

**THE RELATIONSHIP BETWEEN POVERTY AND ENVIRONMENTAL
DEGRADATION, KWAZULU-NATAL**

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ABSTRACT

Brundtland (1987) has argued that the key to remedying environmental degradation is addressing poverty through economic growth. However, this study will argue that a weak institutional framework is the main cause of environmental degradation, suggesting a different remedy. The study will therefore dismiss economic growth as the panacea for environmental degradation. It will favour the position of the World Bank (Sham, 1993) that the most effective way to address the downward spiral within the environment-poverty relationship is to develop environmental policies that are aimed at availing employment opportunities to 'the poor' in rural areas.

A case study in the area of Maphophoma, north of KwaZulu-Natal had been undertaken to support the proposed theoretical framework. A qualitative methodology of in-depth semi-structured interviews has been used to collect data. The purpose of this study is to provide findings that will assist – specific implementation of well-researched environmental protection policies rather than blanket implementation of these policies.

DECLARATION

I hereby declare the following:

I confirm that the work I submit for assessment of the above-mentioned course is my own, unaided work. I have followed the required conventions of referencing the thoughts and ideas of others. I am aware that the correct method for referencing material and a discussion on what plagiarism is has been explained in the WSG Style guide and these issues had been discussed in class during Orientation.

I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong. I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own, unaided work or that I have failed to correctly acknowledge the source of the ideas or words in my writing.

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CHAPTER 1: INTRODUCTION AND ORIENTATION

This research report has been divided into five Chapters, which are described hereafter.

Chapter 1: This chapter consists of the introduction to and background of the study. It outlines the research problem statement, the purpose statement as well as the research questions. The chapter also presents the delimitation of the study.

Chapter 2: The chapter constitutes the literature review of the study. It begins with and justifies the chosen conceptual framework of the study. The conceptual framework is immediately followed by the analytical framework and key lessons from the framework.

Chapter 3: The chapter explains and justifies the preferred research methodology as well as the research design. The preferred research methodology is qualitative. The research approach is explained as well as the type of data, sampling procedure and data validation.

Chapter 4: The chapter presents the data collected from the case study of the community of Maphophoma and the officials from government that had been interviewed.

Chapter 5: This chapter focusses on the conclusions as well as the recommendations for future environmental and poverty alleviation policies.

1.1 Introduction

Brundtland (1987:27) argues that “poor people are forced to overuse environmental resources to survive from day to day, and the impoverishment of their environment further impoverishes them, making their survival ever more difficult and uncertain”. This argument has led to an extensive debate in public policy on the nature and character of the relationship between poverty and the environment. Distinct opposing views about this relationship between poverty and the environment exist amongst those whose prime concern is either the protection of the environment or poverty eradication.

The argument for the chosen theoretical framework – institutional failure as the cause and effect of environmental degradation – will be made by examining a case study of an unsuccessful irrigation project, due to the protection of the wetland, in the rural community of Maphophoma, located in KwaZulu-Natal.

According to Leach, *et al.* (2004) institutions play an important role in the relationship between environment and society. They regularise patterns of behaviour between individuals and groups of society. They further regularise people-environment interaction; how society gains access to, controls the environment and uses the environment as a natural resource by defining the rights a society has on the environment. The interaction between environment and society is regulated through a legislative permission system.

Case studies from other jurisdictions will be evaluated to prove that the rural poor depend on the environment and that they protect the environment from time immemorial.

The report will conclude that the role of poverty on environmental degradation must be based on an understanding of the environmental change that reflects the social concerns of the rural communities. A community is understood to be individual members who are united by culture, share common interests and have mutual dependence (Frisby & Sayer, 1986).

