three stones method of cooking can be built very simply and cheaply from mud and other locally available materials.

Young (1993) further points out that solar cookers and solar ovens that use no source of fuel at all except sunrays are now available. Solar energy can be used to heat water and in this manner more time is saved to do other jobs that might generate additional income for the household. Appleton (1995) also indicates in the study that was

undertaken with the women in Chile, that they prefer the use of kitchen equipment such as the *cocina bruja*. This type of stove is essential to meet the demands of their daily tasks. Sowetan (2001) advertised the *Makoti* stove, which seems to be more useful as it uses waste such as sawdust.

2.3.11 Other types of technologies

There are several techniques that can be learned from women's organization such as different methods of food processing. Some of the techniques include the preserving of banana and other fruit. Appleton (1995) indicates that Carada in South America produces different varieties of banana and the *hualele* variety is the best to be preserved since it has the strongest flavour but it is the scarcest. Projects for the plantation of the *haulele* banana had been introduced in different communities and the production has already increased because producers have direct markets for their raw material. Other additional benefits for the people involved in marketing and selling were also created. In sum, the greatest impact of the project has been on women. The consolidation of the organization through a job qualitatively different from the ones they had been doing before and the participation of women in intermediate technology was a move forward with regard to the position of women in the community.

According to AFRA (2001), women on the outskirts of Pietermaritzburg, where peaches are abundant, are very active in canning the fruit to be used when they have functions. Although they are not selling their produce but it became obvious that they can generate income if they can be encouraged to sell. They further emphasized that the process of canning the fruit is very old in these communities as knowledge is passed from older members to the younger ones.

2.3.12 Benefits obtained by women in technologically oriented projects

The most important aspect in projects delivered to rural communities is to ensure that indigenous communities are incorporated from the planning to the implementation of the project. According to the African National Congress (ANC) (1994), through the Reconstruction and Development Programme (RDP) the main objective of people-

driven development was to ensure that local people who are the beneficiaries of a project should have control over that project. People-driven development, therefore, was aimed at building the capacity in the process of implementing the project, rather than just delivering a product.

According to Appleton (1995), Cobbet (1987) and Coetzee and Graff (1996) most of the technological innovations have been introduced to reduce drudgery involved in most of the duties performed by both men and women. Projects of this nature allow women to share their skills and they are given a chance of speaking in front of an audience, which women deserve most, as they have been deprived such opportunities to voice out their knowledge and perceptions in the past. Erskine (1992) and Moser (1993) outline that the involvement of women in project activities is seen as an important mechanism to overcome apathy and lack of self-confidence and it makes women visible in the community. They learn different skills of dealing with poverty problems while at the same time they became conscious about caring for their environment.

Appleton (1995) emphasizes that skills are sometimes learnt from friends or neighbours or transferred from mother to daughter as in the case of reeling, which has been a traditionally hereditary occupation with skills passed from the mother or father's side of the family. Creevey (1996) and Devasia (1994) indicate that technological projects are aimed at developing needy communities, especially those communities that have been deprived opportunities in the past. This is also aimed at alleviating poverty. An example is the case where women were involved in the project of knitting and selling jerseys for the community. They were able to double the benefits they obtained as they were generating additional income for their households whereas at the same time increasing their capacity due to the knowledge and skills that were offered and shared in the project. When the project ended it was easy for the women to continue with the same tasks in their communities. Women proceeded with knitting and selling jerseys and tracksuits to children in the community school even after the project had ended (AFRA, 2000).

AFRA (2000) further states that women in the area of Pietermaritzburg started their business in the project that was aimed at showing people that there are several tasks they can perform. They have progressed to such an extent that they are now selling tracksuits and uniforms to their local schools. They are now helping their poor communities to save the money that would be spent for transport when going to buy these items in towns. Jain (1984) revealed that the transfer of technology in the projects might result in the formation of the family industry. Other members of the family, particularly females, may feel interested in the work they usually see generating income. In this manner, they can join their mother and more jobs and more money could be raised (AFRA, 2000).

The formation of the project in La Chimba in the Northern part of Chile as mentioned by Appleton (1995) can be regarded as one that proved to be most successful. Women in this area realized that penicillin was not the solution for diseases that affected their children but it was important to deal with the dwellings under which they live to solve the problem. They decided to change the *mediagua* (tin house) into proper houses. Although women had financial problems, they realized the importance of building better homes that would last longer. Projects have enabled them to achieve their goals and they approached Non-Governmental Organizations (NGOs) that would assist them in terms of money. Projects do not stereotypically assist those communities involved but knowledge is widespread to others as it is seen to the young residents of Conchali in South Korea who followed the same direction (Appleton, 1995). For the women the most important aspect of the project was their opening to the world. They realized that they were capable of doing what they intended, valuing themselves, knowing that they are not restricted only to the home, but there are other alternatives which allow them to share, to develop and to participate. They could leave the home, enjoying a newly earned freedom.

Yoon (1995) states that women's involvement in water and sanitation programs have demonstrated that women are not only part of the problem; they are also part of the

solution. In China, Panama village women helped engineers to identify sources of fresh water that had been overlooked in the initial surveys. Yoon (1995) further outlines that in Latin America, Africa and parts of Asia women volunteered their labour in the construction of a piped water system. In Lesotho and Tonga they helped in building latrines. Their role in helping to generate new financing for water projects have been shown to be important because women often reinvest in other family basic needs such as better education and improved child nutrition. The women garden groups in the Casamance of Senegal and rural South Korea were examples of key links between water supply and income generation welfare (Yoon, 1995).

The anxiety of generating income is not critical to those women with no health problems alone, but even to those that are facing severe health problems. Women with Human Immunodeficiency Virus (HIV) in the Hillcrest area formed an organization, which is aimed at generating income. They make beautiful bags, beads and other crafts that are sold in order to buy healthy food (AFRA, 2002).

The availability of rural community projects and involvement of women as people most responsible for rural activities not only assists them in obtaining more skills and knowledge but they get opportunities of meeting with people outside their countries. Creevey (1996) points out that women who participated in the Bagameyo Project in Nigeria revealed that they got an opportunity they would never have had to meet people from outside including Europeans and Government officials with whom they engaged in useful discussions. As a result of the project they now have confidence to talk freely in front of other people. They also have hopes for the future as they have proper skills to operate the machines and have rights to own them.

2.3.13 Women's innovation and adaptation of existing technologies in rural communities

Adaptation and innovation of modern technologies is taking place among rural women. However, this supports the findings of Appleton (1995) that illustrate that although women are adapting innovating technologies, their expertise is unrecognised

and less valued. Appleton (1995) further argues that women have no problem in assimilating technology as it was shown in the training with women of the Centre of San Miguel Afuera in South America in the use of intermediate technology in the preparation of dehydrated banana. The process was not complicated since it consisted of recapturing the knowledge of the women and the community with regard to the traditional method for the dehydration of banana in big firewood ovens or by exposure to the sun. The technological innovation was the use of a banana drier or dehydration machine, which works as a gas oven, and of the forced convection airflow created by an electric fan.

In this sense women have no problem in technology assimilation and adaptation because they were learning to do better what they already knew how to do. They are even improving it in the sense that they are making it more efficient. The practical assimilation of intermediate technology is self-evident. Their sense of technology assimilation is based on the possibility of teaching what they have learnt from other women.

Buvinic (1993) and Taylor and Mckenzie (1992) point out that if you wish to develop the rural communities you need to develop them with the resources already available within their community. In most rural areas women are concerned about what they do to sustain their livelihoods. They have their traditional or indigenous systems of doing their tasks. The knowledge that is passed from one woman to another or from mother to daughter is a clear indication of grasping existing technologies. The new technologies may be integrated to traditional knowledge in order to produce conditions conducive for rural women. According to Fife (1996), Frischmuth, (1995) and Gaiha (1995), evidence suggests that with the appropriate technologies and incentives women are willing and capable of adopting and progressing with their daily practices. To sum up, women have limited problems in the assimilation and adaptation of developed or introduced technologies.

2.3.14 Risks and health problems associated with the use of technology

While technology is deemed to reduce drudgery involved in the tasks performed by rural women, there are several dangers also involved. Appleton (1995) states that the success of rural women in the La Chimba project in the Northern part of Chile makes them work under pressure. The problem was that the tools and other equipment they were using were heavy since they were made with men in mind. Women had to struggle with them. This sometimes had negative impacts on their lives. Women often had to stand on loose poles to continue their tasks which put their lives at risks.

Pearson (1993 cited in Mitter and Rowbotham, 1995:92) illustrates that although there is no medical and legal agreement of the degree of risk and vulnerability associated with the use of computers but literature has revealed several health hazards. Computer users have disorders in necks, upper limbs, shoulders and backs. Also, the reproductive system is affected to such an extent that miscarriages and fertility problems associated with stress occur.

Appleton (1995) indicates that women in the Building Hope project in South America had several difficulties including those that do not want to pay the rotating fund. This does not hinder them from progressing efficiently as they allowed these people to take part in the activities and in the construction itself. One of the participants stated that if they were very strict in that respect, they would be behind time as they were supposed to stick to their schedule. So if some people did not have the money this month, they would have it the next month. Tolerance became the means to achieve success.

2.3.15 Health status in rural areas and the use of indigenous technologies

The health of the population is fundamental for the achievement of development, long-term economic growth and poverty reduction (Daily News, 2002). The poor marginalized communities experience heavy burdens of treating illnesses that are sometimes impossible to cure. Lack of mobile clinics, primary health care clinics, hospitals and doctors are problems confronting rural communities. Shortages of education based on health care are some of the issues that need to be given serious

attention because people, including the breadwinners die. This has a high impact on the deterioration of subsistence production, which results in massive malnutrition (Mail and Guardian, 2002).

According to the World Bank (1995), many traditional health care personnel are women who, if their skills are upgraded can be incorporated into modern health services. In Nigeria, Operation Midwives was a programme superimposed on the existing institution of traditional midwives. Midwives are trained not only in improved and more hygienic delivery practices, but also to advise new mothers on child-care and nutrition. Similarly, in Somalia, traditional midwives who have received training are effectively working to change society's attitudes toward women.

The lack of infrastructure such as transport, hospitals and clinics in rural areas result in increased mortality as stipulated earlier. The use of indigenous technologies in these areas play a fundamental role in healing different illnesses as illustrated by AFRA (2002). Rural communities who reside in deep remote areas have no alternatives other than using medicines from the traditional healers who are around them. Natural herbs, tree barks and certain plant leaves act as fast pain-killers and others are even used to treat broken bones and snake bites. Due to male migration, women are left sometimes with no money to care for the lives of their family members. To treat coughs they simply use herbs such as *umhlonyane* and for diarrhoea they use bug-weed and many more herbs (AFRA, 1999).

2.4 Conclusion

Women and access to the use of technology is an important issue to be seriously discussed because improving the quality of life in rural communities is highly dependent on the availability and accessibility of different technologies. Women's exclusion and alienation to technologies is a consequence of a number of aspects. As mentioned, patriarchal attitudes and notions contribute several barriers that hinder women's access to important technologies. For example, the ownership of assets such as land favours males at the expense of women.

Rural women engaged in a multitude of activities, but their access to technology is very limited. The issue of food production and security as well as processing and storage lies in the hands of women. To ensure that there is sufficient food and the family members do not have health problems including those related to the shortage of healthy food are often women's responsibilities. As mentioned earlier, rural women are not homogenous since others have little formal education while others are totally illiterate. It is therefore important for those women who can bring changes to make an assurance that they assist those that are really desperate. The exchange of ideas in women's organizations and projects seem to assist rural women to gain confidence to express themselves. Self-esteem and assertiveness are some of the aspects that are perpetuated in such activities as Moser (1993) illustrates. Women's involvement in different community organizations might ensure that they gain confidence.

Women living in deep rural areas cannot suddenly change their minds due to the traditional teachings they were taught while young. They were taught to respect males as they were regarded as superior to females. Arguments between males and females were taken as signs of showing disrespect. They have now entered the democratic phase where they are expected to voice out their feelings. Although it is not an easy task to talk about women rights because some rural men are against democratisation of the household structure but through workshops and women's organizations, women can gain more knowledge as shown by many researchers (AFRA, 2002).

Some women are not aware that they have rights to participate in community development projects and programmes and raise their concerns that develop their capacity. Access and involvement in community projects may empower them as they may obtain different skills and get an opportunity to utilize technologies. Moser (1993) outlines that women as much as men have the right and duty to participate in the execution of projects, which profoundly affects their lives. Also, the exclusion of women can negatively impact the outcomes of the project while their active involvement can often help its success. Appleton (1995) illustrates that in many

projects women show that they can work independently as it happens in the formation of the La Chimba project in the Northern part of Chile where women decided on their own that penicillin was not the only solution for the diseases that affects their children, but it was more important to change the tin house into a proper house.

Rural women should not be sidelined by extension services because they are also members of the community who are willing to contribute to the upliftment of the standard of the community where they live. For a long time women have been deprived rights that would assist them in meeting life's challenges. They have shown great potential through their innovative and creative ideas. Apart from multiple responsibilities they usually undertake with very little or no technologies, women keep on making and changing technologies which can sustain themselves and their communities. Some of these technologies may be undermined but in reality play a vital role in generating income.

Rural women are managers of the natural resources, but they are generally not involved in decision-making structures such as community development projects where they may be exposed to different people with incomparable skills and knowledge. Their exposure to community development structures may give them an opportunity to gain access to the use of technologies that are available within the community. Literature reveals that in many parts of the world, males occupy important positions in the community development structures. However, as mentioned, women form the majority of rural dwellers.

Education is another key element that hinders women from increasing their knowledge and be able to use certain technologies. Since education is viewed as the process of training minds of people and ability so that they may have skills, low exposure results in severe difficulties. This is supported by Mitter and Rowbotham (1995) and Malhoutra (1992) when they emphasize that education is the key for creating, adapting and spreading knowledge. They further argue that education and training are among important determinants of women's involvement in technological

activities. Lack of information and skills is thus a barrier to the adoption of and use of essential technologies that may be provided through education.

CHAPTER THREE

RESEARCH METHODOLOGY

AND THE BACKGROUND OF THE STUDY AREA

3.1 Introduction

This chapter focuses on the background of the study areas and methods used to collect data in Makomorenge and Platt Estate. In order to evaluate rural women's access to the use of different technologies, the researcher has decided to employ several methodologies. These methodologies will be dealt with in detail.

3.2 Background of the study areas

The research comprises of two case studies, that is Makomorenge in Matatiele and Platt Estate at uMzinto. Observation in conjunction with document study was a critical tool in detailing the histories of the Makomorenge and the Platt Estate communities. Both data methods were chosen because of their attention to detail.

3.3 Geographical location of Makomorenge

This is one of the deep rural areas of Matatiele. It is approximately 80km away from the town. Before demarcation, Matatiele was under the governance of Eastern Cape but due to the new political boundaries it is now under KwaZulu-Natal. Matatiele comprises several villages including Madlangala and Makomorenge is one of the small wards located in Madlangala. According to Mr Siphambo, one of the elders in Makomorenge, they got this area as a gift after they assisted the English Speaking people to defeat the Afrikaners. Before coming to Madlangala they were residing in Piet Retief. Makomorenge is situated along the range of hills that is the Drakensberg mountains.

3.3.1 Population

Makomorenge is a small area of Madlangala and has approximately one hundred and twenty households. Most of the dwellers are women and children as men have migrated to cities for jobs. There is high a rate of drop-out from schools due to financial constraints. Children also prefer urban life rather than the cultivation of

fields and looking after livestock whereas elderly people oppose this. Makomereng is a rural area with most of the residents heavily involved in agricultural activities, like crop cultivation and stock farming. The area comprises of traditional leaders that is the *inkosi* (chief) and *izinduna* (headmen). The languages, which are normally used, are Xhosa and Sotho. The population of Makomoreng is approximately 800 people.

3.3.2 Climate

The climate of the area consists of hot summers and there is frequent lightning. However, winter is extremely cold with snow during the cold season. People in this area, as mentioned above, are still engaged in traditional forms of life such as ploughing the fields and owning livestock. They are therefore highly dependent on natural precipitation as there are no irrigation schemes except one household that has the sprinkler irrigation. Although the area has insufficient infrastructure, local dwellers have the potential in meeting life's challenges.

3.3.3 Vegetation

The vegetation consists of grassland and thorny shrubs scattered in the area, which is mostly used for grazing. However, the fertile areas for cultivation are found along the river that runs crossing the southern part of the area. Maize is the dominant crop in the area. There is mixed black wattle (*acacia mearnsii*) and silver wattle (*acacia dealbata*) in the community, which are extensively used for fuel, as the area has no electricity. During the interviews people complained about deforestation that was encouraged within the area. They pointed out that the government started by cutting down the trees instead of beginning with providing electricity as an alternative.

3.3.4 Infrastructure

As it has been stated earlier, the area has insufficient infrastructure and the conditions of the roads is of poor quality with very scarce transport available. There is only one bus that operates within the area and caters for the surrounding districts as well. Horses are used by males as the main means of transport when travelling locally.

There is a lack of sanitation and health facilities, which force the people to use doctors and clinics in town.

3.4 Geographical location of Platt Estate

Some of the background information for the study is drawn from previous researchers and from the Business Plan for Platt Estate that was developed by Lima Rural Development Foundation (1998). Platt Estate is located in the Ugu Regional Council Area in KwaZulu-Natal. The area is approximately 20km north of Highflats and 60km west of uMzinto. The area comprises of farms that were previously owned by White farmers and later managed by the KwaZulu-Natal Department of Agriculture. Platt Estate consists of small, different settlements such as Ezitendeni, Mkhunya and Ebholeni, where the data was collected. There is a serious conversation between the local people and the local municipality concerning the issue of owning land. Also, the residents of Platt Estate are heavily dependent on agricultural activities as the area consists of fertile soils.

3.4.1 Population

The local dwellers of Platt Estate are people who were working as labour tenants in the farm and by the time of data collection the population was approximately 600 people. This area consists of eighty-four households on the property of approximately 843 hectares. The level of education is extremely low, especially among older people, as the majority have no formal education. Schools are on the outskirts of the area, which forces pupils to travel long distances.

3.4.2 Climate

The climate of the area consists of hot summers with plenty of rainfall and moderate cold winters as the area absorbs moisture from the nearby ocean.

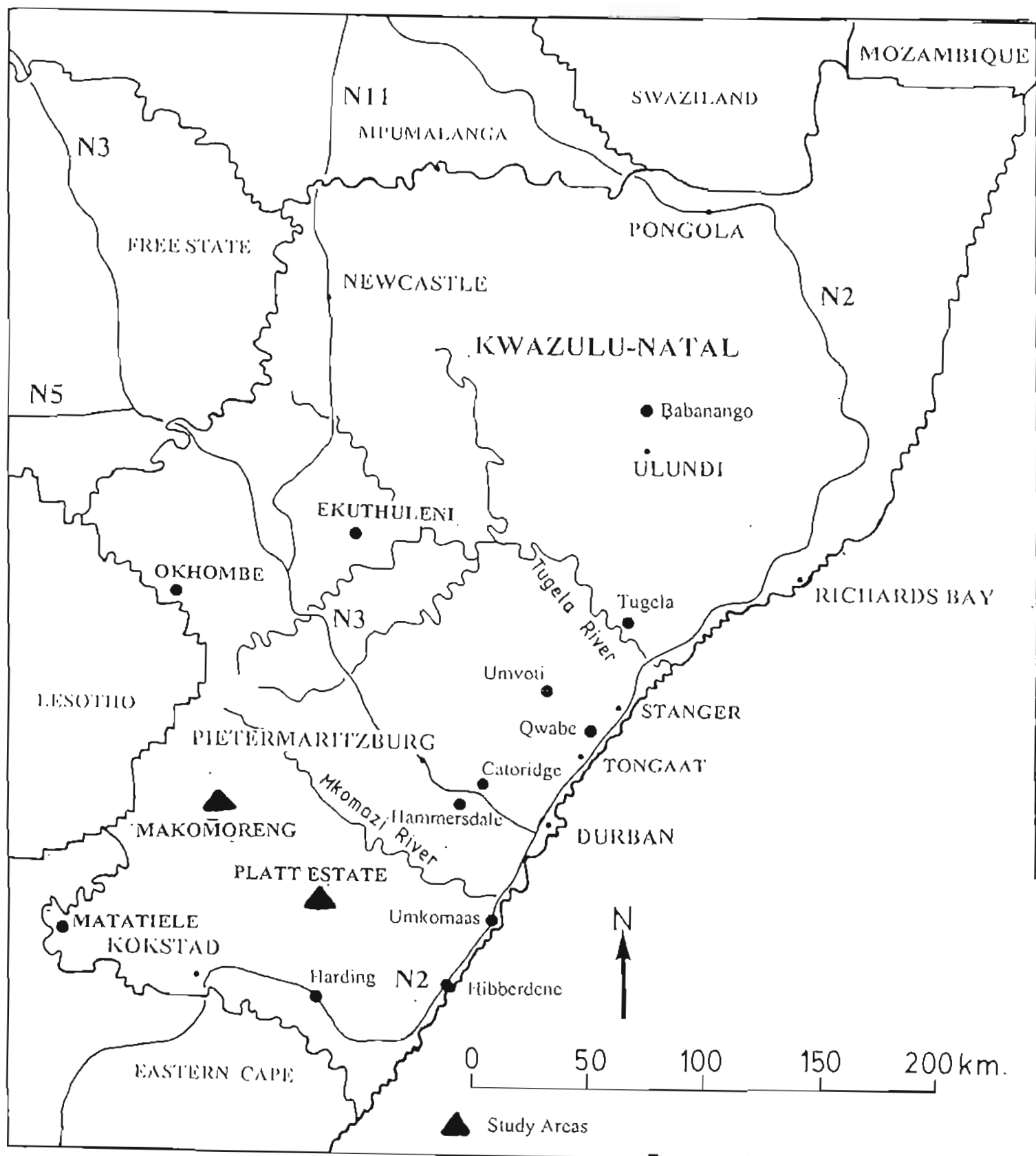
3.4.3 Vegetation

The vegetation comprises of ngongoni grass (*Aristida junciformis*), few gum trees mostly used when building the roof and black wattle (*Acacia mearnsii*), which serve as the major source for fuel.

3.4.4 Infrastructure

The area of Platt Estate has insufficient infrastructure with no clean water supply and proper health and sanitation conditions and a lack of adequate fencing. Fencing could be used for proper veld management as well as the protection of the springs from being polluted by animals.

MAP 1: MAP OF KWAZULU-NATAL SHOWING STUDY AREAS



3.5 Research methods

3.5.1 Meaning of methodology

According to Mouton (1996), the term methodology carries two related concepts, which is techniques and methods. He further elaborates on what he referred to as level of complexity of the methodological dimensions of research. Mouton (1996) emphasizes that at the most concrete and least complex level we find the tangible and observable research instrumentation, which includes the techniques, procedures and skills used in social research.

Neuman (2000) illustrates that many people including professionals outside social science are not clear about the relationship that exists between social science and the natural/ physical sciences. They think only of the natural science such as physics, chemistry and biology. He further argues that the research methodology is what makes social science to be scientific.

3.5.1.1 Methods used to collect data

A range of qualitative and quantitative research methods were adopted to collect data that has been used in the study. Data was extracted using both primary and secondary approaches and the key methods used in the case studies were semi-structured questionnaires, observation, in-depth participatory techniques, ranking exercises, Venn diagrams as well as individual and group discussions. Thus, multiple research methods were adopted in this research and were chosen because of their capacity to give attention to the community's social networks, actions, experiences, attitudes and the meanings attributed to events. This design allowed a variety of aspects of the individual community to be studied. It enabled the drawing of conclusions at the end of the study. Therefore, these methods have been used in collecting data about women and access to the use of technology.

3.6 Qualitative and quantitative research approaches

De Vos (1998) illustrates that there is no single way of doing research. Therefore, both qualitative and quantitative approaches can be adopted either consciously or

unconsciously by the researcher. Objectivity is one of the factors which the critiques claim depends on the researcher's predisposition and social standing. De Vos (1998) further argues that objectivity can only be reached through experimentation and statistical manipulation, in other words through the quantitative approach. The qualitative approach offers the opportunity to study human interaction, historical processes and social reality in an in-depth way in order to obtain valid and detailed data (Bailey, 1994); de Vos, (1998); Rahman, (1993).

