MEETING BASIC NEEDS – PATTERNS AND THE PROBLEM OF ENERGY SUSTAINABILITY: A CASE STUDY OF THE MATOME COMMUNITY, IN THE LIMPOPO PROVINCE

by

MOLAPO PHELADI MALEBO MOJAPELO

SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE

MASTERS IN DEVELOPMENT

IN THE

GRADUATE SCHOOL OF LEADERSHIP, SCHOOL OF MANAGEMENT SCIENCES AND LAW

AT THE

UNIVERSITY OF THE NORTH, TURFLOOP, SOUTH AFRICA.

PROMOTER: DR M.D.J MATSHABAPHALA

JULY 2002

DECLARATION

I hereby declare that the dissertation hereby submitted to the University of the North for the degree of Masters in Development has not previously been submitted by me for degree at this or any other University, that it is my own work in design and in execution, and that all material contained therein has been duly acknowledged.

Signed: .....

Date : 28/02/2003

DEDICATION

This work is dedicated to my husband, Mphesula Christiaan and my two sons Nyakallang Rearabilwe Keavin and Sean Tshoshane Thorisho.

ACKNOWLEDGEMENTS

This study was an enormous undertaking that required incredible knowledge, dedication, persistence and painstaking effort. It was a very challenging task, made possible only through the living God. Thank you Father for fulfilling one of your promises through me. I also wish to express my sincere gratitude and appreciation to the following persons;

First and foremost, Dr M.D.J Matshabaphala, Co-ordinator for Turfloop Graduate School of Leadership and Masters in Development University of the North (EDUPARK) who worked relentlessly as my promoter. I stand in great awe of his intellectual guidance, encouragement and expert advice throughout my study.

My mentor, Prof D.W. Malaka, former Head of University of the North, a continuous source of inspiration, encouragement, support, offering innumerable specific suggestions for improvement on the study. She willingly shared literature on research methodology.

Ms Lekau Thabo Ranoto, Statistician (Stats SA) who laboured tirelessly on data analysis and went beyond the call of duty in making the data more meaningful.

Mrs. K. Ngwasheng and M. S. Sediela, for their unfailing goodwill and dedication in the task of turning the drafts into typescripts. God bless you.

My husband, Mphesula Christiaan Mojapelo, who has unwittingly taught me to stick to the fight to get what I want when I am hardest hit. I feel blessed to have an understanding husband like you.

My parents, Maroba and Molatelo Tladi, for their love, constant prayers, and for having taught me that the family is the rock upon which we build our lives and that good things do not come easily.

My parents-in-law, Matsetsebala and Janet Mojapelo, for their selfless hearts, unconditional love and support and for having taught me never to give up on anything in life.

LIST OF ABBREVIATIONS

1. BNA	-	Basic Needs Approach
2. ESKOM	-	Electricity Supply Commission
3. ABET	-	Adult Basic Education Training
4. NGO	-	Non-Governmental Organisation
5. LDC	-	Less Developed Country
6. UNCED	-	United National Conference on Environmental and Development
7. ANC	-	African National Congress
8. NHP	-	National Health Plan
9. RDP	-	Reconstruction Development Programme
10.NEDLAC	-	National Economic Development and Labour Council
11.NRDC	-	Natural Resources Defence Council
12.NEPAD	-	New Partnership for Africa's Development

TABLE OF CONTENTS

CHAPTER ONE: GENERAL ORIENTATION TO THE STUDY

CHAPTER THREE: RESEARCH METHODOLOGY

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.

CHAPTER ONE: GENERAL ORIENTATION TO THE STUDY

1.1 INTRODUCTION

Paul Streeten (in Wilber 1979:283), as cited by Coetzee (1989:2), takes this view about development: "development is not about index numbers of national income, it is not about savings ratios and capital coefficients: it is about people and for people". This therefore means that people in different areas are affected differently and therefore respond differently to common basic needs. Development concerns people – people experiencing the reality within which they find themselves day by day and moment by moment, feeling its implications and seeing its practical functioning around them. People concerned in development must be pertinently involved in the development process.

People must live in a lifeworld, which is meaningful to them. To live in a world containing meaning, however, does not imply a static conception of social reality; it pre-supposes an active dialogue between people and their overall reality. Development is generally conceptualised as a process of directed changes leading to economic growth, political autonomy and a broad basis of social reconstruction. Social construction makes provision for principles such as freedom, equality, fraternity satisfaction of basic needs and a general process of community growth.

Community growth becomes possible as soon as the process of change starts to influence the total social structure. Improvement of the human condition is held to be the underlying motivation. The semantic meaning of the concept of development is related to progress or improvement and must firmly be based on human well-being, hence people must be involved in the process of their own development. The real aim of development is to improve the quality of human

life. It is a process that enables human beings to realise their potential, build self- confidence and lead lives of dignity and fulfillment. Development must lead to the creation of a condition for the realisation of everyone's personality. Development, according to Swanepoel (1997:43), "is primarily related to meaning and can only be properly assessed in terms of total human needs and the values and standards of the good life."

The process of meeting basic needs entails not only the improvement of the overall income for the poor; but rather it is complex and involves also meeting the psycho-social needs of the people as well. While economic needs can be met with provision of adequate food, clothing and shelter, there are also health needs, which must be catered for through the provision of hospitals and clinics within easy reach. Adequate and well-equipped schools have to be provided as well as job opportunities within the reach of the poor. A major need for development is also the participation of the people themselves in making decisions that affect them.

Jillman (1978:43), explains development in accordance to the Basic Needs Approach (BNA) as follows: "development must lead to the creation of a condition for the realisation of everyone's personality. Esteem and freedom to realise one's human potential must also be accompanied by the fulfillment of the basic human needs experienced by every human being". The following example illustrates the lifestyle of the respondents in the current study:

On a typical morning in Matome, a rural village in the Limpopo Province, nearly half the villagers, mostly women, set out on the routine but arduous job of collecting firewood. The next day it will be the turn of another half or so and in about four days' time today's gatherers will have to go collecting again to fulfil their basic energy need.

Energy, i.e. firewood, impacts on the environment more than any other thing. It is associated with a vast range of different environmental problems, e.g. the cutting of trees for firewood, burning of cattle dung and the smoke of domestic fires. People forced to subsist in rural areas without access to adequate resources and infrastructure like electricity, have no choice but to strip the environment in an attempt to survive.

Our civilizations are at risk when we misuse natural resources and disturb natural systems. Human species must adopt lifestyles and development paths that work within the earth's capacity and limits. According to Koch (1992: 96), "each year roughly 8 million tons of wood is burnt as domestic fuel. Researchers have projected that, if the present trends of wood consumption continue, the homelands could be stripped of nearly all woodland by the year 2020". To curb the problem that has been described by Koch (1992:96), people should try to live sustainably. Living sustainably should become the goal of the global community. However, this is not an easily attainable goal because hundreds of millions of people still do not have access to basic essentials such as energy, clean water, health care and adequate shelter. Sustainable development is a kind of development that provides real improvements in the quality of human life and at the same time conserves the vitality and diversity of the earth.

1.2 MOTIVATION FOR THE STUDY

The rapid process of urbanisation in South Africa can be regarded as one of the country's most important development phenomena. If approached correctly, urban development in South Africa can make an important contribution to economic growth, development and the creation of employment. The study will therefore concentrate on shifting the mindset of the people in Matome from the dangerous and archaic practice of using firewood as fuel towards using electricity, which is safer and healthier.

for survival – against mod

According to Tolba (1992:69), "each year roughly 8 million tons of wood is burnt as domestic fuel used for heating and cooking by urban and rural dwellers". A vast majority of city-dwellers as well as farmers rely on wood fuel for domestic use. Supplies are diminishing as consumption grows. The quality of life and standard of living is deteriorating yet further and the environment is more and more degraded. According to Koch (1992:96), "the wood comes from indigenous bushveld or woodlands which can't yield this amount indefinitely".

Electricity Supply Commission (ESKOM)'s monopoly in the country allows it to take its time. Initial enquiries by interested villagers has indicated that if ten people can show interest in electrifying their homes then ESKOM will start initiating the project in the village. This motivated the researcher to investigate why more than 250 families in Matome do not have access to electricity and still rely on fuel wood for their cooking, lighting and warming up because almost all neighbouring villages have electricity but Matome.

Young couples prefer to migrate to towns where there are all benefits. They abandon homes that they have inherited from their deceased parents. Ultimately Matome will remain with the indigent, poor and old, as there is a lot of mobility among the middle class elite. Unless some form of education on the necessity of electricity is done to discourage firewood usage for sustainability and health reasons, Matome will remain poor with an uninformed elderly and young community. Studies conducted by Koch (1992:97), revealed that "the main environmental benefit of electrical stove is the smokeless environment in the home itself. Soot scrappings from the insides of huts contains carcinogenic substances and evidence comes from East Africa of a correlation between open indoor fires and nasophangeal cancer."

1.3 STATEMENT OF THE PROBLEM

There is no electricity supply in Matome. Firewood is slowly giving way to other types of energy. Transitional fuels like coal, paraffin and bottled gas are being used increasingly, though so far these have had little effect on rural firewood demand. According to Robin Mearns in Prendergast (2000:189), "woodfuel consumption is the principal cause of deforestation and therefore of mounting woodfuel scarcities". With electricity available people can use less firewood and can thus slow the rate of deforestation.

ESKOM generates 60 percent of all the electricity of the African continent, yet ironically, 70 per cent of South Africans, including the Matome community do not have electricity in their homes and use wood to meet their basic energy requirements, Wilson (1989:326). Since the poor are least able to contribute to the Gross Domestic Product (GDP) and because they are least able to pay for commercial energy, they have historically been ignored in energy planning. They have been left with no option but to gather their traditional fuel, which is not sustainable in nature because of deforestation and air pollution. According to Koch (1992:98), this depresses crop growth and impairs soil fertility and deprives the community of subsistence farming.

Families in Matome have turned to burning dung as fuel, instead of using it as manure. They strip trees for firewood, leaving hillsides bare. South Africa has few natural forests and they are disappearing very fast. Wood and dung gatherers who in reality are women and children waste a lot of time looking for fuel. It is the women who experience fuel wood problems while men control cash income and land resources. The time it takes to collect fuel is time, which is not available for the many other tasks women face. One of the first signs of fuel wood problems is the gradual increase in the time it takes the women of Matome to find the wood essential for their household survival. The places these fuels

are collected are just as important as who collects them. Women collect fuel wood from the local environment. Depletion of firewood has environmental implications such as land degradation, soil erosion and deforestation, which carry a high cost to the development effort.

The scale of the above-mentioned problems is difficult to evaluate partly because they've been ignored for so long. But it also reflects the way in which the problems manifest themselves, for they rarely emerge in the form of an absolute lack of fuel. When wood becomes scares, people are forced to spend a longer time to go further to gather it. The time spent in gathering fuel for free could be valuably put to use towards financial gain. However, the wood gatherers do not understand the extent to which their time could be used more profitably. They seem to regard the free fuel, which costs them a lot of time, as being more valuable than selling their labour.

1.4 AIMS AND OBJECTIVES OF THE STUDY

1.4.1 AIMS

There is no electricity supply in Matome village, which is poor with a high potential for development. The researcher wants to establish why ESKOM is not operating in Matome. The main aim of the researcher in the current study is to explore possible ways of helping the people of Matome to develop and meet their needs in a sustainable way. The World Commission on Environment and Development define sustainable development as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs", (Munslow 1988:111). The researcher has evaluated the tendency of the poor to resist change and development. The effects of deforestation on the environment are to be analysed.

This study, aims at strengthening the community as it will educate them about the convenience of electricity and also to show them the dangers of soil degradation through deforestation. Community members will be empowered by getting involved in their own development and learning lifeskills, which promote self-reliance and self-sufficiency. External linkages between villagers and institutions will be forged and existing ones are further explored in order to empower the villagers, e.g. by the establishment of development forums such as Matome Electricity Committee.

1.4.2 OBJECTIVES

Community development works towards concrete objectives such as better living conditions in health, education, and housing. Income could be generated from previously unknown sources. The following objectives will be used as vehicles to achieve the above-mentioned aims:

- to investigate knowledge of the Matome people on the dangers of deforestation and the usage of cow dung as fuel.

- to explore the problems around unaffordability of electricity in Matome.

- to suggest and recommend to the respondents alternative and safe fuel.

- to find ways of re-channeling the time wasted in fuel gathering towards more profitable time use.

- to help people gain confidence in developing self-employment.

1.5 ASSUMPTIONS

The welfare of the Matome people is increasingly jeopardized by the difficulty they encounter in catering for their basic energy needs. We all need energy of one form or another for day- to- day life, e.g. for cooking, lighting and heating.

For the purposes of this study, the researcher has formulated the following assumptions;

- that the lifestyle of the people in Matome will change for the better as soon as the village can be electrified;

- the people of Matome will benefit from Adult Basic Education and Training (ABET) as this will inform them on the dangers of deforestation, soil degradation.

- the health of Matome villagers will improve if they could refrain from using cow dung as fuel.

- too much time is used in fuel gat. ering; such time could be used in enterpreneural activities and poverty could be uprooted.

- the people of Matome have a preconceived idea that the cost of commercial fuel and appliances, which are essential for daily survival on the already constrained, budget is a burden.

1.6 RESEARCH METHODOLOGY

1.6.1 TYPE OF RESEARCH

The type of research that this study will embark on is qualitative and applied. According to Creswell (1997:15), qualitative research is "an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem". In a qualitative study the researcher builds a complex holistic picture. S/he analyzes words, reports detailed views of informants and conducts the study in a natural setting. This study will also be exploratory, as it will make an inquiry on the human and social problems faced by the people of Matome.

1.6.2 RESEARCH DESIGN

Research design refers to the practical guidelines of how to do research. It entails reading extensively on previous research on the topic under study. A literature survey will be undertaken in order to get more information about the topic. The researcher will use description and a high level of detail where the story will be told informally by members of the community. According to Creswell (1997:58), "the overall ethnography consists of a format that is descriptive – data is described, analysed and interpreted to bring in a note of reflection for looking for what people do (behaviour), what they say (language and some tension between what they really do and what they ought to do as well as what they make and use (artifacts)". This study will explore the reasons behind the delay in the implementation of the new policy of rural development, which amongst others entails electrification of rural areas. Data will be collected and analysed in order to come to a conclusion and bring about a recommendation.

1.6.3 POPULATION

According to Creswell (1997:114), "a single site is important where an intact culture – sharing group has developed shared values, beliefs and assumption". The Matome community will be the focus community in this study and from it the target group will be the heads of the households, who are in most cases women or mainly the elderly. The population from which the sample will be drawn is approximately 250 households, which are scattered over a 20km area. Involving the entire population for research is a very expensive venture.

1.6.4 SAMPLING

De Vos (1998:191), defines a sample as "a subset of measurements drawn from a population in which we are interested". The systematic sampling method will be used in the study. Every fifth house will be selected for inclusion in the study. Only 20% of the population, involving 100 respondents will participate in the study. Creswell (1997:114), says "the researcher needs to select a group or individuals representative of a group to study, preferably one to which the investigator is a stranger and can gain access to information".

1.6.5 DATA COLLECTION METHOD

According to Creswell (1997:110), data collection is "a series of interrelated activities aimed at gathering good information to answer emerging research questions". The researcher will gain the confidence of the informants and through systematic method members of the community will be used for the study to gather information or collect data. The type of information to be collected will be based on the participants' observations, interviews, a

questionnaire and relevant documents. This information will be collected, recorded and stored in a file for organised retrieval.

1.7 AREA OF STUDY

Matome is a village in the Capricorn Region of the Limpopo Province, 70 kms south east of the capital city, Polokwane. The Matome village is ruled by an induna(a person nominated by the chief to lead a subsection of a particular community). Matome is but one of the villages that are ruled by Chief Kekana who is based at Moletlane. Ironically, from all villages ruled by Chief Kekana, it is just Matome without electricity.

There are multiple socio-economic problems that assail the people of Matome e.g. a high rate of poverty, illiteracy and unemployment. Matome is rich with natural resources, such as the forests that the community is currently depleting for use as fuel. This practice however is short-lived as it will soon result in deforestation and its associated problems. The pace of development is slow. Because of its slow pace in development the young and the employed, active adults have relocated to stay in adjacent (nearby) peri-urban towns. The residents comprise mostly of very old (indigent) people who are looking after their grandchildren. There is only one primary school and one high school in Matome and the nearest health service provider is Machupye Mphahlele Memorial Hospital, which is approximately 15kms away.

The village lacks good roads and as such does not have reliable public transport and telecommunication system. The village has got an inadequate provision of infrastructure including bulk connector and residential infrastructure. An enormous need exists with regard to the provision and maintenance of roads, reservoirs, electricity as well as the development of social and physical infrastructure.

1.8. SIGNIFICANCE OF THE STUDY

The majority of South Africans, particularly those living in rural areas are largely victims of illiteracy, poverty, ignorance and a slow pace of development. They are therefore assailed by multiple problems such as economic, physical, psychological as well as political. While urban South Africa is developed and being acquainted to the first world, rural South Africa is still lagging behind. There is an awareness of people's physical and psychological needs in South Africa. These needs are seldom or very rarely emphasised. This heightened awareness of physical needs carries its own dangers. According to Swanepoel (1989:4), "it could lead to a well meaning but misguided developmental stampede by Government departments, Non-Governmental Organisations (NGO's) and other well-wishers trampling the views of the people in need". The Matome villagers will benefit from this study because they'll be able to participate in their decision-making mechanism affecting their development whereby a solid, local knowledge base will be used.

The villagers have for years, lived in deprivation and surviving the hardships of their poverty. People who do not participate in their own development have no affinity for developmental efforts and their results. The huge problems of sustainable development and maintaining facilities instituted by development are resolved if the affected people participate, knowing that they have a stake in the effort and the results.

Swanepoel (1989:5), distinguishes between people's interest in development and their reluctance to participate actively in their development. He suggests that "it is necessary to facilitate the people's full participation by enabling them". This implies that people have to be supplied with information so that they can make enlightened decisions. ESKOM, the service provider will also benefit from this study, which will yield information on the needs, lifestyle and problems of the

people in Matome. This then will help ESKOM to design the kind of service that will be suitable for Matome. Kottak (1996:225), says that "when people are asked to give up the basis of their livelihood, they usually resist".

1.9. LIMITATIONS

The study has to be completed within a limited space of time. Hence there will be time factor constraints. There is no funding for this study, as there is no agreement between Eskom and the researcher to get new business prospects for it. Hopefully the findings of the study may be used to bargain with ESKOM to provide a needed service in Matome. The respondents might want to be paid and may not be willing to participate thinking that ESKOM will benefit from the study. The unwillingness of some respondents to participate might infringe on the reliability of some respondents' answers.

1.10 DEFINITION OF CONCEPTS

The terms used in the research shall be explained as such:

1.10.1 DEVELOPMENT

Gilpin (1996:12), defines the term development as "application of human, physical, natural and financial resources to meet effective or prospective market demands and other human needs". Development may be sustainable if the resources used are renewable, or non-sustainable if the resource base is exhaustible. Sachs (1992:10), refers to development as "a favourable change, a step from the simple to the complex, from the inferior to the superior, from worse to better". For the purpose of this study the concept development will be used to imply change and growth – i.e. a significant change in the lifestyle of people e.g. reluctance from using free firewood towards purchasing electricity.

1.10.2 ENVIRONMENT

Environment according to Gilpin (1996:74), is "a concept that includes all aspects of the surroundings of humanity affecting individuals and social groupings". The environment thus includes the built environment, natural environment and all natural resources including air, water and land. The European Union, as cited by Gilpin (1996:74), has defined environment as "the combination of elements whose complex interrelationships make up the settings, the surroundings and the conditions of life of the individual and of society, as they are or as they are felt". In the current study the concept will refer to the geographical area (Matome), its people (Bapedi) and their beliefs (culture).

1.10.3 DEFORESTATION

For Gilpin (1996:56), deforestation refers to "the removal of forests to increase the amount of arable land". Forests and its undergrowth possess a high water retaining capacity, inhibiting runoff of rainwater (causing soil erosion). This study will adopt Gilpin's definition of the term, as this is common in Matome where firewood is used as a source of fuel.

1.10.4 PARTICIPATION

For the Oxford English Dictionary, participation is "the action or fact of partaking, having or forming a part of". In this sense participation could either be forced or free, either manipulative or spontaneous, transitive or intransitive, moral, amoral or immoral". For the purpose of this study it should be noted that all societies, particularly traditional ones must be participants. In the current study "participation" will entail the active involvement of the respondents (Matome people) in the research. The researcher requires the respondents to provide

information by responding to questionnaires, getting involved in discussions on their needs, problems, fears and solutions.