The forces driving poverty and environmental degradation must be addressed through local practices. In certain jurisdictions in which the problems of poverty and environmental degradation are jointly more pronounced it may be more cost-effective to address them jointly. However, in jurisdictions where the incidence of poverty is more prevalent than environmental degradation, poverty alleviation should be made the priority. This requires a bottom-up institutional support of rural communities by authorities, through well-researched policy analysis and development, which has a context-specific implementation strategy rather than a blanket implementation strategy. These policies should address the downward-spiral of the environment-poverty relationship through employment opportunities for the rural poor (Sham, 1993).

Employment opportunities should create a demand for the most valuable asset of the rural poor – labour and investment in human resources (Sham, 1993). This will achieve the goal of protecting the environment while addressing the needs and aspirations of the rural poor to achieve a higher quality of life. This study will reveal that failing to implement environmental protection policies will lead to them being delegitimised, as the rural poor will circumvent them through environmentally unsustainable activities in pursuit of a higher quality of life.

There is therefore a pressing need to analyse the downward-spiral relationship between poverty and the environment in the South African context, by focussing on a specific case study – the unsuccessful development of an irrigation infrastructure for the community of Maphophoma in KwaZulu-Natal – and to make recommendations to mitigate or address the problems.

1.2 Background

The community of Maphophoma is comprised of poor, agricultural households, whose livelihoods depend on small crop farming.

Statistics SA (2011:22) defines agricultural households as a “house involved in agriculture”. Currently, vegetables are not grown in the area of Maphophoma due to the lack of an irrigation infrastructure.

In line with the anti-poverty strategy (Presidency, 2008) a project had been funded by the Agricultural Division of the KwaZulu-Natal Department of Agriculture and Environmental Affairs to address this issue.

The overall aim of the anti-poverty strategy (Presidency, 2008) is to eradicate poverty and create economic opportunities that enable or empower communities and individuals to access these opportunities. The anti-poverty strategy, amongst others, focusses on rural development and agricultural support for rural communities.

The irrigation project that the Department of Agriculture in KwaZulu-Natal investigated had the potential to assist the community of Maphophoma in improving its living standards by enabling it to grow vegetables such as green peppers, tomatoes, beans, onions and potatoes. In order to maximise yields for these vegetables, an irrigation infrastructure became a necessity (Buk'ndalo and Associates, 2008).

The aim of the project had been to irrigate 80 hectares of the surrounding land for the production of crops (Buk'ndalo and Associates, 2008). The area would have been farmed by the members of the community of Maphophoma. However, the site for the irrigation infrastructure had been found to be near pristine wetlands (Buk'ndalo and Associates, 2008). The report states that the wetlands, if the project went ahead, would have been destroyed. Due to the negative impact of the irrigation infrastructure on the wetlands the project could not proceed.

The importance of wetlands in South Africa is evident in the ratification of the Convention on Wetlands of International Importance (hereinafter, referred to as 'the Convention') on 21 December 1975. The Convention provides a framework for national action and international cooperation for the conservation and wise usage of wetlands and their resources.

The Convention had been ratified by South Africa through the National Environment Management Act No. 107 of 1998. According to Nepfumbada and Muller (2010) South Africa is one of 168 signatory countries.

Nepfumbada and Muller (2010) report that South Africa is the thirtieth driest country in the world and has less water per person than countries widely considered much drier, such as Namibia and Botswana. These findings make wetlands an important component of the ecosystem because, among other things, they store water. Nepfumbada & Muller (2010) further report that the losses of wetlands have a direct impact on water availability, particularly on the rural poor.

Generally, wetlands have a positive socio-economic impact on the quality of life of a community. The communities that surround wetlands are able to weave crafts and grow vegetables. Additionally, wetlands act as an important mitigation measure to climate change, as they store greenhouse gases and improve and protect water resources and mitigate flooding. The wetlands also act as stream flow regulators.

1.3 Problem Statement

The rural poor are generally exposed to limited economic opportunities that could lift them up out of their poverty and improve their livelihoods. However, the rural poor do not accept poverty and they respond to it by developing strategies to survive with the limited, available resources (Babier, 1998). However, these strategies and means, in most instances, lead to activities that degrade the environment and further impoverish the rural poor (Brundtland, 1987).