Mounton and Marais (1990 cited in de Vos, 1998:99) suggest that there is great confusion about the exact meaning of qualitative and quantitative approaches. They differentiate quantitative from qualitative as the most formalized as well as explicitly controlled approach with a range that is more exactly defined and which, in terms of the methods used, is relatively close to the physical sciences. In contrast, qualitative approaches are those approaches in which the procedures are not as strictly formalized, while the scope is more likely to be undefined and a more philosophical mode of operation is adopted.

According to Leedy (1993) all data must ultimately reach the researcher either in words or numbers. This ensures that all information can be analysed. Leedy (1993) further outlines that if the data is verbal then the methodology is qualitative and if the data is numerical then the methodology is quantitative.

3.7 Sampling frame

According Bailey (1994) and Bob (1999) sampling is the process whereby a proportion of people is selected from the population at large. The population is the whole number of the people in the community; therefore we use a proportion of the total number of the community since not all of the community can be sampled as it has time, logistic and financial implications. Sampling refers to the set of procedures by which individuals or communities are selected from a total population group. Therefore, for the benefit of this study, the community was sampled simply using the systematic sampling technique whereby every third household was interviewed

through the use of a questionnaire. This was to ensure that a geographical spread of the respondents was interviewed. As mentioned earlier, the area of Platt Estate has eighty-four households and Makomoreng has one hundred and twenty, therefore, forty households from each community have been selected as the sample to represent the entire community.

3.8 Secondary Data Sources

3.8.1. Document studies

Bailey (1994) asserts that an advantage of using documents as data sources is that events can be studied over a period of time. In this study the documents helped to ascertain the history of the rural women in the pre-democratic era, the present standard of living, their income generating activities and what they intended to use in the future to reduce time spent on non-productive activities. The case study method was thus useful for its unique ability to answer the how and why of questions dealing with historical matters that need to be traced over time.

Bailey (1994) further argues that these documents constitute the spontaneous recording of events at the time they occurred. Furthermore, documentary study costs very little. A disadvantage, however, is that documents may not be complete and sometimes the records may not be readily organized. Their availability or completeness depends on the person or persons keeping the records.

Document studies were used to confirm evidence from the interviews. The researcher also participated in workshops and meetings organized for the communities so as to get their feelings and expectations about strategies for improving the accessibility to several technologies. Data were collected from various sources such as the offices of AFRA, journals, articles and newspapers and written reports of diagnostic evaluation studies and other research efforts.

3.9 Primary Data sources.

Primary data sources include questionnaire surveys (interviews and observation) and participatory techniques (focus group discussions, mental mapping, ranking exercise and Venn diagrams).

3.9.1 Interviews

According to Gumede (1997), the interview should not be manipulative and the longer the questionnaire means that more time is needed and few people will be involved. In both communities forty households have been selected in order to represent the entire population. Questionnaires were formulated and administered to the forty households where the researcher requested women between twenty-one and seventy-five years of age to respond to the semi-structured questionnaires that were provided. Respondents were willing to participate at their convenience in terms of their availability since the researcher wanted to minimize the disruption from the daily lives of the respondents as much as possible.

3.9.2 Procedure for interviews

Respondents were visited at their homes where possible. The facilitator interviewed some respondents in their areas of work, that is, in the field or by the river. This presupposes adequate communication occurring between the interviewer and the respondent by means of voice, body language and facial expression. This method has the advantage of direct interaction between the two parties and this makes it easier for the interviewer to establish rapport with the respondent. It also ensures greater flexibility as the respondents are not limited to "yes or no" answers. Instead they can answer in their own words and if it needs be, the interviewer can probe them so as to give a much clearer response. Also, if the respondent is not clear about the question, the interviewer can provide further explanation. The respondent's skills in reading and writing are not an issue, since the interviewer poses the questions in the language understood by the respondents. However, Gumede (1997) indicates that the disadvantage is that an interviewer can only handle a limited amount of interviews per day and as the days are prolonged, efficiency and the concentration level drops. The

researcher found that time was problematic as people have their daily chores to perform and sitting down and concentrating on the interview was really a sacrifice on their behalf.

3.10 Questionnaire design

Questions were phrased according to whether the community, especially women in Makomereng and Platt Estate rural areas have access to technological services such as water, electricity, roads, clinics and schools. Accessibility can be viewed in three different dimensions: the availability of the activity, link between the activity and the people, and the activity itself (Robinson, 1992). The availability of one service cannot guarantee the availability of the other. For example, having roads does not mean that there would necessary be sufficient transport services.

According to Bob (1999), questionnaire based surveys is the most common method used to gather data which is directed to specific individuals. Leedy (1993) further emphasizes that the questionnaire is the simplest and most widely used instrument for the same purpose. The questionnaire comprises a set of carefully structured questions, designed to obtain the needed information without any ambiguity or bias as every respondent answers the same questions, that is worded in the same way and in the same sequence. Bob (1999) asserts that using the questionnaire method is useful in gathering a wide range of information that can be easily quantified and used for statistical analysis, as was the case in this study. The questionnaire was designed with close-ended and open-ended questions.

3.10.1 Open-ended questionnaires

The open-ended questions are used to give the respondents an opportunity to answer the question without restrictions, because they permit an unlimited number of possible answers. De Vos et al (1998) illustrate that open-ended questions help to get general feelings on the matter, as they are more democratic. He further argues on the disadvantageous points of open-ended questions where he states that researchers normally interpret the answers and can therefore misinterpret what the respondent

says. This type of questioning can yield insufficient information from the less talkative people. From previous experience respondents become impatient if the researcher has time-consuming questions.

3.10.2 Close-ended or force-choice questions

According to Gumede (1997), the close-ended questions restrict the respondent on how to answer and this is the easier and quicker form of asking questions. The sequence of the questions is also considered to make sure that there is no confusion and discomfort. The format of the question is drafted in a way that people need to tick the right answer or give details where appropriate. De Vos et al (1998) asserts that where the questionnaire is long and people's motivation to respond is low, force-choice questions are useful since they are quick to answer.

From the researcher's point of view force-choice questions are easier to code. The researcher's ability to misinterpret what the respondent is saying is minimized. This type of questioning is more advantageous for the less talkative, less articulate and less affluent. When this type of question is used as the medium through which information is drawn from the interviewed, a lot of time is saved. They can be disadvantageous because on some issues they can create false opinions either by giving an insufficient range of alternatives from which to choose or by prompting people with acceptable answers (De Vos et al, 1998).

3.10.3 Format of questions in the questionnaire

The aim of the study was to examine problems that hinder women from accessing technology; therefore, the format of the questions is linked to the topic of the research. In both communities, that is Makomoreng and Platt Estate the same questionnaires were administered to the respondents. The main thematic areas in the questionnaire were:

- The socio-demographic and economic profile of the community and the household
In order to have an accurate picture about the nature of the community under study, it is important to know their socio-economic activities. Their socio-economic status may have impacts on access to technologies. For example, it is easy for people who get income to purchase several technologies. However, for those with no income it is rare to purchase such aspects.
- Respondents understanding of technology
It is also important to get respondents views about what they think technology is. People are not homogenous. Different perspectives are expected from respondents. For example, one can think of sophisticated machines while others may think of innovative ideas.
- Technologies and techniques used by the respondents
Respondents are expected to raise various activities in which they are involved. There are also different technologies that are used for different purposes. Some of these technologies are not purchased but are made by rural women to suit their needs.
- Adaptation and innovation of technology
Some technologies used by women are new to them. Adaptation to these technologies might be a problem. However, some may be something women are familiar with.
- Decision-making regarding the use of technology in the household and in the community
It is important to find out whether women are involved in decision-making structures, especially in their communities. Their involvement would not benefit their household members alone but also the community in which they live.
- Technologies modified or developed by the rural women
Respondents are expected to mention different technologies they have developed themselves or modified from used objects. Rural women through innovative and creative ideas change other equipment in order to assist in other household tasks. Some of these equipment are renewed and re-used for other purposes. For example, an old leaking drum is cut and used for fowls to lay eggs.

- Health technologies used by the respondents

Lack of infrastructure in most rural areas is still a major problem. People sometimes walk long distance due the absence of health care facilities in their areas. The use of traditional medicines is mostly common. The researcher views the use indigenous medicines with the intention of finding out whether there are any restrictions or barriers from community members and how they get the knowledge of using them.

3.11 Participatory Research Method

Participation means different things to different people. However, assumptions of contributing, influencing, or distributing power over resources, benefits, skills, and knowledge to be gained through beneficiary involvement in decision-making are common aspects of participation. Pretty (1995) asserts that the term “ participation” has become fashionable with many different interpretations, some hindering rather than supporting sustainability and empowerment. Pretty (1995) further argues that some people view participation as a means to efficiency. The impression is that if people are involved, they are more likely to agree with perceptions of developers and support the chosen process of development. The other view is that people see participation as the fundamental right. In this regard the main aim of participation is to initiate mobilization for collective action, magnify community participation by stressing institution building and increase empowerment. Participation can be adopted in order to transform the present system or maintain the status quo.

3.11.1 The concept of participation

According to Stadler (1995), the notion of participation varies widely. There are several types of participation, that is, passive participation, participation by consultation, active and popular participation. Rahman (1993) emphasizes that what gives real meaning is popular participation and the collective effort by the people concerned in an organized framework to pool their efforts and whatever resources they decide to pool together to attain objectives they set for themselves. In this regard participation is viewed as an active process in which the participants take the

initiatives and take action that is stimulated by their own thinking and deliberation and over which they can exert effective control. The most important issue in participation is the creation of self-reliance and promoting self-esteem. Rahman (1993) further points out that observation by means of participatory research as well as action research promote people's initiatives and self-reliance. Schrunik (1998) argues that defiance of the different patterns and political agendas of participation in the developing countries leads to benefits which may be derived from even the weakest forms of participation. For example, communities are not necessarily asked to share in making actual decisions, but they are consulted on proposals or asked to help in the implementation through the contributions in the form of labour.

3.12 The need for promoting active and popular participation

One of the main prerequisites for sustainable development is securing effective community participation in decision-making. Guijt (1996) illustrates that for the research to be sustainable it must address problems and aspirations identified by the poor and must have management and decision-making structures in which they have confidence. They must ensure that the discussions and conclusions reflect the views of the poorer and less confident members of the community particularly women rather than those of the traditional community leaders.

Active participation from the researcher and the researched requires tough commitment from both sides. This is important as it eliminates top-down ideas. Sharing of information and ideas need to occur from both sides but most importantly from the local dwellers. Rahman (1993) indicates that people's participation has been generated spontaneously in the sense that it emerges as a result of a discreet act by some external force with the conscious objective of promoting participation. Rahman (1993) further emphasizes that there is a great need for the community to participate in any development activity as this does not aim in the upgrading of other people but the community itself. The ANC (1994) further highlights that people-driven projects usually reap the benefits that empower the rural communities because in whatever is taking place, local community especially women actively participate. Bob (1999)

asserts that bottom-up strategies in rural communities reach the most needy communities, where the top-down sharing of ideas evaporates before it reaches the grass-root levels.

3.12.1 Collective action

Developments of the community do not require the action of an individual or of few individuals. Legum and Mmari (1995) underscore that to fight against poverty would not work if there were no serious community involvement. To obtain satisfying outcomes, collective activity among a group of people sharing mutual interest and acting together is important. Also, in this research local communities from both study areas have been given sufficient opportunities to participate collectively so as to arrive at the conclusive level. The purpose of this was solely to enhance the learning process as Kent (1981 cited in Swanepoel, 1997:49) suggests that groups of people learn to work as a team. It is important to realize that people's power is realized by groups working together.

3.12.2 The principle of empowerment

Swanepoel (1997) asserts that there are organizations that regard local people as a good source of information. These organizations may limit people's participation to an advisory role. If it happens that local people act only as advisers to the planners and decision-makers, there is no participation. Arnstein (1969 cited in Swanepoel, 1997:54) declares that participation without power is an empty and frustrating process for the powerless. The principle of empowerment stipulates that people participate because it is their democratic right to do so. Participation is the neutral results of empowerment but it is not a means to an end as it is the objective for development (Swanepoel, 1997).

This research also aims at empowering the communities that are to be studied. Rural women in both communities would be encouraged to participate and be given an opportunity to share their problems in relation to access to the use of technologies. In

order to get their perceptions and promote self-esteem, they would be provided with time for discussions.

3.13 Participatory Rural Appraisal

Participatory Rural Appraisal (PRA) is a survey method that was developed to suit the situation in deprived areas (Swanepoel, 1997). Its main objective is to collect field data in a simple yet reliable manner using local or indigenous knowledge and perceptions of reality. Chambers (1994) emphasizes that PRA is an applied research strategy, which attempts to involve local people as active partners in all aspects of the research development process. He further argues that a key objective is that of enabling local people to share, enhance and analyse their knowledge of life and conditions to plan and to act. Chambers (1994) illustrates that PRA comprises the following techniques:

- Direct observation and do it yourself
- Discussion with key informants
- Group discussions
- Participatory mapping and modelling.

Therefore, the above-mentioned methods have been adopted so as to collect the most accurate information as possible. Participatory techniques involve various participatory exercises. The ranking exercise, mental mapping and Venn diagram were conducted with twelve women with the same interest from each community.

3. 13.1 The Ranking Exercise

According to Theis and Grady (1991), preference ranking consists of two techniques of dealing with problems that impact rural people, that is the pair wise and matrix ranking. For the benefit of this study, in each community, problem-ranking exercises using pair wise ranking and scoring were adopted and conducted with a group of women from each community. Theis and Grady (1991) further illustrate that pair wise ranking and scoring are tools for identifying issues of concern, their causes and prioritising the problems. They further argue that facilitators can use these tools to

ensure that the problems of less powerful groups are at least discussed and perhaps also acted upon.

The ranking exercise was conducted within the group setting and it required participation and interaction among the group members regarding what they perceive as problems in their communities that impacts on their access to technology. Then these problems were ranked. After the problems were identified and ranked, then the groups were asked to come up with suggestions that they thought would resolve their problems. This was done to find out people's perspectives when it comes to the question of who is expected to resolve their problems.

3.13.2 Mental mapping

Bob (1999) illustrates that maps play a crucial role to geographers as it provides a basis for knowing different aspects and other important geographical features. An example is the resource map, which can depict different natural resources. Khanyile (2002) asserts that resource mapping helps the outsiders and the communities to understand how different segments see the communities' resources and how they differ from outsiders' perceptions. He further argues that the tool is vital in many aspects including issues of differences in land use, distribution of access and control of spaces, impacts of technology on the community and responsibilities and labour.

They also show relational locations within the village including infrastructure, dwellings and ownership of assets. This participatory method shows how women and men, aged and youth, poor and rich perceive their immediate environment respectively. This tool is useful at different scales: household, community, regional and national. Khanyile (1998) indicates that it is useful to convey issues of gender differences in land use, responsibilities and labour and the gender distribution of access and control. People's perceptions of the world or their surroundings is shaped by other factors like cultural issues, past experiences as well as future expectations. Mental mapping illustrates that peoples' perceptions about the environment are different and are reflective of their experiences and predictions about future

aspirations. The intention is to disclose community's perceptions about how their resources are used and how that impacts either on certain parts of the community or the community at large. Participatory methods help to obtain complex information including access and control over resources and to understand how spaces are used. This type of method as part of the qualitative method was also adopted to complement other quantitative methods used in this research project.

Theis and Grady (1991) outline that group discussions have the advantage of being useful for the recollection of historical information and for crosschecking purposes. The main disadvantage often forwarded is the fact that the most influential individuals can easily dominate. Group facilitation skills are needed by the interviewer so as to avoid such pitfalls. Mental mapping exercises were applied in this study to develop community resource maps. Prior to the actual mapping the facilitator explained the importance of consistent use of symbols and the advantage of using different colours to depict certain aspects. The materials utilized were large charts and assorted soft coloured pens. Maps were drawn on these charts and they illustrate various aspects including community institutions. The procedure was inspiring as the facilitator asked leading questions and the respondents determined symbols and colour to be used.

According to Khanyile (2002), spatial methods such as mental mapping help in building consensus and can form the base for resolving conflicts and differences of opinions. It also simplifies discussions and the basis of information presented. The disadvantages with mental mapping is that some maps can become too complicated if too much information is incorporated and also maps drawn on pieces of paper can easily be destroyed.

3.13.3 Venn diagram

According to Khanyile (2002), venn diagrams are basically visual methods that represent the role of individuals and the degree of their importance in decision-making. They are also referred to as chapatti diagrams, which are visual representations of the different power structures, which the community perceives to

be influencing decisions at the community level. The circle represents each structure and the overlapping of circles indicates the relationships between structures. If the circle is bigger, the perceived influence is greater. Overlapping of circles show that they overlap in terms of membership or decision-making. This method assists the facilitator to comprehend the roles of the local and outside organizations and the perceptions that people have about them. This tool also helps to show which institutions are the most important and who participates in and is represented by which one. It visually illustrates the power and decision-making structures. For the benefit of this study this tool was adopted to reveal power dynamics within community members as Bob (1999) states that venn diagrams reveal the nature of community structures and this will basically provide more information about rural women and access to the use of technologies.

3.14 Fieldwork

The primary fieldwork conducted in Makomoreng and Platt Estate involves both the quantitative and qualitative methods as mentioned earlier. Bob (1999) asserts that both qualitative and quantitative methods are useful as each method illustrates different ways of getting various types of information.

3.14.1 Sequence of events that were undertaken to collect data in Makomereng:

- **Preliminary visit (September 2001)**

An introductory meeting was held between the researcher and community committee members. This meeting was arranged in consultation with the Environment and Development Agency (EDA). The community committee members were informed about the purpose of the study and the pilot research was conducted with four women.

- **Interviews conducted through the use of questionnaires (October 2001)**

The community committee members agreed to participate in the questionnaire survey. Individual interviews were conducted from house to house using the systematic sampling approach as mentioned earlier. The eldest woman or any older female member available within the household completed the

questionnaire during the period of conducting the research. The questionnaire was written in English, so it was the researcher's responsibility to translate it in the language known by the community members. As mentioned earlier, the most used languages in Makomoreng are Xhosa and Sotho, therefore in order to avoid misinterpretation of the data, one of the community members volunteered to accompany the researcher.

- **Field observation and focus group exercise (July 2002)**

Further meetings were arranged with the community committee members. The purpose of the following meeting was to observe and collect women's views regarding their access to technology. In order to extract accurate and reliable data the respondents were requested to rank community problems. This was done in order to find out what they perceived as the major community problems as problems were ranked according to their importance. Also, field observations were recorded.

Respondents were also requested to participate in the mental mapping and Venn diagram exercises. The mental mapping illustrates the physical features available in the community such as rivers, springs, mountains, fields and residential settlements. This provides the picture of the surrounding environment. Venn diagrams show the important community development institutions and people involved in decision-making processes.

3.14.2 Sequence of events that were undertaken to collect data in Platt Estate

- **Preliminary visit (September 2001)**

In Platt Estate the meeting was arranged in consultation with community committee members. They informed other women about the research that was to be undertaken between the researcher and the women of the community.

- **Conducting individual interviews through the use of questionnaires (October 2001)**

Also, in Platt Estate individual interviews were conducted from house to house using the systematic sample in order to give all respondents an opportunity to

be interviewed. The questionnaire was in English; therefore the researcher was obliged to translate it into Zulu. There were no difficulties since the researcher is fluent in the language used within the community.

- **Field observation and focus group exercises (July 2002)**

The following meeting was also arranged between the community committee members and the researcher. Women were also requested to do problem ranking exercises, draw mental maps and Venn diagrams.

3.15 Limitations

As indicated earlier, the researcher adopted a variety of methodologies so as to ensure that information was gathered from a range of sources, implementing them was not an easy task. The researcher in the field experienced some difficulties. The researcher illustrated earlier that some of the methodologies such as the participatory method were preferred because they are conducive to the illiterate communities, but administering the question, which was in English pose another problem. As a result, the researcher was obliged to explain some questions to such an extent that possible examples were given without the intention of influencing the respondent.

Some of the problems the researcher encountered were respondents' failing to meet the researcher during agreed scheduled times due to funerals held during meeting days. In this regard the researcher had no alternative other than rescheduling the meeting because the majority of the respondents had to go to the funeral. This resulted in time delays as the researcher had to go the study areas for more than it was initially arranged.

3.16 Conclusion

To conclude, this chapter discussed research methods used in the study. An emphasis was placed on participatory methods, as they are most suitable for rural communities. The participatory methods provide a reversal of roles, as researchers are less extractors of information and more facilitators. Rural communities on the other hand are encouraged to carry out the investigation, analysis of the issue at hand; the

community then owns how knowledge is generated. In the process they gain confidence and thus are empowered.

It should be noted that proper implementation of the participatory approach requires fundamental shifts in the norms and attitudes of the researcher. We need to put people first and programmes and projects second in order to obtain reliable information. The ANC (1994) indicates that people-driven projects ensure that local people are given first priority. The main objective is to empower people with skills and knowledge that would sustain them even if the project has ended.

Indigenous communities know more about their areas. They have also greater understanding of the problems they confront in their daily basis. They need to be developed with tools and knowledge that will remain with them and can be easily applied. Some of the methods the researcher adopted made the respondents free to talk among themselves about the problems they have in accessing technologies and some of them came up with ways to deal with those problems.

The adoption of focus group exercises has been another method that proved to be very useful as women got an opportunity to share ideas and engaged in deep controversial issues with the aim of eventually reaching consensus. Although there were differences among women but together with the facilitator they managed to arrive at the acceptable aspiring conclusions. Women proved that if they are given the room to share their similarities and differences, they might come up with different techniques, which are intended to solve their daily problems in accessing technology. To sum up, all the methods the researcher adopted were aimed at collecting the most reliable data while at the same time constructing and promoting self-esteem among the women that were participating.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 INTRODUCTION

This chapter focuses on analysing the data that was collected in Makomoreng and Platt Estate. In order for the data to be properly analysed, data from both study areas would be combined and discussed. Since the aim of the study is to look at the barriers that hinder women from accessing technology in rural areas, the first aspect to be considered is to look at the socio-economic profile of respondents in both communities. In order to know whether the community is involved in the development process, socio-economic activities are used as one of the indicators.

The second aspect to be considered would be ideas collected from both communities when they describe the term technology, as there is no precise definition of what it is and how this technology interacts with them in their daily chores. So both community respondents have defined technology according to their understanding. Technologies developed or changed and problems associated with the use of those technologies in both communities will be dealt with in details.

4.2 SOCIO- DEMOGRAPHIC PROFILE

Table 4.1: Age of the respondents in %

	Makomoreng		Platt-Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
21-30	-	-	4	10	4	5
31-40	13	32.5	12	30	25	31
41-50	13	32.5	10	25	23	29
51-60	6	15	12	30	18	23
Above 60	8	20	2	5	10	12

The above table shows age groups who were interviewed in both communities. Data was collected from the respondents between the age of 21 and from those above 60 as depicted by the above table. This was done solely to obtain reliable information from

mature women and women who are mostly involved in the activities taking place within the area. The majority of the respondents were between the age of 31 and 40 (31%). The middle-aged group is the most active section of the population since during this period people have enough energy to participate in community activities. In this study, 12% of the respondents were above 60 years. According to the researcher's view this percentage is sufficient because it proves that even the oldest community members are enthusiastic about issues discussed in their communities as they were willing to participate during the interviews.

Younger community members may not easily abandon strategies used within this community because older members also actively participate. Information is passed from grannies to the granddaughters as it has been stated in the previous chapter that knowledge in rural areas is not written down but it is inherited from the older generation to the younger ones.

Table 4.2: Marital status of respondents in %

	Makomoreng		Platt-Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Married	25	62.5	27	67.5	52	65
Single	-	-	2	5	2	3
Widow	14	35	8	20	22	27
Separated	1	2.5	2	5	3	4
Divorced	-	-	1	2.5	1	1

Table 4.2 portrays the marital status of the respondents. Sixty-five percent of the respondents interviewed were married, 3% were single, 27% were widows, 1% divorced and 4% separated. The table indicates that information was extracted from people with diverse backgrounds. This was done to ensure that problems that hinder women to access technology are obtained from all sides of the community. It is therefore obvious that biases were eliminated.

