STAKEHOLDERS' PERCEPTIONS ABOUT THEIR EDUCATIONAL CONTRIBUTIONS OF GORONGOSA NATIONAL PARK IN MOZAMBIQUE

by

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STAKEHOLDERS’ PERCEPTIONS ABOUT THEIR EDUCATIONAL CONTRIBUTIONS OF GORONGOSA NATIONAL PARK IN MOZAMBIQUE

I.J. MAIBAZE
DEDICATION

To my late father

Joaquim Fastudo Maibaze

To whom I fully dedicate this research study. I'm really grateful to each and every advice given in life not forgetting those specially words dedicated to me on my Bachelors graduation ceremony (April 2003):

“ A força de vontade, o esforço trazem frutos que garantem o futuro do Homem! Força Ivete, vá mais longe e que Deus te abençoe e te dé mais força, sucessos e longa vida”. 
ACKNOWLEDGEMENTS

Sometimes life gets so busy that one thinks of giving up. This upend many times with me during this research because of time constraints and some other reasons. However the desire to win and be able to face new challenges makes you realize that nothing is easy in life but everything it's possible. Also because of the fact that when started this research study, I was working and living in a quiet place in Manica Province it helped a lot as the silence of the night always reminded me of the responsibility I'm carrying being a first born child of five sisters. Therefore I had no other choices but to wake up and carry on. It wasn’t easy but I am proud to say I did it.

My sincere thanks to the following people who made it possible for me to complete this study.

My late father Joaquim Fastudo Maibaze to whom I fully dedicate this research study. I'm really gratefully to each and every advice given in life.

My stronger and gratefully mother Carlota Joaquim Matchaie to whom I also say Thanks for being a supportive mum and God bless you.

My first, incredible and adorable daughter Khiana Joaquina Senda Nhaquila my source of inspiration without which this study would have not been completed. I hope that she should one day realize that education is a “weapon” to fight ignorance and poverty and a key to open doors or success. I love you more than ever.

Sisters: Rita, Izilda, Maninha, Suselia e Carlinha (as grmdes MAIBAS).
Adorable nieces Jackline Celio Machava, Chelsia Leopoldo Nelson and young nephews Dimitri da Costa Marcelino, Elton Leopodo Nelson

Diogo Gilberto Senda Nhanquila, for his tireless support, encouragement and unconditional friendship through the research.

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Professor HG Van Rooyen for his guidance, patience and assistance through this study. The same gratitude is extended to Dr. Andrew Graham and Marina Du Toit for editing this research study.

My gratitude goes to the following institutions CDS-RN (Chimoio) and MICOA especially to Mrs. Pius Rafael and Erasmo Nhachungue for the support through the study.
This study, entitled "Stakeholders Perceptions about their Educational Contributions of GNP in Mozambique" focused on stakeholders of Nhambita buffer zone in the Province of Sofala.

My interest in conducting such an investigation stemmed from the fact that when started this research I was working at the center for sustainable development of natural resources (CDS-RN) in Chimoio, Manica Province and had Gorongosa National Park (GNP) as our pilot project. I realized that there were different stakeholders involved with the Park as well as the communities around it and not that much was done to improve their quality of life.

Therefore, there was a need to conduct an inquiry which could lead to identifying the real reason underpinning the stakeholders not to do much and to afterwards draw some conclusions to modify the methodologies in order to change stakeholders' perceptions.

In this regard, I conducted interviews and questionnaires in the community and with some stakeholders at Nhambita community, followed by data analysis of research data representing the stakeholders, community members, GNP and also to empower all participants. Hopefully, an educational programme would result from the consensus among all interested parties in the process with the objective of improving the citizen's life.
LIST OF ACRONYMS

CBNRM – Community Based Natural Resource Management
CDS-RN – Centre for Sustainable Development of Natural Resources
CONDES – National Commission for Sustainable Development
DESD - Decade of Education for Sustainable Development
EE - Environmental Education
EFA – Education for All
ESD – Education for Sustainable Development
GDP – Gross Domestic Product
GNP – Gross National Product
GNP – Gorongosa National Park
GTZ – German Organization for Rural Development
HIV – Human Immunodeficiency Virus
IIS - International Implementation Scheme
IUCN – International Union for the Conservation of Nature
KNP – Kruger National Park
MICOA – Ministry for Environmental Affairs
MR WSSD - Mozambican Report on World Summit for Sustainable Development
NEPAD – New Partnership for Africa’s Development
NGO’S – Non Government Organizations
OE - State Budget
ORAM – Rural Organization for Human Rights
PARPA - Action Plan for the Reduction of Extreme Poverty
PES - Economic and Social Plan
PRSP - Mozambique’s Poverty Reduction Strategy Paper
RRD – Regional Rural Development
SADC - Southern African Development Community
SARDC - Center for documentation and research in Austral Africa
UCM – Catholic University of Mozambique
UNCED – United Nations Conference on Environmental Development
UNEP – United Nations Environmental Programme
UNESCO – United Nations Education, Science and Culture
UNIDO - Annual Report on Gold mining in Southern Africa. Mozambique
WCED - World Conference on Economic Development
WDR – World Development Report
WSSD – World Summit on Sustainable Development
WWF – World Wildlife Fund
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CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

This section will present a brief discussion on the context and background of the study, the motivation and interest behind it, clarification of concepts, aims and objectives and research methods and design.

1.2 CONTEXTUALIZATION OF THE STUDY

Gorongosa National Park is situated in the geographic centre of Mozambique, astride the southern end of the Great Rift Valley system of Africa, which extends through East Africa from Ethiopia to Mozambique. According to local Administrators contacted during the workshop organized by CDS-NR (Centre for Sustainable Development of Natural Resources) at Beira (Mozambique) during 14 to 15 October 2005, the actual limits of the Park include 18 Human groups which are 7 in Gorongosa (including Nhambita buffer zone), 4 in Cheringoma, 5 in Muanza and 2 in Nhamatanda. However the Nhambita community is situated at Pungue Locality, Administrative post of Gorongosa, District of Gorongosa, within an area of 48,596 hectares and 25 acres designated to other needs.

The community is represented by two leaders and four local chiefs. Although the community is extended on a large scale within various natural resources, problems arise from the large number of people, about 4500, who are living, poaching and farming in the buffer zone. This indicates that more people lead unsustainable lifestyles, harming the wildlife by illegal hunting and shifting
cultivation, which is the main agricultural farming technique at the Park. This leads to heavy deforestation and potential loss of water catchment areas.

This raises the question of how stakeholders contribute to improving Environmental Education in the Nhambita buffer zone within Gorongosa National Park. This study will attempt to establish how sustainable Environmental Education is improving the quality of life of Nhambita community in the buffer zone around the Park. It will also attempt to explain which strategies can be implemented to achieve sustainability. A possible secondary benefit from the study could be that the Nhambita community will be sensitized about the environment and improve sustainability within their community.

1.3 BACKGROUND TO THE STUDY

The following questions are part of the initial motivation for this study: Is Environmental Education a solution to poor quality of life of communities in buffer zones, particularly that around Nhambita? How could the quality of human life in this area be improved through sustainable Environmental Education?

Sustainable Environmental Education requires hard work, as well as regional and individual self-reliance. In this particular area, various stakeholders can serve as physical and human resources, providing tools, knowledge and wisdom to contribute to the quest for sustainability. One of the issues prioritized in the Mozambique's report for the World Summit on Sustainable Development (WSSD) held in Johannesburg (CONDES, 2002: 4) was improving the quality of human life, with particular emphasis placed on sustainable development. Within that context, the sectors and sub-sectors which embodied government structures, particularly those related to the management of natural resources, initiated a process of designing sectoral policies used as guidelines for the relaunching of economic activity and development of activities and resources under
their authority for the post-war period. Hence, various packages of national policies have been approved, among which are those on environment, tourism, water, land issues, agriculture, fisheries, forestry and wildlife.

Sustainable development ideally integrates economic, environmental and social development issues, thus WSSD focused on the needs of the developing world i.e. the links between poverty, environment and human development. It calls for the improvement of the quality of life for all of the world’s people, and a truly sustainable way of life. Integration of action in the following key areas is imperative:

- economic development and equity
- conserving natural resources and the bio-physical environment
- social development

(Lombard, 2002: 22-25)

With poverty and equity generally regarded as the greatest threats to global sustainable development in the 21st century (WSSD Policy Unit) (Lombard, 2002: 29), parts of Africa have endorsed the ideals of achieving a more sustainable way of life, as rooted in a New Partnership for Africa’s Development (NEPAD) (Lombard, 2002: 34-39). Such partnerships are important, particularly among public, private, multi stakeholders and regions if there is to be poverty eradication, economic development and a better quality of life for the nation. The next target date for assessing success in this direction will be 2012, when the previous World Summit on Sustainable Development (Johannesburg, 2002), will be reviewed (Lombard, 2002: 40).
1.4 MOTIVATION FOR THE STUDY

The study is considered relevant and worthwhile since it will attempt to ensure that environmental education strategies explained are worthwhile to improve the quality of human life at buffer zones particularly the Nhambita community. Furthermore, this research challenges various stakeholders, such as those in local government, the private sector, community members and Non-Government Organizations (NGOs) to contribute to the improvement in quality of human life. The community must also be sensitized and made aware that their activities can degrade the environment and that they should co-operate and work in partnership with other stakeholders to improve the quality of life in their areas.

Educators are often exposed to learners from different socio-economic backgrounds, of which most come from disadvantaged and poverty-stricken communities in buffer zones, so affecting their environmental illiteracy level. For instance, a situation arose in which a member of the community tried to implement new strategies to overcome burning farm land and bush fires, only to find it was not successful because the people had never been forced to change their attitude and they were happy and successful following traditional methods. Therefore, to help solve this problem most educators came to the conclusion that something has to be done with the next generation at primary school level.

In recent years, however, there has been a growing acknowledgement among environmental educators that the 'environment' not only refers to natural systems but also to human beings and their activities as an integral part of the environment. Fien (1993: 7-18) states that many people are acknowledging the view of the environment as a social construction, no longer rigid and unchanging but a result of the way we view nature and the benefit we gain from its resources. Van Rooyen (2002: 4-7) argues that environment and environmental issues are interlinked dimensions of political, social, economic, technological-scientific, personal, contextual and biophysical factors. People's economic, political and
social values therefore play a large role in the way they relate to the biophysical environment. The socially constructed nature of the 'environment' and environmental problems imply that there is no one correct solution. This is so because environmental problems do not emanate from one source but have multiple causes and thus becoming controversial issues.

Later on in 2004 Fien (cited by Landorf, Doscher & Rocco, 2008:226) defines education for sustainability as a paradigm that incorporates social and economic contexts and develops `citizen and institutional roles to facilitate in the transition to sustainability'. Fien argues, as others do, for a comprehensive approach to education that encompasses ecological, economic, social and political sustainability.

However, the concept of Environmental Education is well known in many countries of the world. Its development over the past 33 years starting with the Stockholm Conference in 1972 is well documented and will not be discussed in this research, but with different stages of development came different definitions. Irwin (1990:5) writes that of the many definitions that have been suggested, one of the earliest that has also come to be accepted is that by the International Union for the Conservation of Nature (IUCN) (1972: 38)

Environmental Education is the process of identifying values and clarifying concepts in order to develop skills and attitudes pertaining to an appreciation of the relationship between man, his culture and his biophysical environment. Environmental Education also includes the practice of decision-making and the formulation of a personal code of conduct on matters affecting the quality of the environment.

Field (1995:8) adds that Environmental Education developed from the views amongst people who saw it as something similar to nature study or conservation education, but it has gradually come to be understood in a more holistic way. He adds that Environmental Education should be dealt with and studied in various learning areas. This is in agreement with Fensham's (1978: 87) belief that one
feature of Environmental Education that makes it responsive to the needs of the environment is its holistic nature. As environmental issues are multi-faceted and interdependent (Van Rooyen, 2002: 9), they cannot be tackled successfully by an education system characterized by single disciplines, as is the case of, for example the Lesotho curriculum. In the same manner, it cannot be just another subject added to the existing curriculum but needs to be integrated into all disciplines to allow for its holistic nature. Contemporary education is characterized by the gap between formal education and the real world, and between the activities in the school and the real needs of the community in which the school is situated. In order for Environmental Education to respond successfully to the different environmental issues, some of these challenges need to be overcome. This shows that sustainable development is everybody’s business, and a challenge to device strategies to implement sustainable development.

1.5 PURPOSE STATEMENT

If unsustainable environmental education programmes continue at different levels, the combined threats of ill health and diseases, such as HIV/AIDS, as well as conflicts over natural resources, under-development, environmental degradation and economic instability, will undermine the prosperity and security of the global community. Eradication of poverty is linked to sustainable development, with education serving as a basis for the development of individuals and countries, and as a key vehicle for the alleviation of poverty and improvements in quality of life.

The purpose of this study is to investigate how stakeholders contribute to improving environmental education in the Nhambita buffer zone within Gorongosa National Park.
Against this background, the study raises the following questions:

- What are the contributions made by various stakeholders to improving sustainable environmental education?
- Is environmental education a solution to unsustainable lifestyle and environmental problems?
- Which environmental education strategies can be implemented to achieve improved levels of sustainable life?

1.6 AIMS AND OBJECTIVES OF THE STUDY

The primary aim of this study is to assess the contributions of stakeholders to improve environmental education in the Nhambita buffer zone within Gorongosa National Park.

The sub-aims of the study are the following:

- Firstly, briefly to describe the current situation at Nhambita buffer zone, thereby identifying problems and priority issues within the Gorongosa National Park.
- Secondly, to assess the existing environmental literacy level of members of the community.
- Thirdly, to determine strategies that can be implemented to improve EE so that a sustainable and more equitable and just society can be built.
- Lastly, to raise the profile of environmental awareness through environmental education.

1.7 THE SIGNIFICANCE OF THE STUDY

It has been stated that the purpose of this study is to investigate how stakeholders contribute to improvements in environmental education in the
Nhambita buffer zone within Gorongosa National Park. The importance of this study lies in improving the quality of life of people there. It will also explain which EE strategies can be implemented to achieve improved levels of sustainable life, not only internationally but also nationally, so that a sustainable and more equitable and environmentally just society can be built, a society which can care for its environment.

1.8 RESEARCH DESIGN AND METHODS

The research design of this study is based on the main tenets of qualitative research (Le Compete & Preissle, 1993:158), being concerned with capturing data that presents contextual meaning. Le Compete and Preissle (1993:31-32) maintain that qualitative research is concerned with conceptual meaning, thus studies are “framed by descriptions of explanation of or meanings given to, the phenomenon by both the researcher and the participants, rather than by the definitions and interpretations of the researcher alone”.

Borg and Gall (1989: 98) explain that qualitative research methods involve a holistic inquiry carried out in a natural setting, helping to understand social cultural and historical setting in which an investigation occurs. This approach guides the researcher to enter the inquiry with no preconceived judgments, but allows him/her to experience the real life world of the participants in the study. Hence, by being in the situation, the researcher will be able to understand the thinking, talking and the way of doing things by them.

The qualitative and quantitative research methods are to be used simultaneously to collect data for this study. Creswell (1994: 46-49) uses the term triangulation to argue for the combination of methodologies in the study of the same phenomenon, and in this study the researcher uses multiple methods of data collection and analysis, to be discussed separately. Rudestan and Newton (1992:
102) are of the opinion that in order to obtain useful patterns and relationships from the data, and expressing these relationships in numbers, statistical methods are used. They go on to argue that the focus of qualitative research is the study of averages or group effects, as opposed to that of individual differences. According to Miles and Huberman (1994: 76), qualitative research is conducted through intense and/or prolonged contact with a 'field' or 'life' situation. These situations are banal or normal ones, reflective of the everyday life of individuals, groups, societies and organizations.

The researcher will apply the quantitative method in the form of questionnaires, which will be distributed to the community members at the Nhambita Buffer Zone. The questionnaires were based on a review of literature conducted for the study. With regard to qualitative research methods the researcher intends to conduct individual interviews with various stakeholders to understand how they can contribute to improve natural resource management of the Nhambita Buffer Zone?

1.9 DATA COLLECTION METHODS

Both qualitative and quantitative research methods will be employed during data collection. For the purpose of this study both structured questionnaires and semi-structured or open-ended interviews will be used.

1.9.1 Selection of participants and sampling

According to Le Compete and Preissle (1993:10), selection of participants for a study refers to a more general process of focusing on what to study. It involves defining what kinds of people and how many of them can be studied, as well as when, where and under which circumstances they will be studied. The authors also maintain that populations are chosen on the basis of their theoretical
significance or relevance to the theory that suits the research question (Le Compte & Preissle, 1993:57). The population to be interviewed will be community members from the Nhambita buffer zone around Gorongosa National Park, where the questionnaires were administered to obtain accurate results and allow various stakeholders to understand how they can contribute to improving natural resource management.

For the purpose of this study, participants will be selected randomly (Le Compte & Preissle, 1993: 69). Community members and officials from the Departments of Environmental Affairs, Agriculture, Tourism, Germany NGO for Rural Development (GTZ), Rural Organization for Human rights (ORAM), the Centre for Sustainable Development for Natural Resources (CDS-RN), the World Wildlife Fund (WWF), as well as NGOs of CBNRM (Community Based Natural Resource Management), will all be interviewed.

The researcher was a worker at the Centre for Sustainable Development for Natural Resources in Chimoio province, which has Gorongosa National Park as one of its pilot projects, and so is aware of unsustainable uses of natural resources as well as ineffective Environmental Education (EE) programmes in the Nhambita buffer zone. Environmental Education is the solution to improve the quality of life of all people, particularly members of Nhambita community.

After drawing the questionnaire sample, the questionnaires will be administered in the following manner:

- The researcher will distribute the community questionnaires throughout the selected members of the community around Gorongosa National Park (GNP), namely Nhambita.
- The researcher will identify contact households from where to collect the completed questionnaires. In some cases the questionnaires will be
completed, in the presence of the researcher, especially when the respondents are illiterate and require interpretation of the questions.

- When handing over the questionnaires, the researcher will explain the purpose of the questionnaires in order to avoid any fears and unnecessary misunderstandings.

Interviews will be held in different venues since the interviewees would be on different settings. Interview dates and time will be confirmed with the interviewees. In order to maintain focus and control on the interview discussions, and avoid deviations from the purpose of the research, the researcher will develop some questions as a point of reference for the interview.

1.9.2 Data Analysis

Miles and Huberman (1994:10) define data analysis as consisting of three current flows of activity: data reduction, data display and conclusion drawing. Qualitative data analysis requires organization of information and data reduction. Data obtained from the questionnaire responses and interviews will be processed, analyzed and coded, categorized and clustered, depending on suitability.

1.10 LIMITATIONS AND DELIMITATIONS OF THE STUDY

The demographic representation of the research will be limited in terms of the number of communities to be investigated, and to the fact that I am from the South and so do not speak or understand the local language spoken in the area (central Mozambique). There will naturally be a few inherent weaknesses in this study, the most obvious being that it will be limited to only one community (the Nhambita Buffer Zone). This was chosen as it is already focalized and organized
into committees, but the data would be richer if participants from all buffer zone areas were involved.

1.11 ORGANIZATION OF THE STUDY

This study will comprise five sections, which will be organized as follows:

**Section 1** provides an orientation to the study, introducing the investigation by presenting the research problem, contextualization and background to the study, motivation, purpose statements, aims and objectives, research methods and design as well as clarification of concepts.

**Section 2** is a literature review in which sources addressing similar or related issues will be discussed.

**Section 3** outlines the research methods and design, discussing data collecting strategies and instruments and procedures for collecting data.

**Section 4** presents an analysis of data and findings.

**Section 5** gives the findings of the research and makes recommendations.

1.12 CONCLUSION

This chapter has served as an introduction to the study. The content, background motivation, purpose statement, aims, methodology, significance of the study, were briefly explained. The chapter that follows, deals with the theoretical framework of the study through a literature review.
CHAPTER 2

LITERATURE REVIEW: ENVIRONMENTAL EDUCATION FROM INTERNATIONAL AND LOCAL PERSPECTIVES

2.1 INTRODUCTION

This chapter seeks to review the literature, thus strengthening the theoretical perspective of this research and providing readers with an orientation of the study, the primary aim of which is to understand how stakeholders contribute to improving the environment in Nhambita buffer zone at the Kruger National Park (KNP). This chapter therefore starts with a discussion on the meaning of terms such as buffer zone, sustainability, sustainable development, sustainable use, environment, environmental education, and stakeholders, in order to provide the same level and understanding of the concepts as used in Environmental Education (EE) literature.

2.2 CLARIFICATION OF CONCEPTS

2.2.1 Buffer zone

A buffer zone is defined as an area surrounding a protected area, in transition to an area of multiple uses, and intended to help control and minimize the impact of human action on the former.
2.2.2 Sustainability

According to the IUCN (1997: 36-39), "A society is sustainable when the human condition and the condition of the ecosystem are satisfactory or improving" (IUCN, 1997: 39), and has been used as a qualifier in a large range of terms, such as sustainable living, sustainable agriculture, sustainable practices, sustainable development and sustainable land reform. To 'sustain' means to keep going or to continue, whilst 'sustainable' thus means doing things in a way that does not damage or prevent that activity or practice continuing in the long term. However, 'sustainability' is a woolly term, difficult to define precisely as it has been used to mean different things to people with different agendas. For instance, ecologists use it to refer to the biophysical environment, which is in balance and not to be affected negatively. The word is also increasingly common in the business world, with economic sustainability to be achieved when an organization or process is financially viable over the long term. Social sustainability, meanwhile, requires that people's relationships, social structures, institutions, and practices support a strong and cohesive community.

Sustainability, therefore, is a complex concept, with no single definition. It is more of a goal or aim than a 'thing' that can be achieved or measured. While it is important that land reform initiatives work towards sustainability, it is equally important that the concept is critically evaluated and not valued only for one aspect, for example, economic sustainability over the others (IUCN, 1997: 43).

2.2.3 Sustainable Development

The phrase "Sustainable development" originated in German forest management practices during the 19th century, but was popularized in the 1980s. In theory it means development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Yeld, 1997: 57). It is not possible to give an unequivocal definition but it does imply, however, the wise,
inter-generational use of natural resources. Also, it emphasizes that the international goal of conservation cannot be achieved without development to alleviate the poverty and misery of hundreds of millions of people across the world. Development is essential to raise living standards, allow people to reach their human potential, whilst enjoying a life of dignity and ensuring their welfare. However, such development had to be responsibly directed and controlled, taking full account of the needs of the present and future generations (Telma, 1992:22).