1.10.5 RESOURCES

According to Gilpin (1996:188), it is "a general term for anything that can be used to provide the means to satisfy basic human needs and wants. A resource is simply a service for noble or base purposes." Sachs (1992:206), says "a resource originally implied life, its roots is a Latin verb surgere which evoked the image of a spring that continually rises from the ground. A resource rises again even if it has repeatedly been used and consumed". In the current study the concepts will be used to refer to cow dung, firewood, which is used as fuel and electricity, which is needed.

1.10.6 STANDARD OF LIVING/QUALITY OF LIFE

According to Gilpin (1996:184), these refer to "a concept embracing a miscellany of desirable things not always recognised or adequately recognised, in the marketplace. It embraces such relevant matters as real income, housing, working conditions, health, educational services and recreational opportunities which may be regarded as the general standard of living". Sachs (1992:250), says it refers to "material well being and constitute a concept, susceptible to measurement. The standard of living is measured by the quantity of goods and services which may be purchased by the average national income". In the current study the lifestyle of Matome villagers is that of poverty, illiteracy and unemployment.

1.10.7 SUSTAINABLE DEVELOPMENT

According to Gilpin (1992:206), sustainable development refers to "development that provides economic, social and environmental benefits in the long term, having regards to the needs of living and future generations." Thus the satisfaction of human needs and aspirations is the major objective of development. Sustainable development considers both the living and non-living resource base with regard for conservation and the advantages and disadvantages of alternative courses of action for future generations. For the study, sustainable development refers to affordability of required resources.

1.10.8 ENERGY

When we use a fuel (coal, wood, oil, etc) we do not directly use the physical substance itself, but rather the power derived from the energy released during the consumption of the fuel. Energy can be derived from many sources and for the purpose of this study non-commercial, traditional or biomass fuels, i.e. wood, charcoal, crop and animal residues. According to Soussan (1998:44), "these fuels are usually non-commodified i.e not bought and sold, but may be gathered freely from the local environment and are the fuels most closely associated with the crisis of energyern or commercial fuels e.g. coal, gas, oil and electricity. These fuels have a commercial value". Energy in this study will refer to fuel whilst currently the required energy is electricity.

1.10.9 DESERTIFICATION

According to World Commission on Environment and Development (1998:34) desertification is "a process whereby productive arid and semi-arid land is rendered economically unproductive". Desertification involves complex interactions between humans, land and climate. In this study, desertification will

refer to the loss of tropical forests already affecting hundreds of millions of people through increased flooding, soil-erosion and silting of waterways, drought, shortages of fuelwood and timber and displacement of societies and cultures.

1.10.10 OVERINNOVATION

According to Kottak (1996:243), overinnovation refers to "too much change". Evolution occurs in increments. For this study, overinnovation means change that does not occur gradually.

1.10.11 UNDERDIFFERENTIATION

According to Kottak (1996:245) the term underdifferentiation refers to "ignoring cultural diversity and adopting a uniform approach to deal with different sets of people". This study will adopt Kottaks definition of the term.

1.11 STRUCTURE OF THE RESEARCH REPORT

After data has been collected, a discussion on the proceedings and findings will be presented in a report of five chapters following this format:

Chapter 1
- **Background of the study** which includes
- problem statement
- objectives of research
- assumptions
- a brief research design
- significance and motivation of the study
- what the study aims to achieve

Chapter 2 - **Literature survey** – to review relevant books which have a full bearing on the topic to get more information and insight.

Chapter 3 - **Research Methodology** including a description of the case study which might also give an overview of the whole "electricity provision".

- size of the population
- education level
- economic activities
- size of the household
- migration and health status

Chapter 4 - **Data collection methods** where actual discussion of how data (information) was gathered and analysed step by step e.g the size of the population and sample.

Chapter 5 - **Findings and Summary** i.e conclusions and Recommendations and results will be described. The findings will be linked with assumptions made earlier.

CHAPTER TWO LITERATURE SURVEY

ATTITUDES AND PERCEPTIONS OF RURAL PEOPLE ON FUEL USAGE

2.1 INTRODUCTION

The roots of South Africa's current poverty and the ongoing process of impoverishment go deep into the past. There is little doubt that it is some of those special policies like Land Act of 1913, Group Areas Act, Development Facilitation Act and Separate Amenities Act pursued by the out-gone government that have done much to impoverish millions of South Africans. South Africa as a developing country is confronted with situations and problems, which may threaten the future existence of the inhabitants of this country. At the moment, many communities in South Africa are characterised by a poor quality of life. To address this problem effectively, not only should the quality of life in these communities be improved, but also the rate at which the improvements are taking place must also be accelerated. An improvement in the quality of life will have an influence on the attitude and perceptions of people with regard to issues such as air pollution, deforestation and destruction of natural resources. Development is a process that can facilitate change in attitudes and perceptions.

Lombard (1991:197), indicates that "development has assumed the meaning of state, or other external intervention aimed at the improvement of the quality of life of a population, or a part thereof". The Government on its own cannot enhance the quality of life of the inhabitants, because of the backlog and therefore, communities need to be involved in their own survival. Crewe (1998:25), states that "communities must progress through stages, and for

example, that development means movement from tradition to modernity. More specifically technology evolution is an essential part of development".

2.2 AN EVALUATION OF POVERTY AND RESISTANCE TO CHANGE

A necessary condition for getting to grips with poverty in any society is that the poor must have political power and be able to participate effectively in the decisions that affect their lives. According to Lombard (1991:108), "development can never take place in isolation, it is an integral part of the comprehensive socio-political, psychological and economic change South Africa is undergoing". The creation of an enabling environment economically, politically and legally at national and international levels is fundamental. Such an environment however must be complimented with a positive response, which can occur only when people understand the benefits of change.

Development was in the past regarded as economic and technological progression. Poor and underdeveloped communities were given financial aid to improve their living conditions and quality of life. Provision of resources cannot on their own, provide quality of life before people themselves are motivated to use available resources nationally. Individuals in the community should be motivated, encouraged and taught not only to become involved but also to seize each opportunity as it comes. South Africa through its Constitution and its Bill of Rights, Act 108 of 1996, policies on human rights and other mechanism of Government and civil society has engaged in action to support the objectives of social development. The Basic Needs Approach to development as postulated by Wilson (1989:285), recognises that "the poor must benefit from economic growth and this requires adequate provision of goods and services to satisfy the basic human needs of the poor".

Fuel or fire is one of the basic needs without which man cannot survive. Wilson (1989:43), says "it is so much part of human existence that one takes it for granted, seldom thinking what life would be like without it". Through the Basic Needs Approach, basic needs such as fuel are met. Wilson (1989:44), says "South Africa produces 60% of electricity in the entire continent and yet two-thirds of the total population within the country do not have access to that energy for their household requirements". The new dispensation is striving to provide previously disadvantaged poor with electricity in order to ease their workload, yet there is still some resistance in acceptance of this resource. Some people regard natural resources such as cow dung and wood as easily available at no cost.

Nwankiti (1981:108), says "an energy requirement for a modern society is electricity". Certain jobs such as cooking, heating, lighting and operation of machinery can be accomplished using electricity when it is sufficiently available. Therefore there is a very wide gap between the minimum amount of electricity required to maintain comfort and the maximum amount that can be consumed. The energy crisis of undeveloped rural areas has been identified. The public needs to be made aware of the mutilation of the environment that is taking place as a consequence of the extensive use of wood as fuel. The question about fuel is not whether the poor can afford electricity in South Africa, especially in Matome, but, whether they can afford not to have it given the ecological consequences of the resentless search for fuel by people without electricity.

In Matome, as well as in many other villages in the Limpopo Province, women still wake up in the morning to gather firewood and run the risks of being molested and raped by strangers who might be HIV infected. Such women are also in danger of being wounded by the heavy logs that are to be put on their heads- a task that they have to do sometimes with children on their back. The place for wood gathering is not only far, exhausting, time consuming and

dangerous but has also ecological problems. Some people have moved from gathering dead wood, to cutting off green branches of trees thus causing erosion by water and wind; a factor which is hazardous and also not healthy. Wilson (1989:47-48), says "when the trees and bushes go (as fuel) the springs of water tend to dry up. The sponge effect of forests enables them to act as regulators of our water supply. When they are removed, rivers that once flowed perennially now either dry up completely or become flooded whenever it rains. The flooding is physically destructive and the desiccation disastrous for man and beast. When the soil is laid bare, floods may remove up to a hundred years of precious topsoil in a day. This, in turn harms the bacteria, which would otherwise purify the water. In these ways the disappearance of natural vegetation, whether as food for hungry cattle and goats or as fuel for cooking and warmth, will have led to the disappearance of clean drinking water from much of the country".

Lately women also have to walk further as more and more people searching for fuel have remotely eaten the vegetation away in the unending search. This does not promote sustainable development, which requires that we simultaneously use and develop natural resources so that future generations will also be able to use them. Flint (1999:31),mentions "availability is affected by the distance between the resource and the point of use". The distance women have to walk for fuel wood may be up to 10kms; so, this may limit access to fuel suppliers. Similarly topographic features such as mountains and river valleys may restrict access to supplies of fuel wood. Whatever their cause, the widespread rural energy problems produce a range of responses from people in Less Developed Countries (LDC). The range of responses makes it clear that the fuel wood issue is in fact a complex series of inter-related problems. Rather than continue to damage or deplete natural resources, community development should seek to improve them. Nurturists link behaviour and social organisation to environmental factors.

According to Kottak (1996:278), "nurturists focus on variation to stresses learning the role of culture in human development".

Pennington (1986:128), distinguishes between three points concerning the way people understand their social environment. Viz.

- *People perceive behaviour as being caused,*
- *It is important to understand people's perceptions, and*
- *The locus of the causes of behaviour is perceived to be with the person, situation or some combination of both.*

According to an Unpublished Fact Sheet on Land Degradation in South Africa (1999:2), rural poverty, historical land distribution policies and inappropriate land use practices have resulted in veld degradation being most severe in the communal areas. In many communal areas loss of plant cover is a problem. Whether rural resource use decreases, increases or intensifies, it is essential that sustainable land use policies and practices should take into account South Africa's unique historical conditions. The review of land degradation clearly showed that in South Africa both socio-political and environmental factors have had a significant impact on the land

Sustainable development is a kind of development that provides real improvements in the quality of human life and at the same time conserves the vitality and diversity of the earth. Humanity must take no more from nature than nature can replenish i.e. adopting lifestyles and development paths that respect and work within nature's limits. According to Global Environment Facilitity (1996:155), "within any particular country, there are three components of such certainty: sound understanding of the problems, and of the means to solve them; good, organisation and administration and the backing of a well informed organisation and administration". None can succeed without the other.

2.3 ATTITUDE AND BEHAVIOUR OF PEOPLE TOWARDS CHANGE OR DEVELOPMENT

In virtually all aspects of our social life, we are continually seeking out other people's attitudes, telling others of our views and trying to change someone else's opinion. Pennington (1986:60), referred to two approaches of defining attitudes i.e. the structure and functions that attitudes serve for a person. Neither of these approaches offers satisfactory answer but taken together they may do so.

2.3.1. THE STRUCTURAL APPROACH

This reflects a traditional three-component analysis of affective, cognitive and cognitive components of attitudes. The cognitive component refers to beliefs; while the affective component refers to the evaluation (good or bad); and the cognitive component refers to behaviour with respect to the object or person.

Pennington (1986:61), illustrates this as follows in figure 1 below

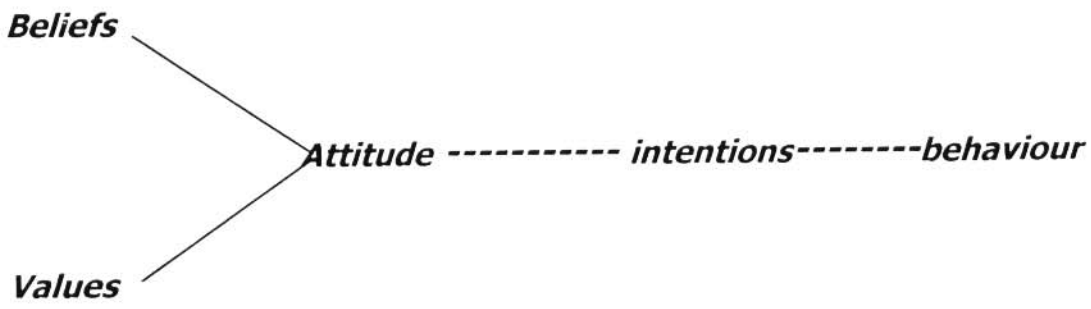


Figure 2.1 as adapted from Pennington (1986:61)

2.3.2 THE FUNCTIONAL APPROACH

This approach suggests that attitudes promote the well being of an individual by serving essentially four functions. These are the adaptive knowledge, self-expressive, and the ego-defensive functions. The basic idea is that attitudes help a person to mediate between the inner demands of the self and the outside world.

Lauer (1995:569) defines attitude as a "predisposition about something in one's environment". Pennington (1986:77) assumes that "attitude and behaviour go together in a consistent manner and their relationship is poor". To Pennington, generally, most theories assume that attitude causes behaviour in some way. Kottak (1996:30), says "sometimes adaptive behaviour offers short term benefits to particular individuals that may also harm the environment and threaten the group's long term survival". Creative manipulation of culture and the environment by man can foster a more secure economy, but it can also deplete strategic resources.

2.4 ATTITUDE AND CHANGE

An individual's attitude is not something unique to that individual or something created/developed in isolation from others. Lauer (1995:10) writes "an individual's attitude develops through interaction with others and is shared with the group of which s/he is a part". By so saying a person's attitude is not simply the results of his or her personal thinking. Pennington (1986:60) stresses that "family background, level of educational attainment and sub culture ethos all contribute towards differences in attitude among people".

Due to the fact that the community of Matome is comprised mostly of elderly people who are illiterate, not only are they uninformed but are inclined to be

conservative. The elderly are monitors of culture and convention. They do not adapt to change easily hence they find it difficult to change their lifestyles. Lauer (1995:208) comments that "the inadequacy of their financial resources deprives the poor of freedom to pursue a full and happy life. Poverty brings more despair than happiness and more fear than fullness of life". The poor and the elderly face choices between security and change because of the absence of men and the middle aged who go off to work in urban areas. The elderly are both caretakers and heads of households in Matome.

Illiteracy causes inferiority complexes. Swanepoel (1997:20) states that "people are afraid to participate, thinking that they cannot make worthwhile contributions or afford". They accommodate their poverty and misery by accepting it as their way of life. Swanepoel (1997:24) views them as "being fearful of innovation because for them it carries tremendous risks".

Change as it occurs when a community develops, must involve participation of all people. Yet, many believe that innovations must be for the educated and the rich only. The elderly's attitude towards change has been aptly explained by Wilson (1989:267), in the statement that "the poor people must change the low self esteem and sense of hopelessness that they have of themselves and their situation". The poor are primarily pre-occupied with their day today undertakings for survival. They regard daydreaming and planning for the future as a luxury that they cannot afford. Forward planning is a luxury they can't afford. It, therefore, suffices to say that the way people behave towards change must be understood in terms of the social factors at work.

2.5 PERCEPTIONS OF RURAL PEOPLE TOWARDS CHANGE FROM USE OF TRADITIONAL FUEL

Crewe (1998:103) points out that "technologically simple, or wood burning cooking fires have many advantages over improved stoves". Wood is one of the oldest energy sources known to humans. During the 1800s, wood was the only supply of fuel available for factories and home heat. According to Daugherty (1991:284), "wood is widely available, so transportation costs can be low and it comes from a renewable natural resource". For rural people, Crewe (1998:103), found that "wood burning fires cost no money; offer a social of ritual focus; are more flexible because they can be easily moved and produce heat which can be easily controlled. These fires can burn any size or type of fuel; can support any size or type of pot; can provide lighting and heating; and release smoke, which preserves food, dries fuel or clothes, deters insects and lengthens the life of thatch". The implication is that traditional fuel is part of an old, established, inefficient and static technology. The rural poor perceive their system as neither fixed nor inferior. Schumacher, Intermediate Technology's founder as cited by Crewe (1998:104), asserted that "the poor are so lacking in education that they are only capable of understanding practical matters". Therefore it is the job of the clear – thinking, educated experts, to have responsibility of sharing their knowledge. Daughterty (1991:284) says "most people who enjoy heating with wood usually like the independence from other expensive fuels".

Energy Conservation and Pollution Control research by Global Environment Facility (1996:61) indicates that "some Township and Village Enterprises in China have been slow to adopt new energy-efficient technologies or improve the energy efficiency of existing plants. The reasons include uncertainty about energy-efficient technologies to their economic viability, lack of skilled personnel, and constraints on capital."

2.6 DOMESTIC FUEL: WOOD VS ELECTRICITY

Most of the people of the world still use plant materials directly as fuel-to cook food and heat their houses as well as in blacksmithing and other manufacturing processes. Wood is the preferred fuel, but where it is scarce, non-woody plants and animal dung are used in its place. According to Miller (1997:421), "almost 70% of the people living in developing countries heat their homes and cook their food by burning wood or charcoal: However, about 2 billion people in developing countries cannot find enough fuel wood to meet their needs".

Harvesting wood can cost accidents (mostly from chain saws) and burning wood in poorly maintained or operated wood stoves can cause house fires. Wood smoke contains pollutants known to cause bronchitis, emphysema, asthma, cancers and other illnesses. Wilson (1989:160) commented that "those who glorify a simple way of life epitomized by cutting a supply of fuel wood may not be solving the problems of the nation of the world". In the future, wood will serve only as the most minor source of energy. Like fossil fuels, it may have such value as a raw material that it will become too precious to burn at all.

Flint (1999:31), opinioned "the demand for fuel wood reflects the energy needs of the population and the availability of alternative fuels". This is a complex system in which people have to balance their needs and priorities with their available resources. Government policy on sustainable resource use is designed and will be implemented in accordance with (Act 108 of 1996) section 24 of the Constitution, which states that everyone has the right to the following:

a. *An environment that is not harmful to health or well being; and*
b. *Have the environment protected, for the benefits of present and future generations, through reasonable legislative and other measures that:*

i. *Prevent pollution and ecological degradation;*

ii. *Promote conservation; and*

iii. *Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*

An energy requirement for a modern society is electricity. Certain jobs such as cooking, heating, lighting and operation of machinery can be accomplished using electricity when it is sufficiently available. Nwankiti (1981:108) writes "there is a very wide gap between the minimum amount of electricity required to maintain comfort and the maximum amount that can be consumed". According to Global Environment Facility (1996:178), A Household Energy project in Mali's objective was to control deforestation by enhancing sustainable use of fuel wood and the reduction in per capital fuel wood consumption by promoting more energy – efficient stoves.

Nwankiti (1981:162), says "the increased realisation and fear that available world reserves are depletable without an already developed alternative fuel source. The nervousness is caused by the feeling that the situation of a world with fuel scarcity could yield catastrophic consequences to the lifestyle and general well being of modern man". Real or imaginary, the energy crisis has prompted tense comparisons by people and leaders of governments around the world. According to Pearce (1989:89), "in the wake of Bruntland it is now clear that sustainable development must involve changes in both consumption patterns and in investment patters, to augment rather than deplete environmental capital". Electricity then can be considered a convenient and versatile form of fuel for domestic use. Wilson (1989:325), cites the need expressed most keenly by rural families of some form of energy that is readily available, affordable and do not involve hour of backbreaking work. Electricity is considered a worthy goal attainable by all, although there are in fact no sufficient opportunities for

everyone to attain. Electrification can substitute wood usage in urban and rural areas and thus has the potential to substantially reduce the severe pollution and depletion of natural resources. Wilson (1989:326), further expressed that "for electrification to be successful, it should be coupled with an integrated package of energy conservation measures, including better houses, insulation, solar water heating, and awareness programs of ways to use electricity efficiently in the home".

2.7 NORMS, VALUES AND CHANGE

Customs, norms and traditions can be obstacles because people feel obliged to follow them even if they work against development. According to Lauer (1995:20), "norms are shared expectations about behaviour – the behaviour that is expected of each one of us by the rest of us". By this definition we realise that norms and values are social. An individual who charts his or her own course regardless of what others may think or say sets norms and values. South African rural people tend to refuse to submit to majority opinion. Kottak (1996:243) says "they live according to their conscience as long as that conscience does not violate traditional values".

Norms and values of tradition aren't static but tend to adapt themselves to suit the times. Swanepoel (1997:20) says "where people's tradition is static for some or other reason, they can hinder development". While certain values and ideas about what is valuable are common to all communities, many values vary among various groups. Lauer (1995:13) refers to social change as "alterations in the patterns of interaction or in such aspects of culture as norms, values and technology". Social change may include anything from changed attitudes about something in large-scale urbanization. Change is linked to social problems, In Lauer (1995:14), William Ogburn coined the term "cultural lag" after he observed that change in one part requires change in other parts too. Ogburn further said

there is maladjustment when various parts of a cultural group lag in the change. Social problems arise because of conflicting rates of change and in particular because technology is changing more rapidly than other aspects of culture. When society changes, people are filled with conflict and stress. For some people, change is disruptive or traumatic.