Table 4.3: Level of education in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
No formal education	4	10	16	40	20	25
Partially primary	6	15	9	22.5	15	18
Completed primary	6	15	9	22.5	15	18
Partially secondary	18	45	6	15	25	31
Matric	3	8	-	-	3	4
Post matric	3	8	-	-	3	4

The above table illustrates the level of education in both study areas. In Makomoreng only 10% of the respondents have no formal education whereas in Platt Estate 40% is illiterate. The reason behind this is that the older community members in Platt Estate in the previous years have been labour tenants in the farm, as it has been stated that this area is in the farm. The majority of the people reside on the farm because their parents were working on the farm. There was no time for education, as people working and residing on the farm did not have any opportunities for schooling. There is no school on the farm where workers could send their children for education. Even the younger children, especially girls have the duty to look after the youngsters while their parents are working

In both communities respondents revealed that during their time of schooling girls were not encouraged to further their education as parents, especially fathers, were more concerned about getting cattle when their daughters marry. Education was given to boys because parents believed that sons would support them. In Makomoreng 45% have partial secondary education. The reason behind this is that in Makomoreng the local school ends in grade nine. The majority of pupils cannot afford to further their education outside the area. Eight percent of Makomoreng respondents have post matric education. This number comprises the teachers who are working in the local school. All of them are indigenous community members who have learnt from the local schools and decided to come back and develop their community. They pointed

out that they do not want their children to experience the same difficulties as they did. That is why they decided to work for their community because teachers from other areas do not like to work in such deep rural areas.

Respondents revealed that in the previous years, one of the households used to educate children, as the only school was available in one of the villages called Pepela. Children had to go long distances; therefore parents come together and looked for teachers who would teach children within the area. They further stated that the local school is new. In Makomoreng most of the pupils drop out at secondary level as depicted earlier on. The available school starts from grade one to grade nine. Those who have completed grade nine have no alternative other than going to town or to other distant schools. This creates frustration because more money is needed in order to send a child to other schools outside the community.

In both study areas there are no adult schools whereas respondents have shown great interest when asked whether they like Adult Basic Education and Training (ABET) or not. One of them stated that ABET would assist in opening the minds of the people because they will be taught different skills including skills to manage small businesses as the majority is involved in different community projects.

In Platt Estate respondents showed that they will be very delighted if ABET would be introduced because they are confronted with many problems related to the lack of formal education. They further argued that children have no local schools therefore all of them have to travel to the outskirts of the farm where they will access schools. This has serious implications in summer when there is thunder and lightning. Parents are forced to look for their children when the weather is too bad. The absence of a high school creates frustration, as the poor families cannot afford to send children to other schools because they cannot afford to pay expensive school fees and for the accommodation closer to the school premises.

Table 4.4: Distance to schools in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Within the community	40	100	-	-	40	50
More than a walking distance of 30 minutes	-		40	100	40	50

In Makomoreng all respondents indicated that both the crèche and the junior secondary school are within the community. In Platt Estate all types of schools are outside the community at a distance of more than thirty minutes. It has been mentioned earlier that in both communities the issue of absence of schools has raised arguments and local communities have been complaining that the government has failed to assist them. In Platt Estate pupils travel long distances because schools are in the neighbouring villages. Respondents emphasized that it is extremely difficult in summer when there is thunder and rain. In Makomoreng respondents mentioned that the available school ends in grade nine. Pupils are obliged to further their education in schools in town, which is problematic to poor parents who cannot afford to pay necessary amounts.

In Makomoreng respondents further argued that although fees are reasonable but facilities in the local school are not in good condition because windows are broken and there is insufficient learning materials (desks) including the classrooms and the teaching staff. Pupils in two different grades are sharing one classroom. This makes teaching very difficult.

Table 4.5: Employment details in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Unemployed	23	57.5	28	70	51	64
Labourer	1	2.5	4	10	5	6
Social grants	13	32.5	6	15	19	23
Self-employed	-	-	2	5	2	3
Professional	3	7.5	-	-	3	4

The above table indicates level of employment in both areas under study. Sixty-four percent of the respondents (58% in Makomoreng and 70% in Platt Estate) are unemployed. The majority of the members of the local communities are unemployed, which proves that poverty is a serious problem confronting them. Twenty-three percent of the respondents (33% in Makomoreng and 15% in Platt Estate) rely heavily on social grants (pension and children grants). Six percent of the respondents (3% in Makomoreng and 10% in Platt Estate) are employed as labourers in the nearby town. Only 5% of Platt Estate respondents are self-employed whereas in Makomoreng only 8% of the respondents are professionals. This illustrates that most of the respondents rely on different strategies so as to sustain their livelihoods. Agriculture is the dominants activity in which both communities are heavily dependent on. Access to relevant technologies is very essential to meet living conditions. Although these areas have insufficient infrastructure but communities manage to cultivate the soil and get production to sustain their livelihoods, especially in Makomoreng where the soil is infertile, people use compost from the livestock to obtain better production.

Table 4.6: Income in %

	Makomoreng		Platt-Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
None	27	67.5	28	70	55	69
1-500	1	2.5	2	5	3	4
501-1000	9	22.5	8	20	17	20
1001-1500	-	-	2	5	2	3
>2501	3	7.5	-	-	3	4

It is not surprising that 69% have no income as stipulated earlier, the majority of the respondents are unemployed. This proves that women in these study areas struggle to meet living conditions. Four percent of the respondents indicate that they get between R1 and R500 income. Most of these respondents are those that earn social grants from the government. Twenty percent mentioned that they get between R501 and R1000. Respondents from this category are mostly pensioners.

Table 4.7: Additional sources of income in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Social grant	10	25	6	15	16	20
Remittances	3	7.5	9	22.5	12	15
Sell at home	13	32.5	5	12.5	18	22.5
None	14	35	20	50	34	42.5

Table 4.7 shows the additional sources of household income. Forty-three percent are unemployed with no outside remittances and 20% obtain social grants and 15% get remittances. Although the majority of the respondents are unemployed, but in both communities women are creative and innovative. They have their own ways of protecting their families from starvation. The table further illustrates that 23% of the respondents (33% in Makomoreng and 13% in Platt Estate) sell different products in their homes. To mention a few, the majority of the households have home gardens in which they grow different crops. They rely on these gardens to feed their families and

the surplus is sold to generate income. Some of the community members in Makomoreng are involved in different small projects. Poultry is one of the dominant small businesses within the area of Makomoreng and other women are involved in piggery, bakery and sewing. Two of the community members have spaza shops that support the area with everyday needs such as candles and matches. Income received through selling these different products plays an important role in generating additional income.

In Makomoreng some of the respondents revealed that there was a bakery developed by the local women. Technology was involved in the establishment of this business. Women were using big drums covered by mud used as ovens to bake. This was used as the means to generate income that would support the families. Initially, the business functioned very well but due to lack of proper business management skills it collapsed. Although this business of baking collapsed, women have the ability to start again. They pointed out that if they can obtain income they would restart. Most of the Makomoreng residents have proper skills in baking. The researcher points this out because in all households that were interviewed, the issue of the local bakery that collapsed was most prominent.

Due to the fertility of the soil in Platt Estate women who are involved in gardens are able to sell vegetables. They yield onions and other vegetables. Some of the problems that were revealed by those with gardens were the absence of areas where they can sell their produce. They stated that most of their produce rotted because they do not have transport and markets in the nearby locations where their produce could be sold. In both communities tasks related to the cultivation of crops is performed by the majority of women and children since most of the males are in urban areas.

Plate 4. 1: Home garden in Platt Estate.



Table 4.8: Water sources for domestic use in % (multiple responses)

Source	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Rain water tank	2	5	14	35	16	20
Piped internal	4	10	-	-	4	5
Piped-public tap (free)	40	100	-	-	40	50
Perennial stream		-	40	100	40	50

In both communities all respondents revealed that they utilize two sources of water for domestic purposes, which are water from the public taps and water from the stream and spring. In Makomoreng community members are collecting water from the piped-public tap (free). The water is used for cooking, washing clothes and bathing whereas in Platt Estate water for domestic use is collected from the two springs and there is also a perennial stream. Due to the scarcity of water in Platt Estate 35% of the respondents use rainwater collected in tanks for watering the home gardens and washing the clothes.

All Makomoreng respondents have access to water from free piped-public taps, which are 200m apart. The survey indicated that all households were within a walking distance of less than 10 minutes from the taps. This shows that water collection in

Makomoreng is no longer a heavy task. In the previous chapter it has been mentioned that water in rural areas is one of the most time consuming tasks as people in other rural areas walk long distances when collecting water. Respondents in Makomoreng mentioned that the government has fulfilled the promise of delivering clean piped water to rural areas as the conditions have improved compared to the past where communities have been struggling when looking for water as the springs used to dry up in winter.

In Platt Estate respondents utilize water from the springs and stream that dries up during dry periods. They stated that overland flow and livestock easily contaminate water. The survey indicates that spring water is also within a walking distance of 30 minutes, depending on the location of each household. Water collection in Platt Estate is still a cumbersome task, as people have to walk in steep areas with heavy loads on their heads. This increases illnesses that affect women because sometimes they carry twenty-five litres of water containers with babies on their backs.

Plate 4.2: Modified technologies used to water the crops in Makomoreng



Table 4.9: Sources of water for agricultural use in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Flowing river/stream	26	65	13	33	39	48
Rain water tank	-	-	1	2	1	2
None	14	35	26	65	40	50

Sixty five percent of respondents in Makomoreng stated that they use the flowing river when watering the community gardens. It has been mentioned earlier that the fertile areas in Makomoreng are along the river valley; therefore water is collected around the cultivated area. Respondents emphasized that they usually water those crops (such as cabbage) that are cultivated in winter when there is insufficient soil moisture. Water for watering the crops is collected in containers from the source to the cultivated area as shown by photos above. This often requires a number of trips from the river back to the cultivated area, which is a time consuming and energy-demanding task. For other crops that are planted in vast lands (such as maize) respondents mentioned that they rely on natural precipitation. In Platt Estate respondents cultivate crops in fertile land as mentioned earlier that the area of Platt Estate is very rich in terms of soil nutrients. Two percent of Platt Estate respondents assert that water from the tanks is used to water home gardens only when there is the need to do so.

Table 4.10: Responsibility for fetching water in %

Duty/Task	Makomoreng							
	Girls U18		Women 18-60		Women >60		Boys U18	
	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%
Fetching water	5	13	40	100	3	8	3	8
Water managing	-	-	40	100	3	8	0	-

The survey in Makomoreng indicated that the highest percentage of people responsible for collecting and managing water are women between the age of 18 and

60. This is however not surprising as these people are the ones who are taking care of the households. The survey also reveals that although some boys under the age of 18 are involved in the fetching of water, in many households, the burden is on the females.

Table 4.11: Responsibility for fetching water in %

Duty/Task	Platt Estate							
	Girls U18		Women 18-60		Women >60		Boys U18	
	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%
Fetching water	8	20	40	100	2	5	3	8
Water managing	-	-	40	100	2	5	-	-

The table portrays members of the community responsible for water collection. In Platt Estate people responsible for collection and management of water are women between the age of less than 18 and 60. In many parts of the world where there is the division of labour, the heavier workload that demands more energy is associated with females. There is the notion in the African communities that female children need to work harder because they will marry in the future and if they become lazy they will not marry. Older community members in the study stated that they encourage female children to experience difficulties while they are in their homes so that they will succeed in the future.

In both communities respondents who are responsible for domestic tasks are mainly between the ages of less than 18 and 60. As pointed out earlier that people between this age group are more active because they have sufficient energy, also in both communities the burden is on them. They are responsible for water and fuel collection. Although respondents in both communities pointed out that boys and girls under 18 years of age also collect water and fuel, these tasks are not their responsibilities, they just assist the household members when requested to do so.

**Plate 4.3: People who are responsible for water and fuel
Collection in Makomoreng**



4.2.1 Water treatment

As mentioned earlier, in Makomoreng respondents stated that they use water from the taps therefore their water is purified by the Working for Water Project (WFWP), whereas in Platt Estate respondents illustrated that their water is from the stream and it is easily contaminated by overland flow and livestock. All respondents mentioned clearly that they use spring and stream water without using any safety measures.

Table 4.12: Primary sources for cooking, heating and lighting in % (multiple responses)

Makomoreng						
	Cooking		Heating		Lighting	
	(n=40)	%	(n=40)	%	(n=40)	%
Wood	40	100	40	100	-	-
Wood and paraffin	8	20	2	5	-	-
Gas, wood and paraffin	1	3	-	-	-	-
Candles	-	-	-	-	40	100
Candles and paraffin	-	-	-	-	40	100

Table 4.12 illustrates different sources of energy used by the Makomoreng community. All respondents rely on wood for cooking and heating. The area has extremely cold winters. Among the respondents interviewed, 20% utilize both wood and paraffin when cooking, but paraffin is only used when it is too hot in summer. Only 3% percent use wood, paraffin and gas when cooking. This percentage comprises the professionals teaching in the community. The above table shows that all Makomoreng respondents utilize wood as the major source for cooking, as the majority is unemployed. All respondents utilises candles and paraffin for lighting.

Table 4.13: Primary sources for cooking, heating and lighting in % (multiple responses)

	Platt Estate					
	Cooking		Heating		Lighting	
	(n=40)	%	(n=40)	%	(n=40)	%
Wood	40	100	40	100	-	-
Paraffin	3	8	4	10	10	25
Wood and paraffin	15	38	1	3	-	-
Wood, paraffin and gas	2	5	-	-	-	-
Candles	-	-	-	-	40	100
Candles and paraffin	-	-	-	-	30	75

The above table shows different sources of energy used in Platt Estate. All respondents utilize wood for cooking and heating. As mentioned earlier, the area has plenty of wattle trees, which serves as the source for fuel. All respondents interviewed pointed out that wood is not scarce and there is no need to travel long distances as it is collected around the household. There are also no difficulties concerning access to forests. People may collect fuel wood at any time. Thirty-eight percent of the respondents use wood and paraffin when cooking. Only 5% of the respondents utilise wood, paraffin and gas. All respondents use candles for lighting and 75% use both candles and paraffin for the same purpose.

Table 4.14: Preferred sources of fuel

	Platt Estate		Makomoreng		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Wood	27	68	38	96	65	82
Electricity	13	32	1	2	14	17
Paraffin	-		1	2	1	1

Eighty-two percent of the respondents (68% in Platt Estate and 95% in Makomoreng) prefer wood as they stated that they do not think they would afford to pay for electricity whereas 32% of the respondents in Platt Estate revealed that they prefer

electricity. Among the reasons pointed out were that, the area is too dark at night when there is no moon. Also, respondents stated that electricity would be of great importance when communicating with other people, for example, the use of televisions. The area of Platt Estate has no problem of thieves and robbers. People are free to walk at night if it is not too dark to see the footpaths. Makomoreng respondents illustrated that the installation of electricity might help in overcoming the problem of thieves who usually come at night and steal livestock.

Some of the Makomoreng respondents were angry about the cutting of forests in the area because they think they would not survive without wood as the area has snow during the winter season. However, others do not bother themselves as they are among those people employed in deforestation. Wood is also the most used source for heating. Candles and paraffin are important for lighting as mentioned earlier, spaza shops are essential for supporting the community with everyday needs. Respondents mentioned that there are no restrictions when collecting the dry wood, but restrictions only apply when they are cutting the living trees. Men use them when there are funerals and when making yolks and sledges to be used for ploughing and planting.

Table 4.15: Reasons for preferring the chosen fuel in %

	Makomoreng		Platt-Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Avoid costs	13	32	11	27	24	30
Meet demands	10	25	8	20	18	23
Abundant	17	43	21	53	38	47

The above table illustrates reasons stated by the respondents when asked why they prefer the source of fuel chosen. Although the responses are different, they seemingly point to one and the same reason. Thirty percent of respondents pointed out that wood is used in order to avoid costs as people have no income to purchase other source of fuels. Twenty-three percent from both communities stated that wood meets their daily demands because it is collected within the area. Even the older community

members are able to pull dry tree branches. In both communities there are also no restrictions when collecting the dry wood.

Forty-seven percent of the respondents agree on the point that wood is preferred due to its abundance. In Makomoreng wood is collected within the community but little distance is involved, whereas in Platt Estate wood is found around the households. Even when it is late, people have no problem of cooking because fuel is just collected around the household.

4.2.2 Sanitation

Table 4.16: Types of latrines available in both communities in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Shallow pit	40	100	35	88	75	94
None	0	-	5	12	5	6

Table 4.16 gives a picture of latrines that are used in both communities. Ninety-four percent of the respondents interviewed use shallow pit latrines, which are built outside the dwelling but on the stand of the household. These latrines differ in terms of their structures as some are made of wood and mud and others are made out of cut pieces of corrugated iron. Twelve percent of the respondents in Platt Estate stated that they have no latrines in their homes as the forest, which is used as an alternative to the latrines, surrounds them.

Table 4.17: Types of latrines preferred in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Flushed latrine	11	28	16	40	27	34
Ventilated Improved Pit latrine (VIP)	29	72	24	60	53	66

The above table shows different types of latrines that respondents preferred. Thirty-four percent of respondents (28% in Makomoreng and 40% in Platt Estate) pointed out that they prefer flushed latrines. In Makomoreng respondents indicated that the area has abundant water. Respondents further argued that shallow pit latrines are not safe, especially when used by children and when used at night. However, 66% (72% in Makomoreng and 60% in Platt Estate) stated that they prefer the improved pit latrine with ventilation (VIP) because there were rumours that water will be paid for, so they fear that they will not meet the costs. They further pointed out that the VIPs are safe from diseases associated with shallow pit latrines. Some of these respondents pointed out that flushed latrines will be available after a long period because it requires more technical staff such as the pipes for sewerage whereas the improved pit latrine requires lesser technical equipment. In Platt Estate respondents emphasized that they need flushed latrines because they want to live modern lives with the latrine would be inside the household.

4.3 GENDER DYNAMICS

Table 4.18: Members who perform household tasks in % (multiple responses)

Makomoreng										
Activity	Girls U16		Women 16-60		Women>60		Boys U16		Men16-60	
	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%
Fetching Water	12	30	32	80	8	20	8	20	-	-
Collect firewood	20	50	32	80	8	20	2	5	-	-
Cooking	24	60	32	80	8	20	3	8	-	-
Shopping	20	50	24	60	-	-	4	10	4	10
Laundry	16	40	24	60	4	10	2	5	8	20
House cleaning	20	50	32	80	4	10	-	-	4	10
Child care	8	20	32	80	3	8	-	-	-	-
Repairs	-	-	4	10	-	-	8	20	32	80
Tend livestock	8	20	16	40	-	-	36	90	31	78
Tend garden	4	10	32	80	1	3	22	55	-	-

Table 4.19: Members who perform household tasks in % (multiple responses)

Platt Estate										
Activity	Girls U16		Women16-60		Women>60		Boys U16		Men16-60	
	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%
Fetching Water	16	40	38	95	2	5	8	20	4	10
Collect firewood	15	38	38	95	2	5	4	10	4	10
Cooking	16	40	38	95	2	5	4	10	8	20
Shopping	16	40	33	83	-	-	8	20	-	-
Laundry	16	40	38	95	2	5	8	20	4	10
House cleaning	20	50	38	95	2	5	4	10	-	-
Child care	33	83	38	95	2	5	-	-	-	-
Repairs	-	-	37	93	-	-	8	20	20	50
Tend livestock	5	13	30	75	-	-	37	93	16	40
Tend garden	3	8	38	95	2	5	8	20	3	8

The levels of participation in domestic activities as illustrated in table 4.18 and 4.19 indicate that women in the middle age group have the worst burden of work to do. In all mentioned activities (except tending livestock which is mainly undertaken by boys under the age of sixteen) women between the age of sixteen and sixty have the highest percentage compared to other people. Although boys and men are involved in these activities, their level of participation is very low as it shows that the highest percentage is 50% where men are involved in repairs. This shows that social barriers that promote gender differentiation still exist. In chapter two, writers have pointed out that in rural areas heavy and unpaid tasks are associated with women, which increases their workloads, as women's responsibilities tend to increase. Both tables show that women are primarily responsible for fetching water, collecting wood, and caring for the children. There is great evidence that the female members of the households undertake large proportions of the tasks. A very small percentage of men and boys, if any, are involved in laundry and house cleaning, which is often perceived as female tasks.

Table 4.20: People responsible for house building in % (multiple responses)

	Makomoreng							
	Girls		Women		Boys		Men	
	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%
Planning of the structure	-	-	-	-	-	-	40	100
Constructing the frame	-	-	-	-	22	55	32	58
Building the walls	18	45	40	100	22	55	33	83
Building the roof	-	-	-	-	16	40	40	100
Building the floor	40	100	40	100	5	13	12	30

In Makomoreng men are responsible for house building. Respondents stated that there are community members but males are hired when building the house. Although men are responsible for planning the structure and building the roof, building the walls and the floors are women's tasks. These are also time and energy demanding tasks as women had to dig soil and prepare the mud by mixing soil and water which take time to be ready for use.

Table 4.21: People responsible for house building in % (multiple responses)

	Platt Estate							
	Girls		Women		Boys		Men	
	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%
Planning of the structure	-	-	38	95	9	23	14	35
Constructing the frame	-	-	31	78	17	43	17	43
Building the walls	20	50	32	80	16	40	9	23
Building the roof	-	-	38	95	38	95	16	40
Building the floor	24	60	40	100	38	95	9	23

In Platt Estate women are highly involved in building the houses. Ninety-five percent of Platt Estate respondents are responsible for making their own houses. Although building the house is not an easy task, the entire house in Platt Estate is build by

members of the household without hiring someone outside. Mainly women do most of the building, as the above table shows, 95% of the interviewed respondents stated that they build the roof with the assistance of boys. Women are also responsible for planning the structure, building the floor and walls. It is amazing but encouraging to see rural people, especially a woman climbing on top of the roof without showing signs of being scared. The above table shows the number of respondents who confirm that household members including boys and girls built the houses in which they live.

Respondents in both communities indicated that they use mostly natural resources that are poles, mud and water that are available within the area. Technologies used for roof building are developed from old umbrella wires or using simple old wires. This saves money that would be spent on purchasing needles for roofing and hiring someone to build the entire house. Respondents pointed out that nobody teaches them these methods of building the house but they just learn from seeing other family members and neighbours. That means knowledge is passed from older to younger members of the household.

It is obvious that women all over the world have the ability to learn from neighbours, other family members or friends because what has happened in Platt Estate and in Makomereng is what happened in La Chimba in the Northern part of Chile where women built their house through self-taught learning processes. The tin house was transformed into a proper house with no external assistance. Also, in Platt Estate communities sleep in proper houses that are made through the use of indigenous resources that are mud, wood and grass. There is no leakage that may give the dwellers difficulties when it rains.

4.4 LAND

Table 4.22: Ownership of land in %

	Makomoreng	
	(n=40)	%
Male	24	60
Female	16	40

The above table depicts people responsible for the ownership of land in Makomoreng. As mentioned earlier, the area of Makomoreng is under the control of chiefs, therefore all community members obtain the land from the chief (communal land ownership). Sixty percent of the respondents stated that the males who are regarded as the head of the households own the land. Yet, 40% of the respondents mentioned that they own the land after the death of their husbands. Although there are females who own land in Makomoreng, they made it clear that they do not have full control over their lands because once the elder son is old enough ownership goes back to him. In other words women in Makomoreng, especially widows own land if they have no sons to take over. Respondents stated that unmarried women have no right to own land except if she has a son ready to marry. The same strategy is used to allocate the land for cultivation. Only widows with no sons have the right to own land.

In Platt Estate during the period of data collection buying of land was an issue not finalised as mentioned earlier, dwellers in this farm were labour tenants. However, respondents emphasised that they have claimed the land in terms of the Land Reform (Labour Tenants) Act No 3 of 1996.