Sustainable development is about protecting and safeguarding the fertility and the productivity of the Earth, which can be achieved by meeting three basic objectives:

- Maintaining essential ecological processes and life-support systems
- Preserving genetic diversity, and
- Using any natural resources or ecosystems sustainable, or, where this is not possible, as in the case of non-renewable resources, wisely.

People depend on the Earth's resources to sustain their lives, from the most basic requirements, such as air, water and food, through to materials used for shelter, transport, work opportunities and recreation (Shiva, 1992:192). In *Caring for the Earth: a strategy for sustainable living* (1991), produced by three environmental agencies, the International Union for Conservation of Nature (IUCN), the World Wide Fund for Nature (WWF) and the United Nations Environmental Program (UNEP), sustainable development is defined as "improving the quality of human life while living within the carrying capacity of supporting ecosystem". By implication, ecosystems will have to be disturbed as little as possible, so that successive generations can also utilize them to improve the quality of life (Fourie & Rust, 1999:8).
In the context of my study, sustainable development means that community members should use their resources, as well as those of the Park, to satisfy their present needs and whilst keeping in mind that others will need to use them in future. I argue that if community members in the buffer zones would use the Park's resources in a sustainable way, there would be no conflict between man and animals or between Park staff and community members. Such issues can drive Park staff to unconditionally remove community members from the buffer zones, as destruction and unsustainable use of resources runs counter to maintaining essential ecological processes and life support systems.

2.2.4 Sustainable use

Sustainable use, both extractive and non-extractive, is defined as a dynamic process that attempts to maintain biodiversity and enhance ecological and socio-economic services, recognizing that the greater the equity and degree of participation in governance and management, the greater the likelihood of achieving these objectives for present and future generations (TRAC-MP, 2004: 9).

2.2.5 Environment

The concept “environment” had been mostly used to refer to nature or the biophysical elements of one’s surroundings. Later the concept came to include urban and built surroundings, and even broader views included four related dimensions, namely: the biophysical, economic social and political environment (O’Donoghue & McNaught, 1889: 59-60, O’Donoghue, 1990: 16-24).
Figure 2.1: Four related dimensions of the environment (O’Donoghue & McNaught, 1889; O’Donoghue, 1990).

In this relationship, the environment consists of interactions between the biophysical, economic, social and political dimensions of the world. The biophysical dimension is the sustaining base of the life support at the foot of the diagram. When looking at an environmental issue one needs to consider all its ‘dimensions’. Because of the interactions between them, issues tend to be complex and interlinked (Le Roux, 2001:20). The concept of environment is made by humans, thus the understanding of ‘environment’ will differ from one person to the next.

Fien (1993: 130) also regarded environment as a social construct referring to the interactions between social and biophysical systems. For him the environment was not something that had reality outside or separate from people and their
social milieu. Rather, it should be understood as the conceptual interaction between one's physical surroundings and the social, political and economic forces that organize people in the context of these surroundings. It is in this sense that one can say that the concept 'environment' is socially constructed (Le Roux, 2001:21).

Van Rooyen (2002: 4-5) has recently argued that in any endeavor to develop a better and more reliable perception of the environment and the nature of the environmental crises, one should regard the biophysical domain as the central point of focus. He explains that this should be a starting point in relation to the dimensions (political, social, scientific-technological, economic, personal and contextual) of any environmental crises, warning that any attempt to ignore it could distort understanding of environmental issues and result in a human-centered and biased illustration.

Fig 2.2 (below) shows that the meaning of the concept environment is also constructed from a personal point of view influenced by different contexts.
2.2.6 Environmental Education

Environmental Education (EE) has the potential to provide a way of transforming mankind from a destroyer of the environment into a defender of it. EE is defined by the IUCN (cited by Neal & Palmer, 1994:12) as "a process during which values are discovered and concepts are explained in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and biophysical surroundings". It also includes the practice of decision-making and the formulation of a personal code of conduct on matters affecting the quality of the environment. In October 1997, UNESCO (United Nations Education, Science and Culture), at the Tbilisi Inter-Governmental Conference, adopted this definition:
Environmental Education is a lifelong, multidisciplinary approach to teaching, mass communication, community participation on some other activity aimed at the development of a world population that is aware of, and concerned about the environment and has this knowledge, skills, attitudes, motivation, and commitment to work individually and collectively towards solutions of current problems and the prevention of new ones (Moseley, 2000:24)

More briefly, Alleas (1997: 86) defined EE as the Education ‘about’, ‘for’, ‘in’, and ‘through’ the environment. For the purpose of this study, I view the concept ‘environment’ in relation to human behavior, often determined by perceptions, as being noted for its flexibility. Humans respond appropriately to prevailing socio-environmental conditions, therefore the manner in which resources are used may or may not be sustainable, depending on attitudes and conditions. In the Nhambita buffer zone, decimation of wildlife by illegal hunting and shifting cultivation, which is the main agricultural farming technique at the Park, leads to heavy deforestation and potential loss of water catchment areas. Consequently, the survival strategies of a large proportion of people whose livelihoods depend on these resources are undermined. The most obvious cause of this problem is mismanagement and unsustainable utilization of resources. However the root causes are the resource-users’ perceptions and attitudes towards resources, centered as they are on the notion that natural resources are free and infinite. Hence, considerable attention and effort by the government and other stakeholders directed towards solving the problem of resource degradation in Nhambita buffer zone has had very little success. Unfortunately, this problem was ignored by the local communities, who have instead perpetuated resources degradation. It is premised, therefore that efforts of the country to promote sustainable use of resources will continue to fail if community members are not educated on sustainable principles and behavior.

On one hand the study sees as key to this riddle being that individuals are aware of their responsibility for protecting and improving the environment by changing
their own behavior and actions so that they conform to the norms which ensure a health environment (UNESCO, 1977: 90). On the other hand it is argued that, despite EE’s potential, there is a need to continuously evaluate programmes to ensure that it is achieving the set goals and objectives and to ascertain that it is actually building skills that would change perspectives and attitudes on unsustainable resource utilization (United Nations Environmental Programme (UNEP), 1992: 22).

2.2.7 Stakeholders

‘Stakeholders’ are generally those who are affected by an activity. Primary stakeholders are directly affected by or closely involved with and activity or those people who have a direct influence over it. Examples include beneficiaries of a land reform development initiative, the government department and/or NGO implementing the initiative, as well as the land owner. Secondary stakeholders are indirectly affected by an activity. For example, traders and tourism entrepreneurs may benefit from a road being built to enable access to the land reform project.

In the focus of this study the stakeholders are committee members and traditional leaders in the Nhambita Buffer Zone within Gorongosa National Park, Districts of Gorongosa, Cheringoma, Nwanza and Nhamatanda, Gorongosa National Park, Department of Environmental Affairs, Department of Agriculture, Department of Tourism, GTZ and ORAM the non Governmental NGO’s for CBNRM (Community Based Natural Resource Management), Center for Sustainable Development for Natural Resources (CDS-RN-Chimoio), WWF and UCM (Catholic University of Mozambique).
2.3 THE GLOBAL ENVIRONMENTAL CRISIS

Since the United Nations Conference on the Human Environment (Stockholm, 1972), many people have been persuaded that the Earth's environment is rapidly deteriorating. Thus, while the population rises by 100 million a year, the Earth's capacity to support humankind is reduced. Two reasons are given for holding this pessimistic view, namely that those resources are being consumed at an unsustainable rate and that they are being degraded (World Conference on Economic Development (WCED), 1989: 65).

The world has an effective finite stock of mineral resources. Similarly, there is a limit to the amount of land that might be cultivated or farmed. For more than a century people wanted to preserve species and ecosystems, but only during the last few years has the loss of biodiversity has been seriously viewed as a threat to sustainable development. This was a major concern at the United Nations Conference on Environmental Development (UNCED) in 1992. Over the last 20 years, the increasing rate of forest loss, particularly species-rich moist tropical forest (Grainger, 1993: 54), has also been identified as an alarming trend. Forests are important carbon sinks, reducing the effect of global warming. They are also home to indigenous people, most or all of whom have existed in relative harmony with the environment, living off it in a sustainable fashion. Forests form protection against soil erosion and the siltation of reservoirs, and they moderate the severity of floods. However, forests and trees outside forests (Munslow et al., 1988: 164) are valued as a source of wood for fuel, and as potential grazing land for cattle. Their clearance by loggers and farmers has caused widespread environmental problems, as well as a crisis in energy production for the poor (WCED, 1989: 75-80).

Resource degradation through misuse and pollution is the second component of the environmental crisis. Pollution of air, land and water has long been identified as a problem. Smoke control legislation was introduced in London in the
thirteenth century. In the South the effects of pollution are recognized locally as catastrophic. Acid rain is now a global phenomenon, killing trees, acidifying soils, reducing crop yields, causing human health problems and corroding stone buildings. Emissions of greenhouse gases, for example chloro-flouro-carbons (CFCs) that cause ozone layer depletion, are leading to changes in the Earth's climate that will have a major impact on human welfare within the next generation. The ozone layer shields against cancer causing ultraviolet (UV radiation). There is now little doubt that human health is seriously threatened by increased UV radiation. At unsponsored conferences in Montreal (1987), London (1990) and Copenhagen (1992), governments agreed to phase out CFC production by 1996. Ozone loss will, however, continue because much CFC is already available in the atmosphere. The rapidity of the international response to ozone depletion is an encouraging sign that co-operation to maintain environmental quality is possible (WCED, 1989: 88). Desertification is probably the most widely recognized form of resource degradation affecting as much as one-third of the world and caused by soil erosion, badly managed irrigation systems, fluctuation of climate, inappropriate land use and removal of trees.

The crisis of global insecurity is probably the most serious threat to sustainable development. As Brundland (WCED, 1987: 39-40) shows, these crises interconnect and reinforce each other. The complexity and strength of the interconnections ensure that progress to sustainable development will not be easy. Either incrementally, through numerous small changes, or radically, through large structural changes, the functioning of the human system must change. Clearly, the prevailing economic, political and social systems are responsible for the misfit between the Earth (nature) and the World (humanity). Changes to human systems can be achieved only on the basis of changes in ethical value systems, changes in what is regarded as acceptable behavior in relation to people and to the environment.
Some believe that it is only possible to achieve this through a centrally-driven, directive, command economy and society, dominated by a central government advised by experts. Alternatively, the emphasis might be on grassroots action using the abilities of individuals, households and small communities. Whichever approach is used raises questions of equity, power and democracy. (WCED, 1989: 47)

2.4 MANAGING NATURAL RESOURCES AND USING AID EFFECTIVELY

The exploitation of natural resources is often a major challenge for national actors and institutions (World Development Report (WDR), 2003: 65), creating revenue for government that in a weak institutional context makes it less accountable and responsive to citizen taxpayers, encourages rent seeking and other unproductive competition, and can lead to macroeconomic imbalances, weaker economic performance and, in extreme cases, violent conflict. According to the World Development Report (WDR, 2003:98), it thus has the potential to impair the emergence of good institutions, which in the longer term are critical for strong, sustained growth. International aid can have similar effects in impeding the emergency of inclusive and responsive institutions. The challenge lies in avoiding these negative potentials being realized.

According to Takano (2005:463), the seriousness of the environmental problems populations face has been widely discussed, as has the role of education for sustainable living in addressing these issues (Palmer, 1998: 52-54; Quarrie, 1992. 104). In the UK and USA, much of environmental education theory and practice rests on the assumption that human disconnection from nature is a fundamental problem (Abbey, 1984: 87-91; Lindholt, 1999: 18; Orr, 1994; Russel, 1999: 64; Thomashow, 1995: 98). Many environmentalists and educators suggest that indigenous peoples’ traditional beliefs and the way relate to the natural environment have significant implications for sustainable living (Beinart &
Coates, 1995: 81-84; Descola & Pálsson, 1999: 29-31; Lee & DeVore, 1968: 104-109; Sessions, 1995: 76; Simmons, 1993: 47). While the terms ‘indigenous’ and ‘traditional’ are contested (Agrawal, 1995: 172; Hirtz, 2003: 46; Schmink et al. 1992: 114) and the diversity among ‘indigenous peoples’ must be recognized, these terms are used here in contrast to mainstream ‘Western’ culture which has a judeo-Christian background and which is associated with highly industrialized societies.

2.4.1 Natural Resources – Blessing or Curse?

The WDR states that there is much discussion about whether and under what circumstances natural resources are “treasure or trouble”. Will the exploitation of vast new-found oil in central Asia be a source of great wealth and economic dynamism, or will it add to the military conflicts in the region? The importance of institutions has emerged as a key aspect of the debate, made more so by current steep rises in oil prices. In the context of a viable social contract, based on widely agreed formal and informal rules for the allocation of resources and the settlement of grievances, institutional arrangements can be sufficient to restrain behavior and the violent expression of grievance. An extensive World Bank study (2003) on natural resources in Latin America “found... that the key to success is to complement natural resource wealth with good institutions, human capital, and knowledge”. Where institutions are weak, however, exploiting natural resources can have negative consequences, with some authors even pointing to a “resource curse”. One central mechanism is that the availability of revenue from such reasons may free the government from developing institutions that are accountable to the populace at large. For example, the question of whether oil and minerals hinder the emergence of democratic institutions has been tested empirically and found to hold for a panel of 113 countries between 1971 and 1997.
The adverse effects are magnified when the natural resource endowment, for instance petrochemicals and minerals, is "point-sourced," meaning that its production and revenue patterns are concentrated. Coffee and cocoa take on point-source characteristics when shipped, and are similar to petrochemicals and minerals. When Governments control the revenues from resource extraction, their activities can be financed to a greater extent without the consent of taxpayers, reducing accountability. Where government is less open, easily appropriate rents weaken governance and institutions, both of which are critical for long-term economic performance. In a context where government is responsive to its citizens, these adverse effects are muted.

Table 2.1 (below) presents a list of 45 countries whose growth was not sustained, in that they achieved their 1999 level of Gross domestic product (GDP) per capita in an earlier decade, many as far back as 1960s. Of these 45 countries, all but six are point-source economies. The majority of the countries with point-source natural resources also suffered violent conflict in the 1990s (indicated in bold). (WDR, 2003: 69-70)
Table 2.1 – Unsustained growth performance is closely associated with point-source natural resources, and conflict

COUNTRIES WITH UNSUSTAINED GROWTH
1999 GDP per capita (1995 US$) was reached

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Therefore, the institutional context is crucial. Where norms and rules are weak, greater endowments of natural resources lead to worse economic performance in the long run, compared with countries that have small resource endowments. Existing institutions are eroded, and the emergence of new institutions is hampered. There are two key issues in dealing with natural resources: how are resources managed? And how are the resulting proceeds deployed?

Effective natural resource management hinges on property rights, whether ownership is held individually, as a group, or by government. While there are exceptions involving some multinational corporations promoting sustainable practices due to concerns about reputation, in general when property rights have not been established or are poorly defended, time horizons are short, damaging races for control ensue. (WDR, 2003: 75). Managing natural resources also causes major problems in channeling dispersed interests. As a result of resource extraction, communities may need to move or the local environment may suffer substantial degradation. There is an important role for government in managing these impacts, setting a framework for responsible private sector participation and facilitating the efforts of CSOs. According to the WDR, social cohesion and institutional development will be served by using resource wealth to promote the participation of poor people and to share the benefits broadly (even though it is more difficult to compensate affected communities that operate outside the cash economy).

Another set of problems arises with deploying the proceeds from natural resource exploitation. The availability of associated funds in government coffers complicates the relationships between government leaders and the citizenry. When government must finance its activities through general taxation, it must interact and negotiate with taxpayers, giving citizens greater opportunities for holding their leaders accountable. However, having funds available from natural resources, especially when production involves a concentrated few, enables government leaders and others with the de facto control to pursue their own
agenda. The funds confer power, facilitate patronage, and provide a basis for co-option, and the country is likely to experience more corruption, rent seeking, and other unproductive activities in the costly competition for the resources, including civil conflict.

The document also considers the following questions, in the presence of large accumulated funds, can budget constraints still be binding? How can government leaders commit to honest use in the interest of broader sustainable development? Overcoming short-term rent seeking is a major challenge, requiring a strong "no bailout commitment" for struggling sectors of the economy or local governments. Transparency, independent audits, and open dialogues with all stakeholders are central to effective processes, especially when creating investment funds (sometimes offshore) for future generations as part of a long-term strategy to ward off Dutch disease-type problems.

Once the share of total of total revenues to be placed in these investment funds is determined, their effective management would benefit from an independent board whose sole objective is to maximize return. Civil society can perform a key monitoring function, as in Cameroon and Chad. That natural resources can undermine institutions and hamper their evolution is not destiny. Malaysia and Botswana have both leveraged their natural resources to foster development. In addition to sound macroeconomic policies, the good examples of resource-rich countries point to the importance of shared growth, or inclusive access to assets, by which resource rents are invested in education and agriculture improvements targeting the poor. Taking advantage of resource rents to promote inclusiveness in access to assets also encourages social cohesion and institutional development, where such have been more difficult. Reducing polarization and fostering a capacity for negotiations and coalition-building as well as an ability to commit to and sustain reforms, can also be decisive in responding to external shocks. When managed and deployed well the rents from natural resources present an important opportunity for accelerating more sustainable development.
2.4.2 Ensuring that aid does not make Government less accountable

The World Commission on Environment and Development (WCED, 1987: 82-84) Report, commonly known as the Brundland Report (after its chairman), produced by an international group of politicians, civil servants and experts on environment and development, argues that development assistance can help governments leverage domestic resources to bring about change. However, aid and natural resources rents share a key attribute: the potential for weakening the accountability of government to its citizens. It also notes that aid provides a source of funds to government leaders, again without the need for interaction and negotiation with members of the policy. This effect is clearly identified in research on odious debts, where government leaders raise international loans—and proceed to misallocate funds to poorly conceived projects or, in the extreme, to steal and squander the funds without the consent of those in whose name the obligation were contracted. That the loans are still extended and debt service is still demanded from subsequent government and its citizens shows that in a weak institutional context, official lending can have effects. The 1998 World Bank aid effectiveness study and other research offer sobering observations, namely that in the past, countries with poor policies received as much aid as those making positive reform efforts; and aid has sometimes prolonged bad policies.

The study found that aid amounting to 1 percent of national income contributes 0.5 percent to growth in countries with mediocre policies, zero percent in countries with mediocre policies, and -0.3 percent in countries with bad policies. Other studies find evidence that less corrupt countries were not preferentially funded by donors, and that foreign aid eroded the quality of governance, as measured by indexes of corruption, the rule of law, and bureaucratic quality.

Similar to the natural resource 'curse', development aid gives rise to commitment and disperses interest problems, but as with natural resources, it is possible to find innovative solutions to increase aid effectiveness without incurring undue
transaction costs. Donors have become more selective, directing aid to countries with good policies and institutions ("institutional conditionality"). International financial institutions increasingly seek to promote the emergence of better institutions and participatory approaches, aiming to strengthen coordination by directly addressing the problem of finding channels for the dispersed interests harmed by ill-conceived policies. Debt relief seeks to encourage reform and channel funds to development. Recipient governments, as well as donors, are permitting greater transparency in the process, especially in providing access to information and facilitating the participation of civil society. Support is growing for the preparation of Poverty Reduction Strategy Papers, which aim:

To strengthen country ownership of poverty reduction strategies; to broaden the representation of civil society - particularly the poor themselves - in the design of such strategies; to improve coordination among development partners; and to focus the analytical, advisory, and financial resources of the international community on reducing poverty. (WCED, 1987: 89)

2.5 Averting Violent Conflict

According to a group of authors, violent conflict breaks down the institutional framework that enables people to get the most out of life and to work together toward sustainable development. When death and destruction are widespread, prevention, reconciliation, and reconstruction must be the first order of business. Since 1999, more than half of all low-income countries have experienced significant conflict, generating substantial transnational spillovers that demand a response from the global community, for example in helping refugees, providing third-party mediation, underpinning commitment guarantees, and supporting reconstruction. In Africa, major conflict has visited virtually every country or an immediate neighbor over the last decade. Although some aspects of security
may be resolved at the local level, the formation of the state and challenges to the state are national in scope, making conflict a major national issue (Sambanis, Jacobs, Thomas & Astrop (2000: 129-130); Fajnzylber, Lederman & Loayza, (2000: 25-32).

Conflict and homicides stem from similar underlying factors, including the potential gains from violence, such as the available ‘loot’, and from the breakdown or weakness of defensive structures, such as traditional norms, sections, and government-enforced rule of law. Table 2.2 below, shows that:

- For the world as a whole, the average number of annual deaths from civil wars was four to five times greater than from homicides between 1944 and 1996.
- In Sub-Saharan Africa, both civil conflicting deaths and homicides are higher than in other regions.
- East Asia and Pacific, and the Middle East and North Africa, by contrast, have relatively high civil conflict deaths and low homicides. This suggests that state institutions have less success in mediating tension and containing civil violence than norms and sanctions do in limiting homicide.
- In Latin America, where incomes and inequality are somewhat higher, civil conflict deaths are relatively low, but homicides are high. This suggests that the state has been well “defended”, partly through periods of similarity rule, but that factors such as high levels of inequality continue to fuel homicides.

Table 2.2: Civil conflict and reported homicides (per 100,000 people)

<table>
<thead>
<tr>
<th>Region</th>
<th>Total civil conflict deaths per year (1944-96)</th>
<th>Total homicides per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>All regions (population-weighted average)</td>
<td>10.3</td>
<td>2.3</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>30.3</td>
<td>7.4</td>
</tr>
<tr>
<td>East Asia and Pacific</td>
<td>10.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>9.4</td>
<td>1.2</td>
</tr>
</tbody>
</table>
South Asia | 7.4 | 1.9
---|---|---
Europe and Central Asia | 3.4 | 1.8
Latin America and the Caribbean | 3.2 | 4.5


"A typically severe grievance" and religious or ethnic divisions in society have been cited as important causes of civil conflict. Studies by Easterly (forthcoming), suggest that the institutional framework is central to constraining the divisive effects of such social characteristics, and those other factors are important to the incidence and duration of civil conflict, for example the presence of natural resources, and the incidence of extreme poverty and unsustained growth. (Sambanis, Jacobs, Thomas & Astrop, (2000: 147-150); Fajnzylber, Lederman & Loayza, (2000: 39-45)

2.5.1 Natural Resources and Civil War

The World Development Report (2003:170) maintained that dependence on natural resources increases the likelihood of conflict; especially if they are location-specific and can be looted giving opposition groups funding opportunities. This is distinct from the broader impact of point-source natural resources examined above. There is also a link between natural resource extraction and civil war based on grievances related to “land expropriation, environmental damage, and labor migration” (WDR, 2003:171). The potential access to resource rents makes it easier for private armies or warlords to acquire the arms that contribute to the incidence of civil conflict.