A number of studies show, on the contrary, that a rapid rate of change may be considered desirable by the people experiencing it. Under certain conditions, change becomes conducive to psychic well being, Lauer (1995:15), says "a slow rate of change may be more stressful than a rapid one". It is among those who do not participate in the change rather than those who experience it.

2.8 MAN AND THE ENVIRONMENT

For the world's poor, health, soil erosion, loss of fuel wood supplies, inadequate sanitation and reduction of cultivable land area are the major environmental concerns. According to Miller (1997:23), in 1994, about 2 billion people almost 1 of every 3 people on earth in 63 Less Developed Countries (LDC's) either could not get enough fuel wood to meet their basic needs or were forced to meet their basic needs by consuming it faster than it was being replenished. Burning wood to boil water has become an unaffordable luxury for these people. Water borne and air borne infectious diseases are rapidly spreading because of the destruction of natural resources such as wood

If wood is harvested in accordance with sustainable forestry practices, wood fuel could be available from forests, woodlands and savannas indefinitely into the future. Unfortunately, the demand for wood or charcoal has been so high in most of the tropical countries of the world that forests have been pushed back, woodlands destroyed and savannas changed to open grassland. What is termed "energy crisis" by Nwankiti (1981:162) is "the growing shortage of wood and the

environmental consequences that follow on massive deforestation". Not only are forests destroyed, along with their associated plant and wildlife species, but along the desert margin of the world, cutting plants for fuel adds to pressures from over grazing to cause a continuing expansion of barren deserts.

According to Dasman (1984:109), "the use of animal dung for fuel, in areas where woody plants have virtually ceased to exist, removes the soil restorative action of this organic material and contributes further to declining productivity". According to the Fact Sheet on Land Degradation 1999, in terms of the national review of land degradation, the Limpopo Province is one of the most degraded provinces in South Africa. Limpopo Province has the highest index values of both soil and veld degradation.

2.8.1 DEFORESTATION

According to Gilpin (1996:56), deforestation refers to "the removal of forests to increase the amount of arable land". According to calculations made by Miller (1997:394), "humankind has already destroyed almost 10 million square kilometers of wooded and forest areas". This is mainly done to clear land for agriculture, to obtain firewood and for financial benefits such as the sale of wood for furniture and other wood products. The most serious effect of deforestation is the disturbance of the gas balance of the atmosphere.

Forests are important sponge regions and as a result of water retention, run off is more uniform and constant. Not only do forests reduce the effects of heavy rain on erosion and flooding but they also assist agricultural planning in that the amount of available water can be more readily predicted. Apart from the fact that these forests are the natural habitat of rare plants and animals, the forests on the mountain slopes are particularly important catchment areas to replenish the water supply.

According to Tolba (1992:71) fuel wood extraction is not a major cause of tropical deforestation (except in some tropical forests in Africa) but is leading to deforestation in many non-tropical LDC's. Besides deforestation and accelerated soil erosion, fuel wood scarcity has other harmful effects. It places an additional burden on the rural people especially women and children who must spend more time and must often walk long distances searching for firewood. Timberlake (1985:116) says "an estimated 800 million poor people who cannot get enough fuel wood often burn dried animal dung and crop residues for cooking and heating".

According to the Global Environment Facility (1996:201), "deforestation in the wake of agricultural expansion, settlement development, the pressures of growing demand for fuel wood or direct extraction can substantially deplete biodiversity and cause land degradation in all ecosystems". Measures involving reforestation afforestation and forest ecosystems management can help prevent and control land degradation and ensure sustainable gains in biodiversity conservation.

2.8.2 SOIL AND LAND DEGRADATION

Although there is no single agreed database on the current status of the natural resource of South Africa, and quantification may be weak and inconsistent, accounts of soil and vegetation degradation are numerous and the same alarming conclusions are drawn. According to Critchley (1998:70), "the natural vegetation of South Africa is increasingly degraded and nobody seems able to stop the process". A table drawn from the Agricultural Research Council, 1997, as adapted from Critchley (1998:74), shows that this must be cause for real concern.

PROVINCE	ESTIMATED EXTEND OF DEGRADATION
North West	20%-50% poor to very poor conditions
Free State	30% poor to very poor conditions
Limpopo	87% poor to critical conditions
Mpumalanga	50% poor to critical conditions

Table 2.1 Estimated extend of degradation in certain Provinces of South Africa by Critchley (1998:74)

According to an Unpublished Fact Sheet on Land Degradation in South Africa (1999:3), many centuries of exploitation and unjust land policies have left large tracts of South Africa degraded: Global climate changes threaten to worsen desertification in some parts of the country. This global climate change makes it even more difficult to feed a rapidly growing population.

According to Soussan (1998:120) soil degradation alone costs South Africa nearly R2 billion per annum. Significant costs are incurred because of erosion of arable lands, which leads to a siltation of dams and increased costs of water purification. The overall cost of land degradation is much higher however, as it includes other problems such as loss of plant cover, alien plants, bush encroachment and deforestation. O'Riordan (1995:233), says "the only way to protect the soil from the erosivity of rainfall is to ensure a cover of vegetation to intercept the kinetic energy of raindrops and absorb it harmlessly into leaves and surface organic matter".

Of all the greatest challenges to sustainability, the expectation of sustainable energy use is anything like the foreseeable future looks the most formidable. Energy use is rooted in all societies as a manifestation of technology, consumption patterns, price distortions and land use arrangements. There is a pressing need to improve the methods for allocating society's preferences for

different energy – environment alternatives via displays of consequences and various trade-off games aimed at soliciting value preferences for different futures of energy economy and environment.

2.8.3 POLLUTION OF THE AIR

Environmental pollution is amongst the most serious of contemporary problems, not only because of its immediate social and economic interfere with amenities and other legitimate uses of the consequences, but because some forms of pollution disrupt complex biogeochemical cycles and many ultimately threaten the survival of the human race itself. A widely accepted definition of pollution is as follows: "the introduction by human action, directly or indirectly of substances of energy into the environment. This results in deleterious effects of such a nature as to endanger human health, harm living resources or ecosystems, and impair or interfere with amenities and other legitimate uses of the environment", (Owen 1991:22). This definition makes it clear where pollution originates – it is caused by people and occurs when damage is done.

Miller (1997:13) views pollution as "any addition to air, water, soil or food that threatens the healthy survival of activities of humans of other living organism". Air pollution is believed to be responsible for up to one quarter of all respiratory morbidity. Indoor air pollution is a much more significant problem in less developed countries. Burning coal and wood for cooking in poorly ventilated dwellings exposes women and children especially to very high concentrations of particulate. According to O'Riordan (1995:338), "indoor air pollution contributes to pneumonia and other respiratory infections in children and chronic respiratory diseases including lung cancer in adults". It can even provoke stillbirths in women exposed during pregnancy.

Reducing these effects will depend on providing not only information about the potential harms to babies and children but also alternative fuels at affordable prices. While the threat of catastrophe from problems such as disease and global warming may eventually require societies to change fundamentally in order to avert the danger, there are policies that can be followed that do not challenge the basic rules of society now in place. In fact there are options that are justifiable for reasons other than their environmental benefit, and that are placed under the heading of "no regrets" policies. For global warming, according to O'Riordan (1995:329), "the relevant no regrets strategy mostly involves promoting energy efficiency". There is much evidence that there is scope for large reduction in total energy use through increasing the efficiency with which energy is used. This is particularly true for electrical appliances since there is so much inefficiency in generating electricity from fossil fuels. On the face of it, there is large scope for saving energy, including many opportunities that are not taken up. The reasons lie in the way that energy is perceived by the customer, regulated by bureaucracy and treated politically.

2.8.4 DESERTIFICATION

Desertification is primarily a problem of sustainable development. It is a matter of addressing poverty and human well-being, as well as preserving the environment. Social and economic issues including food security, migration and political stability are closely linked to land degradation. Land degradation can be minimized with both new and traditional technology. According to Global Environment Facility (GET) (1996:15) United Nations Convention to Combat Desertification (UNCED) is being implemented through action programs, which address the underlying causes of desertification and identifying measures to prevent and reverse it.

2.9 STRATEGIES FOR INNOVATION

Kottak (1996:243) identifies strategies for maximising social and economic development. Development must be:

- Culturally compatible
- Respond to locally perceived needs
- Involve people in planning and carrying out the changes that affect them
- Harness traditional organisations and lastly
- Be flexible

According to Global Environment Facility (1996:1) Agenda 21, and the Global Consensus on Forestry Principles adopted at United Nations Convention To Combat Desertification (UNCED), underline the significance of conservation and sustainable use of forests and call for increased international cooperation to promote sustainable management, conservation and development of forests. Local people have a lot of relevant knowledge about their environment, on which interventions and technical improvements can be developed. Indigenous technologies are often well-suited to local conditions, although they may need adaptation as circumstances change. Researchers need to work more closely with local people to identify ways of improving the performance of existing technologies, and also to educate them about new inventions so as to change their attitudes and perceptions as well.

2.9.1 OVERINNOVATION

By overinnovation Kottak (1996:243), refers to too much change. Change that evolves to maintain a system can play a major role in changing it. Kottak (1996:251) commented that "natives are unlikely to cooperate with development that require major changes in their daily lives, especially ones that interfere too

much with customary subsistence pursuits". People usually want to change just enough to keep what they have. Values of the poor are neither abstract nor long-term. They are based on the objectives of the affected people and are simple and down to earth.

2.9.2 UNDER-DIFFERENTIATION

Kottak (1996:245) says the fallacy of "under-differentiation is the tendency to view the less developed as more alike than they are". Development agencies have often ignored cultural diversity and adopted a uniform approach to deal with very different sets of people. The most productive strategy for change is to base the social design for innovation on traditional social forms in each target area.

2.10 CONCLUSION

The linkage between environmental quality and economic growth is widely recognised and understood as an absolute priority for sustainable development. Future generations will have to live with the consequences of policies chosen in disastrous if the long-term results are ignored. By being denying electricity, communities are further impoverished as they have to meet the higher costs of fuel such as paraffin, candles, gas and batteries while the quality of life expectations are frustrated by being denied the opportunities and benefits of electrification. In addition, the pollution caused within homes and in the wider environment, is a major health hazard. This situation can only exacerbate an already deteriorating social and political climate in these areas. Combating deforestation reduces net carbon dioxide emissions, land degradation and the loss of biodiversity. Similarly, the introduction of renewable energy technologies can cut greenhouse gas emissions while easing pressure on land and forests by providing an alternative to unsustainable biomass fuel.

While the exorbitant emission of greenhouse gases is a consequence of a specific type of development (extremely wealthy), which favours the excessive consumption of fossil fuels, desertification processes are a consequence of an opposite type of development (extremely meagre) requiring intensive consumption of fuel wood for basic survival. The former could be possibly overcome by intensive education effort, but the latter requires, in addition, substantial investment in capital and technology to create the basis for sustainable economic development.

Additional incentives may be required to change behaviour from present patterns of use-especially where resource conservation of management demands restriction on extraction. Community groups will also require efficient support services to make improved technology available and improve their capacity for resource management and establishing regulation.

Local people need to be involved in the development of rules, techniques, and management plans for the sustainable, multipurpose use of forest resources. These locals must be empowered to implement sustainable forest management plans.

Provision of electrical power for the communities who do not have electricity, will significantly reduce the growth in greenhouse gas emissions, which is polluting the air in the area.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. INTRODUCTION

Research is a preplanned, systematic and organised approach to the collection of data. The data serve as evidence to support findings, which answer a clearly defined and delineated problem. Methodology is merely an operational framework within which the facts are placed so that their meaning may be seen more clearly. Research methodology therefore, means that a specific problem which needs to be studied must first be identified, then a plan of action to solve the problem must be designed and then implemented so that the results may be evaluate. The researcher should always take into cognisance, the nature of the data to be collected, as these dictate the type of research methodology to be used. By methodology therefore, Mouton and Marais (1990:32), refer to: "the arrangement of conditions for both collection and analysis of data in a manner that aims to combine relevance to the research purpose". The research methodology has a further function of obtaining answers/solutions to the problem.

The approach used in the solution of the problem is referred to as the design, method or procedure. For the purpose of this study, methodology will be viewed as the procedure by which, and from which, the plan for data gathering and analysis evolves. The problem determines the methods or techniques for collection and analysis of data.

Schematically Kovacs (1985:51), presents the research process from problem to solution as:

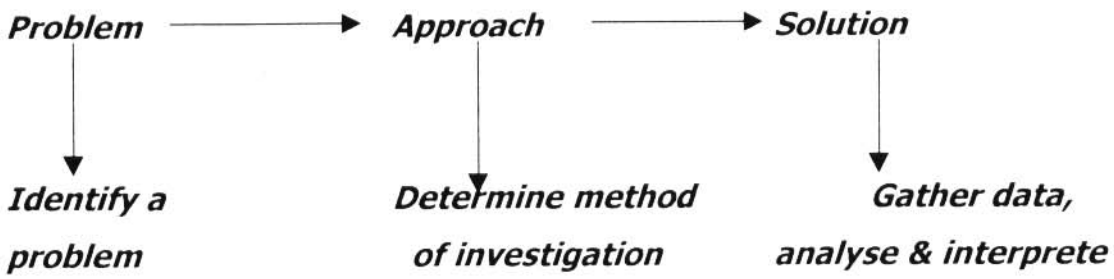


Figure 3.1 as adapted from Kovacs (1985:51)

The research methodology that has been adopted in the current study will facilitate the researcher to come up with a solution to the problem that has been identified as prevailing in Matome. The poverty that prevails in Matome can be accounted for as partly due to the villagers' resistance towards change. In an attempt to meet their fuel needs, the Matome residents unwittingly damage the environment, deplete natural resources and even jeopardise their own health, as the type of fuel they use (wood and cow dung) pollute the air and cause damage to the ozone layer. A community with health problems cannot develop; therefore a method is being sought to resolve the issue, and help the community to develop. It is not only the lives/health of the people at Matome that is at stake here, but that of neighbours and passersby too, as they inhale the smoke too and become victims of passive smoking.

3.2 TYPE OF RESEARCH

The type of research that has been embarked on is exploratory. The researcher has focused on both qualitative and also quantitative data that has been collected and analysed.

3.2.1 EXPLORATORY RESEARCH

In an exploratory study all sources of information are explored. The goal of the research is to formulate more precise questions that can be explored and answered in future research. According to Babbie (2001:91), "this approach typically occurs when a researcher examines a new interest or when the subject of study itself is relatively new". Bless & Higson Smith (1995:42), observed that exploratory research has a purpose of "gaining insight into a situation, phenomenon, community or person". This study is exploratory in the sense that the researcher breaks new ground hoping to make inquiry and also to provide insight on the human and social problem faced by the people at Matome. Babbie (2001:92), mentioned that exploratory studies are mostly done for purposes:

- *To satisfy the researcher 's curiosity and desire for better understanding.*
- *To test the feasibility of undertaking a more extensive study and*
- *To develop the methods to be employed in any subsequent study.*

Exploratory research use qualitative data.

3.2.2 QUALITATIVE RESEARCH

The direction of the research methodology is determined by the choice between qualitative and quantitative approach. By qualitative research, there is always an attempt to study human action from the perspective of the social actors themselves. Babbie (2001:85) says "the primary goal of studies using this approach is defined as describing and understanding rather than explaining human behaviour". A qualitative research entails that the researcher plans to observe, discover, describe, compare and analyse characteristics, attributes, themes and underlying dimensions of a particular unit. Qualitative research, according to De Vos (1998:15), deals with data that is primarily verbal and quantitative research methodologies deal with numerical data. In this study, data will be numerically quantified when being analysed. Qualitative research is embarked on mainly to gain insight into the knowledge, behaviour and attitude of the Matome villagers towards changing their type of fuel.

3.2.3. APPLIED RESEARCH

In applied research, those who are being studied participate in the research process. This study seeks to raise conscience or increase awareness on the degradation of both land and soil at the expense of the health of the Matome villagers. This is mainly done because of ill information and ignorance and for improving conditions and the quality of life of the villagers. According to Neuman (1991:21), applied research "primarily wants to apply and tailor knowledge to address a specific practical issue". The pressing issue that needs to be solved in the current study is the introduction of electricity in Matome in order to change the use of wood and cow dung as sources of fuel.

Researchers however have observed that attitudes and habits are not easy to change. As applied research seeks to change the behaviour of people involved,

it is often not easily accepted. Because of its immediate implication or involvement of controversial issues, applied research often generates conflict. Knowledge develops from experience, particularly the experience of social-political action. Ordinary people like the Matome villagers can become aware of conditions and learn to take actions that can bring about improvement.

3.3 RESEARCH DESIGN

A research design can be understood as the planning of any scientific research from the first step to the last step. According to Bless & Higson Smith (1995:63), "it is a programme to guide the researcher in collecting, analysing and interpreting observed facts". Thyer in (De Vos 1998:123) views a research design as "a blue-print or detailed plan for how a research study is to be conducted". Research design as used in this study refers to the researcher`s plan of how to proceed.

In the current study, a one-short case study has been conducted; which according to De Vos (1998:124), is "a single community during a specific period in time". This community study, is a through observation and analysis of a group of people living together in a particular geographic location in a corporate way. The study deals with such elements of community life as location, appearance, prevailing economic activity, climate and natural resources, historical development, mode of life, social structure, goals of life values and patterns, the individuals of power groups that exert the dominant influence, and the impact of the outside world. For Best (1993:194), "case study also evaluates the social institutions that meet the basic human needs of health, protection, making a living, education, religious expression, and recreation".

Data has been gathered directly from individuals of social or community groups of Matome in their natural environment for the purpose of studying interactions, attitudes and preferences of their type of fuel. Basic to design, therefore are four fundamental questions that must be resolved with respect to the data.

- *What are the data needed?*
- *Where are the data located?*
- *How will the data be secured?*
- *How will the data be interpreted?*

The answers to these questions will bring the research planning and design into a clear focus. The need to use this type of research is apparent in the absence of electricity in Matome; because the insights gained from this study can be used to improve the lifestyle of the Matome villagers. The strategy employed in the study is to proceed as if little is known about the people of Matome and the place. An attempt is made to mentally cleanse the preconditions. The plan will evolve as the researcher learns about the setting, subjects and other sources of data through direct examination. The design will be implemented, data collected and analysed and then the writing done.

3.3.1. AREA OF STUDY AND ITS POPULATION

The primary purpose of research is to discover principles that have the universal application, but to study the whole population to arrive at generalisation would be impracticable, if not impossible. Some populations are so large that their characteristics cannot be measured; before the measurement could be completed, the populations would have changed. The Oxford dictionary defines a population as the total number of inhabitants from which a sample of the study is drawn. For Bless & Higson-Smith (1995:85),a population is "the entire set of

objects and events or groups of people which is the object of research and about which the researcher wants to determine some characteristics". A sample is then easily selected from the population.

Below follows a map of the Matome village as adapted from Statistics South Africa. 1996.