4.5 LIVESTOCK

Table 4.23: Different forms of livestock in % (multiple responses)

Livestock	Makomoreng			
	Domestic use		Commercial use	
	(n=40)	%	(n=40)	%
Cattle	2	5	-	-
Goats	20	50	3	8
Poultry	5	13	35	88
Pigs	6	15	6	15

The table illustrates the households that own livestock. Eighty-eight percent of the respondents stated that they own poultry, which is sold to the local community and 15% own pigs, which are slaughtered for the same purpose. Respondents indicated that women own poultry, pigs and goats. Men own the bigger livestock such as cattle and horses. Cattle and goats are kept mainly for domestic purposes and respondents stated that their husbands sell it if they have a major household problem. Five percent of the respondents indicated that they own cattle. It is important to note that only respondents that are widows own cattle. Respondents further pointed out those women who own goats have no right to sell on their own. They need to do so when their husbands are available within the household.

Table 4.24: Different forms of livestock in % (multiple responses)

Livestock	Platt Estate			
	Domestic use		Commercial use	
	(n=40)	%	(n=40)	%
Cattle	2	5	-	-
Goats	20	50	4	10
Poultry	34	85	20	50

In Platt Estate, 85 % of the respondents indicated that they own poultry for domestic use and 50% sell to the local community members. Fifty percent have goats for

domestic use such as traditional functions whereas 10% mentioned that goats are sold when the conditions within the household are not good and income gained through selling is sometimes used to pay for doctors, school fees and buy food. Only 5% own cattle. It is also important to note that most of the respondents who own bigger livestock are widows. Men own the other form of livestock such as cattle and goats. Although the data indicates that majority of the respondents keep livestock for domestic purposes, other respondents illustrated that they sometimes sell to generate income when the conditions within the household worsen.

The major livestock problems that both the community respondents face are livestock diseases and theft. Problems include scabies, ticks and chicken diseases. The respondents indicated that they make use of both medical and indigenous methods to control the disease problems. Indigenous methods include the use of crushed aloe leaves in water, snuff mixed with water for the control of chicken disease, and used motor oil for sores on animals. In Platt Estate medicine is purchased from one local man. The most commonly used mixture is called 'care'. Respondents in both communities indicated that they make traditional items from animal hide, some sell them and others use them as small floor mats while others throw them away.

4.6 AGRICULTURAL ACTIVITIES

Table 4.25: Extension service provider in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Yes	37	92	40	100	77	95
No	2	5	-	-	2	3
No response	1	3	-	-	1	2

Table 4.25 shows the responses of respondents on whether extension service providers visit the area. Ninety-five percent of the respondents (92% in Makomoreng and all in Platt Estate) stated that extension services visit the area but they come only if requested by the community members. Although 5% of the respondents stated that

they have never seen them in the area, but later on they pointed out that sometimes it is due to their negligence.

Table 4.26: Issues discussed when there is an extension service provider in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Agricultural issues	17	43	20	50	37	46
Livestock issues	21	52	16	40	37	46
No response	2	5	4	10	6	8

Table 4.26 indicates different issues that are discussed with the extension service provider. Issues discussed when there is an extension service provider are not highly different from each other as percentages from both community respondents reveal. Concerning the issues discussed when there are extension services, 46% of the respondents (52% in Makomoreng and 40% in Platt Estate) stated that livestock and agricultural issues are the most prominent aspects because men are concerned about their livestock. The integration between livestock and agricultural activities make these issues to be discussed. Without livestock there will be very little agricultural worked carried out efficiently. Therefore respondents stated that livestock and agricultural issues need to be given special attention because they play an extensive role in sustaining families. Both the agricultural and livestock issues are raised by males because most of the livestock is owned by them and agricultural tasks performed through the use of livestock is also under their supervision.

Respondents further stated that males obtain greater opportunity when discussing their issues. Females tend to loose their focus due to time spent discussing males' issues. Although livestock issues seemed to be widely supported due to its importance, but also the agricultural issues are discussed as the people are more dependent on it for livelihood support. Respondents stated that they do request extension service providers when they need help such as which seeds to grow at certain periods of the

year. The vital role played by extension services in the community includes identifying different varieties of seeds conducive for different types of soils.

Regarding the provision of the extension service provider, 40% of the respondents in Makomoreng and 48% in Platt Estate pointed out they are provided by the government, however 8% in Makomoreng and 4% in Platt Estate stated that they really do not know where they come from. Respondents further argued that extension services usually speak to both gender groups. In most cases meetings are conducted through workshops.

Table 4.27: People responsible for crop production activities in % (multiple responses)

Makomoreng								
Activity	Girls		Women		Boys		Men	
	U/16		16-60		U/16		16-60	
	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%
Ploughing	12	30	18	45	22	55	16	40
Planting	12	30	40	100	4	10	16	40
Weeding	12	30	40	100	4	10	13	33
Irrigating	16	40	40	100	4	10	-	-
Harvesting	12	30	40	100	8	20	13	33
Selling	-	-	12	30	4	10	26	65
Transport	-	-	40	100	40	100	4	10

In Makomoreng the majority of women and girls are primarily responsible for ploughing, planting, weeding, irrigating and harvesting as percentages in the above table illustrate. Women work hard as they are responsible to transport the produce and inputs on their heads, but when it comes to the issue of selling the produce, 65% of men exceed 30% women sellers. This supports the statements in the literature review where writers pointed out that women are sometimes not the beneficiaries of their labour.

Table 4.28: People responsible for agricultural tasks in % (multiple responses)

Activity	Platt Estate							
	Girls		Women		Boys		Men	
	U/16		16-60		U/16		16-60	
	(n=40)	%	(n=40)	%	(n=40)	%	(n=40)	%
Ploughing	9	23	18	45	16	40	22	55
Planting	11	28	40	100	11	28	18	45
Weeding	12	30	40	100	4	10	7	18
Irrigating	16	40	4	10	8	20	-	-
Harvesting	12	30	40	100	4	10	12	30
Selling	-	-	12	30	-	-	17	43
Transport	8	20	20	50	6	15	3	8

Also in Platt Estate, girls and women are also responsible for ploughing, planting, weeding, irrigating and harvesting with significantly more participation by men in these activities and some assistance from boys. There are no men or women who are older than 60 years participating in agricultural activities. In the case of households who sell some of their produce, women form 30% and 43% is from men. The transportation of agricultural production from the fields and for purchasing of inputs is also women's domain.

Table 4.27 and 4.28 clearly indicate that more males are involved in ploughing the fields. Respondents in both communities mentioned that they hire tractors to plough huge fields. This sometimes causes delays because they have to wait longer periods. Respondents illustrated that sometimes tractor drivers start with their families and friends first. In both communities respondents make it clear that they are not scared to drive the tractor, but there are cultural barriers that hinder them from doing so. Also, the use of ox drawn ploughs require males because the plough is sometimes very heavy to be used by females. Therefore, both the ox drawn ploughs and tractors are perceived as belonging to men. In both communities when ploughing the small

garden respondents indicated that they use long hoes and rakes and this is generally used by women, young boys and girls. In both study areas the data also indicated that women are the main people responsible for agricultural production, together with other household activities. Although some gender overlap in agricultural activities is noticeable, the gender division of labour is clearly discernable.

4.6.1 Equipment used for agricultural activities

The research results support existing studies that illustrate that hand tools are the most common capital input many rural women can afford. Respondents indicated that they have both the long hand hoes and rakes, which are in good working condition. Very few respondents use ox drawn ploughs. The low use of ox drawn ploughs could be related to socio-cultural barriers, which make it difficult for women to own cattle, and also the taboos that prevent women from working with them.

4.7 RURAL DEVELOPMENT ORGANISATION

Table 4.29: Participation in rural women's development organisation in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Participant	32	80	28	70	60	75
Non-Participant	8	20	12	30	20	25

Seventy-five percent of respondents (80% in Makomoreng and 70% in Platt Estate) indicated that they have women organizational structures in their areas, of which all of them are members. In most rural areas stokvel is the most prominent activity in which the majority of the women actively participate. Twenty-five percent of the respondents (20% in Makomoreng and 30% in Platt Estate) indicated that they were unaware that such organizations exist in the area. Most of the respondents participated in stokvels and burial societies and they indicated that they received no assistance from the government.

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Table 4.30: Problems women's organizations face in %

Problem	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Insufficient time to attend meetings	20	50	24	60	44	55
Lack of resources	13	32.5	8	20	21	26
Very little support	7	17.5	8	20	15	19

As mentioned earlier, women are involved in multiple roles, therefore it is not surprising that 55% of the respondents (50% in Makomoreng and 60% in Platt Estate) have indicated that they do not have sufficient time to attend meetings considering the various domestic tasks that they perform daily. Twenty-six percent of the respondents (33% in Makomoreng and 20% in Platt Estate) mentioned that lack of resources such as income that is vital for women when they form their organization is another problem that hinder them from progressing efficiently. Nineteen percent revealed that due to the lack of support from their husbands and in-laws, especially mother-in laws, they do not yield the expected results. They further mentioned that sometimes the domestic work such as looking after the old aged members delays them.

Table 4.31: Rural women's organizations for savings and loans in %

Type of saving	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Stokvel	22	55	18	45	40	50
Burial society	12	30	14	35	26	33
Insurance policy	1	2.5	-	-	1	1
Bank	1	2.5	-	-	1	1
None	4	10	8	20	12	15

The table above describes organizations in which women actively participate. In most communities where women gather together, stokvel is the most famous method of saving. Fifty percent of the respondents (55% in Makomoreng and 45% in Platt Estate) stated that brilliant women participate in stokvels because this is the only way

in which they can save money to pay for school fees and also to buy food. There are different forms of stokvels organized by women in both areas under study. One is to collect money that would be shared in the beginning of the year just before schools are opened. The other one is where women buy different types of goods such as blankets or food and give this to one member then she will buy the same item when it is another member's turn. Respondents were very proud to mention different things they bought through the income generated by stokvels.

They further argued that this form of saving money also helps them when they have problems as the member has no difficulties when borrowing money. In the middle of the year there are many problems that may face the community such as illnesses and scarcity of food. They obtain money easily from their saving device. Although they are supposed to pay little interest when borrowing, they feel comfortable because that interest will be included together with the sum of money gained. During school vacations when all children are at home, people have no problem for food as they participate in food stokvels.

Thirty-three percent of the respondents (30% in Makomoreng and 35% in Platt Estate) mentioned that they are also involved in the burial society that assists them in difficult times. Both community respondents pointed out that women in many communities are responsible for caring for the whole family since most men are in urban areas, so they need to plan for everything. Burial societies in rural areas are very useful because all those women involved support each other in times of sorrow and difficulties. Respondents who participate in the burial society stated that some community members do not realize the importance of participating in these services. Once the person is confronted by problems she then seeks urgent help, which is sometimes impossible to get. One of the respondents stated that it is better to do what other women do because at the end you will benefit. Respondents depict that burial societies are open for everyone including males.

Women in different parts of the world have their ways of meeting life's challenges. Stokvel is a device familiar among African women but other women have other forms of savings such as in San Mugel Afuera in South America. Women engaged in collecting money to build proper houses because they realized that if they do not assist their family members by building proper houses, their children would suffer. Although some women could not afford to pay monthly, they were given time to pay the following month. Women's organizations have many aspects that do not solely assist those women involved but the community at large and also promote capabilities that sustain the families in the long term.

Few respondents are also involved in banking and insurance policies. As stipulated earlier that within the area there are teachers who are residents of the area, these people are better in terms of the income they obtain since they are professionals. But the majority of other respondents are similar to women from other rural communities. In both communities respondents stated that they borrowed money from the stokvel and it is not difficult if you are a member. They pay the interest every month until the borrowed money is paid back. They further emphasized that stokvels assist them when they want to pay for school fees, buy food and when they have health problems.

Table 4.32: Rural women's participation in community development activities in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Participants	35	88	34	85	69	87
Non participants	5	12	6	15	11	13

The above table indicates the level of participation by women when there are development activities taking place within the communities. Respondents in both communities stated that they usually attend meetings in the community when they are informed. This is shown by the 87% of respondents who actively participate in development activities such as the Working for Water Project that has been responsible for water installation and eradication of wattle within the Makomoreng

area. However, they reveal that sometimes women are not informed if the meeting is for males. This usually happens when the chief talks with community males. Women are informed by their husbands or sons about what has been discussed. They further illustrate that they do not feel happy about such issues because the progress of other development activities such as the construction of the clinic and road is very slow because they are not taken seriously.

Thirteen percent of the respondents are those who do not attend the meetings because they stated that there is no need because they see no changes. The reason for this is that they were promised that the muddy road would be constructed very soon after the elections but nothing has yet happened. These respondents also pointed out that some of the reasons for not participating are that some of the members in the local committee are greedy. They mostly involve their relatives when there are visitors coming to the area. Some of the means of generating income in Makomoreng include accommodating visitors, therefore some of the respondents pointed out they are not given the chance of participating in such activities.

Some of the respondents pointed out that there are obstacles or constraints that hinder them from participating in the community projects, such as being busy with domestic work. Although few women pointed out different reasons concerning not participating in the development activities, the majority of women are strongly involved in all existing activities. This is revealed by their enthusiastic role in the sewing project, piggery, poultry, home and community gardens.

Respondents illustrate that they are actively involved in development activities that occur within their areas. It has been mentioned earlier that the majority of the interviewed respondents in Platt Estate were the first group to start ploughing the community gardens. This is not surprising as women all over the world are more concerned about the lives of their families, so also in Platt Estate respondents pointed out that due to lack of income to purchase vegetables, they then decided to have small

gardens. They proceed to an extent that they are now selling vegetables to other community members.

Some of the respondents stated that development activities used to bypass them because they are not well informed when there is something taking place within the area. They promised that if they can be well informed, they would also participate. In the second chapter researchers mentioned that some of the reasons that hinder women from participating in the development activities is that they are mostly tied to domestic chores. In order to have sufficient time to attend development activities they would definitely need technologies that would assist them in finishing more domestic work within a short period of time because some of them are not responsible for cooking and cleaning the house only but they are caring for sick people and young children.

4.8 COMMUNITY DEVELOPMENT STRUCTURES

Table 4.33: Community institutions present in the community and affiliation in %
(multiple responses)

Makomoreng		
	Affiliation	
Institution	(n=40)	%
Water Committee	23	58
School governing body	4	10
Crèche Committee	1	3
Burial Society	28	70
Development Project Committee	6	5
Garden Committee	31	78
Women's Religious Group	22	55
Women's craft Group	11	28
Pensions Committee	1	3
Agricultural Committee	2	5
Community policing forum	1	3

In Makomoreng the level of the respondents affiliated in the garden committee is 78%. This indicates that most of the respondents are committed to agricultural production. Seventy percent are involved in the burial societies as mentioned earlier that this is how rural women function to fight against difficulties. Fifty-eight percent are affiliated to the water committee and respondents further mentioned that this committee has played a vital role in the installation of the water that is used in the community. Twenty-eight percent are affiliated in women's craft group. Respondents mentioned that there are several craftwork items that are made by community members such as sleeping mats, chair-backs and decorate clothing through the use of coloured cloth-paints. Five percent of the respondents are affiliated to the development project committee. Respondents indicated that women in Makomereng play a major role when there are tourists as the area is responsible for tourist attraction.

Although 3% are affiliated to the pension committee, respondents stated that this committee is cares for the older community members and functions very effectively. Some of the problems that are facing the agricultural committee in Makomoreng are that they lack food and income that will be used to progress with piggery which they have started. The garden committee also raised the problem of their agricultural production that is devastated by livestock, as they have no fences to protect crops from animals.

Table 4.34: Community institutions present in the community and affiliation in %
(multiple responses)

Platt Estate		
	Affiliation	
Institution	(n=40)	%
Health Committee	2	5
Burial Society	23	58
Development Project Committee	4	10
Garden Committee	28	70
Women's Religious Group	22	55
Women's craft Group	7	18
Pensions Committee	1	3
Agricultural Committee	2	5

The respondents of Platt Estate have eight community institutions in their area. Seventy percent of the respondents are affiliated in the garden committee. Respondents mentioned that community gardens are ploughed through the use of hand tools. Therefore agricultural technologies such as fence, proper hoes, rakes and spades are very important when cultivating their crops because the tools that they are using are old and this consume a lot of time. Fifty-eight percent are involved in the burial committee and 55% is in the women's religious group. Five percent is involved in the agricultural committee. Respondents illustrated that agricultural members play an important role because they attend workshops and come back with more knowledge.

In Platt Estate respondents stated that the garden committee and the burial society function effectively. Members of both committees are not greedy but they are willing to work openly with other people. Those who are involved in gardens have individual plots in which they grow different crops. Although women are affiliated to these committees, the researcher noticed that women are mostly affiliated in committees that deals mainly with their responsibilities. For example, in both communities there

are tribal courts that deals with minor cases but no woman is affiliated there. In the development project committee the percentage of women's affiliation in both communities is very low as it is 5% in Makomoreng and 10% in Platt Estate. Respondents also mentioned that men in both communities hold leading positions.

4.9 PROVISION OF LOCAL SERVICES

Table 4.35: Availability of local services in the community in % (multiple responses)

Services	Makomoreng		Platt Estate		Total
	(n=40)	%	(n=40)	%	(n=80)
Spaza shop	40	100	40	100	80
Shebeen	40	100	40	100	80
Taxi Rank	-	-	40	100	40
General Dealer	40	100	40	100	80
Bus Service	40	100	40	100	80
Cemetery	40	100	-	-	40
Clinic	-	-	19	48	19

The above table reveals that from eight available local services, three of them are local income generating services for community members, indicating needs of the community and business prospects for local entrepreneurs. In Makomoreng, respondents make it clear that the spaza shops play a crucial role in providing the community with special needs. The general dealer alone is unable to support the whole community. The researcher mentioned earlier that transport is a great problem in Makomoreng as there is only one bus that operates within the area. Respondents have pointed out that they face severe difficulties if there are emergencies.

In Platt Estate there are buses and taxis that operate within the community, therefore respondents stated that they have no problem with the transport, as they are able to purchase big goods such as 50kg of fertilizer in town and transport it in the bus. In Makomoreng respondents mentioned that it is very difficult to purchase big goods because the bus is always full.

Respondents in Makomoreng indicate that they would like to have a high school, clinic, community hall, more transport services and a police station in their community. They indicated that the police station would assist them because they have the problem of livestock theft. They therefore have difficulties in reporting urgent criminal matters to the police, and having one in the community will make reporting and action much quicker. The community hall would be essential when the community has meetings and it will also assist pensioners during sunny and rainy days. The availability of high school within the community would help the disadvantaged children with parents who cannot afford to send them to other schools.

Respondents from Platt Estate emphasized that they would like to have a community hall, ambulance services, mobile clinic, crèche and primary and high schools in their community. They indicated that the hall would be an ideal place for convening meetings and a venue to collect their pension payments. Services such as an ambulance and local clinic will help in cases of emergencies. Presently, children walk long distances to school, a school close by would mean that the children could leave home later to go to school, and get home earlier to assist with the household tasks.

4.10 OFF FARM ACTIVITIES

Table 4.36: Off farm activities in % (multiple responses)

Activity	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Clothes making	27	68	19	48	46	58
Beer brewing	39	98	37	93	76	95
Brick making	5	13	21	53	26	33
Broom making	26	65	28	70	54	68
Thatching		-	39	98	39	49

The table depicts off-farm activities performed in both communities. Sixty-eight percent of the respondents in Makomoreng and 48% in Platt Estate are engaged in

clothes making. Respondents stated that they are making clothes for their children but sometimes they make traditional attire when requested by customers. Sometimes they make women's clothes that are sold during pension days in the nearby districts. The material is obtained in town and they managed to make little profits. In both communities hand sewing machines are mostly used whereas those who possess no machines are using hand needles.

In both communities beer brewing is the most practiced activity because the older household members, especially old men, drink it. The above table illustrates that 95% of the respondents confirm that they engage in beer brewing, but they usually brew beer when there are traditional functions. However, very few of the respondents interviewed mentioned that they brew beer in order to sell it. They pointed out that they manage to generate little income in order to sustain their families. They further argued that beer brewing is not an easy task as it involves several stages and customers do not buy the beer if it is sour. It also demands more energy. The most productive period in which the beer is sold out is in summer when the sun is too hot and people buy more during month ends and during December vacations.

In both communities methods used for beer brewing differ as respondents in Makomoreng stated that they use clay pots that are made within the area whereas in Platt Estate respondents pointed out that they use plastic buckets. They further argued that small clay pots are used for drinking beer. They are not made within the community but they buy them from outside people who usually come to the area to sell the pots.

Fifty-three percent of the respondents in Platt Estate and 13% in Makomoreng stated that they make mud bricks. Respondents from both communities pointed out that a small box made with planks is used to make rectangular bricks. The majority of Makomoreng respondents stated that they do not like their houses to be made with mud bricks due to the climate of the area, which sometimes incorporate heavy winds and storms. Bricks pose a threat of easily falling down when the weather has heavy

rains and wind. Respondents in Platt Estate where the use of mud bricks is common, stated that they sometimes hire other community members to make the bricks. They further mentioned that they used mud from the wetland in order to make strong bricks.

Ninety-eight percent of respondents in Platt Estate are involved in thatching their houses. In both communities women are engaged in more than two activities. This is supported in the second chapter where researchers stated that women in rural areas are engaged in multiple activities. These activities are not solely aimed at caring for the family of the participant alone but to sustain the whole community. For example, in Platt Estate respondents mentioned that they hire other community members to make mud bricks and also request other woman to assist when the other one is unable to build the house alone. Sixty-eight percent of the respondents are making brooms. They stated that they sell them to other community members and outside the community, especially during pension days.

4.37: Traditional jewellery and sunburn technology in %

Activity	Makomoreng		Platt Estate	
	(n=40)	%	(n=40)	%
Bead bracelets necklace	-	-	33	83
Traditional make-up	33	83	40	100

Eighty-three percent of respondents in Platt Estate indicated that they make traditional jewellery such as bead bracelets and necklaces. These items are sold together with traditional attire as mentioned earlier. The use of traditional make-up is also common in both communities. They mentioned that traditional make-up is made from red soils. It is mixed with water and smeared on the face when the sun is hot. This protects the skin from sunburn.

Table 4.38: Small businesses preferred by rural women in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Public phones	1	3	3	6	4	5
Tavern	4	10	1	3	5	6
Spaza	5	13	8	20	13	16
Poultry	15	38	14	35	29	36
Piggery	5	12	1	3	6	7
Sewing	3	7	6	15	9	11
Vegetable garden	3	7	6	15	9	11
Craft-work	4	10	1	3	5	6

The above table illustrates small businesses rural women of both Makomoreng and Platt Estate may start if they can be provided with resources. The issue of starting businesses raised great discussions between the researcher and the respondents, as they wanted to be given an assurance that they will get resources. Women show that they really need income to start their own businesses as they pointed out that this would eliminate dependency from men. In Makomoreng 12% of the respondents pointed out that they have already started piggery but they do not have food to feed them. This makes the pigs to grow very slowly. Thirty-six percent of the respondents indicate that poultry in both communities is the most preferred form of business for generating income. Respondents stated that they prefer fowls because they grow very quickly and are sold out at any time. Sixteen percent of the respondents stated that spaza shops are also preferred for generating income, job opportunities and providing the most demanded goods as mentioned in the previous chapter that both these rural communities lack proper infrastructure, there are no supermarkets within the areas. Therefore people have to walk long distances. For example, in Makomoreng where the shopping complex is far away from the local community since the only general dealer has insufficient goods as mentioned earlier that tuck-shops provide the community with other small important items.

Respondents revealed that vegetable gardens are very important. They further emphasized that as they are in rural areas children are sometimes affected with diseases such as cracking of the skin due to malnutrition because there are no markets to buy nutritional food. It is better to have small gardens that will provide vegetables rather than buying them with little income.

When the researcher asked the respondents reasons for choosing the businesses they nominated, the majority stated that they do not want mobile businesses as they have more domestic work to do. Therefore, the majority chose poultry, they emphasized that selling poultry does not demand a lot of time because customers come on their own when they need fowls.

4.11 WOMEN AND TECHNOLOGY

Table 4.39: Definitions of technology in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Modern tools	28	70	25	63	53	66
Creative thoughts	6	15	10	25	16	20
No response	6	15	5	12	11	14

The above table portrays different perceptions concerning the definition of technology. Defining technology was not an easy term to the majority of the respondents interviewed but the researcher tried to simplify it in order for the people to have a clearer understanding. Twenty-five percent of Makomoreng respondents and fifteen in Platt Estate stated that technology could be creative thoughts or ideas that produce something valuable. They gave an example of advice centres where they could be provided with information and good ideas or solutions when there are problems.