Similar mechanisms may affect the duration and intensity of conflict. Resource wealth makes it easier for weak groups to continue rather than be crushed, and their leaders might derive greater resource rents during conflict than they would in peace. For instance, according to Mozambique’s Report to the World Summit on Sustainable Development, about 45% of the land area in Mozambique is
arable land, of which only 30 to 40% is actively used. At least 90% of the users are farm families involved in subsistence agriculture. 10% or fewer of the agricultural producers are commercial farmers. Their numbers has increased over the past 5 years due to the economic and political situation in neighboring Zimbabwe. Land degradation in Mozambique represented in fig 2.3 is affected by a number of complex interlinked social, economic, physical and political factors.

Figure 2.3: Poverty Cycle (Doerfler & Castigo, 2004)

Much of the abundant wildlife in Mozambique was reduced almost to distinction during the war between Frelimo and Renamo. From the thousands of elephants which once roamed the Gorongosa National Park during the colonial area, only a few hundred are left today. Poaching and farming in protected areas are reducing other animal populations rapidly to the extent that natural recovery is in many cases no longer possible. If one would want to recover the splendor of the past,
in most cases one would have to reintroduce animal species, as was done in the Limpopo National Park. (MRWSSD, 2002: 6-9)

The presence of natural resources may also make it harder to reach peace accords, because leaders have difficulty with conflicts, in countries such as Angola, Sierra Leone, and the Democratic Republic of Congo. In addition, the government and the international community may be unable to convince violent rebel groups that they will not benefit from the resources extracted. On the contrary, rebel groups successfully pay for weapons and other support with “booty futures”, trading diamond concessions for mercenary services, for example, before the conflict has ever begun. Rebels agree for instance to peace in exchange for regional autonomy only if the government can credibly commit to its promises, but the presence of natural resources increases the incentive for the government to renege on peace agreements.

Even though institutional remedies are emerging, they need to be strengthened. Civil society organizations continue to focus international attention on the practices of failing governments and violent rebel groups. The publicity is also encouraging private actors to adopt codes of conduct for resource extraction, illustrated by efforts to label diamonds and exclude “conflict diamonds” originated in Sierra Leone and Angola from the market. International pressure is growing to curb looting by neighbors, now fueling conflict in the Democratic Republic of Congo, and to promote democracy and participation to help prevent the accumulation of grievances that boil over into violence. Indeed, as noted above, recent research on the ‘resource curse” suggests another less direct mechanism by which resources raise the probability of violent conflict, i.e., by undermining the institutional framework that is critical to economic growth and poverty reduction (WDR, 2003: 111).

2.6 SUSTAINABLE DEVELOPMENT IN MOZAMBIQUE'S CONTEXT
Mozambique attended the United Nations Conference on Environmental Development, held in June 1992, in Rio de Janeiro, Brazil, through a delegation headed by the country’s President, Mr Joaquim Chissano (MR WSSD, 2002: 9). It was among the first African countries to adhere to the principles discussed and agreed upon during what came to be known as the ‘Earth Summit’. The states that attended agreed upon a set of principles and obligations related to the protection of the Earth and to the improvement of life quality of its inhabitants, through sustainable development. The obligations agreed upon were compiled and recorded into a global action plan, termed ‘Agenda 21’. Parallel to its participation, Mozambique had set up a National Commission for the Environment, a structure that came to form the core of the now existing Ministry for Coordination of Environmental Affairs (MICOA, 1994: 2).

In 1995, the government approved the National Programme for Environmental Management, which outlined the bases for action, the objectives, the activities, and means of implementation of Agenda 21, as well as the National Environmental Policy in Mozambique. The report, which has been prepared for the World Summit on Sustainable Development, held by the United Nations, attempted to make an evolution of the level of fulfillment of the obligations taken up by Mozambique during the Rio de Janeiro Conference (1992), using as guidelines the programmatic areas of the Agenda 21. To achieve that, 10 seminars were held through all the country’s provinces on the first draft of the document, with the involvement of civil society and government representatives. The pragmatic consensus is replacing the old-style theoretical contests, centering on notions of sustainability. Making development sustainable means moving beyond a narrow, albeit important, concern with economic growth per se, to considerations relating to the quality of that growth. The focus is on ensuring that people’s basic needs are being met, that the resource bases are conserved, that there is a sustainable population level, that environment and cross-sector concerns are integrated into decision-making processes, and that communities

Sustainable development is concerned with improving the overall quality of life as well as satisfying human needs. Mustafa Tolba, the African former head of the United Nations Environmental Programme (UNEP), sees sustainable development necessitating help to the poorest, who would otherwise be left with no option but to destroy the environment. Sustainable development implies self-reliant and cost-effective development, facilitating access to health, shelter, clean water and food. Finally, it implies the need for people-centered initiatives (Tolba, 1987: 40). Sustainable development needs to be at the very heart of Mozambique's development programme, as it places many of these concerns, and in particular meeting basic needs, at the centre of the growth agenda itself.

Sustainable development is not something that can happen easily, but requires amongst other things a massive educational effort so that citizens are made aware of the need to manage resources wisely. They must achieve the maximum benefits at the minimum cost, not only to fulfill their own needs in the present, but those of their children in the future. So much that is written about sustainable development concerns the natural resource base rather than human resource sustainability. Both are important, but ultimately it is people who create and have to resolve the problem of managing the natural resource base. While all can agree on the principle of sustainable development, realizing it in practice will be far more problematic, as development is being pursued for short-term motivations of profit or political expedience, to the long-term detriment of people and the planet (IUCN, 1997: 99-100).

To enable development, sustainable governance is necessary, strategically fitted into an environment of developmental needs and priorities. Public administration alone is not sufficient; rather an integrated public and development management approach. Good development management means not just managing sectors,
but ensuring effective coordinating and integration between them. In the current world, partnership is required between the government, civil society and private sector. This also holds for cooperation between the different tiers of government from national, to provincial and local level. Greater sensitivity is required towards other role-players and stakeholders, the environment, as well the social and organizational context surrounding decisions and activities (IUCN, 1997: 104).

Mozambique has developed its national environmental policy through the National Council for Sustainable Development (CONDES), which gave all stakeholders the chance to contribute their ideas to developing the new environmental policy, and define sustainable development as a combination of social economical environmental factors. The government believes that sustainable development is the best way to use and manage natural resources in Mozambique (CONDES, 2002: 8). Mozambique’s vision is of a society that is in harmony with its environment, but achieving this requires an integrated and holistic environmental management system that aims to achieve sustainable development. Therefore the government programme for the period of 1994-1999 established as its main objective reconstruction of the national social and economic structure, aimed at promoting the gradual eradication of poverty and improving life quality of the Mozambican people.

Within this context, the sectors and sub-sectors which embodied the government apparatus, particularly those related to the management of natural resources, initiated a process of designing sectoral policies to be used as guidelines for the re-launching of economic activity and development of activities and resources under their authority for the post war period. As a result, various packages of national policies have been approved, among which are those centred on the following: environment, tourism, water, land issues, Agriculture, Industry, Commerce, Fisheries, Forest and Wildlife, Education, Health and Disaster Management. (CONDES, 2002: 10-15)
To achieve this all people in Mozambique will have to work together towards a society where all people, in their own neighborhoods, have enough food to eat, clean water to drink, fresh air to breathe, decent homes to live in and green spaces in which to walk and play. This can only be achieved through a management model, based on sustainable development and that addresses:

- The quality of life in daily lives, and living and working environments.
- Fair access to land and natural resources.
- The integration of economic development, social justice and environmental sustainability.
- More efficient use of energy resources.
- The interaction between population growth and sustainable development
- The sustainable use of social, cultural and natural resources.
- Public participation in environmental governance
- Custodianship of the environment.

In particular, all Mozambicans will have to look to live and use resources in a sustainable way so that they can meet present and future needs. Sustainable development that leads to sustainable living is the key to well being and improved quality of life for all, now and in the future. Mozambicans need to look more carefully at the relationship between economic activity, the environment and different approaches to development.

A developing country, Mozambique needs growth and development to improve the quality of people’s lives. At the same time, it must use its environmental resources in a sustainable way. Growth means increasing the size of the economy, which countries do by investing local and foreign money to exploit natural, social and cultural resources, with the aim of creating new jobs and increasing wealth. Growth is measured by using Gross Domestic Product (GDP) and Gross National Product (GNP).
However, development deals with people's basic needs, with fairness and with redistribution of wealth. It is about the quality of people's lives rather than how much economic activity there is. (CONDES, 2002: 15) To achieve sustainable development the economy breaks away from uncontrolled growth and environmentally damaging exploitation, and moves towards environmental sustainability. Through Resolution: 5/95, of August 3rd, (1995), the National Policy on Environmental Affairs, guarantees that everyone has the right to:

a) an environment that is not harmful to their health or well being, and
b) have the environment protected, for the benefit of present and future generations, through reasonable legislation 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.

(MoçAmbiente, 2002: 14)

Provincial and local government will operate within a framework of sustainable development and integrated environmental management. Where appropriate, provincial and local government will develop their own strategies to suit their specific needs and conditions. They apply stricter norms and standards to ensure the protection of human health and well being and ensure environmental sustainability.

2.7 POVERTY AND ENVIRONMENT LINKAGES IN THE CONTEXT OF THE WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT

The WSSD has clearly recognized the links between eradicating poverty and progress towards sustainable development through addressing aspects of global trade, finance and debts. No longer is it possible to talk about the local without
the global, this being the message behind New Partnership for African Development (NEPAD), which aims at ensuring Africa is not excluded from the global economy. The important cue from NEPAD is that issues of poverty and environment require a global and local solution. Poverty has also been blamed, unjustifiably, for environmental ills in the developing countries. Considerations have not been given to the economic setting which is the root cause for poverty and environmental damage. The discourse on environment must be based on an approach to economic development (Batemen, 2000:14).

Environmental poverty linkages can only be understood in terms of risk and vulnerability that poor people face when trying to secure sustainable livelihoods. The risk and vulnerability emanate from changes in both the international and domestic socio-economic environment. The entire strategy for sustainable development is premised on the idea that the linkages between political governance, social and economic programmes, are intertwined with environmental considerations.

In developing countries, the realities of the linkages are much more obvious. Most environmental problems can be attributed to weak local government capacity, lack of capital to invest in infrastructure improvements, and squalid conditions for habitation. Significant changes to the governance system that enshrines a rights-based approach to issues of basic need are critical for sustainable development. Certain macro-economic changes, such as land reform, have resulted in infrastructural investments in water delivery, housing, schools and clinics. This has created new opportunities for improving the management of the environment, and job creation.

Improvements in services such as electricity, water and sanitation can reduce environmental heath risks. Increased access to natural resources leads to a long-term horizon for people as they feel they have proprietorship over the resources and are more likely to invest in the long-term conservation of them.
Improvements in infrastructure delivery also contribute to alleviating some of the environmental health problems that arise from conditions of squalor, such as poor sanitation and burning of low-quality coal that leads to levels of household pollution and respiratory problems (Bateman, 2000:14-15).

In Mozambique, urban-rural dynamics are poorly understood but there is no doubt that the economies of poor households and social networks continue to be connected. The web is intricate and creates its own dynamism. Agriculture, for example, is an important economic resource for many Africans countries, including Mozambique. It is therefore essential that a sound rural development policy needs to be implemented. The natural resource base can also add significant value to poor households in their attempt to maintain sustainable livelihoods. Agriculture is important; however its expansion is also dependent on the rate of land reform. Many poor people are not only looking to agriculture to provide a livelihood. Rural communities, for example, have latched onto tourism as a new market to generate alternate livelihood.

2.7.1 Struggle against Poverty in the Case of Mozambique

The reduction of extreme poverty and the improvement of living conditions of the people are a government priority; at least as underlined in its programmes. For instance, in April 2000, the Government approved the Action Plan for the Reduction of Extreme Poverty for 2001/2005 (PARPA), which represented a strategic vision for reduction of poverty, its main objectives and the key actions to be pursued. This document also serves as Mozambique’s Poverty Reduction Strategy Paper (PRSP). The Government’s global objective is substantial reduction of extreme poverty levels through the adoption of measures aimed at the improvement of capacities and opportunities for all Mozambicans, reducing it from the 70% figure of 1997 to less than 60% by 2005, and less than 50% by the end of the first decade of 2000.
Maintenance of peace and social and economic stability constitute the basic presuppositions for the poverty reduction strategy, as well as the medium- and long-term measures that can also sustain comprehensive and rapid economic growth. The poverty reduction strategy encompasses the following areas of action, that is, those actions with comprehensive and long reaching impact for the improvement of living conditions of the people:

- **Manpower Development**, which calls for accomplishment of universal primary education, the expansion of secondary education, non-formal education and technical and professional education.
- **Health**, with priority placed on expansion and quality improvement of basic health care, fight against the HIV/AIDS epidemic and other endemic diseases (malaria, diarrheas, tuberculosis and leprosy).
- **Infrastructure i.e.** (roads, energy and water), placing emphasis on the development of basic infrastructure, primary road network, basic sanitation, giving priority to the rural areas.
- **Agriculture and Rural Development**, giving priority to increasing income generating opportunities, productivity and access to markets.
- **Good Governance, Legality and Justice**, Priority is given to the reinforcement terms of capacity and efficiency of both the legal and judicial system, improvement of public security, protection of the rights and liberties of the citizens.
- **Micro Economic and Financial Policies**, the priorities of this sector being keeping low of inflation and increased economic competitiveness, mobilization of additional budget resources equitably and efficiently, improved management of public expenditure, protection and expansion of financial markets and reinforcement of management of internal and external debt.

Apart from the areas indicated above, the poverty reduction strategy covers other complementary activities, which include selected social programmes (guided
programmes of social assistance, housing), sectoral policies and programmes, contributing to income generation and promotion of jobs (enterprise development, fishing, mining, industry, tourism), specific programmes for reduction of vulnerability to natural disasters and supporting back-up policies for sustainable growth (transport and communication, environmental management and technology). The implementation and monitoring of PARPA is included within the other government planning tools, namely the Economic and Social Plan (PES) and the State Budget (OE).

Within a long-term approach, the government has launched extended constructive debate and dialogue about the future of Mozambique. This strategic initiative known as ‘Agenda 2025’ aims at forming a common national strategic vision of development through a participatory and conclusive process, as well as the reinforcement of government institutions of the society in their capacity of designing and implementing development projects and programmes (CONDES, 2002: 20).

2.8 WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT: A CALL FOR ACTION AND STRUGGLE

It was quit evident that delegates at the WSSD would have to fight hard in order to establish a sustainable world order. The UN Secretary General called for the delegates to adopt an action plan that would be inclusive, relevant, practical an implementable, based on a shared vision of both developed and developing countries. He called the WSSD to focus mainly on “WEHAB” (water, energy, health, agriculture and biodiversity) with a high priority being accorded to poverty alleviation.

2.8.1 Discussion/Negotiations
The G-77 proposal for the creation of a World Solidarity Fund for poverty eradication was much debated with opposition from the USA, Japan, Australia and the EU. Finally, it was agreed to establish the fund with voluntary contributions. Concerning water and sanitation, discussions focused on time-bound targets. The final agreement was to have by 2015 a proportion of people having access to safe drinking water and sanitation. Targets to increase the share of renewable energy (to about 15% by 2010) and adopting timetables to phase out energy subsidies were sources of major disagreements. The final text dropped the targets and timetables, including those for removing subsidies, and added the phrase "with a sense of urgency" (Connect, 2003: 20 25). In the case of biodiversity, the debated issues were: targeting 2010 for reducing the rate of biodiversity loss and setting up an "internationally binding regime" for benefit sharing. While the 2010 target was agreed upon, the USA opposed the use of 'legally binding' and 'regime'. Consequently 'legally binding' was dropped; the final text retained only international regime' (Connect 2003: 27).

On the concluding day of the Summit, the world leaders declared that the "deep fault line" between the rich and the poor posed a major threat to global prosperity and stability and adopted a broad plan to address it, called 'the Johannesburg Plan of Implementation'. The Johannesburg Declaration on Sustainable reaffirms world leaders, commitments need to save the environment and lift billions of people out of poverty. The most likely success of the Johannesburg Summit was the agreement reached on concrete targets and schedules for conserving biological diversity, improving sanitation provision for the poorest and mitigating the hazards posed by chemicals. Biodiversity conservation goals were already agreed upon in the earlier Convention on Biological Diversity, but the approval of the USA was new.

As concerns the financing of global sustainability policy, only very small steps forward were taken. Furthermore, the Summit failed to agree on strengthening UNEP, nor did it succeed in establishing a World Environment Organization.
Thus, there is still no institution able to effectively implement and monitor the goals set. The Summit failed to agree on a target share of renewable resources of at least 15% by the year 2010, thus making it difficult to protect the world’s climate. On the precautionary principle, neither was progress made, rather all that was achieved was to prevent falling behind 1992 agreements (Connect, 2003: 35-40).

2.9 ENVIRONMENTAL EDUCATION (EE) AT WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT

There was a wide recognition of the role of EE for sustainable development at WSSD, EE being one of the issues with no area of major disagreement. A joint statement on Education for Sustainable Development (ESD) signed by the representatives of national and regional professionals EE associations with members in 73 countries and all continents was issued. The statement urged governments to prepare and implement plans for ESD for action and change. It further urged nations and the UN system to support the plan with appropriate financial resources. The proposal for declaration of 2005-2015 as the International Decade for Education for Sustainable Development was also accepted (Connect, 2003: 40).

2.10 EDUCATION FOR SUSTAINABLE DEVELOPMENT: EXPANDING THE VISION

Education for Sustainable Development (ESD) is "an emerging but dynamic concept that encompasses a new vision of education that seeks to empower all ages to assume responsibility for creating and enjoying a sustainable future". It is not so much education about sustainability development but education for sustainable development, which makes the concept more participatory,
encouraging educators and learners to interact, debate and foster learning that emerges from experiences and creativity. This more dynamic meaning of ESD utilizes all aspects of public awareness, education and training as powerful instruments to create both understanding about sustainability to develop the knowledge, skills, perspectives and values needed to participate in individual and collective decisions that will improve the quality of life in the short and the long run. This means that while there will be overall agreement on “what is ESD?” there will be nuanced differences according to local contexts, priorities and approaches. There will be no single “right” definition of ESD, but there will be overall agreement that education addresses (Connect, 2003: 68).

The goals, emphasis and processes of ESD must, therefore, be locally defined, meeting the local environmental, social and economic conditions in culturally appropriate ways. This can be facilitated through community involvement, which will enable people to make informed decisions on issues affecting the quality of their lives. ESD has four major thrusts: promotion and improvement of basic education; reorienting existing education at all levels to address sustainable development; developing public understanding; and awareness of sustainability and training.

Education, both formal and informal, public awareness and training are key process by which societies can reach their fullest potential. Education at all levels is a key to sustainable development and educating people about sustainable development requires a balance between economic goals, social goals, and ecological responsibility. Education should provide communities with skills, perspectives, values and knowledge to live in a sustainable manner. It should be interdisciplinary integrating concepts and analytical tools from a variety of disciplines (UN Commission on Sustainable Development, 2002: 39). Education must be reoriented to include the changes needed to promote sustainable development. Education for sustainable development must be attentive to developments and reforms in education, particularly Education For All (EFA), as
well as to the Millennium Development Goals and the Goals of the International literacy Decade (Connect, 2003: 75-80).

The WSSD plan of implementation recognizes two key aspects of education in relation to sustainable development. Firstly, education is the foundation for sustainable development and much of the work of ESD must be closely linked the pursuit of EFA. Secondly, education, as a key instrument for bringing about changes in values and attitudes, skills, behaviors and lifestyles consistent with sustainable development within and among countries, is a tool for addressing such issues as gender quality, environmental protection, rural development, human rights, health care, HIV/AIDS and consumption patterns, as these intersect with the sustainable development agenda.

Indeed education, broadly defined, is humanity’s best hope and most effective means in the quest to achieve sustainable development. Much of current education falls short of what is required, therefore the quality of education is of paramount importance. Improving the quality of education and re-orienting its goals to recognize the importance of sustainable development must be one of UNESCO’s and the world's highest priorities. Education at all levels and in all its forms should help people of all ages better understand the world in which they live and the complexity and inter-relationships of problems such as poverty, wasteful consumption, environmental degradation, urban decay, population growth, gender inequality, health conflict, and the violation of human rights that threaten our future. (Connect, 2003: 80). This vision of education emphasizes a holistic, interdisciplinary approach to developing knowledge and skills needed for a sustainable future, encompassing both formal and non-formal education.

The conception of a Decade of Education for Sustainable Development was introduced by the Japanese government at the World Summit for Sustainable Development (WSSD) Preparatory Committee iv (Bali, Indonesia, June 2002) and endorsed at the highest political level at the WSSD in Johannesburg, South
Africa in September 2002. Three months later, it was adopted by consensus at the 57th session of the UN General Assembly and a Decade of Education for Sustainable Development that commenced 1st January 2005 (Connect, 2003: 88).

According to Curren (2008: 191) in December 2002, the United Nations General Assembly resolved to declare and implement a United Nations Decade of Education for Sustainable Development (DESD), running from 2005 to 2014. UNESCO took the lead in this, enlisted an array of institutional and research partners, and developed an International Implementation Scheme (IIS) and a web-based multimedia teacher education program: “Teaching and Learning for a Sustainable Future”. The scheme was developed and presented to the UN General Assembly in October 2004 and to UNESCO’s Executive Board in April and September 2005. The IIS sets out a framework for implementation, premised on global ‘collective ownership’ of the DESD, which is the cooperation of the world’s governments, non-governmental organizations (NGOs), and other stakeholders in implementing ESD.