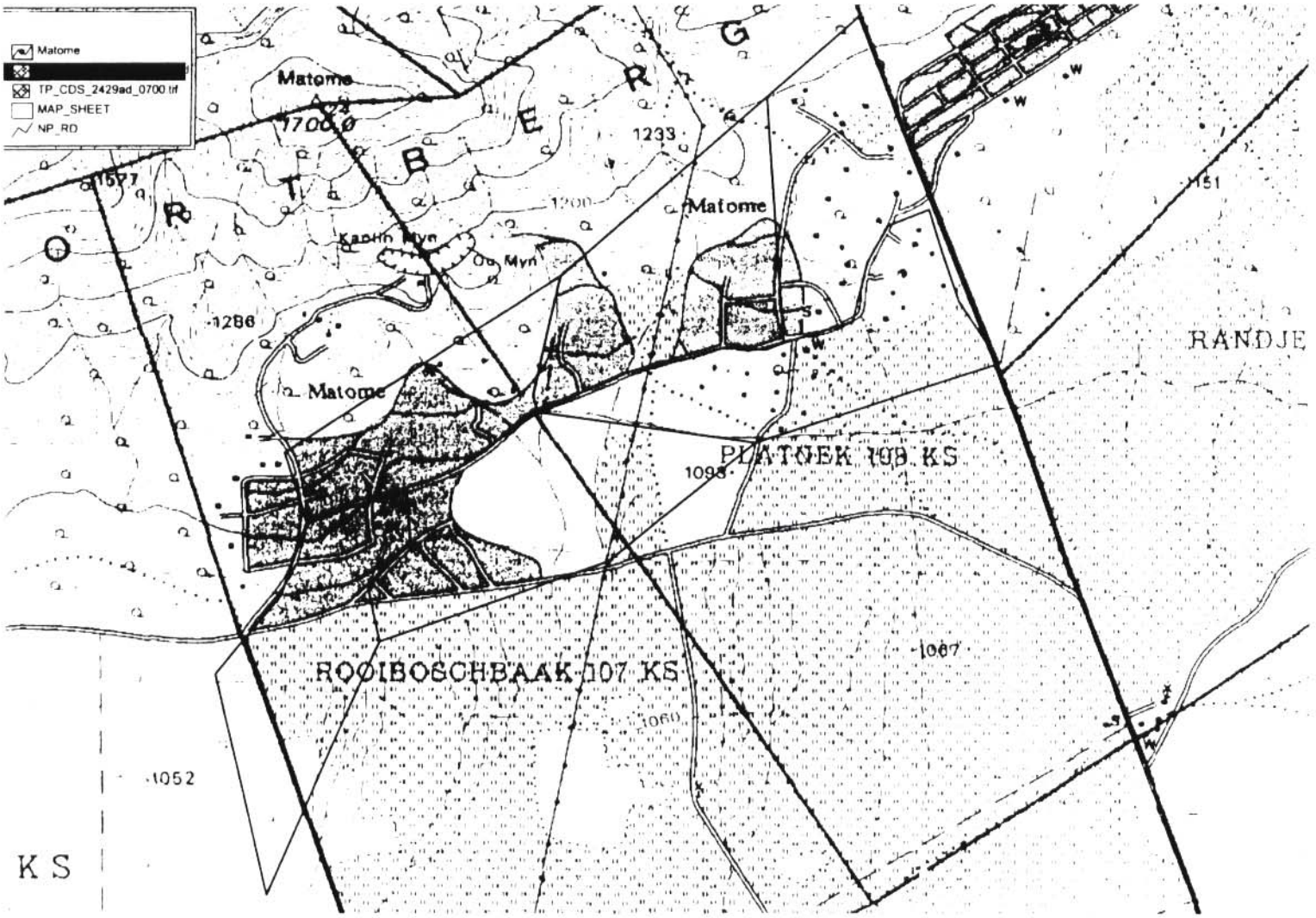


Figure 3.2 Map of the Matome Village adapted from Statistics South Africa 1996

3.3.2. ANALYSIS OF THE MAP.

Matome comprises the shaded area above both Rooiboschbaak and Platnek. Unlike the shaded area above Randjies , namely Schuinsrand (Ga – Ledwaba), Matome has not been planned i.e. it is a scattered settlement that covers approximately 20 km^2. It is surrounded by other rural areas, which are in the danger of passive smoking from inhaling the polluted air, which flows from Matome. It should be noted that while the others like Ga-Ledwaba and Mmakotse (Randjies) have been electrified, Matome however has been passed and is unlikely to be developed. This study hopes to correct that.

3.3.2.1 SIZE OF AREA, POPULATION AND HOUSEHOLD

Matome, a rural village in the central region of the Limpopo Province, is the chosen area of study. Like many other areas in the Limpopo Province, Matome is under the jurisdiction of the Mandebele Tribal Authority. The population of the village was according to the 1996 census data obtained from Statistics South Africa as shown in table 3.1 below.

Male	*Female*	*Total*
1063	*1431*	*2494*

Table 3.1 South Africa Census 1996 Gender for person weighted, Matome as adopted from Statistics South Africa Census 1996

These statistics have ignored non-voting people and children as well as migrant labourers who spend weekends and holidays in Matome. The elderly, who heads most families in the area are unemployed and receive a social grant from the Government because most men work in big cities far from home. This migrant labour system creates an unbreakable cycle of poverty in the area as women are

left at home without any source of income. There is a convention, which has ultimately been adopted as a cultural norm. People from Matome, like those from all other villages, believe that once a female reaches puberty, she has to prove her fertility by bearing child or even more. This then makes her eligible for marriage and the child grant from the Government to augment the household income. Due to this practice, the size of the household expands tremendously and the grandparents assume a responsibility of taking care of grandchildren sometimes even up to the third generation. In Matome, only the very old, indigent and the youth are in the household, while actively employed adults are migrant workers who often do not in any way contribute to the economic development of Matome.

3.3.2.2 EDUCATIONAL LEVEL

Like the rest of the country, the village is not immune to a high illiteracy rate. Many young people leave school at a very tender age because of either lack of school fees, young parenthood or nursing of the elderly at home. There is only one primary and one high school in Matome. The high school was recently built. Previously children had to walk long distances to other villages for post primary education. The current high school was built only after many young couples had already migrated to neighbouring squatter camps in the urban areas in order to access infrastructure. The migration of the young adults without surety of jobs, tends to increase overcrowding and crime in urban areas. Matome has thus become a deserted village that is stagnant and resistant to development as it is becoming a village of the elderly and the unemployed only. Whatever is provided by the new government, is regarded as "too little too late", in terms of development because people have suffered for a long time and have reached a state of helplessness and hopelessness. This research, hopefully, will involve the villagers, as it is applied research, and will then invoke in them a change of

behaviour and attitude with regard to the use of electricity to replace wood and cow dung.

The high illiteracy level of the Matome villagers makes them look naïve, uninformed and ignorant. Wilson (1989:141), comments that "illiteracy is then a major dimension of poverty all over South Africa, but particularly in the rural areas". This problem exaggerated because of problems of overcrowding, hunger, low morale of teachers, who are under/unqualified and the quality of education provided in the schools. Applied research, however, involves people in the solution of their own problems and in this way it imbibes in them hope, interest and enthusiasm in behaviour/attitude change.

3.3.2.3 MIGRATION

There are generally extremely high rates of migration from Matome to the urban areas. These massive migration flows persist unabated despite the fact that unemployment rates in urban areas have tended to increase. The impact of migration on urban crime and collective violence, as well as on the evolution of family organisation in areas settled by migrants is being stressed. Korten (1984:111), observed that "migrants are largely younger, better-educated, more ambitious, healthier, more self-confident, adjustable, risk taking and infra marginal workers". These youth need not linger unemployed in Matome. By their departure, they transfer out of Matome a valuable portion of its knowledgeable human resource investment and further contribute to its marginalisation. Carter (1999:172), sees migration as "pushing immigrants into a new hierarchy of power, priviledge and prestige". The knowledgeable leave Matome because of its slow pace of development to cities/urban areas where their self- esteem will be boosted. The electrification of Matome, however, might serve to decrease migration of the young and in this way create job opportunities for them and also the development of the village.

3.3.2.4 HEALTH STATUS

Many of the major determinants of health, disease and death are environmental risk factors, not individually chosen aspects of a lifestyle. These risk factors may be natural or generated by human activity and alter people's susceptibility to disease. Dennill (1999:119), opinioned that "with risk factors, people may operate by making unhealthy choices more likely". In 1994, the new Government of National Unity introduced the Reconstruction and Development Programme (RDP) as an integrated, coherent socio-economic policy framework. The political and economic philosophy that underlies the RDP is bases on six basic principles (Afican National Congress 1994 (a): 1-7)

- An integrated and sustainable programme
- A people driven process
- Peace and security for all
- Nation building
- Linking of reconstruction and development
- Democratisation of South Africa.

The health of all South Africans will be secured mainly through the achievement of equitable social and economic development. The Matome people pollute the air on a daily basis thus making themselves vulnerable to chronic diseases. The current study will therefore serve as a primary prevention program, which will educate the people about the health hazard of their fuel system, and it will involve the people in participating in saving their natural resources and saving the environment from pollution.

Central to the National Health Plan (NHP), which was developed by the South African Government, are full community participation and empowerment, intersectoral collaboration and cost-effective care, as well as integration of health

promotion, disease prevention, and curative and rehabilitation services. Most of the heads of the household are the elderly who survive by means of the social grant, which they use also to feed their dependents (unemployed children, grandchildren and great grandchildren). There is a lot of responsibility put on the elderly who take care of up to three generations of extended families within one household. Youth who are dependent on pensioners cannot determine their own lifestyle but have to live according to the lifestyle of the outdated provider. As the elderly cannot afford electricity or rather do not even want to know and think about it, they subject their dependents to wood and cow dung, which is a health hazard both to the human being and the environment.

Wealth determines health is a phrase, which is often used to explain the spatial pattern of ill health and premature death at various scales. Wealth determines health in terms not only of the ability of a nation to provide health services or the ability of individuals to pay for such services but also of determining the nature of the environment in which the majority of the population has to live.

3.3.2.5 ECONOMIC ACTIVITIES

Major structural changes have occurred in the South African economy over the past years. According to the National Economic Development and Labour Council (NEDLAC)'s annual report 1999, economic growth and employment creation remain a central challenge to South Africa's economy. Employment remains the strongest defense against poverty. There is only one brick factory around Matome. It manufactures bricks and employs people from around the village. Not everybody can be absorbed (employed) in the factory, as people's interests and physical strength differs. Due to the nature of the job in the factory, not everybody is capable of doing the strenuous jobs. While some people are weak, most of the population in Matome comprises the infirm and the elderly. Economic activities are very minimal in Matome. Lack of infrastructure

in the village acts as a barrier for the community to gain access to basic resources. There is a tremendous diversity in terms of people 's access to resources. These can be considered at a variety of scales; differences within the household according to gender for example; inequalities within a local community; regional differences within a country such as between urban and rural populations and also at the international scale. Similarly, there are differences in the way people use resources, which can also be considered at varying levels. For example, decisions regarding resource use differ between low and high-income households, between public and private enterprise and within capitalist or socialist production. Availability of electricity in Matome, will serve to open more job opportunities for the wider community and also improve the health status of the people in Matome as well as those in their neighbourhood.

3.4 SAMPLING

Monette et.al. (1990:132), state that: " a sample is drawn from a population. It is representative when it accurately reflects the distribution of relevant variables in the target population". A sample can therefore, be viewed as a small reproduction of the targeted population. According to De Vos (1998:190), a sample is regarded as "a subset of measurements drawn from a population in which we are interested". Best (1993:13), views a sample as " a small proportion of a population selected for observation and analysis". Samples are not selected haphazardly. They are chosen in a systematically random way, so that chance or the operation of probability can be utilized.

Given the fact that the population in Matome consists of approximately 250 households, using a probability sampling procedure, which is systematic, every fifth house will be used for data collection and a sample of fifty households will be chosen. According to Kovacs (1985:103), "a probability sample can also be obtained through logical or systematic sampling; that is, selecting the elements

of units in a systematic way from a list which is arranged in some order". While fifty respondents will be contacted in order for the researcher to gather data in the community, the researcher cannot guarantee that all will be willing to participate in the current study. However, the sample will constitute 20% of the total population of Matome. As the heads of the households, are the elderly in Matome, the sample will comprise mostly of the aged; and most of these will be women hence those will be the unit of analysis. The unit of analysis according to Bless & Higson-Smith (1995:64), is "the person or object from whom the researcher collects data".

3.5 DATA COLLECTION METHODS

We refer here to the methods that will be employed in gathering data. This answers the question: how will the data be secured? According to Bless & Higson-Smith, (1995:99) "facts which are expressed in the language of measurement became data". When the researcher collects data for the purpose of the research, the data is primary. Data gathered will be directed towards answering precisely the questions raised by the researcher.

3.5.1 QUESTIONNAIRE

Data collected in this study will mainly be through a questionnaire. According to Kovacs (1985:70), a questionnaire: "is a series of well formulated written questions, distributed by mail or person to a selected sample". The researcher will administer the questionnaire in person, in order to motivate the subjects to respond by giving a good reason to do so. The researcher's availability classifies the questionnaire as personal.

3.5.2 INTERVIEW GUIDE

Seeing that most heads of Matome households are the illiterate elderly, an interview guide is also another method, which will be employed in the current study. Bless & Higson-Smith (1995:106), comments that "an interview involves direct personal contact with the participant who is asked to answer questions". The purpose of interviewing is to find out what is in or on someone else 's mind. A set of written questions used in a face to face situation in which the researcher asks the subjects questions and records their answers during the interview or as soon as possible. Best (1993:199), observed that "interviewees provide information based upon what they think the interviewer wants to hear". It is therefore critical for the interviewer to make sure that the person being interviewed understands that the researcher does not hold any preconceived notions regarding the outcome of the study.

This interview will at some instances be used instead of the questionnaire to gather data from the respondents and in order to provide greater flexibility in interpreting questions. In the interview, an opportunity will be provided to assess the validity of the responses. Interviews are used to gather information regarding an individual's experiences and knowledge, his or her opinions, beliefs, and feelings, and demographic data. Interview questions can be asked so as to determine past or current information, as well as predictions for the future. The researcher has chosen to use the interview in the current study so that she may follow cues and encourage the respondents to provide qualitative data, which will provide her with more insight into the problems experienced by the Matome villagers and also into possible solutions to these problems.

3.6 CONCLUSION

Environmental degradation has been described as the impact from human interaction with the natural, social and man-made environment. The depletion and degradation of natural resources and their effects on food and energy supply marginal conditions in human settlements and environmentally conditioned diseases are not so high on the government policies for small rural undeveloped communities such as Matome. The loss of potentially valuable genetic resources is probably the reason for the relatively low priorities assigned to the conservation of these resources. Often, people contribute to the further degradation of already poor environments in the course of trying to meet their survival requirements. However, as the environment deteriorates, so do standards of living and the prospects for meeting future needs. Characteristics of the human environment of the developing world include rapid population growth, rising numbers of people in absolute poverty, increasing urbanization, widespread ill health, and high levels of unemployment and a lack of skilled personnel. These are but some of the characteristics of the natural and human environments of the developing world which ensure that the challenges of and opportunities for sustainable development are quite different from those of the developed countries.

In order to understand the characteristics of resource use or human conditions in Matome , it is essential to identify the underlying processes. Such processes operate at a variety of spatial scales from local (including the household) through to the global level. They include a large number of both physical and human processes. At all scales, it is these factors in combination, which shape the relationships between people and the environment, and also between people in different places. Above all, 'development' needs to be sustainable; it must encompass not only economic and social activities, but also those related

to the population, the use of natural resources and their resulting impacts on the environment.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

Having invested a tremendous amount of thought and energy in developing a theoretical framework, conceptualizing and measuring key variables, planning a research design, and then collecting data, in the current chapter the researcher has striven to present, analyse and interprete the data which has been gathered during the research process. In this chapter the researcher has presented her discovery on how accurate the initial predictions on the study have been. She has also extracted from unanticipated results i.e. new insights for future research.

Monette et al (1988:11), stated that data analysis can be both challenging and interesting in that it serves the purpose of either confirming or refuting the researcher's hypotheses. Data analysis therefore, refers to the process of unlocking information hidden in the raw data, and transforming it into something useful and meaningful. Strauss (1990:18), commented that "data should not be analysed *per se*; but rather the researcher's task is to gather the data and present them in such a manner that the informants speak for themselves". The researcher must give an honest account of data with little or no interpretation of the spoken words made by the informants. In the current study, when interpreting data, the researcher has consciously excluded her own biases and presence, so as not to intrude upon the data that had been collected. In this way, she has presented an objective rather than a subjective study. Data was collected from a total of fifty (50) respondents. Thirty-five (35) respondents completed the questionnaire while fifteen (15) responded to an interview schedule which was administered by the researcher. Participants had been

implored to express their opinions and ideas freely without fear. The researcher had reassured them that the study was not for mere exposure of their plight for publicity, but it was to facilitate her complete her graduate studies and hopefully draw the attention of authorities to their isolation and lack of development.

4.2 DATA PRESENTATION

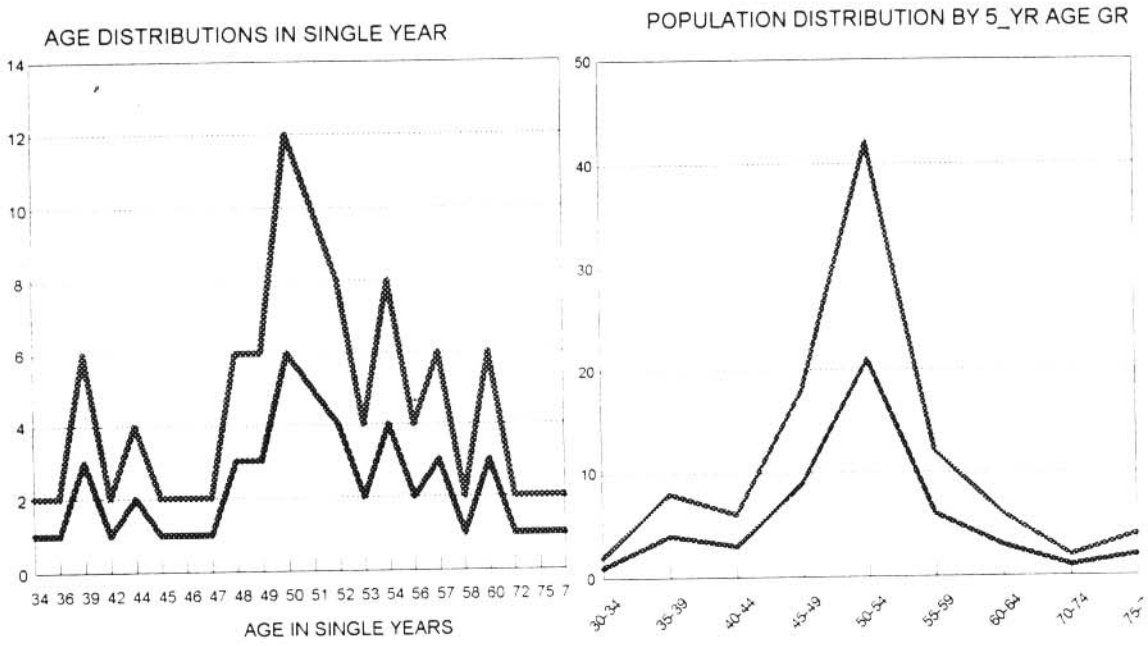
While the type of research that the study embarks on is qualitative, the researcher is required to step back and critically analyse situations, to recognize and avoid bias, to obtain valid and reliable data, and to think abstractly. Data was then processed forging a link between data collection and data analysis. The collected data was analysed to arrive at findings of theories. These procedures include techniques for conceptualising data like data coding which was used in the data analysis of the study. The researcher assigns a descriptive word or phrase to each variable. In this study variables that were used in the questionnaire and interview schedule, were coded to facilitate a quantitative presentation.

4.3 DATA ANALYSIS

The researcher was able to selectively attach meaningful tags to words, phrases and situations, and to name what was potentially important about them. She also distinguished data that contributed significantly to the study's findings. She presented data in the form of tables and graphs that indicated both numerals and percentages. Prior to the presentation of the results, the researcher had deemed it necessary to describe the demographic characteristics of the study sample in order to shed more light on the background of the respondents.

4.3.1 DEMOGRAPHIC FACTORS: REFER ALSO TO ANNEXURE A (LIST OF TABLES pages 103 –109) AND ANNEXURE C (QUESTIONNAIRE pages 113 –118)

4.3.1.1 AGE DISTRIBUTION



Figures 4.1 and 4.2 Age and Population Distribution

Participants aged between 50 and 70 years constituted more than half of the sample (54%) as shown in figures 4.1 & 4.2 above the, while the younger age group constituted less than a quarter of the sample (See also question 2 of Annexure C and table 1 a & b of Annexure A). This is due to the fact that in Matome, the elderly and retired people head most households while the younger people seek residence in areas that have infrastructure and resources such as purified drinking water and electricity.