Sixty-six percent of the respondents pointed out that technology refers to the modern equipment that is used to make heavy jobs easier. They further emphasized that

technological equipment is what they really need to assist in reducing workloads and saving time. However, they have insufficient access to these tools. So, women confirmed that availability and accessibility to these technologies would play an important role in their lives. For example, the installation of water in the area is one of the aspects that have helped them because in the previous years people had to walk long distance when collecting water. As the water is now available time that was spent on water collection is used for other purposes including weeding the gardens. Respondents stated that they have huge hopes of obtaining other technologies that would be important to fight poverty. As mentioned earlier, only one household has the sprinkler irrigation in the community but the majority of the respondents pointed out that they have realized that the availability of such technologies for community members would mean more work is covered within a short period of time. They stated that during winter periods watering the gardens consume a lot of time because they are supposed to go down to the river to fetch water for watering the crops. Although gardens are along the river but moving up and down for water collection consumes time.

Respondents further pointed out that an example of modern tools includes tractors, long hoes and televisions. They argued that lack of income to purchase these sophisticated tools is the only problem that hinders them from progressing efficiently. They mentioned that innovative ideas easily reach people with technologies such as televisions and telephones.

4.11.1 Domestic related technology

Table 4.40: Domestic appliances available in the household in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Gas stove	6	15	-	-	6	8
Gas fridge	1	3	-	-	1	1
Coal stove	38	95	7	18	45	56
Coal iron	40	100	40	100	80	100
Paraffin stove	3	7	1	3	4	5
Paraffin heater	1	3	-	-	1	1

The above table indicates different domestic appliances used in both communities. As mentioned earlier, the area of Makomoreng is very cold in winter and 95% use coal-stoves when cooking and heating. This type of stove was made to use coals but wood is used without any problem because the stove has enough space to put pieces of wood. They pointed out that coal stoves keep the house warm for a long time compared to the open fire. It emits smoke out of the house as it has a long chimney, therefore, doors and windows can be kept closed to avoid the entrance of cold air. Another advantage of using a coal-stove is that it cooks more than one pot. Therefore this saves time and fuel wood.

All respondents interviewed stated that they use coal irons because they have no alternatives. Coals from wood are collected when fire is available. Once wood is burnt, children collect ash with coals and water them so that when they need to iron, they simply put them in the iron and put a little bit of paraffin to make them hot. One percent uses paraffin heaters when it is too cold. This is also the minority who are professionals working in the community.

In Platt Estate, the level of people using coal stoves is low compared to Makomoreng. The majority of the residents use open fires when cooking and heating. Five percent

use paraffin stoves. They stated that paraffin stoves are used only when there is something urgent. In most cases they use open fire. When comparing the standard of living of these study areas, Makomoreng is a deep rural area while Platt Estate seems much better as it is located between Umzinto and Highflats. When it comes to the adoption of modern life, Makomoreng has a higher standard of living. The reason for this is that some women in Makomoreng have husbands working in Gauteng and they import technology from urban areas while those in Platt Estate have husbands working on the farm.

Table 4.41: Access to technologies available in the communities in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Big tractor	26	65	40	100	66	83
Mini tractor	13	32	-	-	13	16
Chain saw	1	3	-	-	1	1

The table shows the equipment available in both communities for agricultural purposes. In Makomoreng all respondents stated that there is a big tractor that was given to the community by the government. Initially this tractor was introduced to assist all members of the community without any payments. As time went on things began to change as the tractor was monopolized by one of the community members who complained about the shortage of fuel to keep the tractor working. All respondents pointed out that access to the use of the tractor depends on whether you have money to pay for it or not. They also argued that the tractor is monopolized, all the income received when ploughing and planting the fields is not shared among the members of the community but is used by that individual alone. Respondents further argued that although the tractor is available, they do not have access due to the lack of income, as ploughing is very expensive. They further emphasized that some of the land is left unplanted due to the shortage of money to hire the tractor. Respondents clearly outlined that shortage of staple food such as maize and potatoes, which the community is highly dependent on, is the result of not ploughing the whole field.

In Platt Estate all respondents revealed that there is a tractor that has been introduced by the Department of Agriculture to assist the community without any payments. People have been using this tractor and all of them had equal access in its use. However, some of the respondents on the issue of access to the use of the tractor complained and emphasized that access to the tractor depends on who you are. There are people who request the tractor but wait for a long time to such an extent that sometimes they end up using hand tools such as long hoes, spades and forks. Respondents further argued that the issue of the community tractor in Platt Estate is not clear because as the Department of Agriculture withdraws from the area, maybe there will be no other tractor that will be brought to assist the community in the future.

Table 4.42: Decision-making regarding the use of technology in the household in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Men	-	-	2	5	2	3
Women	22	55	8	20	30	37
Both	15	37	30	75	45	56
No response	3	8	-	-	3	4

The above table demonstrates people responsible for decision making in the household. Thirty-seven percent mentioned that women are responsible for making decisions regarding the use of technology within households because most of the males in the communities are in urban areas. Therefore, it is women's responsibility to decide on everything within the household, especially as some of the households are headed by women due to *de facto* reasons. Therefore, they have no alternative other than making the decisions in all household chores. Three percent of the women interviewed stated that they have nothing to decide in their houses because husbands make the decisions. They argued that they still respect the traditional ways under which they were socialized such as giving males their positions as they are regarded as the heads of the households. In chapter two the issue of patriarchy was discussed and it was revealed that it is very difficult to change the minds of illiterate

communities because traditional customs are entrenched. In the discussions that was conducted with this community it became obvious that some of the women do not see the importance of sharing the power in the household. They sometimes agree on matters that are not conducive for their lives.

Fifty six percent of the respondents stated that both men and women are responsible for making decisions relating to the use of technology within the household. Respondents in both communities stated that knowledge of using the equipment is obtained from elder family members. For example, children growing in families where they use ox drawn ploughs, learn from others. Also, the use of chain saws is self-taught. Knowledge is passed from older community members to the younger generation.

Table 4.43: Decision-making regarding the use of technology in the community in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Men	3	7.5	7	17.5	10	12
Women	1	2.5	-	-	1	1
Both	34	85	33	82.5	67	83
No response	2	5	-	-	2	4

The table above gives an idea about people who make decision regarding the use of technology in the community. As depicted earlier, both communities were provided with tractors which were introduced as the means to assist the community in agricultural production, but they no longer serve the whole community due to accessibility and affordability. Twelve percent of the respondents pointed out that men always take decisions pertaining to the use of technologies, especially when it comes to the issue of ploughing the fields. Women are the last to be considered. It has been revealed in chapter two that gender dimensions in owning technology can sometimes result in delays.

One of the respondents pointed out that tractors in rural areas are associated with males because there is that notion of women being unable to drive it. So, if there is no man to use the tool it remains there even if the female counterparts are available. Respondents emphasised that the use of tractor is associated with men whereas they see nothing difficult with the use of a tractor because it requires skills to use it. Due to taboos and the notion of considering women as minor people who can't do certain things, some tools remain unused even if they are available.

Respondents raised the issue of neglecting the important roles played by women in their communities, as the control of tools is not in their hands. An example is the gardens that were started by women after realizing that food prices were increasing dramatically. At the beginning there was only one man involved and women were able to make sufficient subsistence production on their own. As time went on some other men decided to follow. Due to the increasing number of other members they now have many problems because men in most cases utilize more resources than women. Initially they were using their own seeds from the previous harvest but due to extension services that help in providing seeds and other agricultural input, men have intervened and they are the first to benefit.

The issue of watering the crops using the water pipe is also problematic. Women complained that men are using more water and their gardens are in the area where the pipe easily reaches the fields. Some of the women end up fetching water from the river. Although some of the women have no control over the use of the community equipment, they manage to further their tasks efficiently. Respondents in Platt Estate pointed out that in order to be able to support the household there is no need to heavily rely on the community equipment because if it is broken or there is no fuel to operate it, you have to wait for unknown periods. Theorists argued that when developing rural communities it is important to introduce the equipment that will not pose problems when it is broken.

Table 4.44 Women's multiple activities in % (multiple responses)

Task	Makomoreng		Platt Estate		Total
	(n=40)	%	(n=40)	%	%
Food processing	32	80	8	20	50
Food storage	16	40	4	10	25
Water storage	24	60	23	58	59
Water heating	40	100	36	90	95
Clothes making	8	20	13	33	27
Making of traditional medicines	32	80	31	78	79
Making of kitchen implements	24	60	10	25	43

Respondents in both communities indicated that they are involved in multiple activities. Sixty percent of the respondents in Makomoreng and 25% in Platt Estate are involved in making kitchen implements (brooms and traditional sticks to stir food). Ninety-five percent of the respondents heat water for household members. Eighty percent in Makomoreng and 20% in Platt Estate process food. Respondents in Makomoreng mentioned that maize is one of the staple foods that needs more time. Although some of them grind maize in the nearby grinding mill, they mentioned that there are other food types that are processed through the use of grinding stones. Forty percent of the respondents in Makomoreng use indigenous food storage technologies. Respondents illustrated that food such as maize is stored in dry containers so that it will last until the following harvest. Seventy-eight percent of the respondents use traditional medicines. Respondents in Makomoreng revealed that knowledge that is passed from older community members to the young ones plays an important role when mixing traditional herbs. Research results support the studies that illustrates that women perform multitude of activities, some of which are physically or emotionally demanding, on a routine daily basis with little or no assistance from men. They also receive little or no acknowledgement for their work in meeting the demands of their households.

Table 4.45: Technologies used for food processing in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Cardboard cooker	6	15	2	5	8	10
Sun dry	32	80	36	90	68	85
Grind maize	2	5	1	3	3	4
None	-	-	1	3	1	1

The table explains technologies used to process food. In Makomoreng the abundant fruits are the peaches whereas in Platt Estate there are guavas. In both communities technologies used to preserve fruits are similar. Eighty-five percent of the respondents stated that in order to have fruits throughout the year, they cut peaches and guavas into small pieces and place them on top of the house in order to be dried by the sun. They are then collected when dry and kept in a dry place. Fruits are also canned in bottles to be used later. In Platt Estate respondents indicated that they canned guavas to be used when there are functions such as weddings and birthday parties.

Ten percent of respondents stated that they cook grain food such as samp and beans by using the cardboard cooker. This is one of the technologies that were developed by women to reduce cooking time and save fuel. The food is temporarily boiled on the fire and wrapped by old clothes and placed in the cardboard-cooker. Food is kept hot for a long time and becomes soft. This reduces time spent when cooking. Respondents illustrate that this form of cooking is mostly used during weeding periods. Food such as samp is pre-cooked before people go to sleep. During the following morning less time is spent to finish up the cooking. As mentioned above, 4% of the respondents revealed that they also grind maize on the grinding stone. Respondents emphasised that traditional technologies used to process food save money used to purchase food in stores but some of these methods such as grinding maize on the grinding stone is time consuming.

Plate 4.4: Fruits preserved in bottles through traditional technology in Makomoreng



Table 4.46: Types of arts and craft done through the use of technologies in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Brooms	26	65	20	50	46	58
Sleeping mats	29	73	17	43	46	58
Beads	-	-	13	33	13	16
Clay pots	13	33	-	-	13	16
Skin products	17	43	5	13	22	28

The above table gives a picture of different types of arts and craft making activities practiced in Makomoreng and Platt Estate. Dealing with strategies to support the household cannot be a success if the focus can be based on a single method. This is what the researcher observed from the respondents. As mentioned previously, information was extracted from a sample of forty households in each community but it was realized that people are involved in different strategies in order to sustain their livelihoods. Sixty-five percent in Makomoreng and 50% in Platt Estate are engaged in making brooms, which are sold within the community and also used within the

household. People are able to generate more income when these brooms are sold in neighbouring districts during pension days. To make brooms, people use certain type of grass that is collected from the veld. It is an abundant natural resource that is not difficult to collect except that it is found away from the home and the area is sometimes steep and slippery.

A similar device is used to make sleeping mats as 58% of the respondents (73% in Makomoreng and 43% in Platt Estate) stated that they make sleeping mats, which are also sold within the community and used by household members. The majority of respondents emphasised that making sleeping mats is good for older people because they do not have many responsibilities as the middle-aged group. Material to make the sleeping mats is collected from the wetlands in the beginning of winter. Few people collect the material on their own but the majority hire other community members due to the freezing water where the material is collected.

In both communities animal skin is used for different purposes. In Platt Estate 13% of the respondents pointed out that in their households there are children who are able to make shields and traditional wear which is made out of animal skins. They usually get money when the neighbouring schools have cultural functions because there are teachers who hire the attire. In Makomoreng 43% of the respondents revealed that skin of animals are also used by boys when undergoing the tradition of circumcision.

Thirty-three percent of the respondents in Makomoreng further stated that they make clay pots. These clay pots are used within the household and sold within and outside the community. They are needed as they are used for beer brewing and storing sour-milk. Respondents stated that they use clay that is collected from the river and burn it in order to make it hard and dry. This product is sold at any time when needed because it is always available. They further stated that income generated through selling, plays an extensive role in supporting the family. To all the above-mentioned items different technologies are applied. Most of them are from used objects that are modified and used for other purposes.

Plate 4.5: Technology used to make sleeping mats in Platt Estate

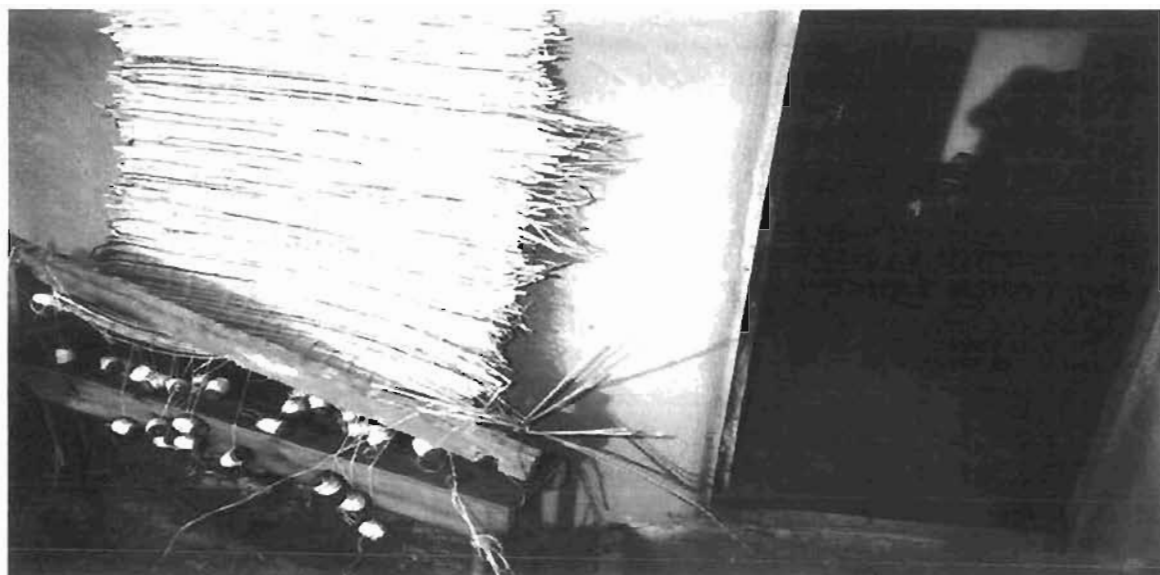


Table 4.47: Technology used to make arts and craft in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Hand saw	19	48	8	20	27	34
Plastic, tins and wire	12	30	5	13	17	22
Cotton and needle	5	13	-	-	5	6
Needle and beads	-	-	20	50	20	25
Wire and stand	25	63	7	18	32	41

The table indicates different types of technologies used to make arts and crafts. Twenty-two percent of respondents (30% in Makomoreng and 13% in Platt Estate) stated that they use plastic, tins and wire to make flowers. These flowers are used to decorate households and also sold within the community. It is encouraging to note that respondents collect and re-use solid waste which is used in making plastic flowers, mats, hats and other craft items. These items are sold and generate income for the women and their children. Forty-one percent of the respondents (63% in Makomoreng and 18% in Platt Estate) pointed out that they use wire and wood stands in order to make sleeping mats, which are also sold to other community members as people live traditional forms of life, mats are usually used to sit.

Fifty percent of the respondents in Platt Estate revealed that they make bead-work, which is sold to those people interested in Zulu dance but they also need to sell it outside their community. The problem is that they do not have the proper place to sell their products. Thirteen percent of the respondents in Makomoreng pointed out that they are making items to decorate such as chair-backs using cotton and needles. Their main obstacle is that people lack relevant skills such as business management. If some of the community members can be provided with training and skills, they believe that progress will be effective. They further argued that people are facing the problem of poverty, therefore, they end up using the income that is supposed to buy the future stock.

Thirty-four percent (48% in Makomoreng and 20% in Platt Estate) of the respondents stated that they use handsaws to cut pieces of wood when making craft such as long wooden spoons. Long wooden spoons are used to stir when cooking the traditional beer.

Table 4.48: Purpose of making arts and craft in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Family use	40	100	40	100	40	100
Sell within the community	33	83	30	75	32	80
Sell outside the community	9	23	30	12	7	18

The table explains purposes of making arts and craft. Eighty percent (83% in Makomoreng and 75% in Platt Estate) of the respondents stated that they sell their craft items within the community, whereas 23% of Makomoreng respondents stated that craft such as clay pots are also sold outside the community. Twelve percent in Platt Estate stated that they also sell the traditional attire outside their community. All respondents mentioned that craft such as sleeping mats and brooms are mostly for family use. Respondents show great potential of being able to make little income using different resources including natural resources and waste plastics. This does not

help in making additional household income only, but also contributes in reducing the solid waste that would otherwise have adverse impacts on the livestock and environment. One of the respondents pointed out that some of the livestock die because they eat plastics. Over-abundance and floating tins are controlled through making flowers that are used to decorate the households. All respondents stated that they make crafts such as sleeping mats for household use as mentioned earlier, people in these areas are still living traditional forms of life.

4.11.2 Agricultural technology

Table 4.49: Soil enhancing technologies in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Organic fertilizer	10	25	28	70	38	48
Inorganic fertilizer	12	30	4	10	16	20
Both fertilizers	18	45	8	20	26	32
Crop rotation	26	65	24	60	50	63
Inter-cropping	40	100	40	100	80	100
Irrigation	28	70	8	20	36	45
Crop rotation	5	13	4	10	9	11
Wind breaks	32	80	4	10	36	45
Fencing and stone formation	5	15	-	-	5	6
Tree growing	17	43	13	33	30	38

Table 4.49 indicates technologies used to keep the soil fertile. It has been mentioned earlier that most of the local dwellers in both communities have no informal income due to the high level of unemployment. Forty-eight percent (25% in Makomoreng and 70% in Platt Estate) of the respondents revealed that they use organic fertiliser because they couldn't afford to purchase the inorganic fertilizer due to the lack of income. Makomoreng respondents outlined that the most preferred compost is the kraal manure from the sheep. The area of Platt Estate is very rich in terms of soil nutrients. This is recognized from their agricultural output, which is obtained through

the use of organic compost. Thirty-two percent (45% in Makomoreng and 20% in Platt Estate) of the respondents stated that they use both fertilizers when planting because they need to produce higher yields.

Twenty percent (30% in Makomoreng and 10% in Platt Estate) of respondents stated that they use chemical fertilizer because the soil is sometimes not good for crop production. Respondents emphasized that although there is insufficient income to purchase the chemical fertilizer, they are obliged to do so in order to get better harvests that would sustain livelihoods for longer periods. As mentioned earlier, in Makomoreng maize is the dominant crop, respondents pointed out that they need to harvest maize that will be used as mielie-meal until the following harvest is obtained.

In both communities all respondents are engaged in many soil-enhancing activities. The activity most practiced is inter-cropping. Respondents mentioned that they could not afford to practice mono cropping because this requires more money to cultivate and plant vast land for different crops. Respondents further stated that inter-cropping also helps when there are pests affecting the crops. For example, when cabbage is planted together with onions, cabbage is protected from pests because onions act as pest repellers.

Sixty-three percent of the respondents are involved in crop rotation. This is practiced mainly in the home gardens and crops are cultivated according to the seasons of the year. Forty-five percent (70% in Makomoreng and 20% in Platt Estate) stated that they use small tins with small holes underneath to water crops such as cabbage when there is a huge need to do so and they use home made technologies to carry out the watering task. Initially in Makomoreng respondents stated that there was a pipe that drew water from the nearby river. It was used to irrigate the community gardens. Due to certain problems they are no longer using the pipe.

In both communities crop rotation is practiced mainly in the home gardens as respondents mentioned and they normally cultivate crops that are conducive for

particular seasons. Although crop rotation automatically contributes to soil conservation, respondents elaborated clearly that they are not aware of this. Forty-five percent of the respondents stated that windbreaks are essential when cooking outside because food is protected from dust and the fire is not easily blown by wind. Thirty-eight percent of the respondents mentioned that tree growing on edges of gardens helps in reducing wind and restores the removed soil.

In Makomoreng where the level of using conservation strategies is high, respondents stated that they are forced by natural agents (such as strong wind) to use these strategies, as they have never seen any environmental educators within the area. Fifteen percent of Makomoreng respondents are using fence and stones to reduce soil erosion. Eighty percent in Makomoreng and 10% in Platt Estate use windbreaks. In Makomoreng respondents stated that they have the problem of wind during winter months. Knowledge of using the above mentioned strategies are learned from older family members, neighbours and friends. In chapter two writers indicated that in rural areas knowledge is passed from mother to daughter or from father to son. In that manner ideas that function effectively are passed from generation to generation. Respondents indicated that as environmental educators have never visited their areas therefore strategies used to conserve the soil are mainly used for the sake of the community itself and are not practiced for environmental reasons.

Table 4.50: Pesticides used in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Chemical pesticide	6	15	10	25	16	20
Indigenous	24	60	22	55	46	58
Both	2	5	2	5	4	5
None	8	20	6	15	14	17

Table 4.50 illustrates different types of pesticides used in both communities. The use of chemical pesticides in both communities is very low as it appears in the above

table. Only 20% of the respondents (15% in Makomerng and 25% in Platt Estate) stated that they occasionally use chemical pesticides. Respondents further mentioned that chemical pesticide is mostly used to kill insects that harm crops such as cabbage that is easily targeted. But some of them stated that the use of such pesticides needs to be given serious attention because if not properly used people can be affected with dangerous diseases. The use of chemical pesticides needs careful supervision. The most used pesticide is the indigenous form of killing pests as 58% of the respondents (60% in Makomorenng and 55% in Platt Estate) stated that they use indigenous technologies such as ash and cow-dung mixed with water. This helps to avoid the crops to be affected by pests and crops such as potatoes when smeared with the mixture of water and cow-dung are not eaten by animals such as goats. Respondents further argued that ash mixed with water is used to chase away insects from maize containers. While 18% of the respondents stated that they do not use pesticides 5% of the respondents in each community said that they use both.

Table 4.51: Technologies used for seed storage in %

	Makomorenng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Tanks	18	45	6	15	24	30
Sacks	7	17	11	27	18	22
Tied on the roof	4	10	10	25	14	18
Inqolobane	3	8	3	8	6	8
Spread on the floor	8	20	6	15	14	18
None	-	-	4	10	4	5

The table above describes technologies used for seed storage. As mentioned earlier that both communities under study are rural areas, so technologies used in both areas have traditional background. Thirty percent of respondents (45% in Makomorenng and 15% in Platt Estate) are using plastic tanks (*ifatshi*), which are obtained from people with relatives in urban areas. Respondents stated that tanks store different types of seeds and crops such as maize, *amabele* and beans. They are very crucial for crop protection from pests because they have lids that are tightly closed. Therefore, people

using tanks have no problem of crops being devastated by mice and rats and there is no need to use pesticides. Twenty-two percent of the respondents (17% in Makomoreng and 27% in Platt Estate) stated that they use sacks when storing their crops. They further argued that rats and mice are the major problem. They emphasized that they really need plastic tanks but due to the lack of income they cannot afford to buy them. Pesticides to kill rats are occasionally bought when there is a huge demand to do so, especially in winter.