For the last decade and more, Bowers (1993, 1995, 1997, 2001) cited by Gruenewald, 2003:6 has been the leading theorist critiquing the absence of concern for ecological matters in education and in the critical tradition led by Freire, MacLaren, and Giroux. Pedagogy can work to reinforce cultural beliefs, or “root metaphors,” that underlie ecological problems and that are reproduced throughout conventional education: namely: individualism, the belief in the progressive nature of change, and anthropocentrism. Bowers further repudiates critical pedagogues for their tendency to represent themselves as the only group concerned with issues of gender, race, and economic poverty (Bowers, 1993:111) and challenges these emancipator educators to broaden their cultural critique to include an analysis of ecological systems and the problems of promoting an ever expanding consumer economy (Gruenewald, 2003:6).
A similar view is expressed by Bourn (2008: 200) notably that the UN Decade on Education for Sustainable Development has potentially created the opportunity for opening up the debates and the dialogue on the learning agendas; and has also highlighted the need to make closer linkages between environmental and development agendas, particularly with the direct reference to the millennium development goals.

However, in the UK, because there was already a wealth of initiatives taking place on ESD, the Decade as a concept has to date had less impact than in other countries. There was an official launch of the Decade in December 2005, and a coordinating committee aimed to bring together most of the major stakeholders across the UK.

The main aims of the Decade in the UK to date have been:

- Promotion of the aims of the Decade to broader sectors of UK society and educational bodies;
- Encouragement of initiatives and programmes across all aspects of learning;
- In partnership with government bodies engaged in initiatives in ESD, support for greater co-ordination and coherence in order to facilitate greater understanding amongst the UK public;
- Demonstration of the value and impact of ESD and the Decade to appropriate policy-makers in education, environment and international development;
- Facilitation of debates and discussion within appropriate educational bodies on the relevance of the aims of the learning programmes;
- Ensuring that ESD bodies and initiatives are aware of UNESCO activities on the Decade elsewhere in the world and encouraging opportunities for mutual learning (UNESCO UK, 2007: 47).

Another valuable contribution to the significance of the concept ESD comes from Landorf, Doscher and Rocco (2008: 221), whom states that: “The decade of
education for sustainable development (DESD) initiative is almost three years old. The United Nations Educational, Scientific and Cultural Organization (UNESCO), the lead agency for DESD, describes the goal for the decade as being: `to integrate the principles, values, and practices of sustainable development into all aspects of education and learning`, and, further, that `this education effort will encourage changes in behavior that will create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations` (UNESCO, 2005: 29).

2.11 DIVERSIFIED APPROACHES TO ENVIRONMENTAL EDUCATION FOR APPROPRIATE UTILIZATION OF NATURAL RESOURCES

Rapid population increases, social deprivation and economic hardship contribute to the fast and unsustainable rate of exploiting natural resources. Recent revelations indicate that the rate of exploitation of natural resources exceeds sustainable yield. Environmental education (EE) is expected to deal with the dynamics of the biological resources and those of the socio-economic environment in which natural resources are managed, conserved and utilized. Although the concept of EE is relatively new, it is fast gaining momentum in recognition of its importance in addressing the consequences of biodiversity loss, environmental degradation, and the effect of environmental damage on the social, economic and political lives of people. The United Nations conference on Environment and Development in Rio de Janeiro, Brazil, in 1992 stressed the importance of EE in re-orientation of education towards sustainable development (UN, 1992: 78; Abel, 1996: 204).

An example of the rapid rate of depletion of natural resources and consequent scarcity of wood fuel makes households use agricultural residues such as maize stalks, cobs, bean pods and animal dung as fuel. The current approach to environmental education in Africa is narrow in scope of training and participation.
It also lacks a solid foundation at the grassroots and is restricted to only formal education in tertiary institutions. Therefore, the impact of EE at grassroots level is minimal, because the percentage of the population that receives tertiary education in the society is small.

2.11.1 Environmental Education and Natural Resource Interface

2.11.1.1 Current Structure of Environmental Education

The current structure of EE is essentially bimodal. One mode exists in the form of formal training in tertiary institutions, to produce sophisticated graduates who are not very closely in touch with the people and issues on EE at the grassroots. Their domain and contacts are mainly with the elitist group in the urban sector. They therefore make little impact towards efficient use of natural resources. Environmental education is also a new and emerging field of study with low enrolments in the subject still very low. This newness and low enrolment, coupled with the isolation of EE graduates from where active use of resources takes place, accounts for the limited impact. The other mode is through interventions from nongovernmental organizations (NGOs), which are often multi-purpose in their aim and mode of operation. They have prescribed and predetermined agenda, which they pursue through generic and multi-purpose projects that do not have specific mandates on EE. When projects have specific agendas, EE could be used as a means to an end and not an end itself.

Due to global commitments to environmental quality improvement and the signing of treaties on the environment, many development projects require recipient countries to meet certain environmental quality standards as preconditions for borrowing from international financial institutions, such as the World Bank and IMF. In South Africa, the National Environmental Management Act of 1998 stipulates among other things that: "Sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development
serves present and future generations". Often government aspirations to nature are not fully captured by project instruments, nor complemented by society. In many cases, NGO projects target dwellers who are not well-schooled technically, and do not appreciate that environmental degradation is a cumulative result of activities inadvertently undertaken for purposes of survival, rather than as a deliberate attempt to degrade the environment (Nwonwu, 1996: 99).

The two approaches and how they affect society and natural resource utilization are presented in figure 2.3 (below). The figure shows that EE relates to tertiary institutions and NGOs as an input. The outputs, graduates in the case of tertiary institutions and projects from the NGOs, are more inclined to modern than to traditional knowledge systems. While there is formal EE in tertiary institutions there is only informal EE with the NGOs. Also, the graduates and projects, which are the products of tertiary institutions and NGO EE programmes respectively, are more inclined to modern than indigenous knowledge systems. Therefore their impacts and contributions to sustainable use of natural resources are limited.
2.11.1.2 Education and Natural Resource Linkage

Most of the natural resources, such as water, forests, fisheries, wildlife, marine and aquatic lives and mineral resources in developing countries are still conserved and managed in-situ, in their natural habitats and ecosystems, which are closer to rural than urban areas. The rural people who have lived adjacent to these resources over the years have developed and perfected the techniques and strategies for managing them optimally. To alienate them from the decision-making process and education plan that would provide necessary tools for managing the resources is tantamount to 'killing the goose that lays golden egg'.

2.11.2 Adopting a Multi-Pronged Environmental Education System
Environmental Education can be more effective and would cover a wider clientele if its design were multi-pronged. The current two-pronged approach, consisting of studies at the tertiary institutions and through NGO projects, can be widened. The new approach would consist of five points of intervention, including the establishment of formal environmental education in primary, secondary and tertiary institutions as well as informal EE through NGOs and private sector projects and investments.

For instance, in search of optimal methods of managing natural resources, the Ethiopian government explored the option of early childhood training by prescribing the integration of EE into the national education programme, to include the raising of shade tree seedlings and their distribution by children. A new education policy was then formulated to promote the environmental soundness policy in the country, stating as its main aim that of “Providing education that can produce citizens who possess national and international outlook on the environment to protect natural resources and the historical heritage of the country” (Abebe, 1996: 99-102). The government further believed that sound education and capacity development in EE is best achievable through further integration of education with research and training to facilitate awareness creation and networking (Abebe, 1996: 102).
Creating a report between them and the demand side stakeholders, the communities, would be significant if the goal of efficient use of resources and sustainable development were to be achieved. Simple instruments of communities, such as audiovisuals, posters, meetings and the radio, would facilitate better understanding and effectiveness in information dissemination among the resource use planners. The private sector, which is known for its efficiency in enterprise management, would play a leading role in this inter-sector cooperation.

Alternative approaches to providing environmental education and their expected outputs and impacts on natural resource use are illustrated in Figure 2.4 (above), showing EE as a direct input into primary, secondary and tertiary institutions, as well as NGO and private sector programmes. The outputs from these sectors are
technicians and extensionists from the primary and secondary schools; professionals in the form of graduates from tertiary institutions; EE-supporting projects from the NGOs; and EE-supporting private investments from the private sector. The impact of such large-scope EE programmes is likely to bring about more efficient management of natural resources. All the different outputs which are used as instruments for efficient resource management will combine competency acquired from both modern technology and indigenous knowledge systems to achieve efficient and appropriate utilization of natural resources and sustainable development.

2.11.3 Policy Implications

2.11.3.1 Institutional Support for Environmental Education

The multi-facet approach to environmental education will call for more fund allocation to primary and secondary education to help widen the scope of the current system to accommodate the new programme on EE. The training and deployment of environmentalists will be based on need as exemplified by areas that prove most vulnerable to environmental damage.

2.12 ECOLOGICAL LITERACY IN PRELITERATE COMMUNITIES

Environmental education aims at ecological literacy and surpasses the simple acquisition of the techniques of reading and writing. It deals with understanding the principle that underline the organization of ecological communities and using those principles for sustaining the environment. The emphasis on human interest in this domain has often obscured the realization that the satisfaction of human interest is inextricably bound together with the wellbeing and interest of non-human species and the landscape. Knowledge of the pattern of behaviour of flora and fauna, as well as the effect of specific human and natural action on
landscape and soil offers great capacity for humans to adapt to the rhythm of nature or to manipulate its operation for the good of man. Thus the interest of non-human species would still be an indispensable condition for the success of even the most anthropocentric schemes and pretensions. Animal/plant and human interest intertwine and preliterate communities realized this (Chip, 1922: 30).

Literacy and education are not one and the same thing. Many societies who did not have the art of reading and writing were in possession of large stocks of complex knowledge about how living organisms interact with one another, their environment, and human beings. Such knowledge was the foundation of the systematic and ordered practices and timing found in intercropping, agroforestry shifting cultivation, festivals, and rituals of rain-making (Akyeampong, 1996:10). They thus discerned a pattern in the relationship between vegetation and soil, animals and climates. These practices were passed on from generation to generation not in an unconscious, haphazard, or inadvertent manner but in a systematic and orderly way, using diverse methods of socialization and sanctions. They culminated in social, political, and economic institutions and goals (Zoundjihekpon & Dossou-Glehouenou, 1999: 371), the basic characteristics of which was an emphasis on the survival of a communitarian society which marginalized difference and hindered social change.

It is not difficult to illustrate that literature played an important role in the imagination, formulation, and dissemination of such ecological knowledge. In literature one could see the emergence of a wide array of ideas about the judicious use of environmental resources. The community was taught values that were non-human (anthropocentric) and which extolled the intrinsic value of nature, highlighted the interdependence of nature’s resources, underlined the need for a diversity of species and indicated the cyclical nature of ecological process (Taylor, 1986:71-72). These were taught in these preliterate communities mainly through myths, rituals, poetry and songs, and totemism.
A large part of the cosmology that underpinned the ambiguous relationship between human and other species consisted of myths, and they went a long way to determine human attitude. Adams Leeming has observed in this connection that:

Through their authoritativeness and respected characters among them, myths establish a culture’s custom, rituals, religious, tenets, laws social structures, power hierarchies territorial claims, arts and crafts, holidays, and other recurring events, technical tips for hunting, warfare and other endeavors.

A comment on the following Asante myth of procreation can help illustrate this point. The myth has it that:

Long ago a man and women came down from heaven, while another man and women come out from the ground. The Lord of Heaven also sent a python, the non-poisonous snake, which made its home in a river. In the beginning men women had no children; they had no desire for one another and did not know the process of procreation and birth. It was the python who taught them. He asks them if they had any child and on being told that they had none, the python said he would make them have children. He told them to stand facing each other then he went into the river and came out with his mouth full of water. This he sprayed on their bellies saying: “Kus, Kus” (a word that is still used in clan rituals) then the python told the couple to go home and lie together and the women conceive and bore children. These children took the spirit of the river where the python lived as their clan spirit. Members of the clan hold the python as taboo; they should never kill it, and if they find a python that has died or been killed by someone else, they put white clay on it and bury it human fashion.
Stories such as this and many others found in the numerous literary genres of traditional Africa embodied the religious, social, and political rites whose contents went a long way to prescribe and police individual and communal interaction with non-human species (Rattray, 1929:29). Their enduring value does not reside in any claim to historical or scientific veracity but in their didactic efficacy and the impact it has on the conservation practices (Asante-Darko, 1999:8) of "pre-scientific" communities. In the above story, for instance, one sees the idea that the python is presented as a close adopted kin of humans. Its kindness and ascribed cosmic prowess are seen as the very source of human procreation. The gratitude engendered by its benevolence found expression in the reverence and esteem symbolized in the fact that it is buried in human fashion. These attitudes and their assumption of religious status influenced forest management in several communities (Falconer, 1999:370). Such reverence for animals and trees, which the Asante believe have spirits that survive after death (Rattray 1929:258), permeates the content of all forms of traditional Asante methods of such as lectures, group discussion, role playing, debates, and demonstrations (Hofmeyr, 1986:3; MacCaskie, 1995:37; McLead, 1981:30). In the initiation of children, puberty rites, and profession adherence, the integration of literary content and methodological approaches has proved to be beneficial in determining the manner and extent to which knowledge systems can be revived for nature conservation.

It is pertinent to conclude with the brief comment that these traditional beliefs have not always had a positive impact on environmental conservation. Instances abound where the observances of rituals and adherence to the precepts of "the gods" have constituted baneful influence and intractable hindrance to development and the conservation of biodiversity. It would, therefore, augur well for conservation and development if these myths and legends, some of which obviously enhance environmental preservation, were stripped of their mythical epistemological precepts. Again, much can be achieved in conservation if one
emphasizes the intrinsic value of nature (Scweitzer, 1994:66) just as is the instrumental. In all these, the role of poems, songs, short stories, novels, and theatre (for both adults and children in the inculcation of environmental values) cannot be overemphasized.

2.13 ENVIRONMENTAL EDUCATION FOR APPROPRIATE UTILIZATION OF NATURAL RESOURCES: THE CASE OF ARTISANAL GOLD MINING IN MANICA DISTRICT IN MOZAMBIQUE

2.13.1 Artisanal Mining

Artisanal mining is a term used to describe those activities carried out by an individual, families and/or ad-hoc groups, in which the majorities have no technical know-how or adequate equipment. Artisanal gold mining in Manica district plays any important role in the economic subsistence of the local people, but has caused serious environmental as well as social, cultural and education problems.

The number of artisanal miners (known locally as “garimpeiros”) in Mozambique is about 50,000. However, in the season (May-September) the number increases to 100,000 at its peak (Manuel & Muacanhia, 1995:177; Manuel, Muacanhia, Zacarias and Vicente (1999: 177-180). Artisanal gold mining is a very important sector, as it produces most of the gold in Mozambique. Most of the garimpeiros’ activities in Manica are illegal, as they are not subject to royalties and so cause losses of revenue to the government. According to Manuel, Muacanhia, Zacarias and Vicente (1999:177-180), artisanal miners lacked basic geological and mining knowledge and management skills. They use several methods such as pits, trenches, tunnels to reach the auriferous layer or gold ore. Hoes, shovels, picks, shieves, barks, ropes and scales are some of the rudimentary instruments used for gold exploitation. There is inadequate legislation and institutional framework
to protect, guide and support the artisanal mining sector. However, efforts are being made by the government to formulate adequate legislation.

2.13.2 Environmental Impact

Several studies into mining in the region and in the world have revealed that artisanal gold mining has negative impacts on the environment (SARDC, IUCN & SADC, 1994: 8-10; Landner, 1997: 91-96). The gold deposits in Manica District are being degraded because the garimpeiros use rudimentary and inadequate methods and equipment for mining and processing, leading to poor ore recoveries. Lack of basic geological, mining and management skills are undermining the process of gold mining in the district. There is an unfair competition for the deposits, leading to overcrowding of people in some areas, conflicts and poor working practices. These poor working practices have resulted in the abandonment and damage of large gold deposits. Land degradation due to artisanal mining is also a serious problem in Manica District. The deterioration ranges from the removal of the vegetation cover to soil degradation in the form of water erosion, soil compaction and siltation.

Artisanal gold mining is usually located on riverbanks, where most of the gold deposits can be extracted close to the water needed for gold processing. Through this activity the riverbanks are degraded, leading to riverbank erosion, siltation and water pollution. Downstream of gold sites, the water is cloudy, showing the brown orange-brown to reddish-brown colours typical of high level of suspended clay particles. As a result, local communities are not collecting freshwater from the rivers. On the other hand, people and domestic animals are prevented from drinking water from the rivers due to high turbidity. High concentrations of heavy metals were observed in these rivers, posing serious risks not only to biota but also to humans (Manuel & Muacanhia, 1995: 77-80; Manuel & Vicente, 1999: 60; 1999a: 71-73).
The amalgamation process is used to recover gold in its native or "free" form from the gold mercury amalgam (Blowers, 1992). Manuel et al. (1999: 177) has observed that the "garimpeiros" use mercury for gold amalgamation with bare hands and without any masks, endangering their own lives. In this process, mercury fumes are released into the atmosphere. Residues of mercury are dumped into the river water during the recovery process of gold.

2.13.3 Socio –Economic Impact

Artisanal Gold Mining in Manica district is a source of income for many people living in rural and remote areas, as a means of subsistence. The majority of the "garimpeiros" are peasants, working on a seasonal basis, but there are also people of different educational background. The present "garimpeiros" have come from all the provinces of Mozambique as well as from other countries, such as Zimbabwe, Malawi, Tanzania, Nigeria, the Democratic Republic of Congo, Burundi and Rwanda, a situation that often leads to a conflicting scenario because the local communities see their economic rights, social and cultural values being jeopardized by 'aliens' (Manuel & Muacanhia, 1995: 178).

The work and living conditions of miners and their families are generally very poor, merely shelters or huts in very humid areas without basic facilities such as safe drinking water, proper sewage and good latrines represent the artisanal miners’ camps. Malaria and diarrhea are reported in the gold rush villages, while school children abandon their schools and spend most of the time in gold mining site. It is common to find people buying the gold exploited by "garimpeiros" at low prices in the mining areas. Much of the gold is undeclared and sold through illegal channels.

2.13.4 Environmental Education
The actual challenge for the present generation to achieve sustainable gold mining in Manica District is to find ways and means of promoting clear mining practices, enforcement of legislation, establishment of institutional capacity and improvement of environmental, living and working conditions in the mining sites. The environmental campaign can be used to achieve the above as environmental education will improve the community skills, perspectives, values, and knowledge of sustainable life in their community and practice activities for their survival and for future generations (Mckeown, 2000: 148).

It is important to train miners in good mining practices. This will involve the practice of stable excavation, and preparation of adequate support in ore deposits, and require knowledge of basic geology, geohydrology, ore hoisting, identifying rock discontinuities; and selection and installation of pumping equipment. In gold recovery the main processes used in artisanal mining are panning and washing with sluice boxes that are usually used to improve production from the low pans and amalgamation (Blowers, 1992: 51). In dealing with mercury problems, the first step is to educate miners on the danger of mercury (this has already been done) (UNIDO, 2005: 25). The second step is to make sure that protection tools like rubber gloves are readily available. Thirdly, there is a need to introduce the retorts, which will enable the reduction of the loss of mercury by recycling as well as loss of gold during the beneficiation. The retorts must be introduced to the miners by demonstrations of their uses and hence advantages over the current methods (UNIDO, 2005: 47-50).

Based on visible evidence of environmental degradation, training programmes are organized to make artisanal miners aware of the environment problems and demonstrate simple approaches to their solutions. So, there is a need to apply some environmental conservation measures, including the following: (1) raising awareness of cleaner working environments for the miners and all stakeholders, as well as the population in general. (2) Demonstrating how the washing of gravel and panning in nearby rivers is causing water pollution and how pollution
can be reduced. (3) Educating the miners of the importance of land reclamation and how to do it. (4) Raising miners' awareness on the danger of deforestation and how to reduce it. (5) Realizing, training and demonstrating through workshops on cleaner and best practices for a sustainable good mining process.

2.13.5 Strategies for Implementing Environmental Education

Successful implementation of environmental education for sustainable gold mining in Manica District, require the following activities or strategies:

- Planning as an integral part of the mining process. It should be integrated into other development activities with the district taking into account the need for good environmental conservation for future generations.
- Effective participation by the entire community on environmental education features, such as water quality, land use, erosion, cleaner mining techniques, misuse of natural resources, and empowerment of traditional and indigenous knowledge.
- Institutionalization of environmental education into various activities should be a long term, life-long process with stakeholders' participation.

2.14 WATER MANAGEMENT, PEOPLE AND PARKS IN KRUGER NATIONAL PARK

2.14.1 Water Management in and around the Park

As water remains a key factor in natural resource management, the programme consisted on the importance of investigating the “health or well being” of water sources and catchment areas around and in the park, which provide water to plants and animals in the park and therefore maintain a health fauna and flora. I.e. the ecosystems will be preserved (Thomas, 2004: 6). Primarily due to man’s
influence, many of the rivers and catchment areas are changing. Parallel to that at buffer Zones in GNP in Mozambique awareness programmes on water management have been designed in order to overcome desertification as the future availability of water for domestic use, agriculture and industry is directly dependent on the protection of the natural and planted forestry. Because of the present lack of control over deforestation and bush burning, many of the now still permanent rivers will dry up in the coming years and water catchment areas will loose their potential for harvesting and storing water. Therefore, in some dry areas, such as in the case of Tete province, tree planting to re-vegetate deforested zones to reverse the process of desertification and protect water catchment areas is becoming increasingly difficult if not possible. The future of the population looks grim, as the only alternatives will be emigration from these areas to "greener pastures" (GNP REPORT, 2004: 20). Water quantities flowing into the KNP are reducing annually, become less secure and are polluted with chemicals and foreign invasive species, influencing not only the park itself, but also the people, wildlife and plants in neighboring countries (e.g. Mozambique).

According to Thomas, the KNP river management unit investigates these changes, informs the policy makers and general public and tries to suggest modes on how to deal with these changes. They believe the wider public and local institutions must be involved to assist programmes and policies in managing water sources and catchment areas sustainably. He believes that the more local institutional structures are better at responding to these issues, notably local water forums. This links in with the national water management policy of the country (Ababio, 2004: 66).

2.14.1.1 Policy Statements
KNP strives to create awareness on water-related issues. Induction programmes should be put in place internally as part of orientation process in KNP. As part of the awareness programmes, a special section of their website has been set aside for catchment management issues.