4.3.1.2 GENDER

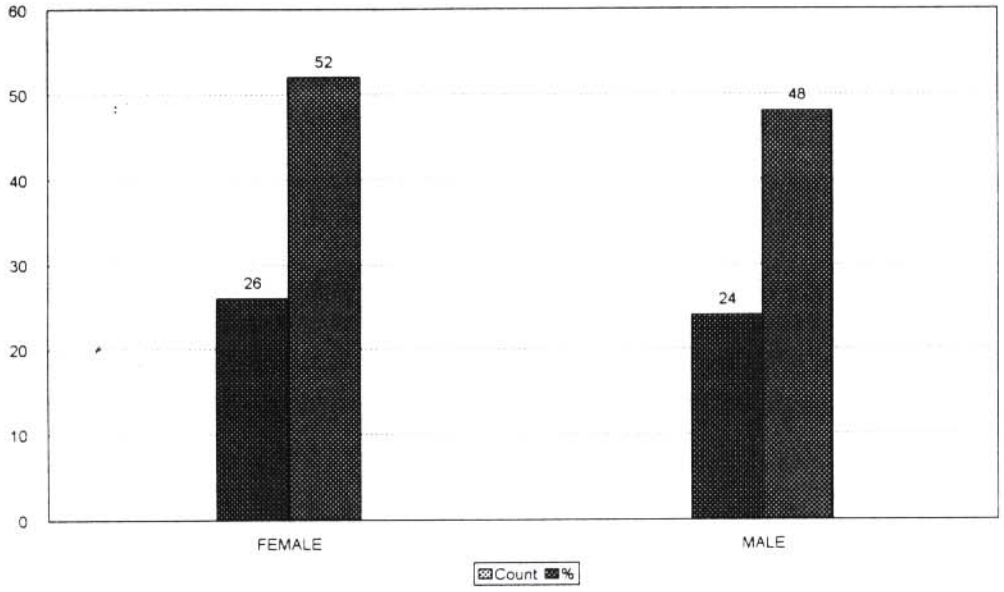


Figure. 4.3 Total number of Males and Females

Like in most parts of the R.S.A., gender distribution in Matome is uneven. It indicates a higher prevalence of female-headed families--for instance 52% of the respondents (26 households) indicated that they come from female-headed households (See question of Annexure C and table 2 of Annexure A). The majority of males were either dead or were migrant workers employed in neighbouring or far away urban settings. They come home occasionally –-i.e. while some come home once monthly, others come home only when they were on leave or during the Easter and Christmas holidays. This is in keeping with the situation in the entire Republic of South Africa. In the Limpopo Province for instance women constitute 56% of the population, (Office on the Status of Women 2000:35). As a great proportion of men continue to be employed in mines, industries and towns away from home, women are often the heads households in rural areas. In addition to their responsibility of caring for their families, the elderly and the infirm, in circumstances where the most basic needs

– food, water and fuel – are hard to obtain, women in Matome also serve as the sole breadwinners. They often have little or no formal education and training. Their chance of obtaining paid employment is almost nil. Though Matome women struggle hard to change their situation, the burden of poverty falls mostly on them because of their double workload, lower level of education and smaller income.

4.3.1.3 EDUCATIONAL LEVEL

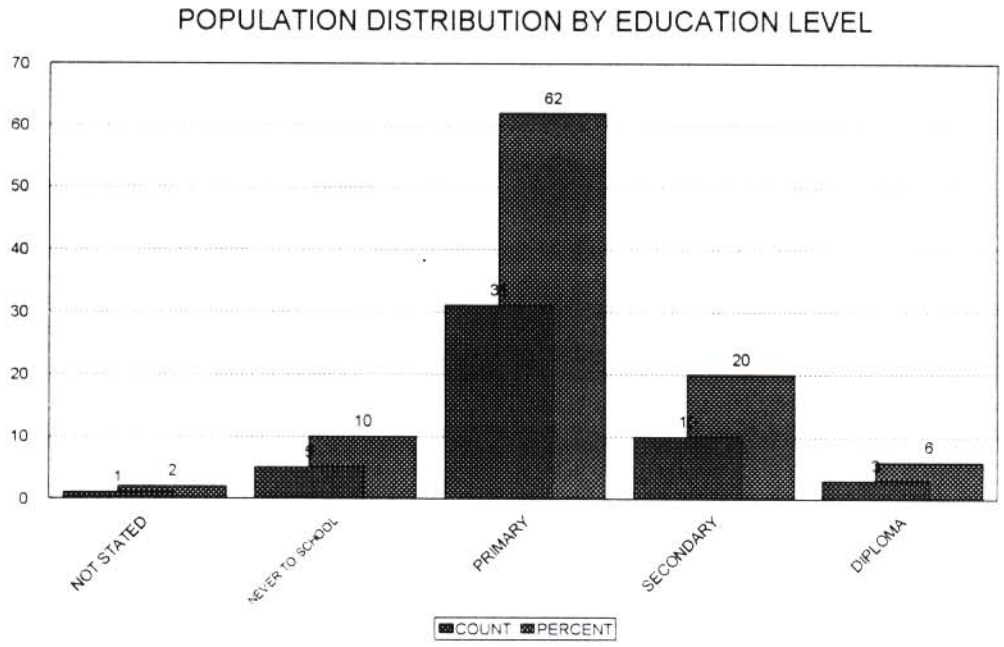


Figure 4.4 Population Distribution By Educational Level

For sustained rural development to occur in Matome, the educational level of the residents must be upgraded. The former system of education as was practised in the Apartheid era was not geared towards the development of the entire society. Some communities were deliberately passed by in order that they could supply a cheap labour force. The education system tended to equate education with securing a better office job, rather than creating opportunities outside office

employment. There is a significant difference between enrolment, attendance, performance and quality of knowledge of the enrolled students. For example, females dropped out of school because of early marriage, pregnancy and above all to help their poverty stricken families. Still worse there were situations where females were not encouraged to attend school hence the prevailing low educational level or illiteracy rate of women in South Africa especially in Matome. Only those females who were from relatively middle class or wealthy families attended schools regularly and completed their studies to become middle class adults too. However, those who did acquire some level of literacy tend to move away from the underdeveloped rural area to urban or semi-urban areas that offer basic resources and infrastructure. However, as the saying goes that East, West, home is best, some elite or middle class people prefer to settle in Matome.

Mammo (1999:204), stated that "it is through education that society's rectilinear is set." Through education, simple but effective information can be disseminated and awareness and consciousness building can be carried out and deepened. More importantly; it is through education that African traditional knowledge and practices can be integrated with better technology that eventually would enable the continent to attack poverty at its roots. This indicates that development is inevitable where the community is subjected to some form of training and upgraded educational level. Literate people are receptive and open to new ideas. They are relatively methodical in their approach and are inclined to be rational when solving problems both in the short and long term. Matome with high illiteracy rate, is no exception.

4.3.1.4 SOCIO-ECONOMIC FACTORS

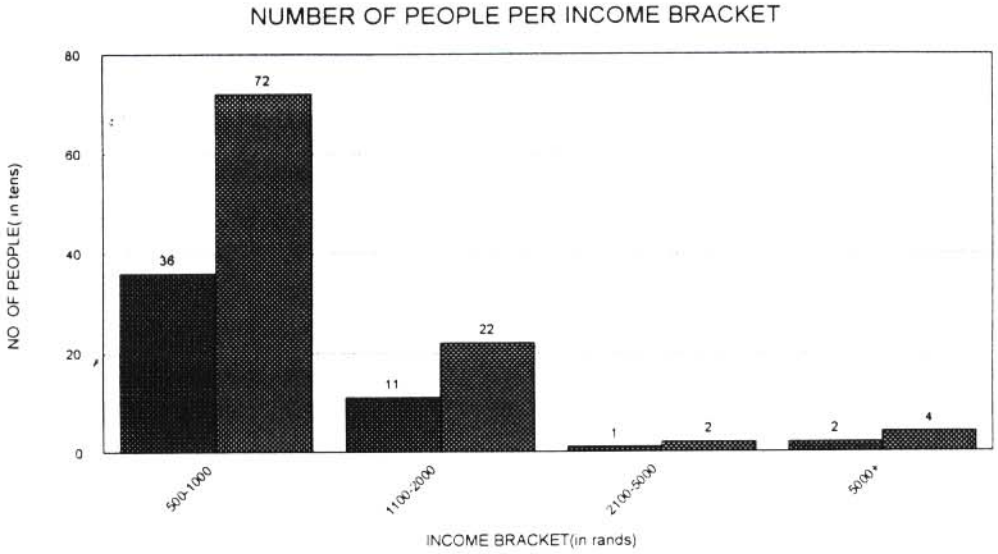


Figure 4.5. Number Of People Per Income Bracket

From the above graph (Figure 4.5), the researcher has deduced that the respondents' monthly income generally comes from a low or poor socio-economic background. The majority (72%) of the respondents reported that they earn in the bracket of R500 to R1000 per month. This is supported by table 4 of Annexure A and questions of Annexure C. Only a small percentage of the respondents (2%) reported an income above R3000 per month and these evaluated their economic circumstances as quiet satisfactory. This finding is not perplexing in view of the fact that other studies have consistently found that more than 50% of South Africans live in poverty and 75% of those are black, overwhelmingly, women. Women living in rural areas fall in the low income group which is classified as poor than in the cities. (The Poverty and Inequality Report, 1997:105, RSA Department of Welfare). More than half (58%) of the income earned in Matome comes from wages earned from the local brick factory and pension grants for the elderly and the disabled people. The current factors

limit the ability of rural households to improve their standard of living. Labour absorption patterns do not in any way provide adequate employment opportunities for all those seeking jobs. Income distribution remains skewed and benefits trickle up to the wealthy more rapidly than they trickle down to the poor. The highly skewed distribution of income in rural South Africa goes hand in hand with highly equitable levels of literacy, education, health and housing as well as lack of access to water and fuel. All of these factors serve to limit the ability of rural households to improve their standard of living.

Conditions for people living in rural areas are in general no better today than they were in the past. Many houses in Matome are still well below standard. They have been constructed from mud bricks, wood, corrugated iron, stones and other locally available material. The majority (95%) of the respondents stated that the roofs of their houses are made of corrugated iron. Wood, agricultural residues and cow dung are still the main source of fuel in rural areas. According to Tolba (1992: 193), "electricity is still a rare commodity in most rural houses, in spite of efforts to increase rural electrification". Matome people are poor as most respondents revealed that they were in a low level income group of below R1000 per month. Basic facilities such as purified water, energy, roads and good housing were lacking. Resources such as educational institutions and welfare services too were lacking and those that were available were inadequate to meet the needs of the community members. In general, poverty and underdevelopment prevailed.

4.4 PERCEPTIONS OF THE RESPONDENTS

Perceptions and attitudes towards environmental issues are conditioned by cultural, traditional, socio-economic and political factors. Understanding culture is a starting point for learning the meaning of development, the values that guide people's actions and their behaviour. Staudt (1991:36), poses the

following question: "Is culture derived from environmental and economic contexts, as people adapt to changing circumstances"? A community that grows is able to do so as a function of the information it possesses. According to Allen (1992:339), "the more peculiar the lifestyle of the people commented on looks to the outside, the more likely it is that the way those people think about the world is taken to be an adequate explanation of what they do". Lack of adequate energy sources in rural areas is a major obstacle to economic and social development. The principal impediments are recurrent cost of conventional energy supplies and the lack of information for poor people about alternative energy source including possible sources of finance.

Most recent surveys undertaken in rural South Africa reveal depths of poverty as severe as in the poorer African countries to the North. They show that woman, and female-headed households are particularly disadvantaged. As a result, three quarters of rural children grow up in households below the poverty line. Development is an evolutionary and civilizing process. Culture is possessed by locals in remote places (but not, apparently by developers) and often impedes progress.

4.4.1 PERCEPTIONS ON THE SIZE OF THE FAMILY

For the individual poor household, children represent wealth and security and in the aggregate, rapid population growth presses in upon the natural resource base. Responses on question 9 of the questionnaire's Section A related that 22 % of the respondents have seven occupants in their households whilst only 10% have least members of 5 in their households.

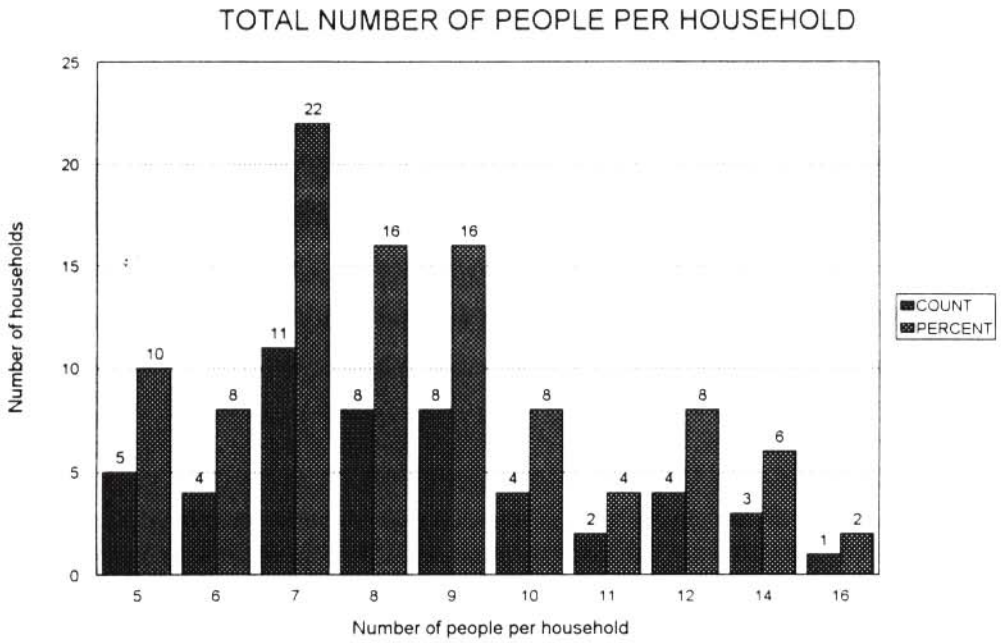


Figure 4.6 Total Number Of People Living In A Household

In 22% households there is a minimum of 11 people per household who live and have to survive on an income of less than R1000.00 per month. While statistics shows an increase in the population density, natural resources such as wood show a rapid decrease and the future of generations to come is doomed as all natural resources will have been depleted. Overpopulation limits the opportunities of many people, particularly the poor from accessing land. It leads to increasing competition for available jobs and also overburdens available social services thus it compounds health and nutrition problems.

Morton (1996:151), observed that "the more people there are, the more they destroy the long term potential of fragile environment and the poorer this makes them and their descendants". The deteriorating environmental conditions in which people live propagate the spread of infective agents and the breeding of their vectors. Tolba (1992:201), observed that overcrowding accelerates the spread of tuberculosis and other respiratory infections.

4.4.2 ON AFFORDABLE FUEL FOR COOKING

Some 94% of the respondents according to their response to question 2 of Section B on Annexure C indicated that they were dependent on fuel wood for cooking food that they consume. The serious and rapid environmental decline threatens the future of Matome. Deterioration of the resource base results in corresponding decreases in the productivity on which the survival strategies of most poor people/households depend. Only 6% of the respondents indicated that they use commercial fuel for cooking. Korten (1984:142), observed that "the poor in their desperate efforts to survive add to the degradation". As the sources of wood diminish and population increases, the cost for fuel wood is bound to rise.

'Experts' mistakenly think that people routinely cut trees to get fuel for domestic consumption and deduce that a decrease in domestic fuel wood consumption would reduce the rate of deforestation in areas of scarcity. Domestic fuel consumption increases proportionately with population growth and both are directly related to deforestation.

Below follows figure 4.7 that explains the respondents' choice of fuel for cooking.

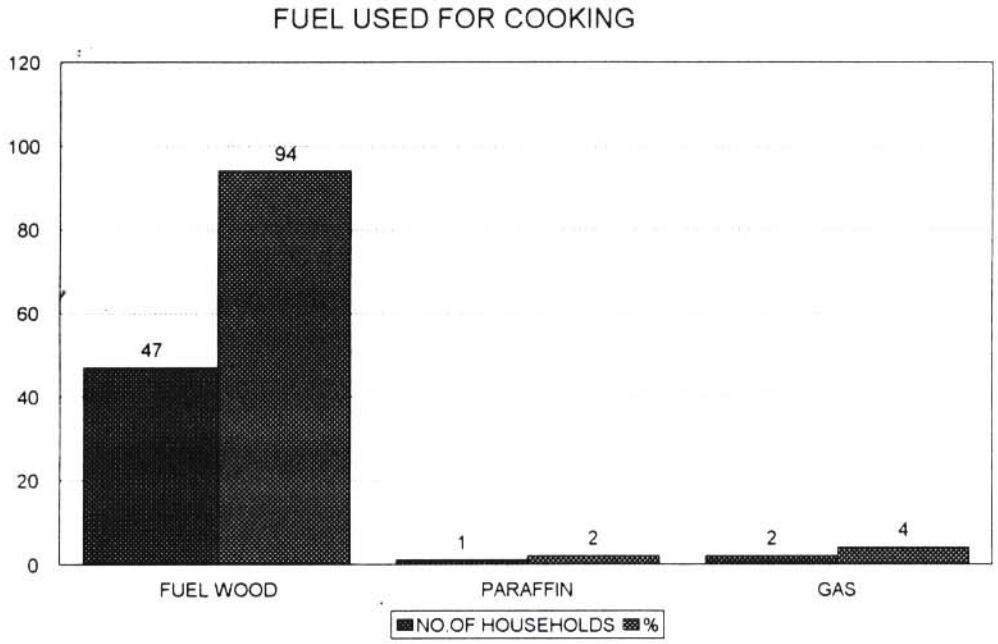


Figure 4.7 Fuel Used For Cooking

The response of question 2 of Annexure C indicated that majority (94%) opt for more affordable or even free fuel wood while an insignificant low number of people use paraffin and /or gas which have to be purchased at a higher price. This then indicates even the reluctance of the majority to change to electricity, as this might not be affordable to them.

4.4.3 ON DISTANCE OF ACCESSING AFFORDABLE FUEL

Only 6% of the respondents get their fuel from the market, while the majority (94%) resort to walking long distances (a minimum distance of approximately 4km) to gather free wood from the forest. As nearby fuel wood sources are exhausted, people have to walk long distances to access free firewood that is

fast getting depleted. The depletion of forests is also accompanied by erosion and soil degradation. The following figures show the preferred source of fuel and its accessibility.

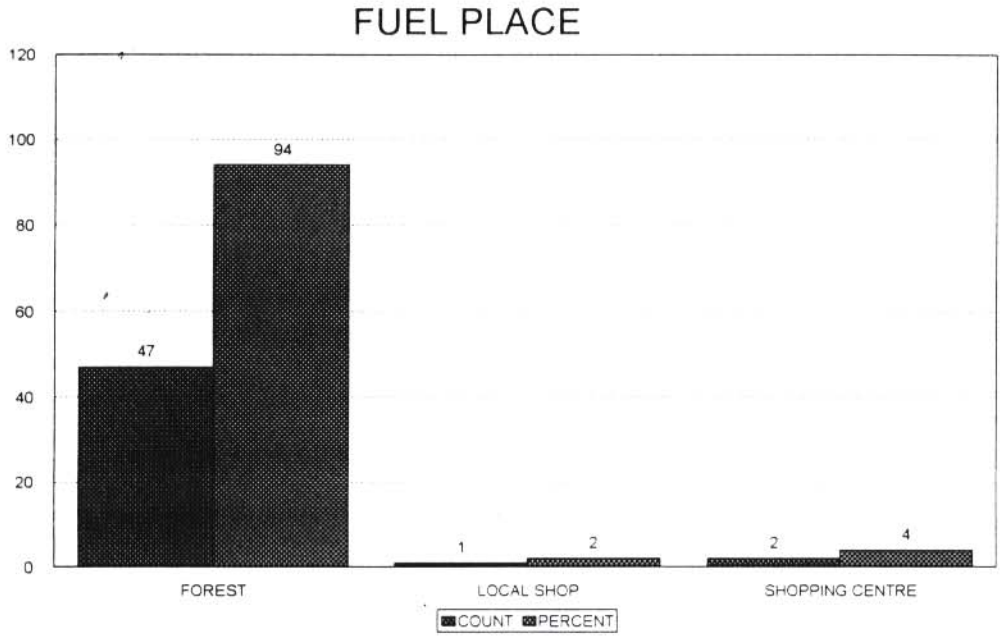
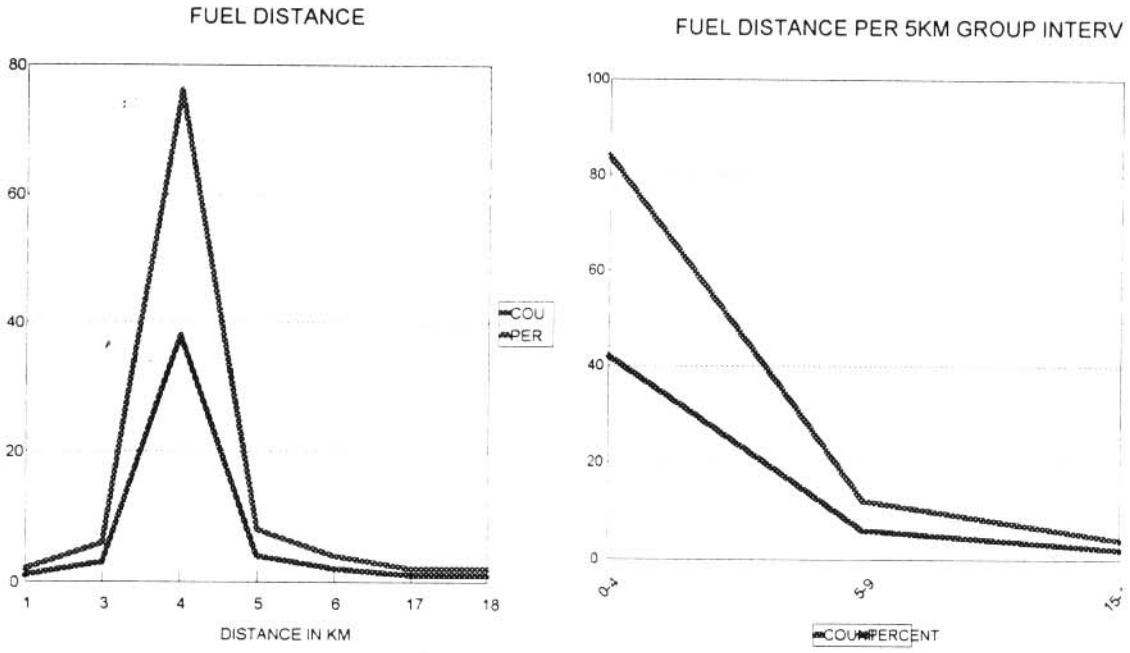


Figure 4.8 Fuel Collection Place

While the local shop and shopping centre are within the village, the majority of people (94%) are prepared to walk the +_4km distance to access free firewood in the forest. This was taken from their answers to question 4 of Annexure C Section B.