Eighteen percent of the respondents (10% in Makomereng and 25% in Platt Estate) stated that seeds such as maize are tied on the roof of the house where open fire is usually made. This is another traditional indigenous knowledge form of protecting maize from being eaten by pests. Respondents emphasized the importance of hanging the maize seeds inside the house where smoke-fire makes them black, which protects them from being eaten by pests. Eight percent of respondents in both communities mentioned that they are still using the old system of storing maize, that is the *inqolobane*. Although crops are exposed to rats but other insects such as ants that pose great damage to maize are easily chased away with ash mixed with water. The mixture is sprinkled inside the container. Other respondents using similar storage facilities pointed out that they sometimes smear the *inqolobane* with used brake fluid oil. This technique is also used to chase away small insects that damage maize. Eighteen percent of the respondents (20% in Makomoreng and 15% in Platt Estate) revealed that bean seeds are spread on dry floor so as to remain dry.

Plate 4.6: Technology for maize storage



Table 4.52: Domestic and agricultural technologies changed or modified by rural women in % (multiple responses)

	Makomoreng		Platt-Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Tin→ watering can	9	23	10	25	19	24
Tyre→ feeding dish	20	50	21	53	41	51
Gutter→ feeding dish	9	23	13	33	22	28
Tyre→ toilet sit	13	33	8	20	21	26
Tin→ blaze	1	3	7	18	8	10
Drum-→ nest	13	33	13	30	26	32
Drum→ oven	22	55	-	-	22	28
Wire → needle	-	-	24	60	24	30
Steel-bath→ nest	8	20	5	13	13	16
Steel-pot→ blaze	1	3	4	10	5	6

The table gives details of different domestic and agricultural technologies that were changed or modified by women to assist rural dwellers. It has been mentioned in the previous chapter that women in Zambia were able to create job opportunities using

discarded aluminium. This shows that waste material can be reused to produce another items that would be otherwise purchased.

Fifty-five percent of respondents in Makomoreng have shown great potential when they introduced ovens made from old drums to bake bread that was sold within the community. Although their business was unsuccessful due to insufficient income and skills to further it properly, they have proved that access to income and other improved technologies would make them prosper. Women have shown intelligence and great potential when considering the technologies involved in baking. They argue that building of the baking area was a result of shared ideas. No idea was undermined but it was tried to determine whether it would work or not. Respondents further emphasized that they really need to further their business because it was not just helping with food but they were able to make money and they were aware that if they progress effectually they would employ other community members.

When it is cold few respondents (3% in Makomoreng and 18% in Platt Estate) revealed that they use small empty drums and old steel pots to make the blaze. A blaze keeps the household warm for a long time compared to an open fire. Other technologies include the drum and the old steel bath being used as the nests. Thirty-two percent of respondents (33% in Makomoreng and 30% in Platt Estate) use old drums where fowls lay their eggs whereas 20% in Makomoreng and 13% in Platt Estate also use old steel bath for the same purpose. This technology protects the fowls from being eaten by cats and dogs and other wild animals.

Additionally, 51% of the respondents (50% in Makomoreng and 53% in Platt Estate) stated that tyres are used to keep water for fowls and used to feed pigs. Other respondents stated that tyres are also burnt when people need to chase snakes away. The researcher observed several households with tyres used for different purposes such as protecting the soil from being removed. Twenty-eight percent of the respondents (23% in Makomoreng and 33% in Platt Estate) stated that they use old water gutters for fowls to lay their eggs. Sixty percent of respondents in Platt Estate

are using wires to make needles that are used when thatching roofs. Technologies that are developed or modified from used materials are common in both communities. Respondents specified that by making the technologies they need most, they save money that would be spent when purchasing modern technologies.

Plate 4.7: Photos below show technologies used to protect fowls from wild animals



4.11.2.1 Solid waste

All respondents indicated that they dispose their wastes by burying them in the garden. Although the re-use of waste can contribute to reducing costs associated with purchasing agricultural input and other chemical fertilizers, respondents pointed out that they do not use the buried waste as compost because of the lack of knowledge and they are not separating the biodegradable from non-biodegradable waste.

4.12. INFORMATION COMMUNICATION TECHNOLOGY

Table 4.53: Communication network available in the communities in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Television	2	5	3	6	5	6
Radio	35	88	38	95	73	91
Landline	9	23	-	-	9	12
Cellular	1	3	15	38	16	21

The above table explicates different forms of communication networks available in both communities. Ninety-one percent of the respondents (88% in Makomoreng and 95% in Platt Estate) use radios. This is the most used network in both communities as there is no electricity. Six percent have televisions that use batteries. Respondents stated that they like televisions but the problem is that there is no electricity and they can't afford to charge the batteries. Even the households that have televisions experience the problem of charging the batteries, sometimes the appliance ends up being unused due to the shortage of energy.

Twenty-one percent of respondents (3% in Makomoreng and 38% in Platt Estate) have cellular phones. In Makomoreng respondents stated that cellular phones are sometimes not operating due to the absence of signals or network whereas in Platt Estate they do not have such problems. Women in both communities emphasized the importance of having the cellular and landline phones. As mentioned earlier, women in Makomoreng are active, most of them are involved in community projects as the area is concerned with the attraction of tourists. They argued that there is no other way in which they can know when there will be tourists coming there except communicating with cellular phones. They further argued that cellular phones are used more as compared to landline phones that are sometimes damaged by lightning. In order to prepare for the tourists, information is passed from one woman to another until all of them are informed.

As mentioned in chapter two that cellular phones play a major role in the flow of information, women are able to have ideas about what is happening to their relatives in different parts of the world. Respondents in Platt Estate revealed that in order to get information from government officials who are settling the issue of land with local residents, cellular phones are the only means by which they are informed. Respondents stated that cellular phones also assist them when they want to contact the extension services as they usually request them when they need assistance. Although respondents mentioned that they have seen a computer, they do not know how to use it because they are not familiar with any packages.

4.13 HEALTH TECHNOLOGY

Table 4.54: Methods used to treat the family in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	n=40)	%	(n=80)	%
Granny's method	20	50	21	52	23	51
Modern method	12	30	13	33	5	32
All	35	88	31	78	57	83

Although it was not easy for the respondents to agree that they use granny's method (traditional medicines), the researcher managed to extract information, using examples of illnesses that usually affect people on their daily basis and asking methods they prefer most. Eighty-three percent of the respondents (88% in Makomoreng and 78% in Platt Estate) use both granny's and modern medicines. Thirty-two percent of the respondents use modern medicines. Respondents illustrated that they sometimes buy modern medicines in town. Fifty-one percent of the respondents stated that they use traditional medicines when curing minor illnesses such as diahorrea and coughs. As mentioned earlier, traditional medicines serve an important role in remote areas where even mobile clinics are not available, in both communities natural resources such as the tree barks and certain vegetation leaves are mixed and used as treatment.

Respondents in both communities stated that knowledge of using traditional herbs is obtained from older household members such as mothers and fathers. They further argued that traditional medicines are commonly used, as there are no clinics and doctors available in the area. Sometimes they get herbs from the traditional healers who are available in both communities. It has been mentioned earlier that in Makomoreng transport is very scarce as there is only one bus that goes to town in the morning and returns back in the evening, so when there are emergencies people experience difficulties. In Platt Estate the situation is better as there are buses and taxis that operate within the area, so when there is an emergency it is not difficult to get the transport to the clinic.

In both communities the level of using natural resources such as tree barks and plant leaves is higher. Respondents stated that women have no access to the collection of traditional herbs when menstruating because there is a belief that tree will dry up if touched in that condition. They also believe that medicine will not work if used when having periods. There are no other restrictions except in the collection of certain trees that are not touched in summer because they are dangerous as they absorb lightning.

Table 4.55: Diseases prevalence in % (multiple responses)

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
TB	12	30	18	45	30	38
High blood pressure	5	13	10	25	15	19
Diarrhoea	4	10	2	5	6	8
Sugar diabetes	4	10	6	15	10	13
Heart attack	3	8	4	10	7	9
Swelling of the body	1	3	-	-	1	1
Sores/ Rash	9	23	4	10	13	16
Headache	7	18	5	13	12	15
Backache	4	10	6	15	10	13
Asthma	-	-	1	3	1	1

Thirty-eight percent have family members affected by tuberculosis. Thirty-two percent of the respondents mentioned that their families have the problem of sores. They further stated that children are the ones severely affected. Respondents argue that the absence of health institutions in the areas perpetuate the diseases such as sores because affected children receive no treatment and the illness spreads easily to other family members. Nineteen percent of the respondents have the problem of high blood pressure.

Respondents in Makomoreng also illustrated that they cannot afford to travel to town because they have to collect the treatment monthly. Respondents in Platt Estate further mentioned that diarrhoea has struck them severely. Although they did not mention the causes of other illnesses in the community, they stated that they think sores and diarrhoea are related to the pollution of the water they normally use for domestic purposes. Respondents indicated that they have the problem of backache and are usually affected by headache. Most of the households have traditional herbs around them but respondents revealed that they are not planted to meet the dwindling level of environmental species.

Table 4.56: Physically challenged in %

	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Blind	1	2	-	-	1	1
Deaf	1	2	-	-	1	1
Crippled	3	8	4	10	7	9
Dumb	-	-	2	5	2	3
None	35	88	34	85	69	86

In both communities, respondents mentioned that they have disabled people in their households as the above table shows. Respondents further argued that although crippled people are using equipment such as crutches to assist them, they do not get any assistance and specialized treatment within the community.

4.14 GENERAL

Table 4.57: Problems experienced in %

Problems	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Access to services	24	60	16	40	40	50
Lack of employment	37	93	36	90	73	91
Financial constraints	32	80	29	73	61	76
Access to credit	20	50	20	50	40	50
Lack of irrigation capacity	25	63	28	70	53	66
Absence of advice centre	28	70	20	50	48	60
No markets	32	80	32	80	64	80
Lack of information	24	60	22	55	46	58
Lack of police services	32	80	16	40	48	60
Crime and violence	24	60	-	-	24	30

Ninety-one percent of respondents emphasised that lack of employment is the major problem they really experience. Respondents mentioned that lack of job opportunities create subordination because they have to depend on males for whatever they want to

do. In Platt Estate respondents pointed out that although job opportunities are a major problem, in the past they were able to address their needs because some of them have been working on the farm and others work in the nearby forests. Respondents in both communities further argued that the problem of unemployment is severe among the youth. Eighty percent of respondents in both communities also revealed the problem of markets in these communities. They stated that absence of markets create financial constraints. Although respondents are cultivating for subsistence but the remaining production is sold to other community members. They stated that most of the perishable produce rot. The need for a market is important for both communities since it would be a place where they can sell their produce.

Respondents further emphasised that community members would get an opportunity to exchange ideas with other people outside their area. Having a market will also give the respondents an opportunity to expand their operations making a livable income. Being able to sell their agricultural goods will also allow them to purchase other essential technologies; it can be agricultural or domestic technologies. Rural women have no alternative other than using the resources available within the community in order to generate income for themselves and their families. Such income would be needed to disconnect the chains that hinder them from advancement in all other aspects. Income received from the selling of goods will give women financial independence.

Sixty-six percent of the respondents (63% in Makomoreng and 70% in Platt Estate) stated that lack of irrigation capacity create barriers for women to further their tasks efficiently. In Makomoreng respondents argued that there is only one household with sprinkler irrigation. In both communities respondents mentioned that in winter they use small empty tins in order to water their crops. They further argued that lack of irrigation capacity has a great impact on the yields they produce because they believe that availability and accessibility to the irrigation schemes would lead to higher yields.

Sixty percent of the respondents (70% in Makomoreng and 50% in Platt Estate) mentioned that lack of advice centres in these communities is seen as another problem that really affects them. In both communities women are engaged in more than one strategy in order to meet life challenges. They illustrated that advice centres would assist them when there is something they want to develop such as small businesses. These centres will provide them with necessary information as 58% of the respondents stipulated that they lack information that will assist them to further their multiple tasks.

Sixty percent of respondents in Makomoreng mentioned that lack of police services in area has resulted in other fields being left unplanted because thieves steal livestock that is used for ploughing and planting. In order to solve the above mentioned problems respondents in both communities have stated that:

- There should be more development projects from both the government and the NGOs where local people would get job opportunities.
- Government should play an incentive role in bringing the infrastructure. This would assist in improving the standards of living in local communities. For example, in Makomoreng roads are in a bad condition, therefore the construction of proper roads would assist the local dwellers to obtain more transport as respondents pointed out that transport owners are complaining about bad roads. They would also get job opportunities in the construction of those roads as it happens in the Working for Water Project.

- Government should aid community members by giving them credit in order to help those who are willing to open small businesses including the youth who have completed matric but stay at home due to lack of job opportunities. This will also assist in the creation of more job opportunities because the local community members will be able to employ each other.
- NGOs should contribute financially in developing structures that would empower the youth with skills such as bricklaying, brick making and other significant skills.

Table 4.58: Problems experienced when using technology in %

Problem	Makomoreng		Platt Estate		Total	
	(n=40)	%	(n=40)	%	(n=80)	%
Financial constraints	12	30	20	50	32	40
Maintenance	1	1.5	4	10	5	6
Theft	2	5	-	-	2	3
Time constraints	2	5	3	7.5	5	6
Diminishing skills and capacity	3	7.5	-	-	3	4
Inadequate resources (such as land) to use technology	18	45	13	32.5	31	38
Monopolizing	2	5	-	-	2	3

The main problem experienced in relation to the use of technology is financial constraints as indicated by 40% of the respondents. Six percent of the respondents (3% in Makomoreng and 10% in Platt Estate) pointed out that they also have the problem of maintenance, as there are no technicians around their areas. In both communities respondents revealed some of them have sewing machines. They therefore indicated that they want to have knowledge of how to do the repairs. Eight percent of respondents in Makomoreng also identify the problem of having insufficient skills and capacity to use other technologies. They made an example of their bakery that collapsed and emphasised that some of their production was wasted because of the above-mentioned problem.

Thirty-eight percent of the respondents (45% in Makomoreng and 33% in Platt Estate) indicated that the major problem associated with the use of technology is that they do not have land in which they can perform their activities freely, especially in Platt Estate where the issue of land is still debatable. In both communities respondents mentioned that they do not have enough time to learn how to use other technologies. It is not surprising that women do not have the time since they are constantly involved in multiple tasks. However, if they are prepared to spend some time learning how to use the new technologies, it would save them time in the future because they will be exposed to improved technological methods and tools that save time and increase output.

Table 4.59: Technology aspirations

<i>Technologies required</i>	<i>Reason for requirement</i>
Tractors	Reduce workload. Able to cultivate more crops. Assist in producing more yields.
Fence	Protect the crops from being devastated by livestock.
Watering pipes	Assist in winter to water those crops that need water such as cabbages.
Wheel barrow	Needed to transport input and output
Domestic technologies such as refrigerators and stoves	Refrigerator- able to store food and sell perishable products. Stove – makes cooking easy. Able to bake cakes and generate income.

Respondents from both communities outlined that the major problem with regards to acquiring technology is the lack of capital. Their aspirations include fences which they hope will protect their crops from livestock. They stated that watering pipes would help in increasing the production as some of their crops need water in winter.

Respondents in both communities declare that they use their heads when transporting the output and input. They therefore indicated that wheelbarrows would reduce workloads. All respondents mentioned that technologies such as refrigerators are very useful, especially in summer when food easily rot. Respondents also emphasised that stoves will assist when cooking as food is prepared in more than one pot. When asked about future technology training, responses outlined that they need to know how to manage small businesses and how to use technologies. Some of the respondents stated that there is a great need for training the youth so that they will have skills that would equip them to be job creators rather than job seekers.

Table 4.60: Advantages and disadvantages of having technology

Advantages	Disadvantages
<ul style="list-style-type: none"> • Reduces work load • Makes difficult tasks easier • Increases production • Generates income • Reduces hunger and store left food in refrigerator. • Cooks quickly 	<ul style="list-style-type: none"> • Repairs are expensive • Expensive to purchase

All respondents indicated that technology reduces workload as more work is covered within a short period of time. They further stated that technologies such as tractors make difficult tasks to be easier. In Makomoreng where the soils are not good, respondents mentioned that they obtain better yields when using chemical fertilisers. In both communities the use of technologies plays a vital role in generating income. Although respondents find it interesting to mention several advantages of using technologies, the major limitations for having technology is its high costs, which seems like a factor that really hinders them from progressing effectively. It is obvious that women regard technology as something that would save them time and make their work much easier, however, the high costs associated with purchasing of technology is an obstacle that hinders them.

Figure 4.1: Problem Ranking Matrix- Makomoreng

Problems	F	IS	T	NM	BP	AS	NF	W
F	<input type="checkbox"/>	F	F	F	F	F	NF	F
S	<input type="checkbox"/>	<input type="checkbox"/>	T	NM	IS	IS	NF	IS
T	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NM	BP	AS	NF	T
NM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NM	NM	NF	NM
BP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AS	BP	BP
AS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AS	AS
NF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NF
W	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Problem	Scoring	Ranking
1. Lack of funds for infrastructure (F)	6	1
2. No irrigation schemes (IS)	3	4
3. Lack of training (T)	2	5
4. No markets (NM)	5	2
5. Lack of business plans (BP)	3	4
6. Lack of agricultural skills (AS)	4	3
7. No fencing (NF)	5	2
8. Problem of weed (W)	0	6

Most of the respondents reveal that lack of funds was the main obstacle because they are unable to continue their activities properly. The majority of the respondents mentioned their projects that collapsed due to financial constraints. The unavailability of a market in Makomoreng scores five points. Respondents complained about their produce that ends up rotting in the fields because they have no place to sell it. The exposure of fields from livestock also scores five points. They further argue that

livestock devastates their crops because they have no fence. Some of the respondents make recommendations to protect their crops from animals. They stated that there should be laws enacted so that animal owners will take care of their livestock. Lack of business plan scores three points. Respondents mentioned that a business plan would help them when they start their bakery business again. Also, respondents involved in the sewing project emphasized that they need training and business plan.

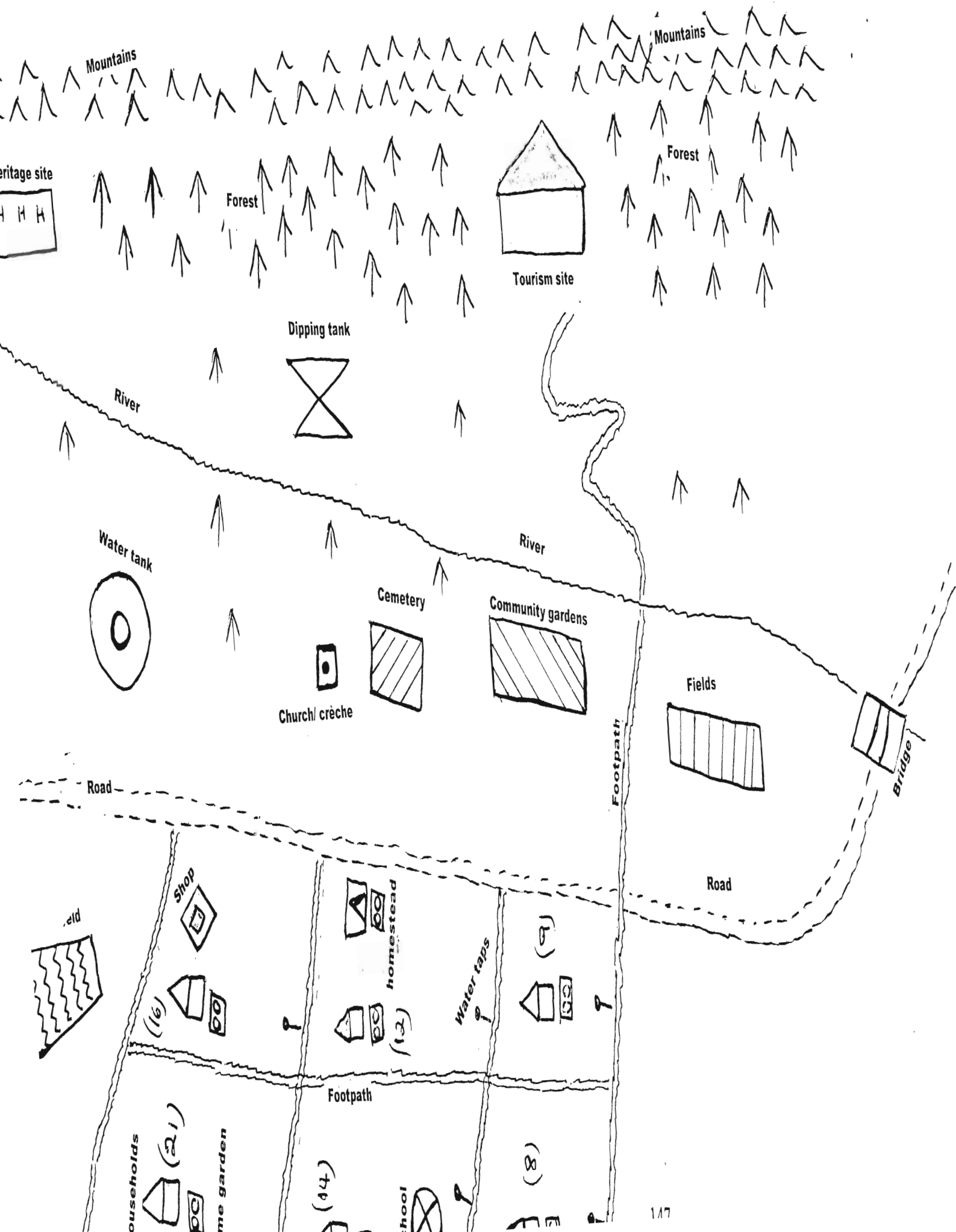
Figure 4.2: Problem Ranking Matrix- Platt Estate

Problems	F	EL	T	W	C	S	WF	IS	L	AC	M
F	<input type="checkbox"/>	EL	F	W	F	F	F	F	F	F	F
EL	<input type="checkbox"/>	<input type="checkbox"/>	EL	W	EL	S	EL	EL	EL	EL	M
T	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	W	C	S	WF	IS	T	AC	M
W	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	W	W	W	W	W	W	W
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C	C	C	C	C	C
S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S	S	S	AC	M
WF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WF	WF	AC	M
IS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IS	IS	M
L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AC	AC
AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	M
M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

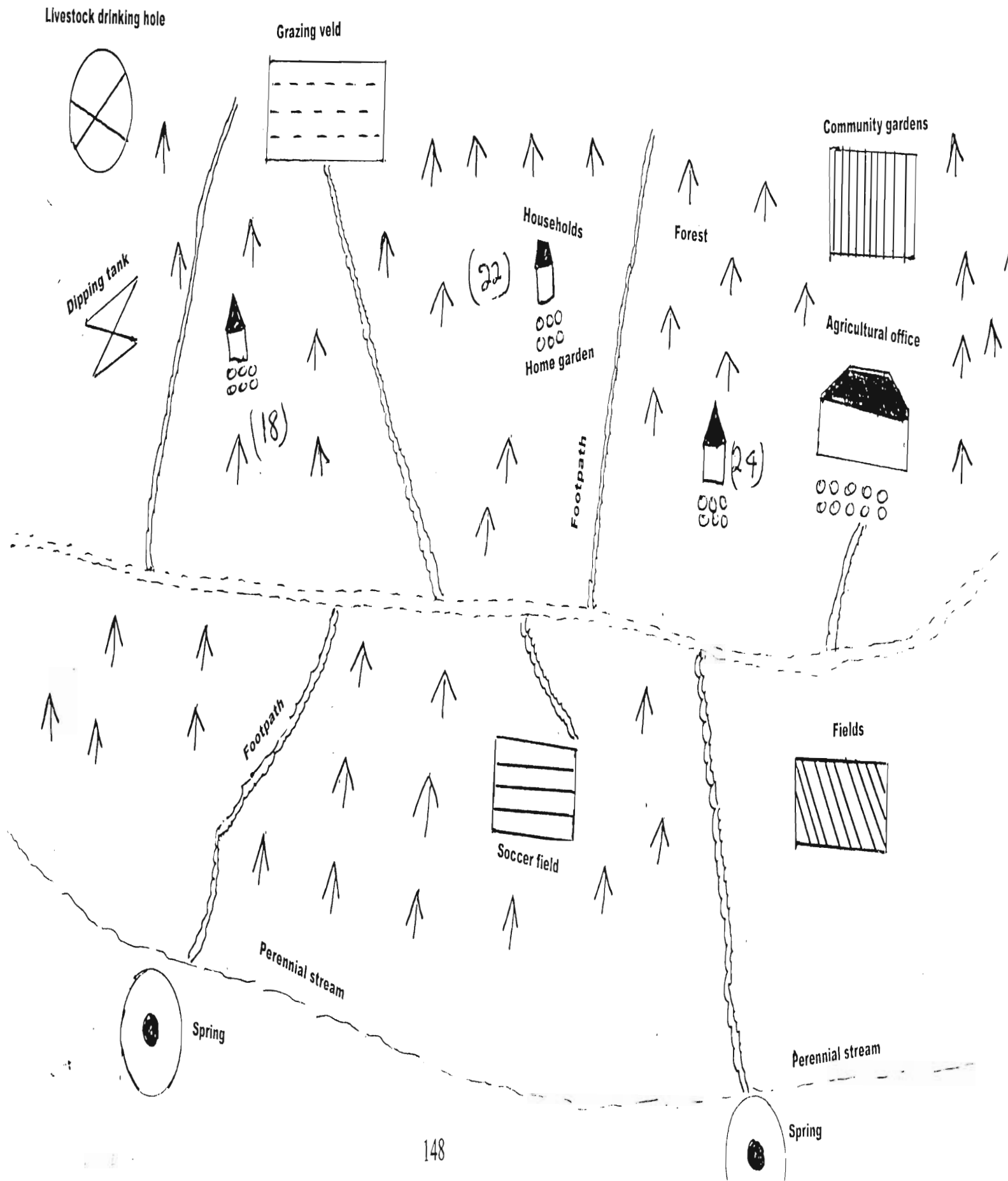
Problem	Scoring	Ranking
1. Funds for infrastructure (F)	8	2
2. Electricity (EL)	7	3
3 Telephone (T)	1	8
4. Water services (W)	10	1
5. Clinic (C)	7	3
6. School (S)	5	5
7 Wire to fence (WF)	3	6
8 Irrigation system (IS)	2	7
9. Latrines (L)	0	9
10. Advice centres (AC)	5	5
11. Market (M)	6	4

In Platt Estate focus groups were conducted with the intention of extracting respondents' views. The problem of clean water was ranked as one. Respondents emphasized that the unavailability of clean water in the area causes health problems as they use water from the spring. The exposure of domestic water from surface runoff and other pollution oblige the community to rank the problem of water as one. Lack of funds for infrastructure was ranked two. Respondents pointed out that they really need basic services in the area. Absence of electricity and clinics was ranked as four. Respondents mentioned that electricity is essential for different purposes but they mostly need it to store food and be able see from the television what is happening in other countries. They further mentioned that a clinic is important for health problems as respondents indicated that they are confronted with severe problems when there are emergencies. The problem of markets was ranked as five. Respondents complained about their production that is physically demanding but end up rotting because they have no place to sell it.