2.14.2 Community Projects

SAN Parks have been trying to involve communities in conservation-related initiatives since the early 1990s. Any project had principally three objectives: to educate the wider public, especially children; to reduce the conflict between wildlife and people, and to develop income-generating options with the people. In the case of Mozambique in the GNP, some of these activities do take place but not quite often, as there is a conflict between the Park’s management and communities at the buffer zones, called the “man and animal conflict”. Caused by poor physical delimitation of protected areas, people are not aware of the position boundaries, or ignore these. Buffer zones are in most cases only indicated but not delimitated, and where buffer zones have been initiated, no maps or beacons of the area delimited exist. Large numbers of people live and farm in buffer zones, reducing further the wildlife by illegal hunting. During the war, farmers were forced to farm inside park areas (Gorongosa) to produce food for soldiers. These are now illegal inhabitants of the park, with little interaction between themselves and others. The Park managers believe that communities do affect negatively the Park’s environment (GNP REPORT, 2004: 22-25).

2.14.2.1 Conservation-linked Community Projects: South African National Parks Community Projects

In 1994, South African National Parks established its Social Ecology Unit and initiated a number of innovative community-based projects. Designed to combine SANParks with an independent Social Ecology Corporate, the main functions of the unit were:
- To analyze strengths, weakness, opportunities and threats of parks and their neighboring communities in order to guide effective development activities
- To assist in facilitating the development of income-generating initiatives
- To test new approaches, methods and concepts within study areas
- To research socio-economic baseline studies
- To develop cultural resource management plans.

**Projects initiated include**

- An Environmental Youth Symposium, held in September 1998, which created links and networks with national and Southern African Development Community (SADC) youth; and produced a Youth Charter.
- Cultural Heritage in the Mountain Zebra National Parks for neighboring communities to present and interpret their own history and culture, thereby creating tourism opportunities.
- A pilot Forestry Nursery Project close to the Tsitsikamma National Park
- Field Guide Training Courses in several parks that facilitate the accreditation of South Africa’s most qualified community guides.
- A San Tracker Training Programme in the Kgalagadi Transfrontier Park.
- Performing Arts and Drama Projects in the Addo Elephant National Park, Mountain Zebra National Park and the KNP.
- Arts and Crafts projects at Numbi and Kruger Gates in the KNP, Wilderness National Park, Golden Gate National Park and Tsitsikamma National Park.
- Textile Printing and Product Development Training Projects in several National Parks, of which the Ritchtersveld National Park Project is the most known.
- A Fessibility study for an open Vehicle Tourism Project, as a community ecotourism initiative in the KNP.
Several Park Communities that promote neighboring community inputs into park management.

Facilitation of community forums to encourage communication between parks and neighboring communities.

Study tours for the neighboring communities and staff of the Augrabies Falls National Park and Kgalagadi Transfrontier National Park.

Socio-economic baseline surveys providing background information on communities living adjacent to parks. This includes the Socio-economic Baseline Study that has been completed around Addo Elephant National Park.

A parks and Communities Project Manual that provides guidelines and formats for park-community project preparation and documentation. This includes budgeting, implementation planning, technical and financial monitoring. The manual is used by Social Ecologists in the parks to set up partnerships with surrounding communities.

In May 2000, a “Best-Practice Conference” was held at Berg-en-Dal Camp in the KNP. Designed to share experience of Social Ecology with key external partners and specialists in conservation, the five-day conference attracted some 80 delegates and was covered by the South African Broadcasting Corporation (SABC) and leading newspaper in South Africa. (Solly, 2004: 5-9)

Projects have been highly successful, bringing opportunity to disadvantaged rural communities and initiating the first steps toward the creation of a mutually beneficial partnership between South African National Parks and their neighbors. Unfortunately, due to a recent lack of funds, a number of fundamental community development programmes are at risk. Additional funding will help ensure that South African National Parks will be able to sustain current prosperous projects, or initiatives vital to new community development programmes.

KNP’s Local Communities
Any person or grouping of persons which within reasonable limits is deemed to be directly affected by the presence of the park or the activities therein, therefore including other communities living some distance away who are influenced by the activities of the Park.

Expected interaction may include community economic empowerment, ancestral claims and cultural/spiritual claim. Not only local Black communities are involves, but also private nature reserves, hotels, mining and agriculture (SAN Parks, 2000: 99).

2.15 NATIONAL PROGRAMME FOR THE ENVIRONMENTAL MANAGEMENT IN MOZAMBIQUE

The Local Agenda 21 (LA21) programme agreed upon in 1992 at the Earth Summit in Rio fuelled the development aspirations and hopes of communities across Mozambique. At the time, the country was on the brink of a peaceful and democratic future, offering equity, justice and freedom from poverty. Through the democratization process, Mozambique committed itself to the principles of sustainable development, as evidenced by the new constitution and various policies. Parallel to its participation in the Earth Summit, in 1992, Mozambique set up a National Commission for the Environment, a structure that came to form the core of the now existing Ministry for Coordination of Environmental Affairs (MICOA), created in 1994. Therefore in 1995, the government approved the National Programme for the Environmental Management, which outlines the bases for action, the objectives, the activities and means of implementation of the Agenda 21, as well as the National Environmental Policy in Mozambique. (CONDES, 2002: 5-9)

Through resolution nº 5/95, of August 3rd, the National Policy on Environmental Affairs was approved, the main objective of which is to secure proper life quality
to the Mozambican citizens. The Policy on Environmental Affairs aims at ensuring that the management of both the environment and the natural resources is done in such a way that these components maintain their functional and productive capacity in order to meet the needs of both the present and the future generation. The Policy also aims at developing an environmental awareness among the people so as to allow for a public participation in the management of the environment and natural resources. (CONDES, 2002: 9)

2.15.1 The objectives of Nhambita Community

The objectives of Nhambita Community are as follows:

- Promotion and protection of natural resources and forestry, against its exploration.
- Organization of access processes for exploration of natural resources by the community members.
- Participation in the definition of exploration mechanisms by others.
- Visualization of exploration activities of natural resources and its respective conservation.
- Promotion of community member’s organization in groups, in accordance with their activities.
- Assistance to the community members at all levels so that they can contribute to the community development. (Nhambita RDP; 2002: 6-8)

2.15.2 Related National Policies

For Mozambique, international cooperation is essential for complementing the national efforts directed towards the implementation of development programmes. These are aimed at eradicating extreme poverty and promoting sustainable development. In this context, Nhambita is today a community with its own history and evolution inside the community dynamic, because the national NGOs, ORAM and GTZ, operating at the Gorongoza district in Sofala since
1997, have part of their activities initiated awareness programmes in order to promote the new policies on Land Use approved in July 1997, which culminated in community delimitation after the RDP activity. (GTZ RDP, 2002: 11)

The Government programme for the period 1994-1999 established as its main objective the reconstruction of the national social economic structure, aimed at promoting the gradual eradication of extreme poverty and improving life of the Mozambican people. Within this context, the sectors and sub-sectors which embodied the government apparatus, particularly those dedicated to the management of natural resources, initiated a process of designing sectoral policies to be used as guidelines for the re-launching of economic activity and development of activities and resources under their authority for the post war period (CONDES, 2002: 13).


2.15.3 Natural Resources in Mozambique

2.15.3.1 Forestry and Wildlife

According to the CONDES Report, estimates indicate that some 62 millions hectares of land are covered by some form of vegetation, with greater prevalence of open forests and savannah. The country’s productive forest, which can produce timber for export or to feed local industry, covers some 19 million hectares. Theoretically, this represents the availability of 22 million cubic meters of timber of species with diameter beyond 40cm. Based on the combination of low productivity and diversity of forest species, the maximum allowable
exploitation is estimated at 500,000 cubic meters/year of logged commercial timber. Thus in the community among the predominant species of forest are: Panga Panga, Umbila, Mbaua, Pau-Rosa, Mussassa, Pau Ferro, which its management is at the hands of the Government. However 80% of the energy required for the community members is gained from the forests. Deforestation around urban centers is massive and in some drier zones irreversible.

The need for firewood and charcoal for cooking in the community is the most important factor for the destruction of the environment. In addition bush burning, be it for hunting or agricultural reasons, destroys the fertility of the soil, wildlife and young plant seedlings, yet it is a major local technique used to clear land and open the forest. Popular sensitization has achieved little so far to reduce the incidence of wildfires in the community. Burning farm land and bush fires creates shortages of pasture each year for grazing animals, and also reduces the numbers of grass species in the rainy season, resulting in elevated death rates among livestock during the dry season. Because of this practice in 2002 and 2003, nearly 80% of the Gorongosa National Park was burned (Nhambita RDP, 2002: 8).

In April 1997, the Mozambican Government approved through Resolution nº 8/97, the Forestry and Wildlife Development Strategy and Policy, the long-term objectives of which are to secure the protection, conservation, rational and sustainable utilization of forestry and wildlife resources for the economic, social and ecological benefit of the present and future generations of the country. The short-term and medium-term objectives of the Forestry and Wildlife Development Strategy and Policy have been set as follows (economically, socially, ecologically and institutionally:

- Economic objective: this objective deals with the production and the utilization of both flora and wildlife resources, with particular attention on the problems related with concession of forest exploitation,
exploitation of game areas, cinegetical activities in open areas, rehabilitation of timber industry, commercial re-forestation and promotion of exports and eco-tourism business.

- Social objective: it addresses the issue of the utilization and conservation of the resource by the community, with particular regard to community education, use and exploitation of the resources by the communities and re-forestation by the community.

- Ecological objective: it addresses the issue of protection and conservation of the flora and wildlife, with particular regard to the rehabilitation and occupation of the national parks as well as forest and game reserves and also the expansion of conservation areas.

- Institutional objective: it addresses the issue related with institutional reorganization and strengthening, with particular regard to the aspects inherent to programming, monitoring, training, inspection and setting up of mechanisms for an autonomous management (CONDES, 2002: 14-16).

2.15.3.2 Tourism

Mozambique has a very high potential for developing its tourism industry and making this into one of the major income (GNP) earners for the country. There are almost 2700 km of poorly exploited coastline, a low population density in many of the rural areas, creating ample opportunity for the protection of wildlife and other natural resources (Nhambita RDP, 2002: 10-17). The National Policy on Tourism, which was approved through Resolution no 2/95, of May 30th, 1995, gives a clear outline of the priorities for the development of tourism during national reconciliation as well as the social and economical phase in Mozambique.

This policy establishes the need to entail the development of tourism taking as a basis the quinquennial strategies to be defined by the government and also
reiterates that the main touristic attractions of Mozambique are the beaches, the flora and the wildlife, thermals and historical municipality (CONDES, 2002: 16) In the past three years, two nature reserves were added to the list of protected areas, namely Chimanimani and Tchuma Tchato Project Area (Manica and Tete Provinces), but access for tourists remained limited due to lack of acceptable infra-structure, especially access roads.

There is much interest from investors in further developing the tourism industry in Mozambique, but presently the implementation of national policies and strategies regarding the exploitation of reserves and national parks or coastlines is not very clear or transparent. The question also remains as how much the government can be committed to nature conservation and possible returns, as opposed to economic exploitation of forest and land area, which in most cases give higher economic returns? In addition, the process of either removing people from reserve and park areas or incorporating their livelihood system into the conservation vision is complex, requiring good planning, sufficient funds and strong government. However, presently donors and investors seem to be reluctant to commit themselves to long term investment on park rehabilitation, because of these uncertain issues (GNP REPORT, 2004: 28).

In order to become more competitive in the tourism market and reduce the man/animal conflicts, the following strategies are to be implemented by the community authority and GNP managers:

- Delimitate and document park and buffer zone borders and sensitize stakeholders on the boundaries.
- Create incentives in terms of social infrastructure, agricultural and other investment opportunities for communities in park or buzzer zones, so that they can be resettled outside these protected areas.
- Attract investors by facilitating the semi privatization of park and protected areas.
• Reintroduce animal species in protected areas, which can be sufficiently controlled (Nhambita RDP, 2002: 18)

2.16 CONCLUSION

This chapter clarified key concepts and examined issues relating to sustainable development in Mozambique, resource management in marginal ecological conditions, poverty and environmental linkages in the context of world summit on sustainable development, world summit on sustainable development: a call for action and struggle, environmental education at world summit on sustainable development, education for sustainable development, diversified approaches to environmental education for appropriate utilization of natural resources, current structure of environmental education, ecological literacy in preliterate communities, water management people and parks in Kruger national park, management of natural resources in Nhambita buffer zone. The next chapter will focus on research methods and design.
CHAPTER 3

THE RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In the previous chapter the main research problem was stated and an extensive literature review was conducted on environmental education in a global and local context. In this chapter, the methodology that was used for the collection of the data will be explained. The methodology used will further be justified and motivated through various relevant literatures.

The perceptions of respondents involved in this research would be influenced by their environmental literacy levels, which, in turn is based on the amount and quality of environmental education that they have been exposed to. Therefore, to serve as a basis for understanding stakeholders’ perceptions about their potential educational contributions to GNP in Mozambique, this research project will also investigate which environmental education strategies can be implemented to achieve improved levels of sustainable lives, and to raise environmental awareness in the community within Gorongosa National Park in Mozambique.

Regarding the research paradigm for this research, both qualitative and quantitative research methods are to be used simultaneously to gather information. Denzin (1978) as noted by Cresswell (1994: 5) used the term ‘triangulation’ to argue for the combination of methodologies in the study of the same phenomenon. The two processes will be discussed separately. Rudestan and Newton (1992: 78-80) are of the opinion that in order to obtain useful patterns and relationships from the data, and to express these relationships in numbers, statistical methods are used. They go on to argue that the focus of
qualitative research, on the other hand, is the study of averages or group effects as opposed to the study of individual differences. According to Miles and Huberman (1994: 127), qualitative research is conducted through intense and/or prolonged contact with a 'field' or 'life' situation. These situations are banal or normal ones, reflective of the everyday life of individuals, groups, societies and organizations.

The researcher will apply the quantitative method in the form of questionnaires, which will be distributed to the community members at Nhambita Buffer Zone. The questionnaires were developed based on a review of literature conducted for the study. With regard to qualitative research methods the researcher intends to conduct individual interviews with various stakeholders to understand what are their perceptions about their educational contributions of GNP in Mozambique.

3.2 JUSTIFICATION OF METHODOLOGY

3.2.1 Qualitative and Quantitative Approaches

Literature on research methodology reveals two main research paradigms or methodology, namely qualitative and quantitative methodologies. It has become common practice for most research works to be committed to one paradigm and to consider the other as misleading or unsustainable for social or educational research (Borg & Gall, 1989:381). Reichard and Cook (cited in Borg & Gall, 1989:381) argue that the debate about polarizing the two research paradigms (qualitative and quantitative) has been dysfunctional. They argue that an overemphasis of the one method (qualitative) as the most appropriate will result in a similar overemphasis of the other method (qualitative) Hammersley (1992:52) adds to the debate by asserting that prevalence of distinction between qualitative and quantitative methods tends to render research decisions less effective than they might otherwise be. Hammersley further warns that the
commitment to specify paradigms, in whatever form, tend to restrict the debate on research methodology and their sustainability to particular research problems rather than keep it open. It is also acknowledged that differences in terms of the nature of data and data collection methods exist between the two paradigms.

This researcher has decided to use qualitative research design in this study because of some reasons which will be mentioned in this section. To clarify the researcher’s intention of using qualitative method, (Cresswell, 1994: 4) asserts that qualitative study is the inquiry process of understanding a social or human problem based on building a complex, holistic picture with words, reporting detailed views of informants and conducted in a natural setting.

Additionally, Le Compte, et al. (1994: 8) argue that qualitative research is concerned with the meaning that is the way people make sense of their lives, how they experience and how their structure in the world is qualitative research dealing with individual lives, cases and groups. It emphasis is to examine and interpret individual’s subjectivity, language and meanings. It regards individuals as active participates in naming the world. In this regard, individuals are not just passive actors interpreting the world. Its aim is to collect data and analyze it.

In qualitative research, events and social phenomena come first before explanations. Qualitative research is generated, subjective and inductive because the research starts from particular to general. In this regard, the researcher builds abstractions, concepts, hypothesis and theories. Therefore, the researcher studies the individual and applies what he has discovered to a wider and general population. (Cresswell, 1994:144).

Rubin and Babie (1998:365) argue that as qualitative research involves field work, the researcher has to go to people, setting site to observe and record how they behave. In this way the researcher becomes part of the society that is being studied. Thus, the researcher begins with data collection and builds theoretical categories and proportions from relationships discovered among data. In this
regard, data bases consist of observational field notes, interviews, teaching records, documents artifacts and reconstructed summaries of each day's events. It is also based on translating.

In qualitative research, the researcher is able to identify biases that may occur if he or she is the only observer of the phenomenon under investigation. In this regard, Cohen and Manion (1980:254) assert that triangulation is the phenomenon which minimizes the researcher's picture of the particular slice of reality or to ensure that the data which are generated are not simply artifacts of one specific method of collection. Furthermore, triangulation techniques are preferred because they help to overcome the problem of boundness.

The qualitative research methodology was deemed most suitable for this study; since it allows more insight to be gained into the contributions of stakeholders to improve environmental education in Nhambita buffer zone within the GNP in Mozambique. Qualitative research is considered with understanding the social phenomenon under investigation from the participant's perspective (MacMillan & Schumacher, 1993:373). Quantitative methods on the other hand "uses standardized measures that fit diverse, various opinions and experiences by manipulating variable" (Patton, 1987:9).

An essential characteristic of qualitative approach is its holistic inquiry of the participants in a natural setting where the researcher gets to know them better, through their gestures, tone of voice, and their joys. This gives an in-depth or detailed description of data to enhance understanding of the phenomenon being studied (Borg & Gall, 1989:381).

Qualitative approach adopts ethnographic methodology. Ethnography states that the researcher has to enter the field of human agents and observe human action to develop grounded theory of how individuals act. This method also allows the
researcher as it enables her or him to come face to face with the interviewers (Cresswell, 1994:150).

Qualitative research however, describes and analyses people’s individual and collective social actions, thoughts and perceptions. According to Miles and Huberman (1994:6) one of the recurring features of qualitative research is that the researcher attempts to capture data on the perceptions of local actors “from the inside” through a process of deep attentiveness, empathetic understanding and suspending or “bracketing” the topics under discussion. This method enables an in-depth investigation into contribution of stakeholders to improve sustainable management of natural resources in Nhambita buffer zone within GNP (Miles & Huberman, 1994:6).

An important aspect of a qualitative approach is the detailed or descriptive nature of the data. According to Sprinthal et al. (1991:100), qualitative data are made up of written descriptions of people, events, opinions, attitudes, and environments or a combination of these. The richness and holism, has strong potential for revealing complexity and provision of “thick descriptions”. These are vivid, nested in a real context, and have a ring of truth that has strong impact on the reader. This is a significant feature of qualitative data (Miles & Huberman, 1994:10). Miles and Huberman further add that qualitative data strongly emphasizes respondent’s lived experiences and is fundamental well suited for locating meanings placed on processes and structure of their lives i.e.; their perceptions, assumptions, prejudgments and presuppositions.

According to Miles and Huberman (1994:10), qualitative data is also useful when one need to supplement, validate, explain, illuminate or reinterpret quantitative data gathered from the same setting. Qualitative – Quantitative linkages exist between distinct data types, where qualitative information (e.g. open-ended interviews) is compared to numerical data (e.g. from a questionnaire). This is relevant to this study because of the use of both questionnaires (which could be
regard as quantitative), and open-ended interviews, (which are more qualitative). According to Brannen (1992:11), this approach is known as a multiple research strategy or multiple methods, which could mean using different methods in relation to the same study.

Rudestam and Newton (1992:23), state that qualitative methods of research have an epistemological based on logical positivism, which maintains that all knowledge is derived from direct observation and logical inferences based on direct observation. Statistical methods are used for looking at relationships and patterns and expressing these patterns with numbers. In quantitative research the objective is to test or verify a theory that the focus of quantitative research emphasizes precise measurement and the control of extraneous sources of error. The purpose is therefore to "isolate a variable of interest and manipulate it to observe the impact of the manipulation on a second, or dependent variable" (Rudestam & Newton, 1994:174).

In this research both qualitative and quantitative paradigms have been used. Cresswell (1994:174) states that the idea of combining qualitative and quantitative approaches in a single study owes much to past discussions about mixing methods, linking paradigms to methods, and to combine research designs in all phases of a study. Green et al. (1998: 255-274) advance five purposes for combining methods in a single study:

- The concept of triangulation which argue for the combination of methodologies in the study of the same phenomenon, thus seeking convergence of results.
- Developmentally where one point follows on from another.
- Complementary, in those overlapping different facets of a phenomenon may emerge.
- Initiation, where contradictions fresh perspectives emerge.
- Expansion, where in the mixed method add scope and breadth to a study.
This research combines a quantitative analysis of the responses to the questionnaires with a qualitative analysis of themes generated by semi-structured or open-ended interviews with various stakeholders. Creswell (1994:174) states that the advantage of this approach is that it presents a consistent paradigm picture in the study still gathers limited information to probe in detail one aspect of the study. A qualitative-quantitative linkage exists between the community member’s data types, where qualitative information gained open ended interviews is compared to the form the numerical data elicited from the questionnaire. Brannen (1992:11) describes this approach as multiple research strategy, where different methods are used in relation to the same object of study. He recognizes that there is a need to use different research strategies and favors the use of different methods in relation to the same object of study.

3.2.2 Paradigms of Research in Environmental Education

For many years environmental education researchers have "hammered" with one research paradigm, "positivism". Positivism has been described by Smith (1995: 17) as emphasizing "sensory knowledge and knowledge that can be observed and measured. Positivism literally means having positive certainty about a statement". Smith (1995: 20) goes on to claim that the aim of science using a positive approach is to "explain, control and predict phenomenon in order to facilitate technical control.

There are however a number of other research paradigms commonly used in education, inter alias hermeneutics (interpretive) phenomenology, conceptual analysis and systems theory (Smith, 1995: 25). Each of these research paradigms are used in specific instances. Phenomenology is typical used by researchers using interviews or extended conversations and the source of data (Rudestan & Newton, 1992: 152-155). The researcher is usually “concerned with describing the lived experience of the person as free as possible from theoretical or social construct". Researchers using this paradigm are “not interested in an
explanation" but rather "interested in the essential features of the experience" (Rudestam & Newton, 1995:110).