This downward-spiral relationship presents the process of policy development with three broad problems, listed below, that require equal attention and responses from authorities (Agrawal & Redford, 2006).

- i. Whether environmental protection without much attention to poverty alleviation should be the main consideration in the policy development trajectory.
- ii. Whether poverty alleviation should be the main consideration without due attention paid to environmental protection.
- iii. Whether poverty alleviation and environmental protection are problems that need to be addressed jointly, and where environmental degradation is more pronounced it should be the main consideration and vice versa.

The answers to these questions are not as straightforward as one would imagine. Environment as well as poverty affects different sectors of society differently; therefore, policy development and implementation need to respond to the different sectors within a community separately.

The literature that has been reviewed (Dasgupta & Mäler, 1994; Duraiappah, 1996) reveals that the downward-spiral relationship between poverty and the environment is more pronounced in developing countries, and it has led to the rural poor being blamed for environmental degradation. South Africa's environmental policy development is not immune to this problem. However, this research study argues that there are other factors that should be considered in the degradation of the environment.

International research (Angelsen & Vainio, 1995; Ostrom, 1999; Duraiappah, 1998; Forsyth, *et al.* 1998, Leach, *et al.* 1997, Bhattacharya & Innes, 2005) on the relationship between poverty and environmental degradation has been conducted. However, there is limited literature on the subject in South Africa, particularly in the community of Maphophoma. There is therefore a need to explore and analyse the downward-spiral caused by the poverty-environment relationship, in the South African context.

This can be achieved by examining the unsuccessful development of irrigation infrastructure for the community of Maphophoma, and to recommend policy options that would mitigate or address these problems of poverty and environmental degradation.

1.4 Purpose Statement

The purpose of this study is to analyse and explore the implications of the downward-spiral relationship between poverty and the environment on policy development and the implementation thereof, with particular reference made to the unsuccessful development of the proposed irrigation infrastructure for the community of Maphophoma, in KwaZulu-Natal.

1.4.1 Research Question

Primary Question

The primary research question for this study is: “What is the relationship between poverty and environmental degradation in the community of Maphophoma, KwaZulu-Natal?”

Secondary Question

The primary research question is explored further by dividing it into the following secondary questions.

- i. Will development of the irrigation infrastructure for the rural community of Maphophoma lead to the degradation of a wetland?
- ii. Will protection of a wetland sustain poverty in the community of Maphophoma?

1.5 Delimitations of the Study

The delimitation of this research study is about what the study does not intend to do (Leedy & Ormrod, 2005). The downward-spiral relationship between poverty and the environment impacts many rural communities in KwaZulu-Natal. However, the study does not intend to cover all these rural communities in KwaZulu-Natal and will only focus on the community of Maphophoma.

The downward-spiral relationship between poverty and the environment is a broad theory, which has been the subject of much academic research (Angelsen & Vainio, 1995; Ostrom, 1999; Duraiappah, 1998; Forsyth, *et al.* 1998, Leach, *et al.* 1997, Bhattacharya & Innes, 2005).

Since the Brundtland report's (1987) publication, scholars have developed many dimensions to the downward-spiral relationship between poverty and the environment such as population growth; power; wealth; greed; trade policies; environmental entitlement; breakdown of traditional authority; social change and new urban aspirations; the immigration of stranger populations; intrusion of inappropriate state policies; and technological advancement as causes of environmental degradation (Leach, *et al.* 1997). However, this study limits itself to poverty as the cause and effect of the downward-spiral relationship between poverty and the environment.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Hart (1998) argues that a literature review involves an available selection of published and unpublished documents that contain information, ideas, data and evidence that are relevant to the study.

These documents are written from a particular perspective, in order to fulfil certain aims or to express certain views regarding the nature of the topic and how it is to be investigated (Hart, 1998). A literature review is an evaluation of these documents in relation to the research being executed.