MAP 2: MENTAL MAPPING OF MAKOMORENG



MAP 3: MENTAL MAPPING OF PLATT ESTATE



Map 2 and 3 are mental maps that were drawn by respondents in both communities. As depicted in chapter three, mental maps show important geographical features as well as natural resources, respondents in both communities show how they perceive their immediate environment. Mental maps provide a clear picture even to the outsiders as respondents in Makomoreng illustrated forested areas. It is noted that natural resources such as fuel and traditional medicines are far away from the homesteads. The community gardens are also located on lower parts of the valley close to the river where there are fields. Although cultivated lands are along the river, it is obvious that technologies that would assist in watering the crops is very crucial as stipulated earlier that collecting water to and from the river require several trips. The availability of technology would assist in reducing time spent while moving up and down the river.

In Platt Estate the fundamental problem is the availability of clean water. The mental map of Platt Estate indicates two springs and one stream that are used by the community for domestic purposes. It is evident that more time is spent on collecting water as the slope of the area is steep. Technologies that would assist rural women to overcome the problem of wasting time on non-productive activities would be essential. The majority of the households in both communities have home gardens that play a vital role in supporting the families with vegetables. Different crops are cultivated according to the seasons of the year. Although respondents mentioned that they rely on natural precipitation, other crops such as cabbages that are cultivated in winter sometimes needs water to give better yields. Therefore, technologies that can do the task easily would mean that more time is spent on productive tasks.

Figure 4.3: Venn diagram of Makomoreng

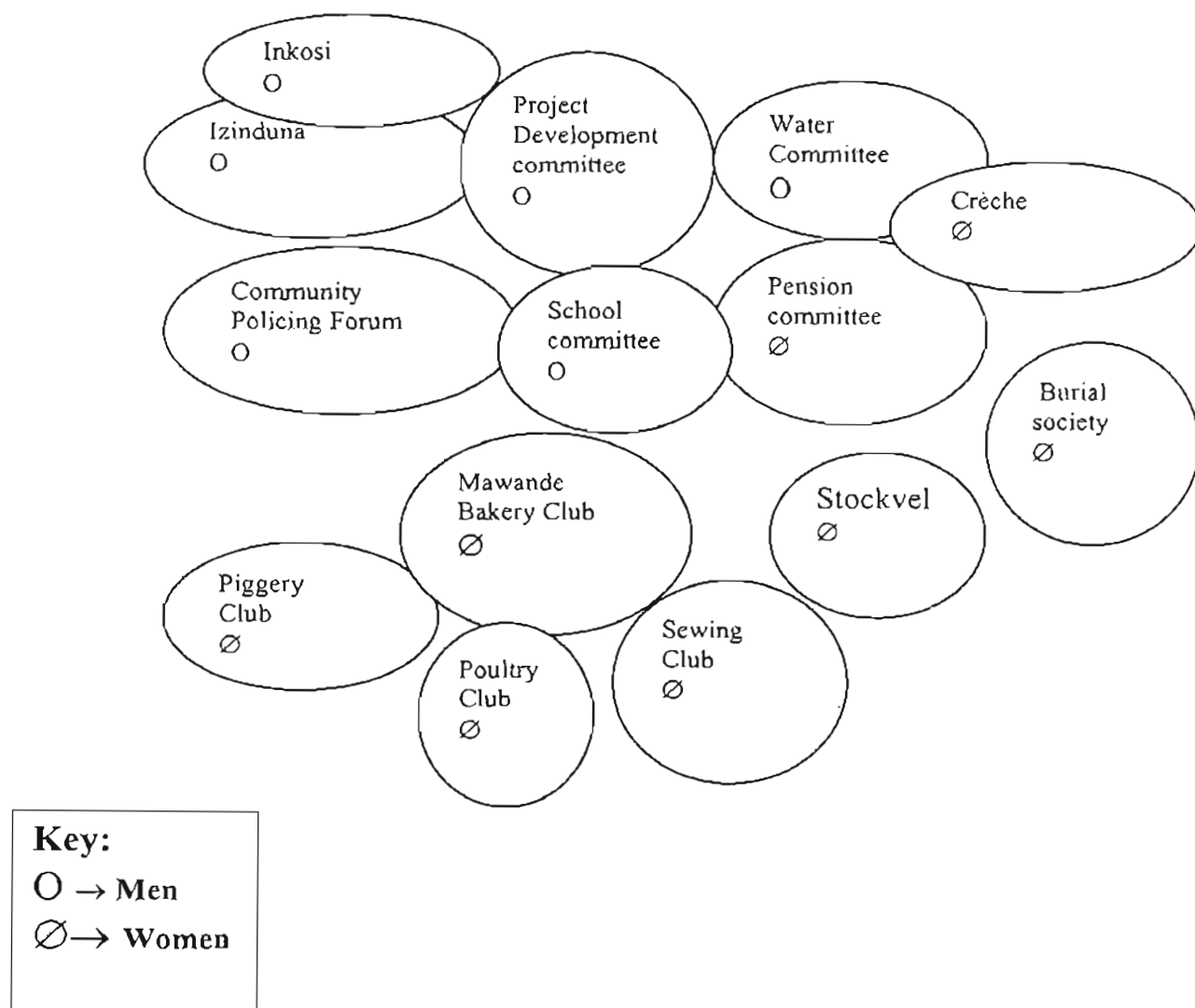
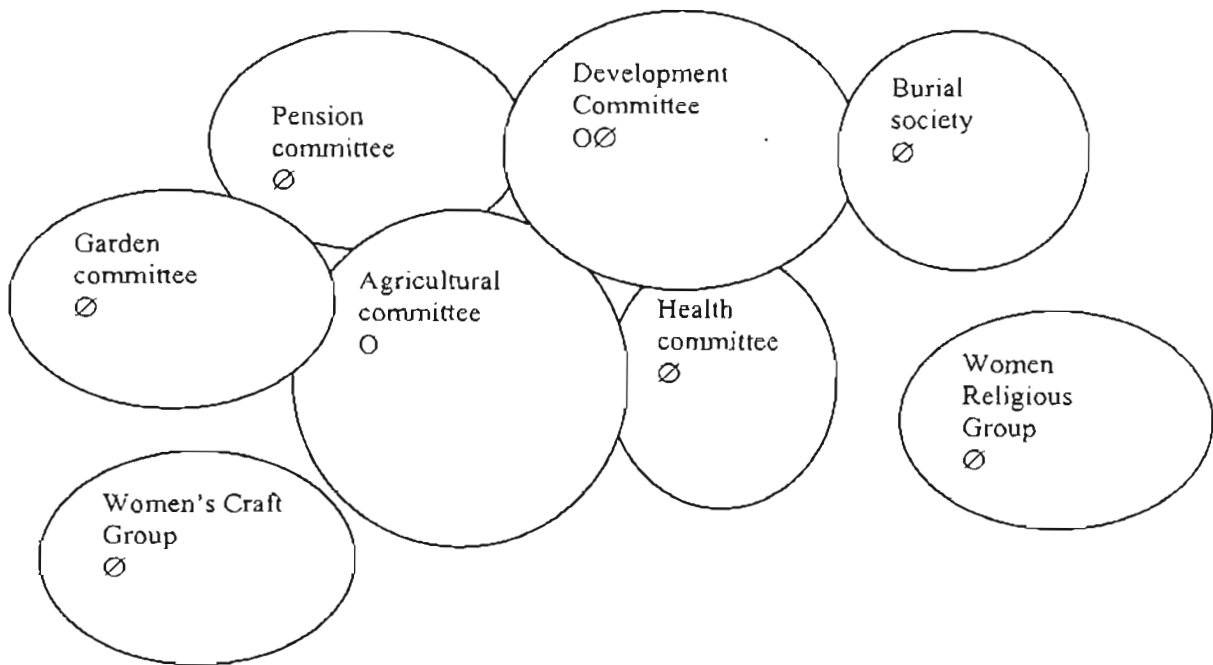


Figure 4.4: Venn diagram of Platt Estate



Key:

$\bigcirc \rightarrow$ Men

$\emptyset \rightarrow$ Women

Figures 4.3 and 4.4 are venn diagrams that were compiled by the focus groups in Makomorenge and Platt Estate. The focus group was requested to identify and rank institutions operating within the community. They had to rank them according to their importance and their influence in decision-making power and show the relationship between and among them. The overlap of circles shows the overlap of members, functions and decision-making power. Information in the above venn diagrams helps in understanding how decisions appropriate to the development activities are handled. This would help in formulating a clear picture regarding access to the use of technology because members involved in the development activities have greater access in decision-making as well as greater access to technology use.

During discussions with the focus group in Makomorenge it became obvious that although the Project Development Committee as well as other small committees have the ability to take decisions in their meetings, the chief and the *izinduna* has the authority to verify all those decisions. It is therefore clear from the responses that very few people in the community directly or indirectly dominate most decision-making structures.

The venn diagram also reflects the non-aligned community based groups whose functions are related to the welfare of the community members, that is, the burial society, stockvel, piggery, bakery and sewing clubs. These structures are community-driven institutions where local community function on their own. Respondents in Makomorenge revealed that although the Mawande bakery collapsed, they managed to obtain financial aid from its members. Other small project groups borrow money if they are really desperate and it is paid with little interest.

4.15 CONCLUSION

The gendered nature of rural women's lives and their access to different technologies cannot be neglected or ignored. This is particularly severe in rural areas of KwaZulu-Natal where high levels of poverty persist and where the re-invention and re-assertion of tradition is strengthening patriarchy. Most of these rural women face severe problems such as illiteracy, low education levels and poverty, which sometimes

prevail as a result of low levels of women in decision-making structures. Added to this, they have no direct relationship with any of the men who make the decisions whether they are married or single because most of the men are in cities, employed or seeking employment. These women are therefore forced to take control of the household, often with little or no financial support.

Due to multiple activities in which rural women are involved in order to sustain their livelihoods, it is obvious that they really need access to technologies. Results from the data collected in both communities show that there are several obstacles that hinder women from accessing technology. Rural women engage in different activities that demand technologies in order to function effectively but due to the lack of income or financial constraints they then decide to develop or change other used equipment so as to make relevant technologies that might do the work but not entirely reduce workloads.

Some of these technologies serve as a critical tool in reaping the required production, for example, the use of tins to irrigate crops is a time consuming task but women are aware that in order to sustain their families crops need moisture to give better yields. It is therefore obvious that women need technologies together with skills as they mentioned that lack of agricultural and business skills hinder them to progress according to their wishes. Their involvement in both agricultural and non-farm activities such as craft making and beer brewing indicate that women have no time to rest. Access to technologies would contribute dramatically in moving them from where they are to better living conditions.

Involvement of women in decision-making structures could reduce poor access to technologies. For example, the venn diagrams show that males dominate the powerful community structures. In the previous chapter it was revealed that women are responsible for many community activities, as some of them are heads of the households due to *de facto* and *de jure* reasons. However, the minority of males have

the ability to control the most important productive structures that are supposed to be controlled by women as they form the larger percentage of rural dwellers.

Women do not solely embark on assisting their families but they manage to help the entire community. Their inability to use technologies such as tractors and ox-drawn ploughs is a clear indication of cultural barriers. They prefer the use of hand tools to cultivate the soil in both communities rather than waiting for males who are responsible for the above-mentioned technologies to assist them. This shows that women have a great potential of progressing with their daily commitments even if the required ingredients are missing. Therefore, provision of the relevant incentives would contribute to finishing many tasks within a minimal time.

CHAPTER FIVE

RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

The main objective of this concluding chapter is to summarize the main research findings and forward recommendations. In the light of the literature review, conceptual framework and data analysis in the previous chapters, general conclusions about women and access to technologies are presented. Since the aim of the study is to examine barriers rural women have in accessing technology, research findings would be evaluated in order to ensure whether the research objectives have been met or not.

First objective

To investigate the socio-economic conditions of women in the case study areas. According to the research findings, communities in the study areas can be said to be among the communities that live below the poverty line. The majority are unemployed. They rely on agricultural production to sustain their families, while others obtain government grants (pension and child grants). Although there are development projects within the areas, people lack relevant skills and the high rate of illiteracy is among the reasons that pull the communities down. The research findings reveal that in both communities most respondents did not get an opportunity to attend formal education because in those days women were not encouraged to involve themselves in such aspects. Their access to essential technologies is hampered by insufficient knowledge.

Second objective

To evaluate women's access to technology. Although people are living in a democratic era, it is important to note that not all of them are enjoying those benefits. The research findings imply that patriarchy still exists mainly in rural areas. This is sometimes against the democratisation of the household structure. Women have no access to certain technologies, especially those related to the status such as tractors. In both communities there are no women who can drive the tractors due to taboos and gender problems. They have minimal access to the ownership of assets such as land

and livestock. Only widows have the full right to own land. Unmarried women are supposed to have sons who would own the land on their behalf. Even those women who own livestock do not have full rights because they have to be permitted by their husbands if they want to sell. This impedes women to purchase required technologies so as to further their tasks accordingly because they need to wait for the males to make decisions.

Third objective

To examine the roles of women in community development institutions and their concomitant impacts on their access to technologies.

Although women are involved in community development structures, they do not have the full potential. It has been revealed that men have the tendency to occupy higher positions. This further impacts women, as they have minimal access to decision-making processes. Their access to technologies used within the communities is dependent on males as they are the ones responsible for making decisions. An obvious example is the case where meetings are held together with the chief. Women are totally excluded. They are just informed about what has been discussed together with the final decisions that are taken.

Fourth objective

To assess the problems rural women face in accessing technology.

Generally, problems faced by women in accessing technology can be related to gender differences. As mentioned above the patriarchal issue which promote male superiority results in women's subordination. Although women together with children form the majority of people living in rural areas, the socio-cultural barriers hinder them access to relevant technologies. There are old fathers within the rural communities who strongly support traditional customs that deny women views.

Lack of infrastructure such as proper roads, schools, televisions and post offices are among issues that cause access to technologies to be a major problem. People living in rural areas have limited networks. They also lack transport due to roads that are in

bad condition. Women in the study areas revealed that televisions and radios would play a major role in transferring information. They may even learn new techniques to meet their challenges. However, the unavailability of such technologies creates barriers because they fail to obtain more knowledge. Financial constraints were among the main problems that hinder women to access technologies since the modern technologies that could assist women to carry out their cumbersome tasks efficiently are costly.

Fifth objective

To examine whether women are innovating or adapting existing technologies in poor rural communities.

In both communities women are sharing ideas in different activities. An example is the sewing project where women mentioned that they enter the project with no skills of sewing. There were only few among them who have sewing skills. They are now selling their items to the tourists and in the community. Profits are shared among them and the remainder is kept to purchase the following year's stock. Also, in the community garden and in the bakery projects, women are adapting new technologies that are learnt from other women involved in cultivation and baking. The bakery project is an example where women built the entire baking system from natural resources and discarded metal waste. Other technologies that are relevant to women's tasks are developed and changed by themselves or learnt from relatives or neighbours, an example is the traditional technology for making sleeping mats. Such technologies are not purchased but they are developed by rural women to meet their needs.

Sixth Objective

To examine the impacts of access to technology on women's lives.

The accessibility of technologies on women's lives may contribute to developing their well-being and improve their standards of living. Through technologies that are made from used materials, they proceed with tasks and are able to produce subsistence crops and items and the remainder is sold to other community members. Women's involvement in multiple activities plays a major role in poverty alleviation. Research

findings illustrate that if rural women can be provided with proper technologies, they may win the battle of fighting poverty. In both communities women are innovative and creative. They have developed and changed multiple technologies, with the intention of generating additional income for their households. In Makomoreng the soil in the home gardens is infertile. Women use tins and plastic containers to water their crops. Although their access is sometimes hampered by the fact that they do not have enough income to purchase other technologies, they manage to find alternatives. In both communities women are involved in stockpiles, which is one of the ways of saving the money for later use. They also make traditional items from natural resources such as sleeping mats and containers for beer brewing. This is sold outside and inside the community. They also use indigenous knowledge to preserve food for later use.

Seventh objective

To examine the types of technologies rural women have access to in different contexts.

Women are using several technologies, which are mostly for domestic use. An example is the coal stove, which assists in cooking more than one pot while warming water at the same time. Coal stoves save time because there is no need to look after the fire. It makes cooking to be an easy task. According to the research findings, ready-made technologies (for example, ploughing machines) are available for community use, but women reveal that such technologies are mainly for men.

5.2 SUMMARY OF MAIN ARGUMENTS

Rural women in both areas of study are facing major problems when conducting their cumbersome tasks. Their low access to relevant technologies needs to be given serious attention. We know that when we are talking about rural areas we are not merely referring to those areas exposed to development activities, there are those in remote locations, where there is no infrastructure. In most of these areas women are generally not included in development structures due to taboos and prevalent patriarchal attitudes and notions.

Rural African women contribute to the economic growth of the country. However, they have not realized their full potential as recognized farmers due to cultural barriers and development policies that tend to favour male farmers. The literature in chapter two revealed that extension services have the ability not to perceive women farmers as people that need to be given skills and capacity as they do to male farmers. Although in the areas studied respondents mentioned that extension services talk to both gender groups, but males have more access than females as they mentioned that men have more time spent on their issues and women tend to lose their focus and end up supporting issues raised by men.

Traditionally, women have not owned or inherited specialized assets, including land (AFRA, 2002). This has had a dramatic impact when it comes to improving the well being of rural women. They are highly dependent on land to meet life challenges as their daily interaction with the environment proves that they know more about the soil. Although rural women's access to land is so limited compared to their male counterparts, they manage to be perceived as agricultural producers as Nkhoma-Wamunza (1992) and Yoon (1995) state that 70% to 80% of food is produced by women. It is therefore important for the women to be given rights on land so as to further their activities pragmatically.

Kabadaki (1994) mentions that women are not the beneficiaries of their labour. They usually sweat in whatever they want to achieve in life as it happens to women in the study. They engage in small community organizations in order to obtain credit so as to further their tasks because they have no access to formal credit as they lack collateral. They are, however, not included in decision making for selling their produce. Rural women's status is more likely to improve if special programmes are established and efforts are made to provide them with necessary information and knowledge. They also need to be motivated for taking advantage of these programmes. The intervention of government and assistance from NGOs would be appreciated because they will develop loan structures with little interest where women will have access and afford to pay the required interest.

The availability of some technologies in areas that have been studied indicates that there should be monitoring from government organs and local authorities because community members have unequal access. For example, the government has brought a tractor in Makomoreng with the intention of assisting the whole community, but some of the community members stated that they are using hand tools because they cannot afford to pay money needed when the tractor has been requested to plough. Some of the land is left uncultivated due to lack of income. This has contributed to the shortage of staple foods such as maize and beans.

For the rural areas to survive it is the responsibility of the government and the people themselves to make sure that they have equal access to the available services and resources. The provision is the problem but in some instances the problem might be the distribution and access to the legal services that the people need. In the provision of the services it is both the public and the private sectors that should take the initiative. Another aspect to be considered is that there should be no discrimination that the private sector have the expensive services that rural people cannot afford because this would lead them to turn to the public sector that offers the services that does not satisfy the people at large. The physical barriers cause the inaccessibility where there is a lack of one service to improve the other. For example, the deep rural

areas are without good quality roads so it is not easy to make health care available to them, and also the absence of transport may result in poor road conditions. For any society to survive four things need to be considered. Services are available, accessible, acceptable and appropriate.

5.3 RECOMMENDATIONS

Rural women are tied up with unproductive time consuming domestic tasks, which need more energy. They have less time for continuing with productive tasks. The availability of technologies such as appliances would reduce time spent on these tasks and increase the time one spends on productive functions. Government needs to make more efforts in meeting the needs of desperate rural communities. They have shown great potential struggling in order to meet life challenges through their innovative and creative ideas.

In both communities that have been researched women pointed out that they are now able to produce more than subsistence. They sell their production to other community members. They emphasized that the absence of markets in their area causes their yields to rot in the fields. The researcher therefore recommends that rural women should be provided with markets where they manage to generate income.

The availability of electricity in deep rural areas as the government promised installations would contribute in meeting the challenges faced by rural women. They will get more time to further their productive tasks and this will reduce health related problems as some of the respondents in Makomoreng stated that they have the problem of backache and headaches that might be the results of heavy loads they usually carry.

The provision of basic services such as clinics and schools would be of great importance in these communities. Respondents have pointed out that lack of proper knowledge in the use of technologies is related to the lack of understanding due to illiteracy. In order for these communities to progress with their tasks efficiently,

education will help in creating self-confidence and promote self-esteem. Respondents in these communities, especially in Makomoreng stated that other community members have the tendency to isolate themselves when they are developing something because they undermine themselves as people who have nothing to contribute. Availability of adult schools would help in overcoming such problems. Respondents in both communities have shown great interest when asked whether they would like to have adult basic education and training (ABET) in their areas. This proves that if such structures would be open for them, they would actively participate.

The government should develop techniques that will enhance specialists to work with rural communities. It is obvious that rural women have innovative ideas, but their problem is that they lack skills and capacity. The effective transfer of technology is critically important for agricultural and other development activities, especially for poor rural women. They manage to change technologies so as to progress with their daily demands. The transfer of knowledge and the development of indigenous capacity to generate ecologically adapted and economically viable agricultural and domestic technology are vital to the progress of less developed areas of the country.