Hermeutics, is concerned with "deriving a rich understanding of the context for data, the setting out of which it arises, and that gives it meaning" (Rudestan & Newton, 1992: 102). This arose in reaction to the positivistic idea that the "humanities and social science" should have the same research methods as the natural sciences (Smith, 1995: 28). Systems theory is also known as the holistic approach to science. In this research paradigm, "the whole is more then the sum of its parts and that explanation or understanding of a problem must take place with due regard for the total situation or the surrounding circumstances" (Smith, 1995: 29). According to Smith, by 'system' in system theory is meant the surrounding forces or grouping of factors which exercise an influence on certain problem. Here a researcher is concerned with breaking up a phenomenon into its various parts or "essences" (Smith, 1995: 29).

A further research paradigm which can be added to the above is ethnographic inquiry (Rudestan & Newton, 1992: 105-108). Ethnographers attempt to capture and understand specific aspects of the life of a particular group. The focus is obtaining a full and detailed description from information. Typically, the ethnographer initiates prolonged contact and immersion in a setting of interest while at the same time maintaining as much detachment as possible from the subject matter.

Wals (1997: 253-67) proposes yet another research paradigm that of critical phenomenology which should "compliment" research in environmental education, rather than "contradict it. The reasons for this paradigm are that:

1. "Environmental education has the potential to lead to educational reform that ultimately can help reshape between people and between people and their environment."
2. Environmental education should lead to the development of symptomatic environmental problems such as, over population, excessive waste, deforestation, which ultimately are rooted in the equal distribution of wealth, the uninhibited strife for economic growth, and inadequate education" (Wals, 1997: 270).

Critical phenomenology combines interpretive and critical science research methods in an attempt to understand the participation view of the world as “manifested in their action in their life world and their reflections on their position in this world” (Wals, 1997: 272-275). According to Wals (1997: 275), that “from an environmental education perspective, research should then focus on gaining a better understanding of people's own perceptions, ideas and theories in relation to their environment, environmental issues and nature in order to obtain new insights in adapting environmental education to the social and physical context in which the community is embedded.

In addition, it is a research approach that suggests that environmental education research should have a pedagogical end in that participants in some way benefit from the research (Wals, 1997: 280). In this way the researcher does not only learn about the participants in the research, but is able to get to know with them reality of the challenges facing them (Wals, 1997: 280)

3.3 DATA COLLECTION METHODS

Lecompte and Preissle (1992:19-29) argue that qualitative research employ a range of data gathering techniques, including observations, interviewing and document analysis. While various qualitative strategies of data collection can be used to provide verbal descriptions, the main or common goal for each will be to capture the richness and complexity of issues or behaviour that occur in natural settings from the participants perspectives (McMillan & Schumacher, 1993:43).
As pointed out by Miles and Huberman (1994: 77) the qualitative researcher attempts to capture data on the perceptions of local actors from the inside, through a process of deep, attentiveness, empathetic understanding, and suspending preconceptions about the topic under discussion. In qualitative research immerse him or her in a research setting to uncover the meaning and significance of social phenomena of people in such setting (Ragin, 1994:83)

For the purpose of this study, both structured questionnaires and semi-structured or open-ended interviews were used. Brannen (1992:11) in Neluvhalani (2000:52) acknowledges the need to use different research strategies and argues in favour of multiple methods that involve what is called ‘between methods’ (the use of different methods in relation to the same object of study e.g. questionnaire survey and open-ended interviews). The questionnaire and interview methods were employed to complement each other.

Miles and Huberman (1994: 10) argue that qualitative data is useful when one needs to supplement, validate, explain, illuminate or reinterpret quantitative data. Questionnaires produce numerical data, but detailed descriptions of the findings in relation to the research problem will allow for flexibility and in-depth inquiry into the contributions of stakeholders to improve sustainable management of natural resources in Nhambita buffer zone within GNP.

### 3.3.1 The Questionnaire as a Research Method

According to Fox (in Mahlangu, 1987:79), this is technique whereby the researcher puts his questions on paper and submits them to the respondents, asking them in turn, to write their answers on paper. The questionnaire is efficient and practical and is widely used in educational research. McMillan and Shumacher point out that in developing a questionnaire, the researcher selects a set of questions requesting respondents to answer them usually in a form that
asks the respondents to check and select their perceived response (McMillan & Schumacher, 1993: 98).

In the questionnaire, the completion of the form is done without any direct outside influence. The questionnaire method tends to be reliable, as it is anonymous, it encourages honesty and it is economical in terms of time and money. Tackman in Mahlangu (1987:79) affirms that questionnaires are used by researchers to convert the information directly given by people into quantifiable data. By providing access to what is “inside somebody’s mind” this approach makes it possible to “measure” what this person knows, likes and dislikes and what he thinks. Mahlangu mentions two types of questionnaires, which are closed or structured questionnaires and the open or unstructured questionnaires.

3.3.1.1 Structured or Closed Questionnaires

Closed questionnaires call for short, check responses. They call for “YES” or “No”, a short response for checking an item from a list suggested responses (Mahlangu, 1987:80). The closed form questionnaire is easy to fill, takes little time, keeps the respondent focused and is easy to tabulate and analyze. It also minimizes the risks of misinterpretation. However, it only reveals data that is implied in the items and thereby limits the scope of the inquiry.

3.3.1.2 Open Questionnaire

Open questionnaires do not suggest answers. They call for the respondents’ free response in their own words. No clues are provided and provision is made for a greater depth of response. The respondents can write in any comment, reveals his response. This type of questionnaire is difficult to interpret, tabulate and summarize. However open questionnaire is the more viable of the two data are sought.
When using questionnaires, both structured and open questionnaires, the language must be unmistakably clear in soliciting precisely what the researcher wishes to learn. It should be designed to fulfill a specific research objective. The researcher should never forget that he is asking of his respondents a gift of time and of effort and the favor of a reply. Thus, the researcher courteous, make the questionnaire as simple to read and to respond to as possible, concentrate to general personal matters, make it briefly and should solicit only those data essential to the research project etc. (Leed, 1979:100).

For this study a structured or closed questionnaire was used as a method for data collection. The motivation of, questions as they appear in the questionnaire will be provided. Appendix A contains few community questionnaires and responses.

- Question 1 is intended to elicit whether various stakeholders introduced the concept of environmental education to community members of Nhambita buffer zone in GNP.

- Questions 2 and 3 are intended to prove that stakeholders play an important role in environmental education in Nhambita community within Gorongosa National Park.

- Questions 4 to 6 indicate that environmental education improves the quality of life of community members as they see it as a solution towards a health society therefore it is covered in a formal as well as informal education.

- Questions 7 to 9 are intended to find out whether community members especially learners in Nhambita within Gorongosa National Park are adequately provided with basic educational needs and material.
• Questions 10 to 11 are intended to find out if various stakeholders provide new techniques for a sustainable education in the community and if they are aware of the need to intensify their educational contributions to the benefit of the community.

• Questions 12 to 13 are intended to elicit the importance of sharing the experience with other communities as well as introducing it at all levels by arguing that EE has no limitations and boundaries.

• Question 14 is intended to elicit the importance of local authorities such as traditional leaders in the success of implementation of EE activities because of political influence they have in the community.

• Questions 15 and 16 are intended to elicit that as EE is a continuous and systematic process community members can be empowered and have their initiatives stimulated so that they can become more involved with their environment.

• Question 17 is intended to elicit the importance of HIV/AIDS as it is also an environmental crisis that needs urgent and adequate attention by all stakeholders involved in improving environmental education.

• Question 18 is intended to find out whether EE is implemented in a sustainable way looking.

• Question 19 is intended to find out whether community members are happy about environmental education contributions taking place in Nhambita buffer zone within Gorongosa National Park.

• Question 20 indicates that sustainable environmental education is a global issue.
Questions were selected and designed to address the main research objectives and to add validity of the questionnaires in addressing the main research problem.

3.3.2 The Interview as a Research Method

Interviewing will also be used as method of collecting qualitative data. Interviewing implies direct interaction between the interviewer and the interviewee. Interviews are described as “structured conversation” with a definite interaction format (Hammersley & Akinson, 1983:24) which allows for disclosure analysis. According to Walker (1985:67) an interview is a method or group of techniques specific to social and human sciences, which also include education (Chohen & Manion, 1980:241), define the research interview as a “two-person conversation initiated by the interviewer for the specific purpose of obtaining research relevant information, and focused by him on content specified by research objectives of systematic, description, prediction or explanation”.

The obvious difference between the questionnaire and interview methods is that the interview involves direct or face to face (McKerman, 1996: 47), interaction between individuals. The fact that the interviewer is also able to probe areas of interest as they arise. Accordingly to Hittleman and Simon (1997:151), the researcher can also modify the data collection context to fit the respondent's responses.

There are, however different types of interviews for different research purposes. McKerman (1991:129) claims that there are chiefly three types of interviews which can be identified in terms of their content and organization, namely structured, semi-structured or unstructured interviews. In structured interviews the interviewer uses a list of specific questions and does not deviate from the wording of such questions. Questions are often fixed response types i.e. there is no elaboration in either question or answer is allowed. In semi-structured or
“open-ended” interviews (McMillan & Schumacher, 1993:251), the interviewer has certain questions he or she asks of all interviewers, but allows the respondents to raise issues and questions as the interview progress. The interviewer can branches off from the specific core questions to explore in-depth information, and probes according to the way the interview proceeds, allowing for limited elaboration. Finally, when using an unstructured interview, the issues and topics to be discussed are left entirely to the interviewee. Unstructured interviews contain no pre-planned questions. It is flexible, placing few restrictions on the respondent’s answers. Verma and Beard (1981:114) refer to unstructured interview as being conducted through conversation, which can be continuous and informal. In this type of interview, much depends on the rapport the interviewer is able to establish, his/her sensitivity to the interviewee’s feelings and the ability to avoid remarks likely to arouse anxiety or to embarrass the interviewee.

The type of interviews used in this research was semi-structured or open-ended. The semi-structured interview was particularly chosen because it has the advantage of being reasonable objective while permitting a more thorough understanding of the respondent’s opinions and the reasons behind them (Borg & Gall, 1989:452). Cohen and Manion (1994:277) further identified some advantages of open-ended questions:

- They are flexible
- They allow the interviewer to probe in order to may go into depth if he or she chooses to.
- The interviewer is able to clear up any misunderstanding on the questions
- They allow the interviewer to test the limit of the respondent’s knowledge.
- They encourage cooperation and help establish rapport.
- They also allow the interviewer to make a correct assessment of what the respondent really believes. Open-ended situations can also result unexpected or unanticipated answers, which could suggest hither to unthought-of relationships or hypotheses.
Interviews have advantage of presenting the respondent's with a degree of prominence. Interviewee's input is thus given as aura of authority. (Walker, 1985: 91). It is also a recommendable arena for negotiations (Walker, 1985:109) in this study of knowledge and meaning. Further advantages of interviews include that they make it possible to seek the some information, in several ways, at various stages of the interview, thus providing a check of the validity of the response. The interview technique could stimulate the respondent to greater insight into his/her own experiences and explore significant areas not anticipated in the original plan of investigation.

When drawing up the interview guide, the researcher took into consideration the questions in the structured questionnaire in order not to deviate from addressing the main objectives of the research problem. Appendix B contains few community questionnaires and responses. Following are the questions on the interview schedule:

1) As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?
2) What is being done by different stakeholders to increase community awareness about sustainability?
3) Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?
4) Which role is played by traditional leaders in facilitating EE?
5) What are the views and attitudes of community members on EE?
6) How is HIV/AIDS dealt with in Nhambita buffer zone as part of environmental education?
7) How are community members in Nhambita empowered to deal with EE in an organized way?
8) To what extent does ineffective EE affect learners at school?
9) What is being done by community members in Nhambita to improve EE?
10) What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?
11) Which new strategies are provided to improve EE in the community?
12) Are there any incentives to stimulate sustainable EE initiatives in the community?
13) Are there enough funds provided by different stakeholders to satisfy community environmental educational needs?
14) To what extent do stakeholders’ environmental educational contributions benefit learners at school?
15) To what extent are stakeholders organized to address EE in the community?
16) Education for sustainability is everyone’s business. Give you comment...

3.3.3 Population

Population refers to the entire group from which the sample is drawn. According to Sprinthall and Schumutte (1991:27) and Borg and Gall (1989:216) the term population refers to the entire group of persons, things or events that share one common trait. For the purpose of this study, Community members in Nhambita Buffer Zone within Gorongosa National Park in the district of Gorongosa, officials from various stakeholders namely; officials from Gorongosa National Park, an official from Gorongosa District, an official from the Department of Environmental Affairs, Department of Agriculture, Department of Tourism, officials from GTZ and ORAM the non Governmental NGO’s for CBNRM (Community Based Natural Resource Management), officials from the Center for Sustainable Development for Natural Resources (CDS-RN), and an official from WWF, will all be interviewed.
3.3.4 Sampling

According to Borg and Gall (1989:269) sampling involves selecting a given number of subjects from a defined populations as representative of that population. Miles and Huberman (1994:27) state; “... as much as we might want to, we cannot study everyone, everywhere, doing everything”.

For the purpose of this study, a simple random sampling procedure was used for selecting the respondents. Borg and Gall (1989.219) define a simple random sample as a sample where each individual in the defined population has an equal and independent chance of being selected as a member of the sample.

Fowler (1993:33), argue that the population from which a particular sample size is drawn has virtually no impact on how well that sample is likely to describe the population. Qualitative researchers usually work with small samples of the people situated in their context and studied in-depth (Miles & Huberman, 1994:27).

The researcher as a worker at the Center for Sustainable Development for Natural resources in Chimoio province and having Gorongosa National Park as one of its pilot projects is aware of unsustainable environmental education programmes in Nhambita buffer zone within GNP. Sustainable environmental education programmes is the solution to eradicate poverty and improving the quality of life of all people, particularly members of Nhambita community. Respondents from various stakeholders as mentioned above were sampled randomly by the researcher.
3.4 DATA COLLECTION PROCEDURE

3.4.1 Community Questionnaires

After drawing the questionnaire sample, the questionnaires were administered in the following manner:

- The researcher distributed the community questionnaires throughout the selected members of the community around GNP, namely Nhambita.
- The researcher identified contact households from where to collect the completed questionnaires. In some cases the questionnaires were completed, in the presence of the researcher especially when the respondents are illiterate and need the researcher’s interpretation of the questions.
- When handing over the questionnaires, the researcher explained the purpose of the questionnaires in order to avoid any fears and unnecessary misunderstandings.
- The researcher agreed on the time frame for the completion and collection of completed questionnaires.
- Questionnaires distributed to the community served as basic elements to the study. See Appendix A.

3.4.2 Interview Data Collection Procedure

Interviews were held in different venues since the interviewees were on different settings. Interview dates and time were confirmed with the interviewees. In order to maintain focus and control on the interview discussions, and avoid deviations from the purpose of the research, the researcher developed some questions as a point of reference for the interview. Borg and Gall (1989:451) refer to this set of questions as an interview guide (Appendix A) and explain that, the interview guide lists questions in a desired sequence. This also provides guidelines on the entire interview process to the interviewer. This instrument will be used for data
analysis at a later stage. The information was communicated to the interviews the researcher took into consideration questions that formed part of the questionnaire. Some of the questions were however, supplemented by follow-up or probing questions during the interview. Cohen and Manion (1994: 31) acknowledged that there are unavoidable features of the interview that would normally be regarded as problems. They cited the fact that the respondents may feel uneasy and sometimes adopt avoidance tactics. The researcher made provision for this by attempting to create a relaxed atmosphere and deep discussion among the participants.

3.5 CONCLUSION

This chapter focused on the research methodology, justification of the research methodology, data collection methods and procedures used in this study. The next chapter deals with analysis of data and findings.
CHAPTER 4

ANALYSIS OF DATA AND FINDINGS

4.1 INTRODUCTION

In this section, presentation of the data collected and analysis thereof will be covered. Presentation of the raw data will be made through the use of tables. The analytical procedure to be followed in sorting the data, taking into account the qualitative approach on which the study is based, will also be explained. The results of the three point scale questionnaires are presented and analyzed. Respondents were randomly selected. This section begins with the analysis and discussions of the questionnaire findings. This will be followed by a report on the interview sessions.

4.2 DATA COLLECTION AND RECORDING

Qualitative analyses differ from a quantitative approach in that it deals more closely with individuals, and involves different methods of data collection, analysis and writing the results. In qualitative studies, data collection is conducted simultaneously with data analysis, data interpretation and narrative reporting writing, to promote the emergence of theory grounded in empirical data. The simultaneous activities engage the attention of a field worker, sorting the information into categories, formatting the information into a story or picture and writing the qualitative text. In qualitative analysis, one does not begin with a theory to be tested, but theory emerges during the data collection and analysis phase of research (Creswell, 1994: 148-154).
Data analysis, referred to as ‘coding’ by Strauss and Corbin (1990: 160), commences with open coding. This involves the process of breaking down, examining, comparing, conceptualizing and categorizing data, by reading carefully the document line-by-line, item-by-item and word-by-word, so as to determine concepts and categories that fit the data. This is followed by axial coding which involves putting back the data in new ways and making connections between categories. Selective coding is further implemented which involves the selection of a core category and relating all major categories both to it and to one another (Strauss & Corbin, 1990:161-116).

According to Creswell (1994:153-155), data analysis requires the researcher to be comfortable with developing categories and making comparisons, as well as being open to possibilities and seeing contrasting or alternative explanations to the findings. The process of data analysis is based on data reduction and interpretation. He further suggests eight steps as guidelines in conducting data analysis:

1. Get the sense of the whole by reading through all of the information carefully and write down ideas as they come to mind
2. One document, preferably the most interesting and the shortest, should be chosen to determine what it is all about and its meaning.
3. When step number two has been completed for several informants, a list of topics should be made and clustered to form major topics.
4. The list is then applied to the data and topics are abbreviated into codes to be written next to the appropriate segments of the text. It should be observed whether new categories and codes emerge.
5. Find the most descriptive wording for the topics and turn them into categories, grouping topics that relate to each other so as to reduce categories. Perhaps a line should be drawn between categories to show their interrelationship.
A final decision on the abbreviations for each category should then be finalized on the codes developed.

The data material belonging to each category should be assembled in one place and a preliminary analysis performed.

If necessary, the existing data should be recorded.

4.3 FINDINGS OF THE QUESTIONNAIRES

The results of the questionnaires are represented in tables below. This information is followed or preceded by a descriptive interpretation of the results.

4.3.1 Community Responses: Pilot of Questionnaires with a Three Point Scale

TABLE 4.1: Nhambita Community: 150 Questionnaires were distributed and only 115 were returned.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agreed</th>
<th>Percentage</th>
<th>Disagree</th>
<th>%</th>
<th>Not sure</th>
<th>%</th>
<th>Total</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>90</td>
<td>78%</td>
<td>19</td>
<td>17%</td>
<td>6</td>
<td>5%</td>
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<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>82</td>
<td>71%</td>
<td>23</td>
<td>20%</td>
<td>10</td>
<td>9%</td>
<td>115</td>
<td>100%</td>
</tr>
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<td>22%</td>
<td>6</td>
<td>5%</td>
<td>115</td>
<td>100%</td>
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<td>100%</td>
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<tr>
<td>5</td>
<td>80</td>
<td>70%</td>
<td>21</td>
<td>18%</td>
<td>14</td>
<td>12%</td>
<td>115</td>
<td>100%</td>
</tr>
<tr>
<td>6</td>
<td>85</td>
<td>74%</td>
<td>21</td>
<td>18%</td>
<td>9</td>
<td>8%</td>
<td>115</td>
<td>100%</td>
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<tr>
<td>7</td>
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<td>9</td>
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<td>80%</td>
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<td>12%</td>
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<td>115</td>
<td>100%</td>
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<tr>
<td>10</td>
<td>102</td>
<td>89%</td>
<td>10</td>
<td>9%</td>
<td>3</td>
<td>2%</td>
<td>115</td>
<td>100%</td>
</tr>
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</table>
(Appendix A)

**Question 1**
The majority of people living at Nhambita Community agreed that various stakeholders introduced the concept of environmental education to community members of Nhambita buffer zone in GNP. Some disagreed and very few community members were not sure that various stakeholders introduced the concept of environmental education to them.

**Question 2**
The results indicate that the majority of community members agreed that stakeholders address educational activities in an organized way. Few disagreed with the statement and about 9% were unsure.

**Question 3**
The majority of rural community members agreed that different stakeholders, such as local government, civil society, private sector and NGOs, contribute to improve EE in the community. Fewer people disagreed with the statement and very few were not sure.
Question 4
The response to this question indicates that the majority of community members agreed that stakeholders’ educational initiatives were important to improvements in the life of community members. Some disagreed with the statement and very few were not sure, which indicates that even though their level of education was low they had a positive attitude regarding the situation in which they found themselves.

Question 5
The majority of people in the buffer zone agreed that they saw EE as a solution towards a healthy society. Some disagreed and few were not sure.

Question 6
The majority of community members in Nhambita buffer zone agreed that EE was covered in a formal as well as an informal way. Few disagreed and very few were not sure.

Question 7
The community responses to this question indicated that because of uncertainty regarding the necessary EE materials to be used, most members agreed that Nhambita community was sufficiently provided with basic educational materials. The majority disagreed and few were not sure.

Question 8
The majority of community members agreed that some of stakeholders’ educational contributions addressed learners’ needs. Some disagreed with the statement and very few were not sure.
Question 9
A high percentage of people were sure that ineffective EE contributions affect learners at school in Nhambita community. Few disagreed with the statement and very few were not sure.

Question 10
Community responses to this question indicate that a very high percentage of people agreed that stakeholders provide new techniques for effective education for sustainability (EE) in the community. Few disagreed and very few were not sure.

Question 11
The majority of people agreed that various stakeholders in Nhambita are aware of the need to intensify their contributions in education for sustainability to the community. Few disagreed and most were not sure.

Question 12
Most people agreed that EE had no limitations and boundaries; therefore stakeholders were interested in collaborating with other communities around GNP in this context. The majority disagreed with the statement and a few were not sure.

Question 13
The responses illustrate that community members are interested in introducing EE at all levels in the community as a means of empowering them with environmental issues. Hence 73% agreed, 11% disagreed and 16% were not sure.
Question 14
The majority of people agreed that traditional leaders actively collaborate with stakeholders in promoting environmental education in the community. Some disagreed and few were not sure.

Question 15
Thirty seven percent agreed that community members were empowered by environmental issues so that they can take good care of their environment. 28% disagreed and 35% were not sure.