This literature review has attempted to advance the understanding of the link between environment and poverty by focussing on a specific aspect of the environment, namely, the wetland. The literature will further investigate the contrasting relationship between poverty and the environment in different jurisdictions, through various case studies. The focus of the literature is the relationship between as well as the response of the rural poor to the environment.

2.2 Background and Discussion

Concern for environmental protection emerged in the 19th century, at a time when the world had been experiencing rapid industrialisation and urbanisation, which was meant to bring about development (Ramlogan, 2011). It, however, only gained traction at the United Nations Conference on Human Environment held in Stockholm, Sweden in 1972.

This increased traction in environmental protection coincided with a report that had been developed and published by the influential Club of Rome (1972), a group of eminent people, entitled '*Limits to Growth*'. The report identifies and analyses a wide range of issues that are considered to be limiting to development. Poverty and environmental degradation are identified and feature prominently in the report.

Scholarly work (Angelsen & Vainio, 1995; Ostrom, 1999; Duraiappah, 1998; Forsyth, *et al.* 1998, Dasgupta, 2003; Bhattacharya & Innes, 2005) cite poverty as the main cause of the

rural poor's over-utilisation of environmental resources, in an effort to improve and sustain their livelihoods. Studies by Angelsen & Vainio, 1995; Leach, Mearns & Scoons, 1997; and Ostrom, 1999 conclude that poverty is the main cause of environmental degradation, and the key to remedying the environmentally unsustainable behaviour of the rural poor is to address poverty.

Over the last 20 years, scholars such as Ostrom (1999) and Angelson and Vainio (1995) describe the relationship between poverty and the environment as a downward-spiral, in which poverty and the environment are interdependent. In this relationship the rural poor are victims as well as agents of environmental destruction.

2.3 Conceptual Framework

The conceptual framework is the part of the research study that reveals which interpretations of concepts and theories are the most valid and supported by evidence in the study (Badenhorst, 2010). Without knowledge of the terms used in the research report, it is difficult for a reader to evaluate the report. The conceptual framework further assists in simplifying the analysis without losing sight of the research problem. Badenhorst (2010:21) argues that "a conceptual framework is where the writer unpacks the key concepts used in the research and identifies the relationship between the concepts". The conceptual framework provides the basic outline for analysing data and drawing conclusions.

The definition of important concepts is the preferred method of constructing a conceptual framework. The rationale behind this method is the ability of the conceptual framework to serve as a network of interlinked concepts that provide a comprehensive understanding of a phenomenon (Badenhorst, 2010). Through the chosen conceptual framework pertinent concepts are identified, and these guide and support the research report. Leedy and Ormrod (2005) argue that to comprehend the full meaning of the problem, the study requires other information as well.

Both the researcher and those reading the research should ultimately have a clear understanding of every detail of the study. Therefore, the researcher must eliminate any possibility of misunderstanding by defining the terms.

The conceptual framework for the study is informed by the concepts described hereafter which the researcher has deemed as crucial to the study, namely: poverty; downward-spiral hypothesis; environment; wetland; and environmental degradation. These terms are defined in the context of the study.

2.3.1 Poverty

2.3.1.1 International Literature

Agrawal and Redford (2006) argue that the subject of poverty alleviation has enjoyed much attention among scholars, although less than the actual existence of poverty in society. Irrespective of the period, poverty continues to be a priority in policy development. Poverty affects human resource development, in particular education and skills development (The Presidency, 2008).

Duraiappah (1996) argues that poverty is a major cause of environmental degradation, and if policy makers want to address the environmental issues they must first address poverty. Broad (1994:812) describes this relationship as “fairly deterministic: if one is poor, then one degrades”. Therefore, measuring the extent and defining poverty of the rural poor accurately is an important variable in establishing the downward-spiral relationship between poverty and environmental degradation. It allows the study to fully determine the level of deprivation and the variables that make degradation of the environment inevitable. Therefore, poverty is an important policy consideration in the downward-spiral theory.