Figures 4.9 and 4.10 Fuel Distance

4.4.4 ON PRICE OF FUEL

According to Timberlake (1988:99), "energy planning in Africa is more complex than in the developed world, partly because the great majority of energy needs are met at present by wood fuel, most of which is collected and not purchased". Cutting trees for firewood puts heavy pressure on the wood resources in Matome. Walking long distances seems not to be a problem for the people of Matome for the mere fact that the wood is free of charge. Matome people simply gather what wood they need from the mountain around them and rarely pays for it. The impression one gets here, is that time management is not of essence to the people in Matome. Whatever amount of time spent in walking to the forest is not regarded as valuable as the amount of money that would have

been spent in purchasing fuel. Here unemployment and illiteracy are prominent with regard to the value placed on time.

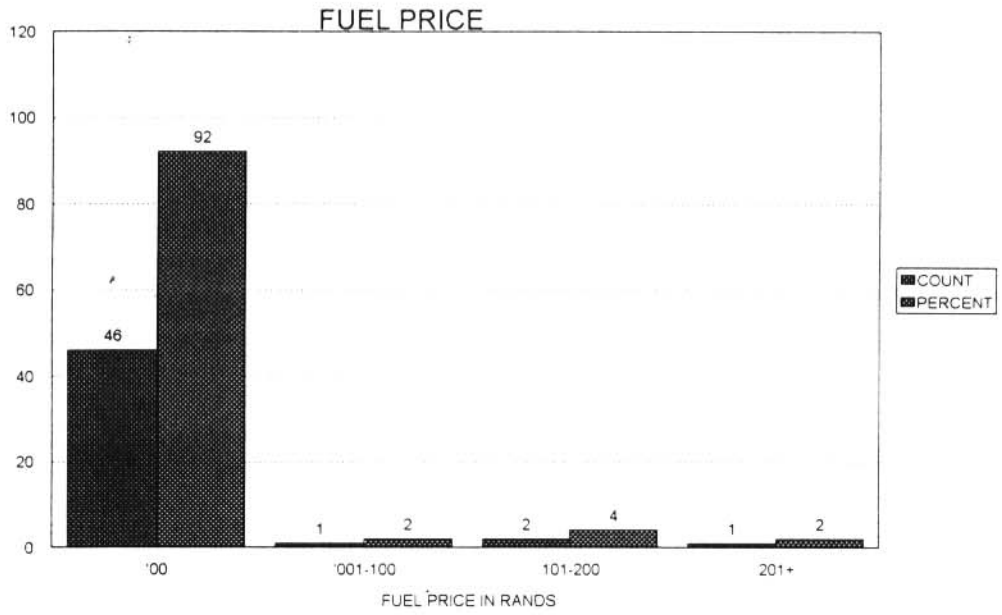


Figure 4.11 Fuel Price

4.4.5 ON HEALTH INSTITUTIONS

According to Timberlake (1985:36), "the industrialised world sees Africa as basically unhealthy because it is full of so many nasty diseases". It is gradually becoming clear that Africa's health problems are not caused so much by diseases as by poverty, and the diseases are not a cause of Africa's slow development, but a symptom of it. Matome villagers have more than their fair share of debilitating, fatal and non-fatal diseases. While 62% of the respondents indicated that they visit a health institution, which is approximately 5 km away, only when it is necessary i.e. because of repeated attacks of cough, which might be tuberculosis, 38% never visit the health centre. The villagers in Matome are easy prey to diseases caused by air pollution yet they do not have easy access to

a health centre. Matome villagers are discriminated against by disease in the same way that they are discriminated against by their government. It is women, disadvantaged by their social custom, whose burden of ill health is most onerous. Control of diseases such as coughing in Matome, will depend entirely on the frankness of the Limpopo Province Government in educating the people as to its causes and prevention. Figure 4.12 alludes to that.

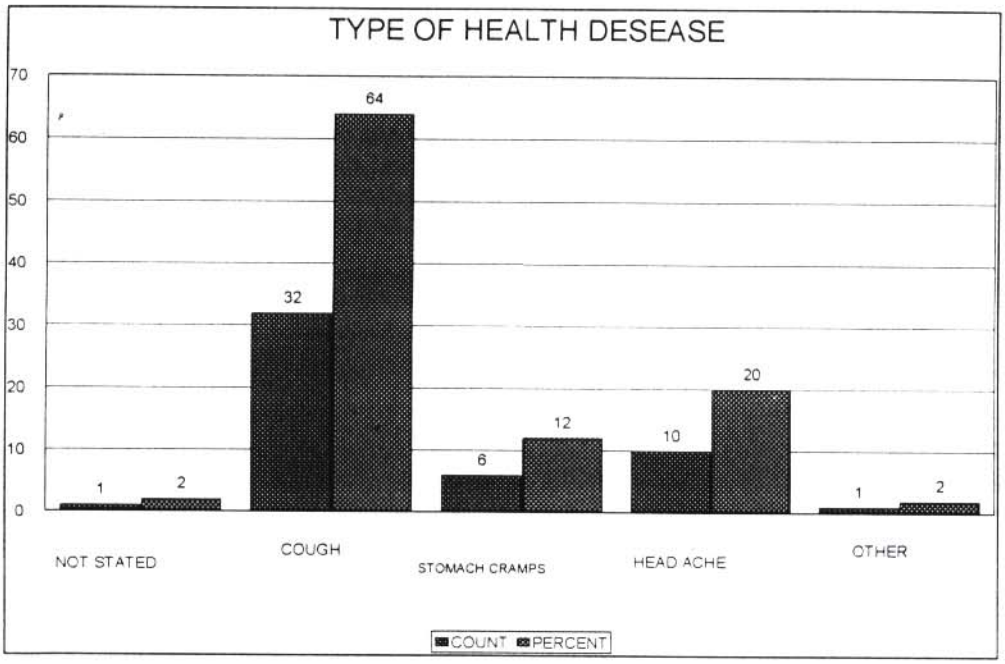


Figure 4.12 Types Of Diseases For Which Matome Villagers Visit The Health Centre

Matome is "unhealthy" not because it is inherently disease-ridden but because fewer people can afford health. A blessing in disguise is the fact that there is a clinic in the neighbourhood of Matome where the poor can receive medical attention. The researcher found out from question 11 of Annexure C that 64% of the population in Matome visit the health institution for health purpose, while 36% never make any attempt to visit the health institution.

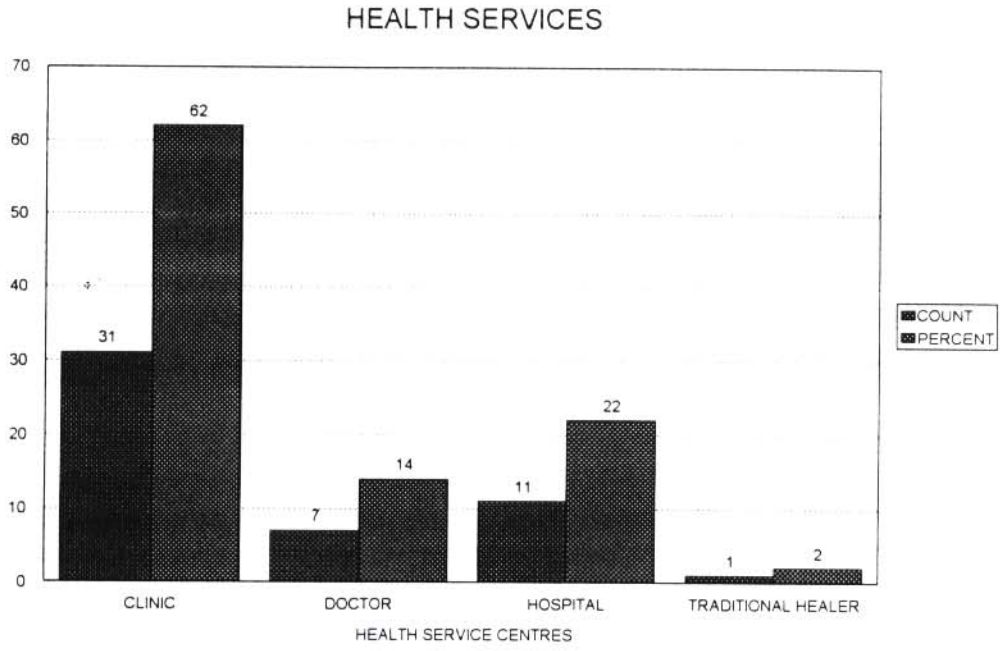


Figure 4.13 Health Services

The same sorts of disenfranchisement, which keeps the Matome people poor, keeps, them unhealthy. The Earth Works Group (1989:11), found that "lung damage from ozone polluted air is a risk faced by roughly 3 out of 5 Americans". In the atmosphere, ozone occurs naturally as a thin layer that protects people from the sun's ultraviolet rays, but when it's formed at ground level, it's deadly. Cooling the Greenhouse, Natural Resources Defence Council (NRDC) as cited by the Earth Works Group (1989:9) commented that "for the first time in history, human activities are altering the climate of our entire planet. In less than two centuries, humans have increased the total amount of carbon dioxide in the atmosphere by 25% form the burning of fossil fuels and the destruction of forests...Unless we reduce emissions of greenhouse gases, the stable, hospitable climate on which civilization is based could become a thing of the past".

Illness is ascribed to causes that are regarded as irrational or unnatural, such as witchcraft or displeasure of the gods. A disease must be viewed as a

consequence of natural biological processes such as the body's response to harmful germs and viruses, life stress or as a consequence of wear and tear associated with aging. People who are ill are never blamed as being at fault for their illnesses.

In contemporary society, response to illness is by providing health services and establishing roles for those who are to use such services. A person who is seriously ill is not expected to participate in normal activities, but has to seek care and follow the therapeutic regime as prescribed by a physician. According to the responses of question 9 of Annexure C, only 8% of the respondents indicated that they ever visit a health institution.

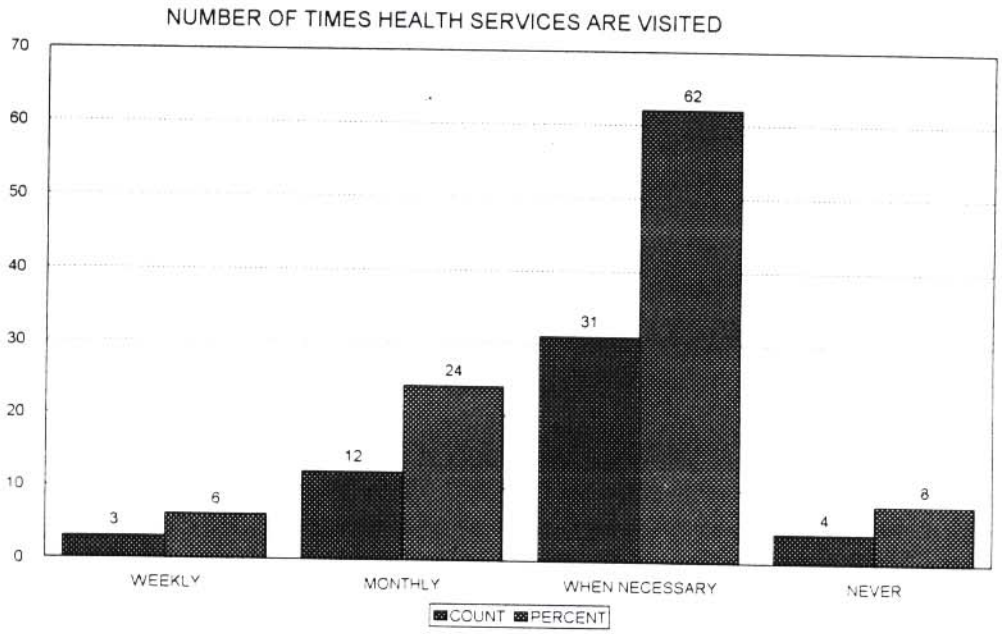


Figure 4.14 Number Of Health Visit

It is generally assumed that the medical profession will bring knowledge and technical skills to bear in order either to cure the disease or to limit impairment. The health institution is inaccessible to some because of the distance that has to

be traveled. Tolba (1992; 193), found that "the use of wood, agricultural residue, and cow dung for domestic fires and other uses in rural areas creates severe indoor air pollution, to which women and children are particularly exposed". There is an increase of the incidence of respiratory diseases and nasopharyngeal cancer among persons, exposed to emissions of such fuels in rural homes.

All constituents of the environment of our planet ultimately exert an influence on human health and well being. However, the greatest and most direct influence is the immediate environment of home, work place and neighbourhood. Both environmental and genetic factors are involved in the incidence of disease. While genetic factors usually give rise to congenital diseases and environmental factors to acquired ones, there is often interplay between the two. Access to health care services is a right under the Constitution (Act 108 of 1996 section 27).

4.4.6 TECHNOLOGY

Societies progress through stages and, for example, the fact that development means movement from 'tradition' to 'modernity' recur in various forms. More specifically, technological evolution is an essential part of development. Allen (1992:321) views technology as the solution to many environmental problems. To the extent that technology succeeds in its aim of solving the problems, then what technology is appropriate for development depends on what is the problem to be solved. This in turn depends on who has the power to define what are the problems of development or on which view of development is taken.

In the study, the researcher viewed electricity as the solution to the problem in Matome. The answers to question 13 of Annexure C the majority (90%) knew and had heard about electricity from neighbouring villages but did not have access to it in their village. The following figure shows that almost all (88%) of

the respondents stated their reason of not having electricity as not affording to install it in their households, but as unavailability of electricity in their village.

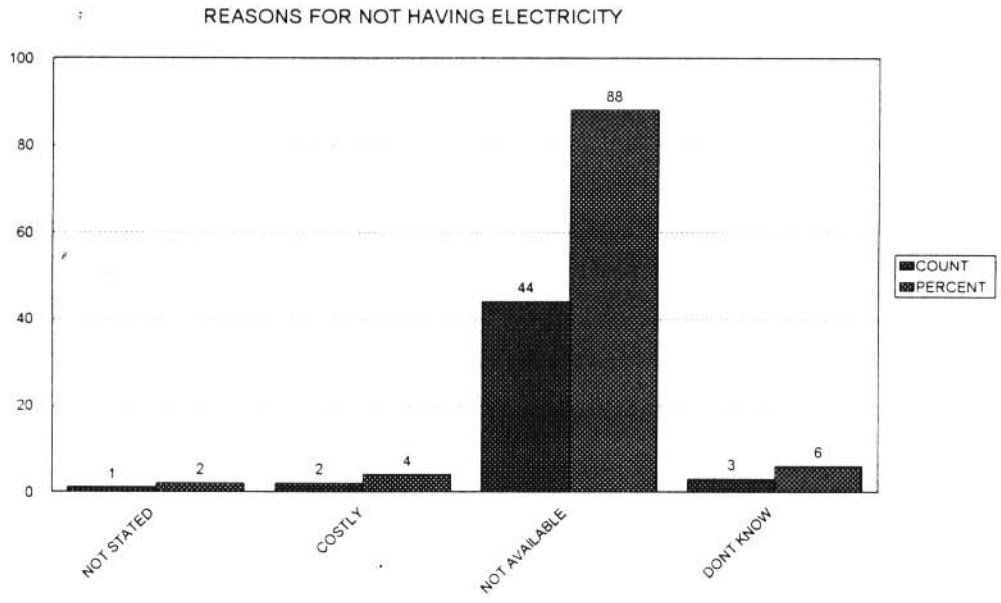


Figure 4.15 Reasons For Unavailability Of Electricity

According to Braun (1977:55) "there are three ways in which technology can continue to provide us with increasing amounts of raw materials".

- by finding ways of exploiting low grade ores, discovering new deposits and
- by enabling common materials to be substituted."

The researcher deemed electricity fit to be the solution because it is regarded as a guide towards meeting their human and social needs. The researcher regards electricity as an appropriate means of fuel because it is aimed primarily at empowering those who lack power such as the rural women and children who are forced to travel long distances to gather the wood. The majority (95%) of the total respondents as indicated by table 14 of Annexure A, wished to have

electricity installed at their houses and also in the village because it will ease their workload at home. Sandhu & Sandler (1986), as cited by Allen (1992:326), stated that "the question is how to involve women in determining which technologies they need for their own development, and that of their families, their communities and their countries". Women must have better access to, use of and control of such desired technology for Matome to develop.

It is often assumed that technology can tame and protect the 'natural' environment as well as act as a catalyst towards a more productive economy. It is therefore seen as a key to poverty alleviation or reduction. According to Crewe (1998:31) "the sharing of technology is a worldwide concern ...but clearly it is most important to the developing countries; and it can even be argued that the principal weakness is the lack of access to technology or of command to it".

4.5 INTERPRETATION OF DATA

Development needs mobilization of resources, and the activation of every sector in a given society. In short, it needs a combination of all positive efforts. The data presented in this chapter revealed that even though the people of Matome do not have electricity in the village, it is their wish that they too could develop and live comfortably. If developmental activities are carried out by members of a given community without the support of Government or any external input, the people of Matome are bound to encounter difficulties in attaining significant results. Their efforts may be enough for survival but not enough for significant development, because poor states do not have enough resources to enforce their will. Additionally, even if there are sufficient resources that a Government would like to allocate, there are so many bottlenecks to overcome before achieving the reduction of the level of poverty in Matome. This refers to lack of improved technology, skilled personnel, appropriate institutions, and the low level of education and insufficient political and economic infrastructures.

In connection to this, if Matome has been able to mobilize its human and natural resources development could become a difficult task unless local knowledge and traditional practices are open and adaptable to innovation to support their efforts. Matome people's efforts in the day-to-day activities supported by the efforts exerted by the Government and Eskom could produce better, coherent and significant results. The researcher believes that a balanced combination of these ingredients could bring about sustainable development and reduce poverty.

A striking aspect on the finding is that 66% of the population is in the category of the aged. The aged are without hope of joy, and have nevertheless become resigned to their life circumstances. A person's aspirations decline with age. The older people are, the less they expect from life. In other words, this study revealed that the older people are, the less likely they are to experience the quality of their lives as posing major problems for them.

The following figure 4.16 attests to this.

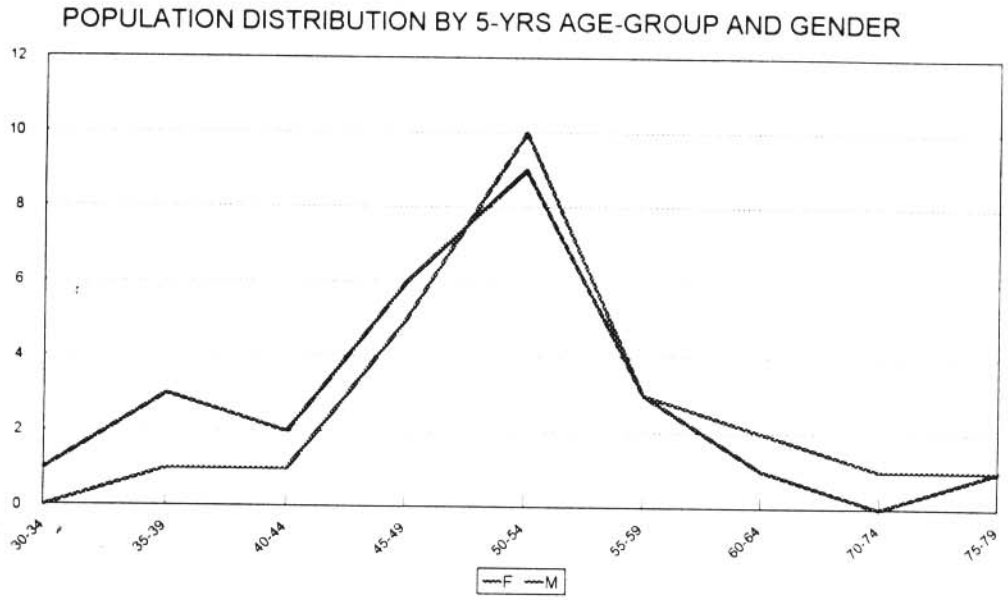


Figure 4.16 Gender – Population Distribution

It is the poor people who suffer the consequences of this pollution. With high unemployment in rural areas, the creation of sustainable rural livelihoods must be a major objective. A wide range of possible environmental impacts must be taken into account. Environmental management should not be restricted to conversation of natural resources, the preservation of ecosystems, the maintenance of biological diversity. It should also include measures to help the poor to use and manage the environment, human living and understanding of the cultural, social and economic forces that define man's relationship to the environment. Environmental concerns therefore embrace concern for human rights. In many parts of South Africa, the natural resource base is overexploited because of extreme poverty, lack of access to land, water and energy sources. According to Mammo (1999:178), "a number of studies show that what are generally referred to as traditional societies' knowledge and practices are not as completely played out as Western development practitioners have often described them to be". In addition to their methods of protecting vital resources and human lives, traditional societies, for example, are rational (Scott and

Gormley, 1990), technically minded and experimental (Chambers and Howes, 1980). They are good at conceptualizing their world outlook (Swanson, 1980), and are endowed with empirical and technical knowledge (Richard, 1980)".