Question 16
Community responses illustrate that there were incentives to attract community members in order to become more involved with environmental education. 48% agreed, 32% disagreed and 20% were not sure.

Question 17
A high percentage of people were not sure whether stakeholders adequately integrated HIV/AIDS in their educational agenda, followed by those who are positive and a few who disagreed.

Question 18
Again the responses illustrate that EE is implemented in a sustainable way, with some people agreeing and a few disagreeing.

Question 19
The majority of people agreed that community members in Nhambita are positive about environmental educational contributions taking place in their area. Some disagreed with the statement and few were not sure.
Question 20
A very high percentage agreed that education for sustainable environments is a global issue. Few disagreed and most were not sure.

4.4. INTERVIEWS

Thirteen persons from amongst the stakeholders and community were interviewed to investigate how various stakeholders contributed to promote environmental education in the abovementioned community. The participants were randomly selected. Appointments were made before, reasons for the interview explained and the interviewee assured of confidentiality. Before the interview, interviewees were greeted and an informal conversation occurred to make them feel comfortable.

4.5 CONCLUSION

In this section, questionnaire responses were analyzed. The next chapter deals with interviews responses, the study's findings, as well as recommendations flowing from the research.
CHAPTER 5

DISCUSSION OF THE FINDINGS

5.1 INTRODUCTION

This section deals with interviews responses, the discussion of findings of both questionnaires and the interview sessions and recommendations based on the findings.

5.2 DISCUSSION OF FINDINGS

5.2.1 Stakeholders Environmental Education contributions

The environmental education ideal calls for the improvement of the quality of life for all and integrates key areas such as economic, social, political, and scientific technology.

From the analysis of questionnaires and interviews (See Appendix B, Questions 1, 10 and 15), it is evident that various stakeholders contribute to environmental education but the rate at which it is taking place is very slow.

Regarding the contributions made by stakeholders to improve environmental education of Nhambita community this respondent said:

*This is one of the communities selected by CDS-RN as our pilot area. One of the reasons is the fact that the community was already organized, we started with a detailed rural development appraisal that helped in finding out all the*
environmental problems affecting the community. From there we organized their EE needs according to their priorities. Through creation of community based natural resource committees (CBNRC), community empowerment in natural resource management issues and promotion of national environmental issues (See appendix B interview 7 question 1)

In addition the other said:
As one of various stakeholders our institution sensitize communities to avoid bush fires during agriculture as this practice reduces soil fertility, destroys vegetation and wildlife, causes erosion and desertification in some areas. In addition we joined other stakeholders in the promotion of actions related to EE.

Looking at the same point (See appendix B interviews 3 & 1 question 10) one can see that to avoid misunderstanding of tasks or responsibilities in formal as well as informal EE stakeholders are also making some efforts:

“...Firstly discussions took place were all stakeholders agreed that it is really necessary to divide environmental activities in groups so that issues can be easily addressed…”

“...Various stakeholders are promoting workshops in order to clearly explain to community members the differences between formal and informal education as the way issues are discussed is different depending on the level it has been discussed…”

Again as I stated before even though some contributions are taking place respondents believe that the rate at which it occurs is very slow:

“...Stakeholders are in some how organized depending on the interests they have, for instance when they have an idea to be developed by the community
they make sure that each and everyone participates in the meeting only to accommodate their interests…” (See appendix B interview 2 & 8 question 15)

“…I really can’t say that stakeholders are organized to address EE activities as most of the time it seems that many of us contact community to discuss same or similar issues discussed before…”

5.2.2 EE materials, strategies, funds and incentives

According to the findings, new strategies are being investigated to determine how EE can be enriched, as the Government has already started with sensitization programmes on good practices in agriculture and erosion.

Regarding the actions that are currently put in place in Nhambita community to provide people with environmental educational materials, this respondent said that:

“…Buffer zones around Gorongosa National Park, especially Nhambita Buffer Zone, are grateful that they have basic assistance such as environmental educational knowledge and materials, albeit they are sometimes insufficient…” (See Appendix B, Questions 3 interview 1)

In addition to increase community awareness about sustainability it was said that:

In Nhambita Buffer Zone (See Appendix B, Questions 2 interview 1) EE is implemented through adoption of strategies and policies that were nationally approved in order to promote environment protection based on sustainable development and having community members as principal partners.

Community members are sensitized to avoid bush fires during agriculture as this practice reduces soil fertility, destroys vegetation and wildlife, and causes erosion
and desertification in some areas. Working on the basis that EE has no limitations or boundaries, stakeholders extended the programme to other communities around GNP in order to promote actions related to EE as people use natural resources unsustainably, for instance felling trees to produce land for grazing and hunting unprotected animals.

Regarding incentives to stimulate sustainable EE initiatives in the community one of respondents said:

Stakeholders and GNP's managers are working together to identify some incentives to community members as they are part of their buffer zones and deserve an special attention regarding those issues. In this regard community members should be offered jobs as Park securities, guiders as well as part of internal staff. (See appendix B interview 8 question 12)

According to other respondents, stakeholders join forces in order to influence hierarchical changes from the base to the top at the community so that community members can participate more actively in decision making regarding EE. One respondent argued that:

Every solution should therefore come from the community and not from the top as usually it occurs. We also disseminate positive and negative attitudes affecting the environment so that people can better understand the environment they leave in (See appendix B interview 6 question 12).

Regarding funds for EE programmes respondents were not that much happy about that:

I can only say that there are funds to sponsor educational activities but I can't say if they are enough or not. (See appendix B interview 8 question 13)
The only way I believe there can be enough funds to satisfy community environmental educational needs is through addition of community generating incomes into stakeholders budgets and their involvement in allocation of funds according to the their priorities so that they can see and learn how it is spent in developing EE programmes (See appendix B interview 6 question 13).

5.2.3 Community empowerment and views on EE

According to respondents (See Appendix B questions 5, 7, and 9) Community members participate actively on environmental education programmes. They develop sustainable activities keeping in mind that whatever they do today will affect future generations.

Looking at interview 1 question 7 about the empowerment of community members to deal with EE in an organized way it was said that:

“... One can realize that some NGO's work hard to promote EE. They have introduced the new concept of CBNRM (community based natural resource management) where committees are created to deal and discuss environmental issues...”

According to the findings, this all idea was introduced because community members have a feeling that they are loosing control over their resources. They say that there is a difference on the way they deal with resources today. Before they would use their resources on their own way and there was no problem.

They raise the question of why now? Before no one was concerned about it, but today it seems that everyone is concerned about it.

In addition respondents believe that stakeholders are promoting short courses, offering equipment and seeds, and incentives to unemployed people. They are
caring for orphans, and giving access to education up to a high level. Those who have influence in the community become more comfortable accommodating new environmental educational challenges, and discourage human activities that can accelerate environmental degradation, such as bush fires, deforestation and unsustainable agricultural practices.

They also plant trees, rear livestock on a small basis, sell fruit and vegetables and do craft work. Some of these community members disagree that environmental education is taking place in their community.

In general, community members are positive about sustainable environmental education programmes taking place, but once again the slow rate at which it occurs makes others feel negative:

“...However I feel that if stakeholders’ contributions were fully operational, community members would implement their environmental educational activities on their own, and therefore increase their awareness of sustainability...”

5.2.4 EE and Learners at School

According to the findings one can easily see that most of the respondents agreed that learners at school are directly affected by ineffective environmental education programmes.

Let's look at this response from interview 1 question 8:

*We all know that wood come from trees and it's used to make furniture and school equipment so when we don't educate those who practice negative activities to the environment such as bush fires we are destroying most of those resources, affecting learners at school whom sit on the floor in classes without windows and doors and therefore don't perform well.*
Again when learners (See Appendix B interview 7 question 8) are not taught about the real importance of EE in their area and all the decisions taking place there they won’t know how to take care of the environment, as they are the future generation, they have the right to be informed about the advantages as well as the disadvantages in the protection of the environment, and about all the decisions taking place in their community.

In this regard Regular meetings with parents take place in the community so that learners are given more chances to participate in all environmental education programmes taking place in their area basically at school:

"...For instance, in rural areas like Nambita, children are often left behind as they have to help their parents with domestic work at home most of the times having to walk long distance to fetch wood to prepare food and so they miss some of their school time..."

Responding to the question regarding stakeholders EE contributions to learners at school, one of the respondents (See Appendix B interview 1 question 14) said:

Stakeholders worked together with GNP to introduce environmental education programmes based on nature and ecology, in which they designed a regular timetable for teachers to visit the Park and discuss environmental issues they observed and experienced. In addition, the administration of the Park, in collaboration with stakeholders, design and provide educational material for schools, as well as for other members in the community.

5.2.5 Role of Traditional Leaders

At this point most of respondents agreed that Traditional leaders do play an important role in facilitating EE. For instance one of the respondents said that:
"...Traditional leaders, use their influence to promote environmental education activities. They participate in meetings held by various stakeholders regarding environmental education and transmit experiences to community members..."

At this stage one can conclude that before sensitization over EE started, community members used to ignore its importance but actually with the pressure of traditional leaders they become more involved and participate actively in implementation of environmental education activities. Although the majority of people in Nhambita Buffer Zone are illiterate, they know the importance of protecting the environment.

5.2.6 HIV/AIDS Awareness

The HIV/AIDS pandemic is the toughest opponent to fight against, and it requires a combined effort from stakeholders.

According to the respondent from interview 1 question 6, not much has been done about this issue in the community as some people still believe that this is a spiritual issue related to jealous revenge and local conflicts between community members. However small programmes do take place such as drama or theatre, sensitization and short courses form some activists in the community.

Those issues are treated openly by government institutions and NGO's. Explaining to community issues about its prevention and mitigation. Therefore people are now losing the stigma over HIV/AIDS facilitating the job of activists as talking about those issues in community is nothing easy as the disease is really killing people. Activists discuss those issues seriously as it deals with people's emotions.
5.3 RECOMMENDATIONS

A number of recommendations emerged from the research:

- Community empowerment in Nhambita Buffer Zone must be accelerated so as to improve environmental education.
- The time-frame and strategies must be developed and implemented to improve the quality of life for community members.
- Basic educational material should be provided at all community levels in formal as well as informal education.
- Traditional leaders should be motivated to make their influence work.
- Establishment of environmental awareness campaigns and environmental education in the community should be carried on.
- Everyone should be involved in the prevention of HIV/AIDS.
- Stakeholders should design an evaluation and monitoring programme so that they can see their progress as well as community actions.

5.4 REFLECTION ON RESEARCH PROCESS

Although this research project yielded the desired results, it was also complete. There were a number of difficulties which were encountered in both the collection of data and analysis. It was discovered that the overwhelming majority of community members in Nhambita Buffer Zone do not have a clear idea regarding environmental education. The demographic representation of the research was limited in terms of the number of communities investigated.

Another difficult encountered was the fact that this was a large-scale study, with a limited time-frame and I was busy other work. This limited me in terms of effort and involvement. The results could have been more comprehensive and conclusive if more time had been allocated to the research. Again, it was not
possible to translate all the interview schedules which were conducted in Portuguese into English because of time. However, the results were regarded as sufficiently satisfactory within the parameters assigned.

It is difficult to determine whether or not someone is being truthful from an anonymous questionnaire, but the use of triangulation helped reduce the impact of this possible defect. Overall I believe the questionnaire was well constructed and relevant, and therefore produced some very interesting responses. I was one of the staff members at the Center for Sustainable Management of Natural Resources (CDS-RN) in Chimoio-Manica Province in the central part of Mozambique about 200k/m from Beira Province, where GNP is situated and was chosen as one of our pilot areas. I then moved to the same Ministry of Environmental affairs in Maputo, which in some ways helped in the flexibility of the study. It can also be said that this study provided a fairly accurate overview of the opinions and experiences of some community members. There were naturally a few inherent weaknesses in this study, the most obvious being that it was limited to only one community (Nhambita Buffer Zone). It would have been stronger if participants from all buffer zone areas were involved.

Despite the difficulties and inconsistencies encountered I learned much from this study. Being one of the stakeholders for environmental protection in Mozambique, I found it very interesting to see how some of the stakeholders' responses would have similarity to mine. Data analysis is a complex procedure and a lot of credit is due to individuals who undertake very large research projects. I feel that I have benefited greatly by undertaking this large-scale research. Most importantly, I learned that things do not only fit one's expectations. It is thus necessary for one to see one's perceptions from different points of view.
5.5 CONCLUSION

In conclusion, unfortunately because of the limit of time participants were not encouraged to provide an overview of how they felt about the future of the environmental education. What was most notably was the fact that from the participants' perspectives the research deduced that environmental education is occurring in Nhambita Buffer Zone, although much is still to be done. In particular, the quality of life of community members can be improved by means sustainable environmental education programmes so that a more equitable and just society is built.

Abebe, K. (1996). *Current environmental issues and development in Ethiopia*. Conference proceedings of the 6th Annual Conference of Eastern Africa Environmental Network, pp. 29-31. This was held in Ethiopia and conducted by CIDA-AUCC (University Partnership Programme involving the University of Saskatchewan, Canada and Hawassa University).

Abel, A.B. (1996). *Environmental Education networking: The potential role of botanic gardens*. Conference proceedings of the 6th Annual Conference of Eastern Africa Environmental Network, pp. 163-164. This was held at the University of Helsinki and conducted by the Department of Biological and Environmental Sciences.


Alleas, K. (1997). The increase of employment, preservation of environment. Institution of Engineers, Australia: T. Barton, ACT.


Nwonwu, F.O.C. (1996). *The impact of poverty on environmental quality in Africa*. Conference proceedings of the 6th Annual Conference of Eastern Africa Environmental Network, pp. 87-98. This was held at the Moi University, Johannesburg. Conducted by the Department of Forestry.


APPENDICES
COMMUNITY QUESTIONNAIRE

Dear community members, it will be greatly appreciated if you would kindly answer the following questions related to “stakeholders” perception about their educational contributions towards a more sustainable Gorongosa National Park in Mozambique.

Kindly tick your response from the alternatives provided.

QUESTIONNAIRE

1- Different stakeholders introduced the concept of environmental education to community members of Nhambita buffer zone in GNP.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>Not sure</th>
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2- Various stakeholders are organized in groups such as governmental institutions, private sector and civil society to better serve educational activities in the community.

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<thead>
<tr>
<th>Agree</th>
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3- Different stakeholders like local government, civil society, private sector; NGO’s, etc. contribute to improve EE in the community.

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<th>Agree</th>
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4- Stakeholders educational initiatives like regular workshops or debates on recycling, sanitation, erosion, bush fires, deforestation and wild life are important to improve the quality of life of community members.

| Agree | Disagree | Not sure |

5- You see EE as a solution towards a healthy society.

| Agree | Disagree | Not sure |

6- EE in the community is covered in a formal as well as informal way.

| Agree | Disagree | Not sure |

7- Nhambita community is sufficiently provided with basic educational materials

| Agree | Disagree | Not sure |

8- Some of stakeholders educational contributions address learner's needs

| Agree | Disagree | Not sure |

9- Ineffective EE contributions educational contributions affect learners at school in Nhambita community.

| Agree | Disagree | Not sure |

10- Stakeholders provide new techniques for effective education for sustainability (EE) in the community.

| Agree | Disagree | Not sure |
11- Various stakeholders in Nhambita are aware of the need to intensify their contributions in education for sustainability (EE) to the community.

<table>
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<tr>
<th>Agree</th>
<th>Disagree</th>
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12- As we all know that EE has no limitations and boundaries therefore stakeholders are interested in collaborating with other communities around GNP in this context.

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<th>Agree</th>
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13- Community members are interested in introducing EE at all levels in the community.

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<th>Agree</th>
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14- Traditional leaders actively collaborate with stakeholders in promoting environmental education in the comm.

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<th>Agree</th>
<th>Disagree</th>
<th>Not sure</th>
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15- Community members are empowered with Environmental issues so that they can take good carry of their environment.

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<th>Agree</th>
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<th>Not sure</th>
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16- There are incentives to attract community members in order to become more involved with environmental education.

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<th>Disagree</th>
<th>Not sure</th>
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</table>
17- Stakeholders adequately integrate HIV/AIDS in their educational agenda.

Agree  Disagree  Not sure

18- EE is implemented in a sustainable way in Nhambita.

Agree  Disagree  Not sure

19- Community members in Nhambita are positive about environmental educational contributions taking place in their area.

Agree  Disagree  Not sure

20- Education for sustainable environments is a global issue.

Agree  Disagree  Not sure
APPENDIX B

INTERVIEW SCHEDULE

“Stakeholders’ perception about their educational contributions towards a more sustainable Gorongosa National Park in Mozambique.

1) As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?
2) What is being done by different stakeholders to increase community awareness about sustainability?
3) Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?
4) Which role is played by traditional leaders in facilitating EE?
5) What are the views and attitudes of community members on EE?
6) How is HIV/AIDS dealt with in Nhambita buffer zone as part of environmental education?
7) How are community members in Nhambita empowered to deal with EE in an organized way?
8) To what extent does ineffective EE affect learners at school?
9) What is being done by community members in Nhambita to improve EE?
10) What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?
11) Which new strategies are provided to improve EE in the community?
12) Are there any incentives to stimulate sustainable EE initiatives in the community?
13) Are there enough funds provided by different stakeholders to satisfy community environmental educational needs?

14) To what extent do stakeholders' environmental educational contributions benefit learners at school?

15) To what extent are stakeholders organized to address EE in the community?

16) Education for sustainability is everyone's business. Give your comment…
4.4.1. INTERVIEW 1

Interviewer: As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?

Interviewee: As one of various stakeholders our institution sensitize communities to avoid bush fires during agriculture as this practice reduces soil fertility, destroys vegetation and wildlife, causes erosion and desertification in some areas. In addition we joined other stakeholders in the promotion of actions related to EE.

Interviewer: What is being done by different stakeholders to increase community awareness about sustainability?

Interviewee: We believe that unsustainability is eradicated through adoption of strategies and policies that were nationally approved in order to promote economic growth based on sustainable development and having community members as principal partners.

Interviewer: Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?

Interviewee: New strategies are being investigated to find out which kind of educational materials can be used at school as well as in community sensitization has the Government has already introduced some of environmental concepts in school curriculum and started with sensitization programmes such as on good practices in agriculture for community members.

Interviewer: Which role is played by traditional leaders in facilitating EE?

Interviewee: The role of traditional leaders is basically to help community members with agricultural practices that eradicate misery, food supply, reducing the level of bush fires that eliminate most of medicinal plants.
Interviewer: What are the views and attitudes of community members on EE?  
Interviewee: Community members participate actively on environmental education programmes. They develop sustainable activities keeping in mind that whatever they do today will affect future generations.

Interviewer: How is HIV/AIDS dealt with in Nhambita buffer zone as part of environmental education?  
Interviewee: Not much has been done about this issue in the community as some people still believe that this is a spiritual issue related to jealous revenge and local conflicts between community members. However small programmes do take place such as drama or theatre, sensitization and short courses form some activists in the community.

Interviewer: How are community members in Nhambita empowered to deal with EE in an organized way?  
Interviewee: Some NGO’s work hard to promote EE. They have introduced the new concept of CBNRM (community based natural resource management) where they have to create committees to deal and discuss environmental issues.

Interviewer: To what extent does ineffective EE affect learners at school?  
Interviewee: We all know that wood come from trees and it’s used to make furniture and school equipment so when we practice negative activities to the environment such as bush fires we are destroying most of those resources, affecting learners at school whom sit on the floor in classes without windows and doors.

Interviewer: What is done by community members in Nhambita to improve sustainable environmental education?  
Interviewee: Community members coordinate with created committees in the implementation of some activities, plant trees; contribute with incentives for those whom do not practice bush fires, conserve water avoiding pollution.

Interviewer: What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?
Interviewee: Various stakeholders are promoting workshops in order to clearly explain to community members the differences between formal and informal education as the way issues are discussed is different depending on the level it has been discussed.

Interviewer: Which new strategies are provided to improve EE in the community?

Interviewee: In recent years the government realized that there is a big interaction between environment and socio-economic development. Therefore through environmental education national programme the government recommends adoption of strategies and policies approved by the programme which promote sustainable development.

Interviewer: Are there any incentives to stimulate sustainable EE initiatives in the community?

Interviewee: Different stakeholders have realized that it is not that easy to promote EE if community members are not clear about those issues and the environment they leave in. However they agreed that this constitutes their priority therefore two meetings were held within the Park managers and stakeholders to identify priorities and basic needs on the process. Incentives consist of community members contributions to keep committees alive. Generating some incomes from companies exploring wood and other resources in the community.

Interviewer: Are there enough funds provided by different stakeholders to satisfy community environmental educational needs?

Interviewee: In case, stakeholders joined forces in this regard some NGO's like GTZ provides money to cover projects costs while others provide technical support.

Interviewer: To what extent do stakeholders' environmental educational contributions benefit learners at school?

Interviewee: As kids are our priority we discussed with GNP staff to introduce practical sessions for school learners when visiting the Park.

Interviewer: To what extent are stakeholders organized to address EE in the community?
Interviewee: EE activities can only be alleviated if community members are explained about national policies and strategies. Stakeholders provide meetings to discuss with them their advantages and disadvantages on the environment.

Interviewer: Education for sustainability is everyone’s business. Give you comment...

Interviewee: I do agree that Education for sustainability is everyone’s business because is through them that we can increase our economic and social development, provide life security to future generations as there is an interaction between man and environment in daily activities.

4.4.2 INTERVIEW 2

Interviewer: As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?

Interviewee: My contributions consist of creation of community based natural resource committees (CBNRC), community empowerment in natural resource management issues and promotion of national environmental issues.

Interviewer: What is being done by different stakeholders to increase community awareness about sustainability?

Interviewee: Because “buffer zone” is considered a transitional area of animals and resources between the Park and other unprotected areas, small projects were created in those buffer zones such as commerce of small objects local produced in the entrances of the Park which helps in generating some incomes.

Interviewer: Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?

Interviewee: At the community there is a small project were community members fabricate local educative materials from available resources in the area. Therefore from the materials produced they choose those which can be used by learners at school.
Interviewer: Which role is played by traditional leaders in facilitating environmental education?

Interviewee: Traditional leaders help in promoting activities and experiences provided by committee based natural resources leaders and other stakeholders.

Interviewer: What are the views and attitudes of community members on environmental education?