The low exposure of experts in rural areas might be the result of poor living conditions and lack of infrastructure. Some areas have no transport in summer due to muddy roads as is the case in Makomoreng. Lack of training in project management and book-keeping skills affect the continuity of rural projects. The absence of banking facilities affects women's ability to invest their money. Poor leadership and lack of training in leadership skills and group management skills lead to mismanagement of resources and vulnerability to manipulation by village leaders who end up taking over from the women. However, if there should be experts willing to work with rural women, such problems might be dealt with easily.

Government needs to ensure that rural people, especially women and children are involved in development programmes so as to increase their ideas about projects. The provision of Government tenders, which is used as one of the tools to empower the

previously neglected communities, should be exposed to rural dwellers. Some people, especially women and the youth, are not exposed to these programmes. Therefore, there should be attempts to reach the remote areas and marginalized groups within the community.

5.4 CONCLUDING REMARKS

The issue of rural women and access to technology needs special attention because many studies have shown that women face several barriers, some of which are the results of traditional and socially constructed beliefs. The discussions indicate that without strong measures adopted to face the obstacles, inequalities and poor access to and control of technologies would remain. The inability of rural women to own or gain access to resources such as land and credit that are vital for meeting life challenges is another dilemma. They need to have access in all technologies so as carry out their cumbersome tasks effectively. Land is the most basic resource of agricultural production. Understanding historical and current gender relations are crucial in formulating policies that are aimed at enhancing African women's capabilities as technology users and food producers.

The status of rural women is about to change due to their great potential and innovative ideas. Hindering them access in technologies would mean poverty is here forever because their strategies for producing more is negatively affected.

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ENVIRONMENT AND DEVELOPMENT PROGRAMME
UNIVERSITY OF DURBAN WESTVILLE
RURAL WOMEN AND TECHNOLOGY

QUESTIONNAIRE

SURVEY NO. _____

A. SOCIO-DEMOGRAPHIC PROFILE

A.1 COMMUNITY DETAILS

1. Name-----
2. Location-----
3. How long have you lived in this area? -----
4. If moved in, from where? -----

A.2 Household Details

	Relation to the respondent	Sex M/F	Age	Marital Status	Level of education	Income level	Employment details	Additional source of income
01	Respondent							
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								

Codes:

Relationship to the respondent	Marital status	Education	Income	Employment	Additional source/s of income
1: Respondent	1: currently married	1: none	1: 0	1: Unemployed	1. Pension
2: Husband/partner	2: Single	2: partial primary	2: 1-500	2: Domestic	2. Cooperative venture/ income from development groups
3: Daughter/ daughter-in-law	3: Divorced	3: Primary complete	3: 501-1000	3: Labourer	3. Renting out rooms
4: Son/son-in-law	4: Widowed	4: Partial secondary	4: 1001-1500	4: Pensioner	4. Outside remittances
5: Grandchild	5: Separated	5: Matric	5: 1501-2000	5: Self-employed	5. Other (specify)
6: Parents	6: Living together	6: Post matric	6: 2001-2500	6: Professional	
7: Other relatives			7: 2501-3000	7: other (specify)	
8: Not related			8: >3001		
9: Don't know					

B. SOCIO - ECONOMIC PROFILE

B.1 WATER

1. What is the most often used source of water in this household for the following uses?

Sources of water	Domestic	Agriculture	Distance to source of water
1. Flowing river/stream			
2. Bore-hole			
3. Rain water tank			
4. Piped-internal			
5. Piped-yard tap			
6. Piped-public tap (free)			
7. Piped-public tap (paid for)			
8. Water carrier/ tanker			
9. Dam/ stagnant water			
10. Protected spring			
11. Well			
12. Other (specify)			

If outside home or yard, distance to source

Within a walking distance of 20minutes	
More than a walking distance of 20 minutes	
Other (Specify)	

2. If water is fetched, which members of the family perform the following duty?

	Girls U/18	Women 18-60	Women >60	Boys U/18	Men 18-60	Men >60
Fetching of water						
Managing water use, including storage						

3. Do you experience any water problems in this area?

Yes	1
No	2

4. If yes, specify.

5. Do you collect rainwater running off from the housing roof structure itself?

Yes	1
No	2

B.2 SANITATION

1. What type of toilets does the household use?

Chemical toilet	1
Flush toilet	2
Mobile toilet	3
Bucket toilet	4
Shallow pit latrines	5
Improved pit latrine with ventilation (VIP)	6
Other (Specify)	7
None	8

2. If your household doesn't have a toilet, would you desire such a facility?

Yes	1
No	2

3. If your household has a toilet, where is it?

Inside dwelling	1
Outside dwelling – on stand	2
Outside dwelling – off stand	3

4. Where do you dump your solid waste?

In the dumping holes	1
Taken by solid waste vehicles	2
Other (Specify)	3

B.3 FUEL

1. What are the primary sources for cooking, heating and lighting? (Rate sources)

	Cooking	Heating	Lighting
1. Wood			
2. Paraffin			
3. Electricity			
4. Coal			
5. Gas			
6. Generator			
7. Candles			
8. Solar heating			
9. Other (Specify)			

2. Which sources of fuel do you prefer most?

Wood	1
Paraffin	2
Coal	3
Electricity	4
Gas	5
Solar heating	6
Other (Specify)	7

3. Why do you prefer the source of fuel you chose from the above?

4. If applicable, which members of the household perform the following duties with regard to the collection of fuel?

	Girls U/18	Women 18-60	Women >60	Boys U/18	Men 18-60	Men >60
1. Wood						
2. Coal						
3. Cow dung						
4. Other (specify)						

6. If it is fuel-wood/coal/cow-dung is used, how often does the household collect this fuel?

1. Daily	1
2. Every second day	2
3. Weekly	3
4. Other (specify)	4

6. Do you have difficulty in collecting fuel-wood/coal/cow-dung?

7. Do you experience any difficulties in obtaining, purchasing or collecting the source of fuel?

Yes	1
No	2
Sometimes	3

8. If yes, what difficulties are those?

No access to sources	1
Unable to purchase fuelwood	2
Environmental problems (lack of sources)	3
Other (Specify)	4

9. If wood/ coal is sold within the area, answer the following questions;

- Who sells the particular fuel?

Business	
Local dealer	1
Business person from outside the community	2
Other (specify)	3

10. How much does the household spend on fuel monthly?

Type of fuel	Amount

11. If using electricity, do you use any other type of fuel? Name the type.

12. Do you experience any problems with the use of electricity?

Unreliable supply	1
Cannot afford to pay	2
Other (specify)	

13. What appliances do you have in the house?

Type of appliance		How acquired? (bought, gift, etc.)	How old?
Gas stove	1		
Coal stove	2		
Electrical stove	3		
Gas refrigerator	4		
Electrical refrigerator	5		
Iron (electrical)	6		
Iron (coal)	7		
Other (specify)	8		

B.4 EDUCATION

1. What is the distance to each type of school ? (One tick per column)

Distance	Creche	Primary school	Junior secondary	Senior secondary	Tertiary (college, university)
1. Within the community					
2. Within a walking distance of 30 minute					
3. More than a walking distance of 30 minutes					

2. How would you rate school education in this area in terms of the following?

Transport	Tick	School fees	Tick
1. Very easy		1. Low	
2. Easy		2. Reasonable	
3. Difficult		3. Expensive	
4. Very difficult		4. Very expensive	

3. How would you rate the adequacy of facilities in the school nearest to your household?

Facilities	Poor	Satisfactory	Good	Excellent
1. Classrooms				
2. Staff rooms				
3. Library				
4. Equipment (overhead projector, chalk-boards, etc)				
5. Playing grounds				
6. Toilet				
7. Other (specify)				

B.5 ADULT BASIC EDUCATION AND TRAINING

1. Is there Adult Basic Education and Training (ABET) in your area?

Yes	1
No	2

2. If No, go to Section L.

If yes, is there any member of the household participating in ABET?

Yes	1
No	2

3. If yes, what type of educational skills are offered?

Skills	Tick
1. Literacy (IsiZulu)	
2. Literacy (English)	
3. Numeracy	
4. Vocational (e.g., plumbing, sewing)	
5. Entrepreneurial	
6. Life skills	
7. Other (specify)	

4. Who in this household participates in ABET?

Males	1
Females	2

5. Who in this household among out of school youth participates in ABET?

Males	
Females	

6. How would you rate ABET in terms of the following?

Transport	Tick	School fees	Tick
1. Very easy		1. Low	
2. Easy		2. Reasonable	
3. Difficult		3. Expensive	
4. Very difficult		4. Very expensive	

7. How would you rate teaching facilities in terms of the following?

Facilities	Poor	Satisfactory	Good	Excellent
1. Classrooms				
2. Staff rooms				
3. Library				
4. Equipment				
5. Toilet				
6. Other(specify)				

8. If there is no ABET programme available to members of your household, would they attend such a programme should it be introduced in your area?

Yes	
No	

B 6. PROVISION OF LOCAL SERVICES

1. What services are available in the community?

1. Hardware shop (e.g., cement, spades,)	
2. Spaza shop	
3. Supermarket	
4. Post Office	
5. Community Centre / Hall	
6. Indoor Recreation Facility (e.g., boxing, music)	
7. Police Station (SAPS)	
8. Banking Facilities	
9. Tribal Authority Offices	
10. Cemetery	
11. Undertakers	
12. Pharmacy / Chemist	
13. Bakery	
14. Hair Dressers	
15. Shebeen	
16. Clinics	
17. Garage filling station	
18. Motor vehicle service (repair) shop	
19. Panel beaters shop	
20. Taxi Rank	
21. Café or tea room	
22. General dealer	
23. Bus service	
24. Library	
25. Ambulance	
26. Laundry/Drycleaners	
27. Office services (e.g., photocopy, faxes)	
28. Shoe repair	
29. Tavern (registered)	
30. Bottle store	
31. Other (specify)	

2. What other services would you like to have in your community?

3. Why would you require the services identified (above)?

B 7. COMMUNITY INSTITUTIONS

1. Does the community have any of the following institutions? (Tick those that exist in the community and tick if any member of the household is affiliated to such institutions).

Institution	Tick	affiliation
1. Community Trust		
2. Water Committee		
3. Health Committee		
4. Community Policing Forum		
5. School governing body/bodies		
6. Creche Committee		
7. Burial Society		
8. Development Project Committee		
9. NGOs / NPOs (specify if possible)		
10. Tribal Court		
11. Garden Committee		
12. Youth Committee		
13. Women's Religious Group		
14. Women's Craft Group		
15. Pensions committee		
16. Agricultural Committee		
17. Other (specify)		

2. Which two of the above mentioned institutions are functioning effectively?

3. Which two of the above mentioned institutions are functioning ineffectively and state why?

4. Which other community institution would you like to have in your area?

B 8. LAND AND LAND USE

1. Does your household own any land?

Yes	1
No	2

2. Ownership of land

Male	1
Female	2

3. What kind of ownership rights does your household have?

Communal	1
Individual title	2
Joint title	3

4. Does your household have access to land for the following?

	Yes	No
Grazing		
Cultivation		

5. How would you rate the adequacy of land for the following uses?

Land	Poor	Satisfactory	Good	Excellent
Grazing				
Cultivation				

B 9. SAVINGS, LOANS AND CREDITS

1. Does the household participate in any of the following savings?

Type of saving	Tick
1. Bank	
2. Stokvels	
3. Burial society	
4. Unit trusts and shares	
5. Insurance policies	
6. Other (specify)	

2. In the last 12 months, did the household receive any cash loan/s?

Yes	
No	

3. If Yes, what amount was received in total?

Amount	Tick
< R100	
R101 – 500	
R501 – 1 000	
R1 001 – 3 000	
R3 001 – 5 000	
> R 5 000	

4. Who provided the loan/s?

1. Family member	
2. Neighbour	
3. Local dealer	
4. Commercial bank	
5. Land bank	
6. Other government agency	
7. Stokvels	
8. Dealer in town	
9. Commercial farmer	
10. Co-operative	
11. Loan sharks (umashonisa)	
12. Other(specify)	
13. No response	

5. What was the money used for?

Item	Specify use
1. Agricultural inputs and services	
2. Other production inputs and services	
3. Buy food	
4. Pay for school fees	
5. Building material	
6. Pay for health expenses	
7. Pay off other debts	
8. Other (Specify)	

6. How difficult would you say it was to obtain these loans?

	Men	Women
1. Very easy		
2. Easy		
3. Difficult		
4. Very difficult		

7. Over how many months must the loan be paid?

8. How many months do you still have over which to pay the loan?

9. Are you paying interest on the loan?

Yes	
No	

10. If you (or someone in your household) were given the opportunity to obtain a loan to start a business in your area, what business activity would you start or consider?

11. How much of money would you need for the business and briefly explain how you would use it?

12. Why would you choose this business?

13. What training would you need to ensure the success of your business?

C. TECHNOLOGY

1. What is your understanding of technology?

2. How do you use it?

3. Who is the decision-maker regarding technology use?

	In the household	In the community
Men		
Women		
Both		

4. What types of machinery or equipment are available in the household and in the community?

In the household	In the community

5. Do you use any of the machinery/ equipment identified above?

Yes	
No	

6. How did you acquire the knowledge and skills to use the machinery/ equipment identified above?

C. ICT Equipment (Information Communication Technology)

1. Do you own or have access to any of the following equipment?

	Ownership		Access/use	When acquired?	How acquired?
	Community	Household			
Computer					
Television					
Radio					
Newspaper					
Landline phone					
Cellular phone					
Postal services					
Other (specify)					

2. Point or place of access

Please tick next to the answer.

Inside the house	1
Clinic	2
Supermarket	3
Neighbor	4
Police-station	5
Library	6
Other (Specify)	7

3 Are you familiar with any computer packages?

Yes	1
No	2

4. If yes, which packages are you familiar with?

E. DOMESTIC-RELATED TECHNOLOGY

1. Do you engage in any of the following activities:

	Yes	No	For what specific purpose?	How done?
Food processing				
Food storage				
Water storage				
Water heating				
Clothes making				
Gathering of wild plants				
Making of traditional medicines				
Making kitchen implements (brooms, spoons, etc.)				
Other (specify)				

2. What type of traditional make-up and jewelry do you make in this community?

Make-up	Jewelry

3. Do you use other materials such as the plastics for craftwork?

Yes	1
No	2

4. If yes, what type of materials do you use and for what purposes?

Type of material	Where accessed?	Purpose

5. Do you or members of the household build your own home/ rooms?

Yes	1
No	2

6. If yes, who in the household participates in:

Activity	Girls	Women	Boys	Men
Planning of structure				
Constructing the frame				
Building the walls				
Building the floor				
Building the roof				
Other (specify)				

7. What types of materials do you use and where do you get them from?

Type of material	How acquired?	Where acquired?
Wood		
Thatch grass		
Mud		
Water		
Bricks		
Other (specify)		

Codes:

How acquired?	Where acquired?
1. From the land	1. Near the home (5km)
2. Bought	2. In the community (5-20km)
3. Given	3. Outside the community (>20km)
4. Other (specify)	

8. How did you or members of the family learn to build the home/ room/ hut?

F. AGRICULTURAL TECHNOLOGY

F 1. CROP PRODUCTION

1. Does the household participate in crop production?

Yes	1
No	2

3. If yes, who among household members perform the following tasks.

	Girls U/16	Women 16-60	Women >60	Boys U 16	Men 16-60	Men >60	Specify how and use of implements
1.Ploughing							
2. Planting							
3. Weeding							
4.Irrigating							
5.Harvesting							
6. Selling/ marketing of products							
7. Transport of products							
Other (specify)							

4. What type of equipment are you using to prepare the soil?

Long hand hoes	1
Tractor	2
Oxen drawn plough	3
Rakes	4
Other (Specify)	5

5. What types of strategies are you using to keep the soil fertile?

Crop rotation	1
Intercropping	2
Organic fertilizer	3
Inorganic fertilizer	4
Other (specify)	5

6. Which of the following equipment do you have in this area?

Land enhancing fertilizer	1
Irrigation schemes	2
Bore-holes	3
Other (specify)	4

7. What type of strategies are you using for pests control?

Ash mixed with mud (indigenous technology)	1
Chemical pesticide	2
Other (specify)	3

8. Are the strategies you use effective?

Yes	1
No	2

9. Do you experience any problems when using the strategy selected above?

Yes	1
No	2

10. If yes, specify the problem

11. Do you store or purchase seeds for planting?

Store	1
Purchase	2

12. If you store, how do you choose seeds for storage?

13. How do you store the seeds?

14. Does your household store crop products such as maize?

Yes	1
No	2

15. If yes, what type of storage techniques are used?

16. Are the storage techniques useful?

Yes	1
No	2

17. If no, what type of problems are experienced?

18. If agricultural products are sold, where does the household sell its agricultural product?

Within the community	
Outside the community	

19. How much does the household make in selling crops per week?

Estimation	
1. <R50	
2. R51 – R100	
3. R101 – R150	
4. R150 – R200	
5. >R200	

20. What mode of transport is used in selling the products?

Mode of transport	Tick
1. Wheel barrow	
2. Bicycle	
3. Bakkie	
4. Other (specify)	

21. Do you experience any problems in transporting your production?

Yes	1
No	2

22. If yes, specify

23. What problems do your household encounter with regard to crop production and marketing?

24. How do you think those problems could be resolved?

F 2 LIVESTOCK

1. Do you and your household own any livestock?

Yes	1
No	2

2. If yes,

Livestock	No of livestock owned	For domestic use	For Commercial
1. Cattle			
2. Sheep			
3. Goats			
4. Poultry			
5. Pigs			
6. Donkeys			
7. Horses			
8. Other (specify)			

4. Do you have dipping tanks?

Yes	
No	

5. How do you treat livestock if they become sick?

6. Where do you sell your livestock? (if applicable)

Within the community (locally)	
Outside the community	

7. What problems do you encounter in regards to livestock?

8. What have you done in the past two years to solve these problems?

9. If you have not done anything, how do you think these problems can be solved?

10. What do community members do with the hide/skin of animals?

11. Do you have access to extension services?

Yes	1
No	2

12. If yes, who do you they usually speak to?

Men	1
Women	2
All groups	3

13. What types of issues do the extension officers deal with?

14. Are you informed if there are any technology to be introduced or developed?

Yes	1
No	2

G. OFF-FARM ACTIVITIES

1. Are you involved in any of the following activities?

	Yes	No
Clothes making	1	1
Beer brewing	2	2
Textiles manufacturing	4	4
Arts and craft making	5	5
Brick-making	6	6
Thatching	7	7
Broom-making	8	8
Other	9	9

9. What type of technology and techniques do you use for the activities?

Activity	Type of technology	How used?
Clothes making		
Beer brewing		
Marketing		
Textiles manufacturing		
Arts and craft making		
Brick-making		
Thatching		
Broom-making		
Other		

H. HEALTH TECHNOLOGY

1. Which methods do you use to treat your family?

Granny's method	1
Modern methods	2
Traditional methods e.g. Inyanga or Isangoma	3
Other (specify)	4

4. What health care facilities are available in this community/area?
(One tick per column)

Distance	Permanent Doctor	Visiting Doctor	Permanent clinic	Mobile clinic	Hospital	Traditional healers (inyanga, isangoma, umthandazi.)
1. Within the community						
2. Within a walking distance of about 30 minutes						
3. Greater than a walking distance of about 30 min.						

3. If yes, how did they help you?

With health problems	1
Food preparation	2
Teaching hygienic methods	3
Other (specify)	4

4 How do you travel to the doctor, mobile clinic, clinic etc.

Categories	Tick
1. Bus	
2. Walking	
3. Taxi	
4. Private (hired vehicle)	
5. Ambulance	
6. Other (specify)	

7 Have any members of the household in the last six months suffered from the following diseases?

Diseases	Tick
1. T B	
2. Cholera	
3. High blood pressure	
4. Diarrhoea	
5. Sugar diabetes	
6. Heart related diseases	
7. Swelling of body	
8. HIV/AIDS	
9. Other (specify)	

15. What do you do with your rubbish/ solid waste?

		Where	How?
Throw it anywhere	1		
Bury or burn it	2		
Recycle	3		
Put it in bins	4		
Other (specify)	5		

16. How do you treat your water, if not from the tap?

Boil it	1
Add lemon	2
Use it without any measures	3
Other (specify)	4

I: PHYSICALLY CHALLENGED

1. Are there any persons in your household who are physically challenged?

Yes	
No	

If No, go to section J

2. If yes, what is the nature of physically challenged person (for example, deaf, blind, etc.)?

3. Please supply the following information regarding the physically challenged person in your household.

Gender

Male	
Female	

Age

0 - 4	5 - 9	10 - 19	20 - 29	30 +

4.

(a) Does the physically challenged person receive any specialized treatment /assistance/support within the community?

Yes	
No	

5. What kind of facilities or services currently exist in the area for the physically challenged person in your household?

6. Does the physically challenged use any equipment/ aid to assist him or her?

Yes	
No	

2. If yes, what type of assistance?

Wheelchair	
Hearing aid	
Glasses	
Other (specify)	

J. ENVIRONMENTAL CONSERVATION TECHNOLOGIES

1. What strategies do you use to conserve the soil?

Type of strategy		Where used?	How learned?
Crop rotation	1		
Wind breaks	2		
Fencing and stone formation	3		
Tree growing	4		
Other (specify)	5		

2. Do the environmental educators visit this area?

Yes	1
No	2

3. If yes, how many times?

Once a month	1
Twice a month	2
Once a year	3
Twice a year	4
Other (specify)	5

K. ADAPTATION/ INNOVATION

1. Have you developed any technology?

Yes	
No	

2. If yes, what type of technology?

3. Have you adapted/ changed any technology?

Yes	
No	

4. If yes, how?

5. Would you sell technology?

Yes	
No	

6. If yes, for what purposes?

L. GENDER DYNAMICS

1. Indicate who among the household members perform the following household tasks (Use an "S" for self). If labor is hired for any of the tasks, use "H".

	Girls U 16	Women 16-60	Women O 60	Boys U 16	Men 16-60	Men O 60
Fetching water						
Collection of firewood						
Cooking						
Shopping						
Laundry						
House cleaning						
Child care						
Repairs						
Tending livestock						
Tending garden						
Gathering of wild-plants for food or medicine						
Other (specify)						

2. Who makes decisions on the following :

	Women 16-60	Women 60+	Men 16-60	Men 60+
Which crops to grow				
Where to grow				
When to plant				
When to harvest				
Storage facilities				
When to buy or sell livestock				
What price to pay or ask				
When to make loans				
How to repay				
What to use loans for				
Amount to borrow				
Amount to spend on recreation				
Which children go to school				
When to stop their education				
How to pay for school fees				
Amount to spend on household needs				

3. Do you have women organizational structures or development schemes in this area?

Yes	1
No	2

4. If yes are you a member of the women organization?

Yes	1
No	2

5. If no, what prevents you from joining women's organization?

Your husband	1
The number of children	2
Lack of awareness and decisiveness	3
Fear of not performing well	4
Other (specify)	5

6. Do you participate in any of the following structures?

Literacy classes	1
Stokvels	2
Community Trust	3
Skills training (specify)	4
Other (specify)	5

7. Does your organization receive any assistance from the government or from the NGOs?

Yes	1
No	2

8. What types of problems do women's organization have?

Insufficient time to attend meetings	1
Lack of resources	2
Very little support	3
Other (Specify)	4

M. GENERAL

1. Identify and rank major problems facing the community.

Problem	Rank
1. Access to services e.g. water, electricity, etc	
2. Lack of employment opportunities	
3. Financial constraints	
4. Limited access to credit	
5. Lack of irrigation capacity	
6. Absence of technical and business advice centre	
7. No markets to sell produce	
8. Lack of information (about jobs, subsidies and loans)	
9. Lack of police services	
10. Crime and violence	
11. Other (specify)	

2. What do you think needs to be done to solve the major problems identified above?

3. Technology aspirations

What type of technology would you like to have?	Why?

4. What types of problems do you experience in acquiring technology? (maintenance, costs, storage space, theft, inadequate resources to make technology, lack of capital for investments, etc.)

5. What problems do you experience when using technology?

Inadequate/ poorly maintained infrastructure

Inadequate time

Diminishing skills and capacity

Inadequate resources (such as land) to use technology

Other (specify)

6. What are the advantages and disadvantages of having technology?

Advantages	Disadvantages