Many development promoters seem to be in a hurry to pass judgement on, or label certain traditions as backward without investigating why the people stick to their traditions and are skeptical of change. Poor people are often reluctant to accept practices or ideas forced upon them. This is because, by experience, they know that they often do not have much to gain from what is called new and in this case, electricity. The source of this skepticism becomes more prominent when foreigners attempt to influence local practitioners to implement new ideas. They often forget to talk down to people and fail to give them opportunities or a choice on their destiny. As a result of such arrogance, proposed undertakings may fail to receive positive response form the local people. This frustrates the foreigners who in turn resort to passing all kinds of unfair judgements concerning the abilities and understanding of the local people and their practices.

4.6 CONCLUSION

Energy is needed for everyday activities in Matome as it is elsewhere. Data presented in this chapter revealed that there is relatively low commercial energy consumption accompanied by a high percentage use of fuel wood in the village of Matome. Wood meets 94% of Matome's energy requirements. Energy efficiency tends to be low, wasting existing scarce resources. Energy and development remains inextricably intertwined.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.

5.1 INTRODUCTION

The current chapter is the culmination of the 4 (four) preceding ones. Its aim is not to present sweeping predictions about the prevention of unsustainable practices. It aims rather, through informed reasoning, at weighing up present realities and latent possibilities. It also attempts at arriving at an accountable presentation of what could and should constitute sustainable practices, based on empirical findings. The findings emanating from the study have been presented in this chapter together with the main conclusions and recommendations. An analysis of whether the aims were achieved or not have also been made.

A summary of the findings emanating from the study have been presented here, in order to communicate the study's results clearly and concisely in a user-friendly, readable, understandable, informative and practical manner. The conclusions that were reached in this study were founded upon the interpretation of data that was collected in this study. Likewise, recommendations or suggested courses of action to remedy the problem were based on the qualitative data that had been provided by respondents. The presentation of recommendations allowed the researcher to flag up any points that she thought might be particularly important or contentious. She also reflected on elements in which she felt there were inadequacies. The recommendations have been presented in a practical manner, to facilitate their being adopted and applied maximally in practice as they suggest sustainable development although some have financial implications, which might not be affordable to the respondents.

5.2 DEMONSTRATION OF HOW THE INITIAL PROPOSITIONS OF THE STUDY WERE ADDRESSED

The problem statement, aims and assumptions that were formulated at the beginning of the study were also restated to ascertain whether they were confirmed or rejected.

5.2.1 RESTATEMENT OF THE PROBLEM

There is no electricity supply in Matome. Firewood is slowly giving way to other types of energy. Traditional forms of fuel like coal; paraffin and bottled gas; is used increasingly, though so far these forms of fuel have had little effect on rural firewood demand. According to Robin Mearns in Prendergast (2000:189), "wood fuel consumption is the principal cause of deforestation and therefore of mounting wood fuel scarcities". With electricity available, people could use less firewood and could thus slow the rate of deforestation.

ESKOM generates 60 percent of all the electricity of the African continent, yet ironically, 70 per cent of South Africans, including the Matome community do not have electricity in their homes. Since the poor are least able to contribute to the GDP and because they are least able to pay for commercial energy, they have historically been ignored in energy planning. They have been left with no option but to gather their traditional fuel that is not sustainable in nature because of deforestation and air pollution. According to Koch (1992:98), this depresses crop growth and impairs soil fertility. It also deprives the community of subsistence farming.

Families in Matome have turned to burning cow dung as fuel, instead of using it as manure. They strip trees for firewood, leaving hillsides bare. South Africa has

few natural forests and they are disappearing very fast. Wood and cow dung gatherers, who in reality are women and children, waste a lot of time looking for fuel. It is the women who experience fuel wood problems while men control cash income and land resources. The time it takes to collect fuel is time, which is not available for the many other tasks women face. One of the first signs of fuel wood problems is the gradual increase in the time it takes the women of Matome to find the wood essential for their household survival. The places where these forms of fuel are collected are just as important as the people who collect them. Women collect fuel wood from the local environment. Depletion of firewood has environmental implications such as: land degradation, soil erosion and deforestation, which carry a high cost to the development effort.

The scale of the above-mentioned problems is difficult to evaluate partly because they've been ignored for so long. But it also reflects the way in which the problems manifest themselves, for they rarely emerge in the form of an absolute lack of fuel. When wood becomes scarce, people are forced to spend a longer time to go further to gather it. The time spent in gathering fuel for free could be valuably put to use towards financial gain. However, the wood gatherers do not understand the extent to which their time could be used more profitably. They seem to regard the free fuel that costs them a lot of time, as being more valuable than selling their labour. The cost of time is undervalued and more premiums are placed on salaries/wages, which could be earned, if jobs could be found.

5.2.2 RESTATEMENT OF THE AIM AND OBJECTIVES OF THE STUDY

5.2.2.1 AIMS

There is no electricity supply in the Matome village, which is poor, yet it has a high potential for development. The researcher's aim was to establish why

ESKOM was not operating in Matome. The main aim of the researcher in the current study was to explore possible ways of helping the people of Matome to develop and meet their needs in a sustainable way. The World Commission on Environment and Development has defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"(Munslow 1988:111).

This study aimed at strengthening the community as it would educate them about the convenience of electricity and also to show them the dangers of soil degradation through deforestation. Community members would be empowered by getting involved in their own development and learning lifeskills, which promote self-reliance and self-sufficiency. External linkages between villagers and institutions would be forged and existing ones would be further explored in order to empower the villagers, e.g. by the establishment of development forums such as the Matome Electricity Committee.

5.2.2.2 OBJECTIVES

Community development works towards concrete objectives such as better living conditions in health, education, and housing. Income could be generated from previously unknown sources.

The following objectives were used as vehicles to achieve the above-mentioned aims:

- to investigate knowledge of the Matome people on the dangers of deforestation and the usage of cow dung as fuel.

- to explore the problems around unaffordability of electricity in Matome.

- to suggest and recommend to the respondents alternative and safe fuel.

- to find ways of re-channeling the time wasted in fuel gathering towards more profitable time use.

- to help people gain confidence in developing self-employment.

5.2.3 RESTATEMENT OF THE ASSUMPTIONS

The welfare of the Matome people is increasingly jeopardized by the difficulty they encounter in catering for their basic energy needs. We all need energy of one form or another for day to day life, e.g. for cooking, lighting, heating, etc. For the purposes of this study, the researcher has formulated the following assumptions;

- that the lifestyle of the people in Matome would change for the better as soon as the village can be electrified;

- the people of Matome would benefit from ABET as this would inform them on the dangers of deforestation, soil degradation.

- the health of Matome villagers would improve if they could refrain from using cow dung as fuel.

- too much time is used in fuel gathering; such time could be used in entrepreneurial activities and poverty could be uprooted.

- the people of Matome have a preconceived idea that the cost of commercial fuel and appliances, which are essential for daily survival on the already constrained, budget, is a burden.

5.2.4 RESTATEMENT OF LIMITATIONS

The study had to be completed within a limited space of time. Hence there would be time factor constraints. There was no funding for this study, as there was no agreement between Eskom and the researcher to get new business prospects for it. Hopefully the findings of the study might be used to bargain with ESKOM to provide a needed service in Matome. The respondents might want to be paid and might not be willing to participate thinking that ESKOM would benefit from the study. The unwillingness of some respondents to participate might infringe on the reliability of some respondents' answers.

5.3 SUMMARY OF FINDINGS AND CONCLUSIONS DRAWN FROM THE STUDY

A description of the conditions of poor rural people might start with the community or with individuals. Starting with the community has the advantage of distinguishing between two types of situations: where the poverty of the whole community is linked to their remoteness or inadequate resources or both and those where there are marked differences of wealth and poverty within the same community. Starting with individuals would have the advantage of pointing to the disadvantages of females in many societies, like in Matome. These two dimensions of location and resource base, and of gender – are significant, and tend to manifest all the negative qualities that have been described below:-

Chambers (1994:112) designed 5 clusters, which interlock like a web to trap people in their deprivation.

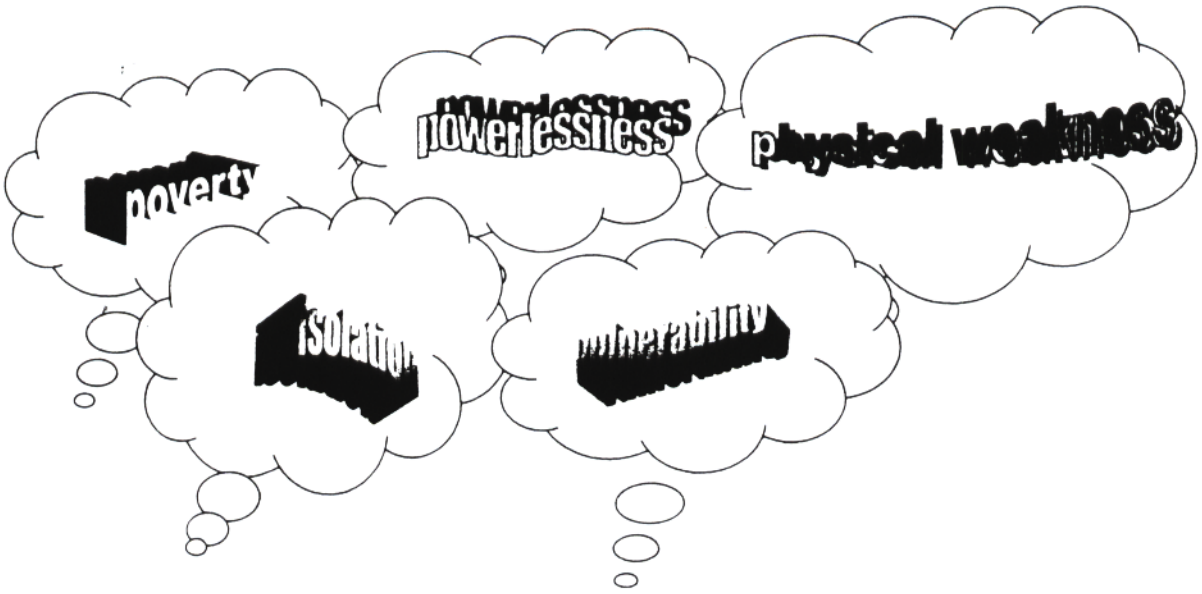


Figure 5.1 Poverty web adopted from chambers(1994:112)

5.3.1 POVERTY

Poverty is a strong determinant of the others. Poverty in Matome contributes to physical weakness through lack of food, low immune response to infections and inability to reach or pay for health services. Environmentalists say the burning of fossil fuel releases gases into the air that affect the world's weather patterns. Climate – change negotiations are no longer just about the weather, they're about how to combat poverty through economic strategy, trade, technology transfer and investment mechanisms. In other words, there is a growing awareness that attempts to deal with global environmental problems had to include efforts to reduce world poverty. Poverty is not only an evil in itself, but

sustainable development requires meeting the basic needs of all, and extending to all, the opportunity to fulfil their aspirations for a better life.

5.3.2 PHYSICAL WEAKNESS

Physical weakness of a household contributes to poverty in several ways: through for example lower wages paid to women and to those who are weak, and through the withdrawal or weakening of labour through sickness. It sustains isolation because of lack of time or energy to seek information. Chambers (1993:113) comments that "the sick and hungry people dare not bargain hard". Main diseases indicated by the people of Matome are respiratory tract infections. These are according to Venter (1994:262) diseases of poverty, which are mainly preventable or communicable. The respiratory diseases include such ailments as asthma, cough, tuberculosis, pneumonia, influenza and laryngopharyngitis. The pollutants found in the atmosphere in the village mainly cause these types of diseases. The smoke emanating from the fuel wood used for preparation of food by 94% of the villagers pollutes the air. Information and knowledge are key elements in empowering people. People need to know what to do, and how to do it. We all need to recognise that the problems we face are not insurmountable. By 'eating the elephant in little pieces we can consume it all' – but everybody must join in.

5.3.3 ISOLATION

Lack of education, remoteness and being out of contact sustains poverty, services do not reach those who are remote, illiterates cannot read valuable information. Isolation goes with physical weakness. Remote households have a high level of migration of the able bodied to towns or to other rural areas. Isolation means lack of contact with advice of the knowledgeable and not knowing what the powerful are doing. In any society, education tends to play a

major role in socialization. Many South Africans, especially those in rural areas like Matome, have had no access to formal schooling. This is reflected in the region's high illiteracy rate. Education remains an effective medium of reaching many families and communities, without which the Matome villagers will not be able to differentiate between both sustainable and unsustainable practices. Health is an integral part of the development process. It improves quality of life, productivity and efficiency.

5.3.4 VULNERABILITY

Vulnerability is part of many of the links. It relates to physical weakness because to handle contingencies, time and energy have to be substituted for money; to isolation through withdrawal – whether spatial (to a more distant marginal area) or social (to fewer reciprocal relationships).

5.3.5 POWERLESSNESS

Powerlessness contributes to poverty in many ways, not least through exploitation by the powerful. It limits or prevents access to resources from the state and only feeble influence on government to provide services for poorer people and places. It reinforces physical weakness, because time and energy have to be devoted to queuing for access. Powerlessness is linked to isolation through the inability of those who are powerless to attract government intervention. Conditions in Matome are varied with a mix of middle to low income economies. Grinding poverty (because they're wage earners in the region of R500 – R1000 per household) engulfs an overwhelming majority of the people in Matome.

The livelihood of the working poor is largely or wholly secured through wage work on its own. The simplicity of this statement, however, obscures the

complex range of social interconnections, which overlay the meaning, and consequence of being part of the rural working poor. Whether they work in the nearby semi urban township or factory, are employed as full-time or casual workers, are skilled or unskilled, men or women, young or old, with or without a mutually responsible adult partner in their households, near to or far from sources of employment, each on its own and all in their combination act to segment the Matome people along a continuum of poverty. The villagers feel they cannot afford electricity and would rather opt for the free fuel wood gathered from the nearby forest.

Their option is a temporary relief measure for them because it is free fuel and they are not aware of the detriment it brings to both their health and the environment. Venter (1994:194) commented that "increasing population is an aggravating cause and a consequence of the socio-economic malaise in South Africa". There is a relationship between population and economic growth with debilitating consequences for the human conditions. The deteriorating socio-economic situation, particularly among the most vulnerable and disadvantaged households, compels these households to ameliorate their plight by increasing their rates of reproduction. The majority (94 %) of the households in Matome is overcrowded, with 11 people staying in one small house. Population pressure is increasingly undermining the capacity of the land, which harbours impoverished households to carry these households.

5.4 FINDINGS AND CONCLUSIONS

From the analysis and interpretation of data that was gathered in this study, the researcher concludes that rural poor have been created by and are part of the way capitalism has developed in the country. Taking this fact on board has huge implications as Venter (1994:270) views it as discrediting what is a fallacy - that rural poverty is a consequence of being left out of the development process. To

address this poverty, it is necessary to re-examine the complex system that has created it – to curb, contain or redirect the system in a way that will make rural people's lives better and more secure and, more broadly, to curtail, if not to stop, the huge squandering of resources. Literacy training should be offered that is accessible to both men and women alike, should be offered.

The control of infectious diseases would be most effective with the implementation of uniform education programs, regular information exchanges and standard treatment protocols. Healthy populations have fewer children and invest more in their education and future. With fewer resources required for health, more funds are available for other development initiatives. The inter-sectoral nature of health makes it a complex area and one that should be integrated fully with other development initiatives, particularly at a socio-economic level. At the same time, development initiatives should take account of their potential impact on health status. This means that a multi-disciplinary approach is essential in development, as one profession, all by itself cannot solve problems, which are multi-dimensional and also have a chain-reaction.

The development of Matome can be redefined to include enabling the poor women and men to demand and control more of the benefits of development. In practice, outsiders/people tend to think of development as limited only to plans, projects and programs implemented by government field organisations and they overlook the impact of unaffordable prices and crime as obstacles that hinder development. The involvement of people themselves in their own development entails their understanding of the various problems that assail them and also assessing costs and choices, examining causes and constraints and finding and making opportunities, especially for the poor. We need to realise that the people themselves can determine their destiny. For instance, if we regard the Matome villagers as remote and powerless we suggest that their vision is blurred and that they do not have insight into their own problems and

are incapable of participating in reducing or alleviating these problems yet, they see most clearly what is close by. They see action starting from where they are.

All people have the power to decide on how to deal with their problems. A decision not to act is itself an action. A person or company that withdraws or abstains from intervening is by that withdrawal or abstinence still intervening by default. What does not happen which however might have happened affects Matome villagers. In this case, ESKOM (who are the sole providers of electricity) must heed the needs of all South Africans on an equal basis. Poor communities like the Matome villagers should not be neglected and be made to feel that electricity is a luxury that they cannot afford. By providing the Matome villagers with easy access to electricity, the same as it occurs in all urban areas, would facilitate the people to decide on their own whether to use electricity or not. But as it is now the people of Matome do not have easy access to electricity and the decision not to use electricity is actually the only decision they can make. For them, the decision to use electricity comes with a very high price tag and it is therefore viewed as frivolous and unaffordable. The people of Matome actually have no power (or are powerless) to decide to have electricity. This power lies with ESKOM – i.e the power to make electricity accessible to the people of Matome. This lack of power for the people of Matome reflects a problem caused by their being remote from an urban area and/or an administrative centre, which could serve as their power point for electricity.

Fuel wood is the traditional energy source for most of South Africa's rural population. According to Cole (1994:64) "fuel wood contributes about 6% of the primary national energy consumption and is used by over half of South Africa's population, for heating and cooking". It is clear from a number of studies, that fuel wood is becoming an increasingly scarce resource in many rural areas. This has a significant impact on the natural environment in terms of deforestation, soil erosion and the loss of natural habitats. The depletion of firewood has a severe

effect on a large number of rural people particularly women and girls who have to walk long distances to collect fuel wood. The number of women and girls who are affected has already increased; and some households have already been forced to seek for alternative means of fuel which however they can ill afford.

Energy, of course, cannot be discussed without mention of the environment. Central to these is the depletion of non-renewable resources such as hydrocarbon, the destruction of conditionally renewable resources such as water and soil and the eroded capacity of the environment to act as a sink of pollution. People must be empowered for sustainable development. This means that people must be provided with resources to help than develop and to afford sustaining a developed lifestyle within their communities.

Sustainable development means improving the way that the human and the natural resource base is managed, both to maximise human welfare and to maintain the environment for current and future generations. The environment is important as it provides the foundation upon which everyone's livelihood depends, especially the rural poor. The problem in Matome is exarcebated by the fact that poverty alleviation and environmental maintenance are not reconciled. Alongside the practice of using fuel wood and cow dung as is common among the majority of the villagers, are the consequences thereof which manifest themselves in the form of ill health, which affects all the people young and old. Lack of education among the old lead to them not caring whether the younger generation get educated or not and this has become a vicious cycle which needs to be dealt with. In the (Sunday Times of 30 June 2002), The Eskom Chief Executive, Thulani Gcabashe remarks that, "our commitment to meeting the energy needs of our region is underpinned by the interrelationship between socio economic and environmental consideration." Closely allied to initiatives on sustainable development is the New Partnership for Africa's Development (NEPAD), which mobilises the continent towards greater

accountability and self-reliance. The vision espoused in NEPAD is one of sustainable development supported by three (3) broad pillars:

- economic development
- social development
- environmental protection

5.5 RECOMMENDATIONS

South Africa stands poised for a new era of peace, co-operation and reconstruction. The availability of electricity wherever it is needed is critical to the region's economic progress. Without it, there will be little change. The cost of taking electricity not only to every country, but also to every town, every village, and every house, will be enormous. However, this is a goal that the Limpopo Province has set itself. If the Province is to escape chronic poverty, it must give electrification of rural areas like Matome the priority this service deserves and enjoys in other Provinces. Commitment to this goal would be a big step in building trust, economic interdependence and political unity within the Province. With vision, determined leadership and a sharing of its resources, Matome can transform itself, and achieve the sustainable development, which is required of it.