Interviewee: NOT ANSWERED

Interviewer: How is HIV/AIDS dealt with in Nhambita buffer zone on environmental education programs?

Interviewee: NOT ANSWERED

Interviewer: How are community members in Nhambita empowered to deal with EE in an organized way?

Interviewee: We created committees to help community in managing their environmental activities as well as organized some workshops for traditional leaders, teachers and other community members to explain and discuss some environmental concepts.

Interviewer: To what extent does ineffective EE affect learners at school?

Interviewee: Of course it affects learners for instance, when good agricultural practices are not used this compromise the all season and kids do not have anything to eat, therefore cannot perform well at school.

Interviewer: What is being done by community members in Nhambita to improve EE?

Interviewee: Community members participate actively in the committee activities and every activity taking place in the area.

Interviewer: What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?

Interviewee: We do work hard with community regarding this issue as this constitutes our big challenge right now. We explain to them which concepts or activities can be discussed in each educational group.
Interviewer: Which new strategies are provided to improve EE in the community?
Interviewee: We do provide community with short courses divided into different models of discussing EE, introduce drama or theatre sessions as well as exhibition of films related to natural resources.

Interviewer: Are there any incentives to stimulate sustainable EE initiatives in the community?
Interviewee: We believe that this is not an easy issue to deal with, as we diverge on the kind of incentives to provide, however we have started with some workshops to discuss important steps to be followed in the process.

Interviewer: To what extent do stakeholders' environmental educational contributions benefit learners at school?
Interviewee: Learners, I mean kids are our priority in everything we do therefore we tend to make sure that every decision we make those whom represent them are involved.

Interviewer: To what extent are stakeholders organized to address EE in the community
Interviewee: I really can't say that stakeholders are organized to address EE activities as most of the time it seems that many of us contact community to discuss same or similar issues discussed before.

Interviewer: Education for sustainability is everyone's business. Give you comment...
Interviewee: Of course, this is a way that can help alleviating poverty, misery and unemployment that community members are facing today. It's also a way of integrating community members on district development plans.

4.4.3 INTERVIEW 3
Interviewer: As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?

Interviewee: Our contributions are based on promotion of EE strategies, techniques, programmes, equipment and empowerment.

Interviewer: What is being done by different stakeholders to increase community awareness about sustainability?

Interviewee: In order to increase community awareness about sustainability, we provide community members with basic alternatives to create or produce their own activities based on local needs.

Interviewer: Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?

Interviewee: We provide some generating income activities based on exploration of natural resources and the principles of sustainable development so that community can then be able to appoint what is important to them to be included in the materials to be produced by stakeholders.

Interviewer: Which role is played by traditional leaders in facilitating EE?

Interviewee: Because of their influence, traditional leaders are mediators between stakeholders and community. They contribute to coordination and integration between them for good management of natural resources.

Interviewer: What are the views and attitudes of community members on EE?

Interviewee: Community members have a feeling that they are loosing control over their resources as many people are concerned with this issue. They say that there is a difference on the way they deal with resources today. Before they would use their resources on their own way and there was no problem. They raise the question why now? Before no one was concerned about it, but today it seems that everyone is concerned about it.

Interviewer: How is HIV/AIDS dealt with in Nhambita buffer zone as part of environmental education?
Interviewee: Today there is much involvement of other members and sectors in the community sensitization and prevention of HIV/AIDS.

Interviewer: How are community members in Nhambita empowered to deal with EE in an organized way?

Interviewee: Committees were created and community members are empowered to help community manage resources in a sustainable way.

Interviewer: To what extent does ineffective EE affect learners at school?

Interviewee: Of course kids at school are directly affected. Look if an environmental problem occurs in the area it will affect teachers and school staff and definitely learner's performance because they are part of the same community.

Interviewer: What is being done by community members in Nhambita to improve EE?

Interviewee: They joined committees created and organized themselves to attend illiterate groups.

Interviewer: What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?

Interviewee: Firstly discussions took place were all stakeholders agreed that it is really necessary to dived environmental activities in groups so that issues can be easily addressed.

Interviewer: Which new strategies are provided to improve EE in the community?

Interviewee: To improve EE in the community we created and promoted natural resources committees where issues related to environment are discussed.

Interviewer: Are there any incentives to stimulate sustainable EE initiatives in the community?

Interviewee: The most important incentive that we provided to community is a certificate document that gives them totally control over their land and resources so that they can work towards protecting their environment.
Interviewer: Are there enough funds provided by different stakeholders to satisfy community environmental educational needs?

Interviewee: I don’t think that there are enough funds to satisfy community environmental educational needs as some times we do face constrains related to money issues.

Interviewer: To what extent do stakeholders’ environmental educational contributions benefit learners at school?

Interviewee: Government institutions and other stakeholders joined forces to provide community members especially learners at school with EE activities so that they can grow up knowing the importance of the environment and cooperate in the promotion of natural resources in a sustainable way.

Interviewer: To what extent are stakeholders organized to address EE in the community?

Interviewee: I do believe that we are organized, firstly because we all know which stakeholders are involved in our community and what they want to do.

Interviewer: Education for sustainability is everyone’s business. Give you comment...

Interviewee: Environmental education is part of community daily activities as they depend basically on the resources to survive. Therefore it’s important that they realize how serious this issue is and start taking carry of them for their own sake and future generations as well.

4.4.4 INTERVIEW 4
Interviewer: As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?

Interviewee: My contributions regarded creation of community based natural resources committees.

Interviewer: What is being done by different stakeholders to increase community awareness about sustainability?

Interviewee: Community members are provided with workshops on EE so that they can use natural resources rationale.

Interviewer: Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?

Interviewee: We started sensitization programmes were community members are explained the need to identify issues which they want to see on their educational materials.

Interviewer: Which role is played by traditional leaders in facilitating EE?

Interviewee: Traditional leaders participate in meetings held by various stakeholders and the transmit experiences to community members.

Interviewer: What are the views and attitudes of community members on EE?

Interviewee: Community members believe that if they clearly follow policies and regulations established for EE their quality of life can improve.

Interviewer: How is HIV/AIDS dealt with in Nhambita buffer zone as part of environmental education?

Interviewee: Community members are involved in HIV/AIDS activities as they find some of those programmes such as theatre and drama very entertaining.

Interviewer: How are community members in Nhambita empowered to deal with EE in an organized way?

Interviewee: Community members are part of natural resources committees created and most of their activities are based on the management of their environment.

Interviewer: To what extent does ineffective EE affect learners at school?
Interviewee: Kids at school become affected when information discussed at the committees is not provided to their teachers and through those to them. As part of new coming generation they should be explained about every decision taking place in the area.

Interviewer: What is being done by community members in Nhambita to improve EE?

Interviewee: They participate actively in all activities taking place in the committees.

Interviewer: What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?

Interviewee: Investigation and research is taking place regarding which activities can be discussed in each of the type of environmental education.

Interviewer: Which new strategies are provided to improve EE in the community?

Interviewee: New strategies provided to improve EE in the community include implementation of community based natural resource management committees.

Interviewer: Are there any incentives to stimulate sustainable EE initiatives in the community?

Interviewee: Of course there are such as meetings with other stakeholders were held to discuss steps to be followed in the all process, small projects that generate incomes were started such as in agriculture, were community members are organized and sell their products in other areas as well as in front of GNP.

Interviewer: Are there enough funds provided by different stakeholders to satisfy community environmental educational needs?

Interviewee: No, I don't think so as sensitization programmes started were community members are explained the necessary steps in the process of lobbying and advocacy to pursue investors to fund their extra activities.

Interviewer: To what extent do stakeholders' environmental educational contributions benefit learners at school?
Interviewee: It’s easy to feel that stakeholders’ environmental educational contributions benefit learners at school by looking at the way learner’s express themselves towards environment. They are represented in the meetings taking place.

Interviewer: To what extent are stakeholders organized to address EE in the community?

Interviewee: I do think that we are organized because each time we want to address the community we write invitations to them in advance and the agenda is placed in time.

Interviewer: Education for sustainability is everyone’s business. Give you comment...

Interviewee: Definitely! All community members should be aware of everything taking place in their environment so that they can be prepared to respond to globalization and new sustainable developmental strategies.

4.4.5 INTERVIEW 5

Interviewer: As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?

Interviewee: Our services are based in community sensitization on sustainable use of natural resources. Promotion of fire break to avoid bush fires a process were you have to delimitate only the area that you pretend to burn so that fire do not expand to other areas.

Interviewer: What is being done by different stakeholders to increase community awareness about sustainability?

Interviewee: As community members use natural resources such as wood coming from trees to produce cow for selling and cooking they also hunt animals. Therefore Governmental institutions and NGO’s together with GNP management
staff introduced educational campaigns to increase community awareness on EE.

**Interviewer:** Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?

**Interviewee:** Stakeholders created groups in the community to identify issues to include in the educational materials.

**Interviewer:** Which role is played by traditional leaders in facilitating EE?

**Interviewee:** Traditional leaders have the responsibility to mobilize participation on EE activities.

**Interviewer:** What are the views and attitudes of community members on EE?

**Interviewee:** Community members wish that each and everyone should take responsibility and control in conservation of natural resources. They also wish to get more percentage from the Park generating incomes.

**Interviewer:** How is HIV/AIDS dealt with in Nhambita buffer zone as part of environmental education?

**Interviewee:** Those issues are seriously threaded in addition with other programmes such as theatre, dancing groups and carry of orphans.

**Interviewer:** How are community members in Nhambita empowered to deal with EE in an organized way?

**Interviewee:** Stakeholders are organized in associations so that natural resources can be used in a sustainable way.

**Interviewer:** To what extent does ineffective EE affect learners at school?

**Interviewee:** Definitely ineffective EE affect learners at school because of deforestation kids at school don’t have fresh air and fresh places to play. They also breathe polluted air because of bush fires.

**Interviewer:** What is being done by community members in Nhambita to improve EE?

**Interviewee:** Community members organized themselves in associations, created environmental clubs for learners at school. Through community based natural resources, control learned how to control bush fires to save the environment.
Interviewer: What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?

Interviewee: Stakeholders divided their activities in groups of formal as well as informal education so that everyone knows their responsibility.

Interviewer: Which new strategies are provided to improve EE in the community? Interviewee: Governmental institutions and other stakeholders created macro-projects for agriculture and production of furniture with local materials. Other activities take place in the community such as: introduction of traditional taps by national NGO's, building of primary schools, building of medical centers, introduction of resistant seeds that survive dry seasons such as: orange potatoes and some fruit trees.

Interviewer: Are there any incentives to stimulate sustainable EE initiatives in the community?

Interviewee: Yes, there are. Stakeholders together with Park managers are still deciding on the criteria to be used to increase community members’ percentage from park generating incomes as they are in some how involved in activities taking place in the Park.

Interviewer: Are there enough funds provided by different stakeholders to satisfy community environmental educational needs?

Interviewee: It depends on what one thinks it can be enough budgets. What I can say is that we created attractive activities outside buffer zone and make sure that community members earn something from the park generating incomes.

Interviewer: To what extent do stakeholders’ environmental educational contributions benefit learners at school?

Interviewee: Definitely stakeholder’s environmental educational contributions benefit learners at school as we now decided on introducing EE activities which start on grade one up to grade five before going to second phase of schooling.

Interviewer: To what extent are stakeholders organized to address EE in the community?
Interviewee: I can say that it seems that stakeholders are organizes as we call regular meetings to design the agenda before addressing the community.

Interviewer: Education for sustainability is everyone's business. Give you comment...

Interviewee: I do agree with the statement. As we all know that some natural resources are renewable and other’s non-renewable. There is a big attraction in control over bush fires, deforestation and uncontrolled game ranch. Control over those activities helps alleviating negative impacts over natural resources that can directly affect the environment.

4.4.6 INTERVIEW 6

Interviewer: As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?

Interviewee: Various stakeholders explain to community members about problems affecting the environment, consequences coming from those problems and we also propose some limits in mitigation of those problems.

Interviewer: What is being done by different stakeholders to increase community awareness about sustainability?

Interviewee: Stakeholders join Park managers on designing of EE activities as community members’ use most of Park resources to satisfy their basic needs.

Interviewer: Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?

Interviewee: To provide people with basic environmental educational (EE) materials there is an integrated action of various stakeholders in programmes like sensitization of the community in the need of identifying activities to be included in the materials to be shared with other communities in the buffer zones.

Interviewer: Which role is played by traditional leaders in facilitading EE?

Interviewee: Traditional leaders use their influence to promote EE activities and avoid bad practices towards the environment.
Interviewer: What are the views and attitudes of community members on EE?
Interviewee: Before the approval of 20% of income generated from the resources sold in the community that benefit community, community members never felt any responsibility towards their environment and everything behind it but since the percentage was approved they want to protect and conserve everything in the environment by giving more attention to EE programmes.

Interviewer: How is HIV/AIDS dealt with in Nhambita buffer zone as part of environmental education?
Interviewee: Today with new strategies of dissemination, something is changing to the best. People are losing the stigma over HIV/AIDS facilitating the job of activists.

Interviewer: How are community members in Nhambita empowered to deal with EE in an organized way?
Interviewee: To deal with EE in an organized way natural resources committees were created in the community so that it can help people give much importance to the environment.

Interviewer: To what extent does ineffective EE affect learners at school?
Interviewee: Like other members in the community ineffective EE affect learners at school for instance, if water is polluted because of Artisanal gold mining or other activities kids at school suffer because stay without clean water to drink and it can in some how affect their performance therefore there should be EE activities for artisanal gold miners as well.

Interviewer: What is being done by community members in Nhambita to improve EE?
Interviewee: Through created committees community members pursue stakeholders to promote short courses and workshops to them so that they become more comfortable to accommodate new challenges related to EE.

Interviewer: What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?
Interviewee: A detailed study taking place to find out the kind of activities to be addressed in formal as well as informal environmental education.

Interviewer: Which new strategies are provided to improve EE in the community? Interviewee: Stakeholders join forces in order to influence hierarchical changes from the base to the top at the community so that community members can participate more actively in decision making regarding EE. Every solution should therefore come from the community and not from the top as usually it occurs. We also disseminate positive and negative attitudes affecting the environment so that people can better understand the environment they leave in.

Interviewer: Are there any incentives to stimulate sustainable EE initiatives in the community?

Interviewee: Besides the 20% that benefit community from resources sold in their area, stakeholders also joined forces to introduce incoming generating activities so that they understand the need to learn more about it and give more importance to the environment.

Interviewer: Are there enough funds provided by different stakeholders to satisfy community environmental educational needs?

Interviewee: The only way I believe there can be enough funds to satisfy community environmental educational needs is through addition of community generating incomes into stakeholders budgets and their involvement in allocation of funds according to the their priorities so that they can see and learn how it is spent in developing EE programmes.

Interviewer: To what extent do stakeholders’ environmental educational contributions benefit learners at school?

Interviewee: Stakeholders are now in the process of paying attention to each and every detail related to kids basically learners at school as they are the principal beneficiaries of their activities because they are the future generations.

Interviewer: To what extent are stakeholders organized to address EE in the community?
**Interviewee:** I think that stakeholders are organized because they plan in advance every issue which will be discussed in the community.

**Interviewer:** Education for sustainability is everyone's business. Give you comment...

**Interviewee:** Firstly I do agree with the statement. Secondly I would say that people use their own capacities to destroy the environment forgetting that they are integrated part of it and should interact with other elements such as: animals and plants. It's really important that we explain to community how important it is to carry for the environment and definitely securing our lives.

4.4.7 INTERVIEW 7

**Interviewer:** As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?

**Interviewee:** This is one of the communities selected by CDS-RN as our pilot area. One of the reasons is the fact that the community was already organized, we started with a detailed rural development appraisal that helped in finding out all the environmental problems affecting the community. From there we organized their EE needs according to their priorities.

**Interviewer:** What is being done by different stakeholders to increase community awareness about sustainability?

**Interviewee:** Stakeholders introduced EE programmes such as good practices on agriculture which is the principal activity in Nhambita Community and contributes to alleviate their hunger. Stakeholders taught community how to create small species of animal which help in food supply and selling.

**Interviewer:** Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?
Interviewee: Stakeholders provide creative elements with small contracts to help in the design of educational materials.

Interviewer: Which role is played by traditional leaders in facilitating EE?

Interviewee: Traditional leaders have the responsibility to sensitize people against bush fires and deforestation. They also promote plantation of old tree species that no longer exist in the area contributing to a health environment.

Interviewer: What are the views and attitudes of community members on EE?

Interviewee: Community members are aware of EE activities taking place in their area. They developed an interesting idea which says that in each tree destroyed they should plant three therefore multiplying tree species as well as creating small species of animal so that the environment could be safe.

Interviewer: How is HIV/AIDS dealt with in Nhambita buffer zone as part of environmental education?

Interviewee: Talking about those issues in community is nothing easy as it is really killing people. Activists discuss those issues seriously as it deals with people's emotions.

Interviewer: How are community members in Nhambita empowered to deal with EE in an organized way?

Interviewee: Community members are empowered to fight and defend their interests regarding EE through seminaries and discussions taking place in their area.

Interviewer: To what extent does ineffective EE affect learners at school?

Interviewee: Learners at school are affected if they are not well prepared or explained about the really importance of EE. As they are tomorrow's future generation they have the right to be informed about advantages and disadvantages regarding environment and every decision taking place in community.

Interviewer: What is being done by community members in Nhambita to improve EE?

Interviewee: Community members based their activities in sensitization activities based on the plantation of trees that no longer exist and are very important to
them. They also devote some time to discuss ways of creating small species of animals.

**Interviewer:** What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?

**Interviewee:** Stakeholders are designing educational programmes where issues are addressed in different ways in which they can easily be understood by different groups of people in the community.

**Interviewer:** Which new strategies are provided to improve EE in the community? **Interviewee:** One of the strategies provided is adoption of policies that are locally accepted by community members. In addition workshops are held to divulgate and discuss implementation of environmental education legislation.

**Interviewer:** Are there any incentives to stimulate sustainable EE initiatives in the community?

**Interviewee:** I do believe that there is no better incentive for community than empowering them on EE issues. Community members are being sensitized about the importance of the environment and the need to protect GNP resources. In this regard stakeholders developed an idea of giving some incentives to those who present good EE ideas to the community.

**Interviewer:** To what extent do stakeholders' environmental educational contributions benefit learners at school?

**Interviewee:** It's really important that we inform and explain to people especially learners at school about the risks they are taking practicing bed activities to the environment so that they can avoid them and practice activities which benefit the environment.

**Interviewer:** To what extent are stakeholders organized to address EE in the community?

**Interviewee:** Stakeholders are in some how organized depending on the interests they have, for instance when they have an idea to be developed by the community they make sure that each and everyone participates in the meeting only to accommodate their interests.
Interviewer: Education for sustainability is everyone’s business. Give you comment...

Interviewee: This is what we should keep telling community members. As they see environment as something that can be explored to the end not realizing that without it everything including their lives are compromised. Stakeholders including community themselves believe that one day attitudes regarding environment will change for the better for everyone’s sake.

4.4.4 INTERVIEW 8

Interviewer: As one of the stakeholders for environment promotion in Mozambique, what are your contributions to improve environmental education of Nhambita buffer zone in GNP?

Interviewee: We have started sensitization programmes regarding rational use of natural resource and empowerment of recent created committees.

Interviewer: What is being done by different stakeholders to increase community awareness about sustainability?

Interviewee: We introduced regular discussions in the community through environmental education programmes which influence good practices in the use of natural resources.

Interviewer: Which actions are currently put in place in Nhambita community to provide people with basic environmental educational (EE) materials?

Interviewee: There are research programmes to help people identify their most important environmental issues to be included in the materials to be produced.

Interviewer: Which role is played by traditional leaders in facilitating EE?

Interviewee: Traditional leaders have the responsibility to promote good environmental practices because of their authority and influence they have over communities.

Interviewer: What are the views and attitudes of community members on EE?
Interviewee: Before introduction of programmes such as sensitization over environment community members used to ignore their importance. Actually they become more involved with each and every activity taking place in their environment.

Interviewer: How is HIV/AIDS dealt with in Nhambita buffer zone as part of environmental education?

Interviewee: Those issues are treated openly by government institutions and NGO’s. Explaining to community issues about prevention and mitigation of HIV/AIDS.

Interviewer: How are community members in Nhambita empowered to deal with EE in an organized way?

Interviewee: Community members attended various environmental education programmes and workshops organized by different stakeholders on EE protection.

Interviewer: To what extent does ineffective EE affect learners at school?

Interviewee: Kids at school are affected if they are not given proper instructions about EE. They should be integrated in each decision taking place.

Interviewer: What is being done by community members in Nhambita to improve EE?

Interviewee: Community members have some knowledge towards environment protection they developed initiatives to avoid bush fires, and bad practice in agriculture, they also promote national legislation on environmental and natural resource issues.

Interviewer: What is being done in order by various stakeholders in this area to avoid misunderstanding of tasks or responsibilities in formal as well as informal environmental education?

Interviewee: Stakeholders are negotiating with population in order to find a way that accommodates all the parts involved in the process (formal and informal education).

Interviewer: Which new strategies are provided to improve EE in the community? Interviewee: Community based natural resource programmers do
occur in the environment. Permission is given to miners in artesanal gold mining to explore gold in a sustainable way. Community members organized themselves in associations for better exploration of resources and production of honey.

Interviewer: Are there any incentives to stimulate sustainable EE initiatives in the community?

Interviewee: Stakeholders and GNP’s managers are working together to identify some incentives to community members as they are part of their buffer zones and deserve an special attention regarding those issues. In this regard community members should be offered jobs as Park securities, guiders as well as part of internal staff.

Interviewer: Are there enough funds provided by different stakeholders to satisfy community environmental educational needs?

Interviewee: I can only say that there are funds to sponsor educational activities but I can’t say if they are enough or not.

Interviewer: To what extent do stakeholders’ environmental educational contributions benefit learners at school?

Interviewee: Through stakeholders’ environmental education programs, sensitization and promotion of national policies regarding EE. Empowerment of their teachers on new strategies and other activities related to environment.

Interviewer To what extent are stakeholders organized to address EE in the community?

Interviewee: I do believe that Stakeholders are organized as they know what they want and how to implement EE in the community.

Interviewer: Education for sustainability is everyone’s business. Give you comment...

Interviewee: I do agree because it’s in the environment that everything we do takes place. Development goes together with EE and individual play an important role as they are the principal part on this process as most of their activities affect the environment.