The quality of education, social services, and health care, for example, can be improved with the availability of electricity. Equipment such as electric stoves, irons, heaters, overhead projectors and X-ray machines can then be affordable and available for use. Electricity also provides options that can change the quality of domestic life, through lighting, refrigeration and television, for example. A switch from wood to electricity for cooking and heating (which use the bulk of household energy) offers domestic and environmental benefits.

Most problems are solvable and the researcher therefore suggests that the Limpopo Province should seek and use the necessary solutions at hand, to solve problems that assail rural people. This means that a new way of thinking about the problems as well as mobilising, or reallocating, the resources is necessary. In the light of the findings of the current study, the researcher suggests the following key points of action:

- *Establish the ethic.* There is the need to instill the knowledge, understanding, the symbiosis between land and people, and with this the responsibility for land management. Also to embody a sense that each and every one of us carries this responsibility if we are to survive. This must become part of our culture – recognition of benefit fused with a pride in achievement.

- *Exercise political will.* Sustainable land management and use cannot be 'top-down' but the principles must be upheld at top level. Political support is essential. The Government must recognise the problems and it must act in the nurturing of a real political will to sustain the wealth of our land. Government has a leading role to play in building up a national land management ethic and this should be driven by a public figure.

- *Process versus projects.* Thinking must shift away from paying people to do work, to teaching people that good land husbandry, or sustainable land management, is possible and that it pays. Strategies for achieving this goal can then be jointly determined.

- *Participation of stakeholders.* Mutual involvement is required in developing concepts, standards and procedures. So we too must change the way we offer advice through giving or telling, to a way of sharing problems and knowledge.

Ultimately the challenge lies in enabling people - by establishing knowledge, stimulating self-belief in what can be done, by technology, by finance, and by developing a politically and economically enabling environment.

On the basis of the above-suggested solutions, the researcher came to the following findings and conclusions, which were also deduced, from the data, which was gathered in the current research. In South Africa, the size of rural poverty cannot be analyzed simply by giving it a number and reducing it to a statistic, as we have no idea of its mass. Poverty is far more than physical deprivation. Deprivation of the material conditions for a full social existence and exclusion from the patterns; customs and activities of everyday life are also forms of poverty. Understanding poverty as a relative concept raises issues that cannot be reduced to figures. It forces analysis of poverty away from problems of quantification and measurement to interrelated questions about who the poor are, the conditions that define their poverty, the reasons for their being poor and the consequences of their poverty.

While health alone cannot guarantee prosperity and development, it also does not play a vital role in achieving development goals by freeing populations of the burden of disease, increasing alertness and the capacity to learn, and improving length and quality of life. Matome has a clinic and a hospital within a 4km radius. An overwhelming majority of respondents confirmed that the clinic is regarded as a valuable resource yet it fails the community as the service is very limited – for instance, it provides service only during the day time (approximately 8 hours only per day) and is also closed during week-ends. The other problems with the health institutions included poor communication facilities, unreliable transport, irregular supplies of medicines, lack of running water and electricity.

5.6 CONCLUSION

Electricity plays a key role in almost every modern form of economic activity. Without electricity there is no escape for the world's poor, particularly the world's rural poor, from life dominated by the daily fight for survival. Venter (1994:131) regards development without electricity as difficult to imagine.

A good initiative is that of electricity subsidy which was intended to reduce electricity costs pertaining to cooking and lighting for the poorest 60% of the population from 1999. Such a move, it was estimated, would save the national health budget R750 million annually (Mail & Guardian 29. 09. 1998). The pollution and health costs from lung diseases, burns and the like makes the electricity subsidy a potentially significant sustainable development initiative.

5.7 LIST OF REFERENCES:

1. A framework of Global Environment Facility. 1996. Activities concerning land degradation. Global environment facility: Washington D.C.

2. African National Congress. 1994 (a). A national health plan for South Africa. ANC: Johannesburg.

3. African National Congress. 1994 (b) .The reconstruction and development programme. Umanyano: Johannesburg.

4. Allen, T. & Thomas, A. 1992. Poverty and development in the 1990's. Oxford University Press: New York.

5. Andrew, F.M. 1986. Research on the quality of life. Institute for social research: Michigan.

6. Babbie,E. 2001. The practice of social research. Wadsworth: Belmont.

7. Baldwin, S. & Godfrey, C 1990. Quality of life – Perspectives and policies. Antony Rowe: Wiltshire.

8. Bastelmus, P 1986. Environment and development. Anchor Brendon Ltd: Great Britain.

9. Best, J.W. & Kahn, J.V. 1993. Research in education. Allyn and Bacon: London.

10. Bless, C & Higson-Smith, C 1995. Fundamentals of social research methods – An African perspective. Juta & Co: Cape Town.

11. Booth, A. 1994. State of the environment in Southern Africa. Penrose Press: Johannesburg.

12. Braun, E. & Collingridge, D. 1977. Technology and survival. Science in a social context. Butterworth: London.

13. Bulmer, M. 1983. Social research in developing countries. Pitmann Press: Avon.

14. Byrner, T. & Padfield, C.F 1990. Social services. Richard Clay: Great Britain.

15. Chambers, R. 1994. Rural development. Putting the last first Longman Group Limited: England.

16. Coetzee, J.K. & Graaff,J. 1996. Reconstruction, development and people of South Africa. International Thomson Publishing: Cape Town.

17. Coetzee, J.K. 1989. Development is for people. Sigma press: Pretoria.

18. Coetzee, J.K., Graaf, J., Hendricks, F. & Wood, G. 2001. Development Theory, policy and practice. Oxford University Press. Cape Town.

19. Cole, K. 1994. Sustainable development for a democratic South Africa Earthscan Publication: London.

20. Colman, D & Nirson, F 1986. Economics of less developed countries. Bames & Voble Books: USA.

21. Corter,. B & McGoldrick, M. 1999. The expanded family life cycle – individual, family and social perspectives. Routledge: Canada.

22. Creswell, J.W. 1997. Qualitative inquiry and research design. Choosing among five traditions. Sage: USA.

23. Crewe, E. & Harrison E. 1998. Whose development? An ethnography of aid. Zed Books Ltd: New York.

24. Critchley, W. 1998. Sustainable land management: Some signposts for South Africa. University of the North Press: Sovenga.

25. Dasman, R.F. 1984. Environmental conservation. John Wiley and Sons: Canada.

26. Daughterty, T.B. 1991. Managing our natural resources. Delmas Publishers: USA.

27. David, A. & Martin, W.H. 1991. Caring for the earth. A strategy for sustainable living. Gland: Switzerland.

28. De Vos A. S. ed. 1998. Research at Grass roots – A primer for the caring professions. JL van Schaik Publishers: Pretoria.

29. Dennill, K. & King, L. & Swanepoel, T.1999. Aspects of primary health care. Oxford University Press: Cape Town.

30. Doyal, L. & Gough, S. 1991. A theory of human need: Guilford Press: Hong Kong.

31. Ellen, R. 1982. Environment, subsistence and system. London: Cambridge University Press: Pretoria.

32. Fitzgerald, P. et al. 1997. Managing sustainable development in South Africa. Oxford University Press: Cape Town.

33. Flint, D. 1999. Managing resources. Hodder and Stoughton: China: .

34. Global Environment Facility.1998. Fact Sheets on the Land Degradation Projects. Global Environment Facility: Washington.

35. G`sanger, H. 1994. The future of rural development Franc Cass: London.

36. Gilpin, A. 1996. A dictionary of environment and sustainable development. Biddles: Great Britain.

37. Haviland, W.A. 1996. Cultural anthropology. Harcourt Brace College Publishers: Florida.

38. Huntley, B. & Siegfried, R & Sunter, C. 1990. South African Environments into the 21st century. Human & Rousseau: Cape Town.

39. Koch, J. and Koch, E. 1992 Going Green—People, politics and the environment in South Africa. Oxford University Press: Cape Town.

40. Koch, J. & Koch E. 1992. Going Green – People, politics and the environment in South Africa. Oxford University Press: Cape Town.

41. Korten, D.C. & Klauss, R. 1984. People centred development. Contributions towards theory and planning frameworks. Kumarian Press: West Hartford.

42. Kottak, C.P. 1996. Mirror for humanity – A concise introduction to cultural anthropology. McGraw – Hill: USA.

43. Kovacs, A.R. 1985. The research process – essentials of skill development. F.A. Davis: Philadelphia.

44. Krathwohl, D.R. 1997. Methods of educational and social science research: an integrated approach. Addison – Wesley Educational Publishers: New York.

45. Lauer, R.H. 1995. Social problems and quality of life. Brown and Benchmarks: United States of America.

46. Limpopo Province 1999: Fact sheet on land degradation. An unpublished document of the Limpopo Province Department of Environmental Affairs: Polokwane.

47. Lombard, A. 1991. Community work and community development. Haum – Tertiary: Pretoria.

48. Long, N. 1977. An introduction to the sociology of rural development. Tavistock: London.

49. Mail & Guardian, 29 August, 1998. Tracking down on Reconstruction, Development & Restructuring. Johannesburg: South Africa.

50. Mammo, T. 1999. The paradox of Africa's poverty. The role of indigenous knowledge, traditional practices and local institutions – The case of Ethiopia. Red Sea Press: Lawrenceville.

51. Merton, R.K. & Nisbet, R. 1976. Contemporary social problems. Harcourt Brace Jovanovich: USA.

52. Miller, G.T. 1997. Environmental science. Von Hoffman Press: USA.

53. Monette, D.R., Sullivan, T.I. & Cornell, H.D. 1990. Applied social research. Forthworth: New York.

54. Morton, J. 1996. The poverty of nations. The aid dilemma at the heart of Africa. I.B Tauris Publishers: London.

55. Mouton, J. & Marais, H.C. 1990. Basic concepts in the methodology of the social sciences. Human sciences research council: Pretoria.

56. Munslow, B. 1998. The fuelwood trap: A study of the SADCC region. Earthscan Publishers: London.

57. Nachmias, D. & Nachmias, C. 1976. Research methods in the social science. Edward Arnold: USA.

58. Nedlac Annual report 1 April 1999/2000 – 31 March 2000.

59. Nwankiti, O.C. 1981. Man and his environment. Longman Group Ltd: Essex.

60. O'Riordan, T. 1995. Environmental science for environment management: Longman group: Singapore.

61. Owen, S. 1991. Environment, resources and conservation. Cambridge University Press: Britain.

62. Oxaal, I. 1975. Beyond the sociology of development. Routledge & Kegan Paul Ltd: London.

63. Pearce, D. 1989. Blueprint for a greener economy. Earthscan Publication Ltd: London.

64. Pennington, D.C. 1986. Essential social psychology. Edward Arnold: London.

65. Prendergast, R. & Singer, H.W. 2000. Development perspective for the 1990's. Macmillan Press: London.

66. Rose, D. & Sulivan, O. 1996. Introducing data analysis for social scientists. Redwood Books: Trowbridge.

67. Sachs, W. 1992. The development dictionary – A guide to knowledge as power. Zed Books: London.

68. Seitz, J.L. 1988. The Politics of development. Basil Blackwell: Oxford.

69. Smit, G.J. 1995. Research guidelines for planning and documentation. Southern Book: Halfway House.

70. Soussan, J. 1998. Primary resources and energy in the third world. Routledge: London.

71. South Africa's National Policy Framework for Women's Empowerment and Gender Equality 2000 Office on the Status of Women: Pretoria.

72. Statistics South Africa Census. 1996 published by Central Statistical Services: Pretoria.

73. Staudt, K. 1991. Managing development. State, society and international contexts. Sage publications: California.

74. Strauss, A. 1990. Basics of qualitative research. Grounded theory, procedures and techniques. Sage Publications: California.

75. Sunday Times, Business Times, 30 June, 2002. Top Company's commitment to the environment. Johannesburg: South Africa.

76. Swanepoel, H. 1992. Community development. Put plans into action. Creda Press: Eppindust.

77. Swanepoel, H. 1997. Community development – Putting plans into action. Juta & Co.: Cape Town.

78. Taylor, S.J. & Bogdan, R. 1984. Introduction to qualitative research methods. John Wiley & Sons: Canada.

79. Tesch, R. 1990. Qualitative research. Analysis types and software tools. The Falmer Press: Bristol.

80. The Concise Oxford English Dictionary, edited by J.B. Sykes. 1980. Oxford University: Oxford.

81. The Earth Works Group. 1989. 50 simple things you can do to save the earth. Earthworks Press: Berkeley.

82. The Poverty and Inequality report. 1997. Department of Welfare. Government Publishers: Pretoria.

83. Tillman, D.A. 1978. Wood as an energy resource. Academic Press: New York.

84. Timberlake, L. 1985. Africa in crisis. The causes, the cures of environmental bankruptcy. Earthscan Publications Limited: London.

85. Tolba, M.K. 1992. Saving our planet. Challenges and hopes. Chapman and Hall: London

86. Toynbee, A.J. 1996. Change and habit. Oxford University Press: London.

87. Venter, M. 1994. Prospects for progress. critical choices for Southern Africa. Maskew Miller Longman: Cape Town.

88. Wilson, F. & Ramphele, M. 1989. Uprooting poverty The South African Challenge. David Phillip Publishers: Claremont.

5.8 APPENDIX

A. LIST OF TABLES

TABLE 1(a). AGE DISTRIBUTIONS IN SINGLE YEARS

Age	Total	Percentage
34	1	2
36	1	2
39	3	6
42	1	2
44	2	4
45	4	8
46	1	2
47	5	10
48	6	12
49	3	6
50	3	6
51	1	2
52	4	8
53	2	4
54	1	2
56	2	4
57	3	6
58	1	2
60	3	6
72	1	2
75	1	2
79	1	2
Total	50	100

TABLE 1(b). POPULATION DISTRIBUTION BY 5-YEAR AGE GROUP

Age group	Count	Percentage
30-34	1	2
35-39	4	8
40-44	3	6
45-49	9	18
50-54	21	42
55-59	6	12
60-64	3	6
70-74	1	2
75-79	2	4
Total	50	100

TABLE 2. TOTAL NUMBER OF MALES AND FEMALES

Gender	Total	Percentage
Female	26	52
Male	24	48
	50	100

TABLE 3. POPULATION DISTRIBUTION BY EDUCATION LEVEL

Education_level	Count	Percentage
Not stated	1	2
Never been to school	5	10
Primary education	31	62
Secondary education	10	20
Diploma	3	6
Total	50	100

TABLE 4. POPULATION DISTRIBUTION BY SOURCE OF INCOME

Source_of_income	Count	Percentage
Pension	7	14
Grant	3	6
Wage	29	58
Salary	11	22
Total	50	100

TABLE 5. TOTAL NUMBER OF PEOPLE PER HOUSEHOLD

No of_people_in a_house	Count	Percentage
5	5	10
6	4	8
7	11	22
8	8	16
9	8	16
10	4	8
11	2	4
12	4	8
14	3	6
16	1	2
Total	50	100

TABLE 6. NUMBER OF PEOPLE PER INCOME BRACKET

Source_of_income	Count	Percentage
500 - 1000	7	14
1100 - 2000	3	6
2100 - 5000	29	58
5000+	11	22
Total	50	100

TABLE 7. FUEL USED FOR COOKING

Fuel_cook	Count	Percentage
Fuel wood	47	94
Paraffin	1	2
Gas	2	4
Total	50	100

TABLE 8. FUEL PLACE

Fuel_place	Count	Percentage
Forest	47	94
Local shop	1	2
Shopping centre	2	4
Total	50	100

TABLE 9. FUEL PRICE

Fuel Price (in rands)	Count	Percentage
0	46	92
1-100	1	2
101-200	2	4
201+	1	2
TOTAL	50	100

TABLE 10 (A) FUEL DISTANCE

Fuel_Distance	Count	Percentage
1	1	2
3	3	6
4	38	76
5	4	8
6	2	4
17	1	2
18	1	2
Total	50	100

TABLE 10 (B) FUEL DISTANCE PER 5KM GROUP INTERVAL

Distance	Count	Percentage
0 – 4	42	84
5 – 9	6	12
15 – 19	2	4
Total	50	100

TABLE 11. TYPE OF HEALTH DISEASE

Health_disease	Count	Percentage
Not stated	1	2
Cough	32	64
Stomach cramps	6	12
Headache	10	20
Other	1	2
Total	50	100

TABLE 12. HEALTH SERVICES

Health_place	Count	Percentage
Clinic	31	6
Doctor	7	1
Hospital	11	2
Traditional healer	1	
Total	50	10

TABLE 13. HEALTH TIMES

Health_times	Count	Percentage
Weekly	3	6
Monthly	12	24
When necessary	31	62
Never	4	8
Total	50	100

TABLE 14. REASONS FOR NOT USING ELECTRICITY

Electricity_why	Count	Percentage
Not stated	1	2
Costly	2	4
Not available	44	88
Don't know	3	6
Total	50	100

TABLE 15.POPULATION DISTRIBUTION BY 5-YRS AGE GROUP AND GENDER

Age Group	Female	Male
30-34	1	0
35-39	3	1
40-44	2	1
45-49	6	5
50-54	9	10
55-59	3	3
60-64	1	2
70-74	0	1
75-79	1	1
Total	26	24

TABLE 16. South Africa Census 1996 gender for person weighted, Matome as adopted from Statistics South Africa Census 1996

Male	*Female*	*Total*
1063	*1431*	*2494*

TABLE 17. Estimated extend of degradation in certain Provinces of South Africa

PROVINCE	ESTIMATED EXTEND OF DEGRADATION
North West	20%-50% poor to very poor conditions
Free State	30% poor to very poor conditions
Limpopo	87% poor to critical conditions
Mpumalanga	50% poor to critical conditions

5.9 LIST OF FIGURES

QUESTIONNAIRE

SECTION A: DEMOGRAPHIC FACTORS

1. Gender: Female ☐ Male ☐

2. **Age:** ☐

3. **Ethnic group:**
   - **Ndebele** ☐
   - **Tsonga** ☐
   - **Pedi** ☐
   - **Other** ☐
   - **Specify** _____

4. **Religion:**
   - **Christian** ☐
   - **Islam** ☐
   - **Traditionalist** ☐
   - **Buddhist** ☐
   - **Other,** ☐
   - **Specify** _____

5. **Educational level:**
   - **Never been to school** ☐
   - **Primary education** ☐
   - **Secondary education**
   - **Up to grade 12** ☐
   - **Diploma** ☐
   - **University degree** ☐

6. **Family background**

- **Rich** ☐
- **Quite well off** ☐
- **Not very well off** ☐
- **Quite poor** ☐

7. **Type of house:**

- **Thatch roofed house** ☐
- **Corrugated iron roofed house** ☐
- **Tile roofed house** ☐

8. **Source of income**

- **Pension** ☐
- **Grant** ☐
- **Wage** ☐
- **Salary** ☐

9. **No of people living in the house** ☐

10. **Income bracket:**

- **R500 · R1000.** ☐
- **R1600 – R2000.** ☐
- **R2000 – R5000.** ☐
- **R5000 and above** ☐

SECTION B: PERCEPTIONS

1. What type of fuel do you use in your house for lighting?

Candles	Paraffin lamps	Gas lamps

2. What type of fuel do you use for cooking?

Cow dung	Fuel wood	Paraffin	Gas

3. Where do you normally get the fuel from?

_____

4. How far is it ?

_____

5. How much do you pay for it per month?

_____

6. Where do you normally do your shopping?

Local shop	Town	Lebowakgomo Shopping complex	Specify Other

_____

7. Where do you go to for health services?

Clinic	Doctor	Hospital	Traditional Healer	Other

8. If your answer to number 8 is other, then specify

_____

9. How often do you visit health institutions?

Weekly	Monthly	When necessary	Never

10. How far is the health institution that you visit?

_____

11. Which ailments do you frequently suffer from?

Coughing	Stomach cramps	Headache	Other

12. If your answer to number 11 is other, then specify_____

_____

13. Have you ever heard of electricity?

Yes	No

14. Where?

_____

15. Why don't you have / use it?

Costly	not available here	don't want it	don't know

16. Would you like to use it?

Yes	No

17. Give a reason for your answer.

_____

_____