Sen (1981) argues that two questions must be asked for one to fully understand the nature and extent of poverty namely, who are the poor? and at what level is poverty defined? The literature over the years, in an attempt to address these questions, has referred to an abstract poverty line definition of minimum flow of real income or a bundle of ‘basic needs’ which may be quantified (Burki & Haq, 1981).

Often this approach is related to an indicator of ‘quality of life’ of the affected community, household or individual (Ajakaiye & Adeyeye, 2001). Sen (1977) and Adeyeye (1987) take a step further and argue that poverty must be seen as the inability of individuals to access resources necessary to sustain their livelihood.

Researchers, such as Ravallion, *et al.* (1991) and Chen & Ravallion (2004) have preferred the one-dollar-a-day measurement of the poverty lines amongst low-income countries. Chen and Ravallion (2004:7) argue that “aggregate poverty in the developing world is defined by perceptions of poverty found in the poorest countries”. However, approaches to measurement of poverty are constantly under review (Forsyth, Leach & Scoones, 1998).

Over the last two decades Forsyth, *et al.* (1998) have expanded on the World Bank’s one dimensional measurement of the level of poverty of a person who earns less than a dollar a day. Forsyth, *et al.* (1998:18) argue that “income-based definitions of poverty have been widely criticized as being too narrow, especially in the developing country context. The Human Development Index (HDI) is an important attempt to broaden the range of indicators while retaining the advantages of quantification and international comparability; it draws on a bundle of indicators referring to general standards of health, education, and wealth which may be used to indicate general levels of development.”

The shortcoming of the World Bank’s definition is that it does not take into account non-monetary variables that contribute to poverty such as living standards, access to proper sanitation, the composition of a household, child mortality, the number of schooling years, the protection of the environment, the lack of personal safety and the daily experience of humiliation (Ravallion, 1992; Ravallion, 1996; and Bourguignon & Chakravarty, 2002).

A narrow definition of poverty has a negative impact on the analysis of the downward-spiral relationship between poverty and the environment because it does not take into account that poverty is not a universal phenomenon, in any given society or community. A part of a society could be facing poverty even if the country is not, and likewise in developed countries where the majority of the citizens live above the dollar-a-day line, it does not mean that all citizens in those countries are self-sufficient.

Environmental protections and poverty policies need to acknowledge living standards, access to proper sanitation, the composition of a household, child mortality, the years of schooling, the protection of the environment, the lack of personal safety and the daily experience of humiliation rather than merely accepting a general view that poverty as the cause of environmental degradation.

Ravallion (1992, 1996) argues that poverty exists in any given society where one or more persons do not attain a certain level of material well-being that has been deemed to be the reasonable minimum by the standards of that society. Aliber (2002) maintains that the reasonable minimum standards of society refer to the quality of life experienced by a particular society, and is not necessarily related to the average personal income of members of that society. The major contributing factors to quality of life relate to access to services and infrastructure such as potable water, electricity, roads, less time spent collecting water; fuel; and wood, and facilitation of engagement in economic activities (Aliber, 2002).

The World Bank's definition of poverty is therefore among the factors that hinder the development and implementation of environmental protection strategies, which also include poverty policies that are context specific. It reinforces a narrow theory of the downward-spiral relationship between poverty and environmental protection.

2.3.1.2 South African Literature

The Presidency has developed an Anti-poverty strategy (Presidency, 2008) which seeks to end poverty by empowering individuals and communities to support themselves. The strategy has placed more emphasis on the ending of intergenerational poverty by improving the economic situation of rural households and provides agricultural support for rural families amongst others.

In recent years, policies to tackle poverty and other developmental problems in South Africa have been based on the National Development Plan – Vision 2030 (NPC, 2011).

The National Development Plan 2030 has laid out long-term developmental goals and perspectives against which a discussion document on the anti-poverty strategy for South Africa identifies rural development and agricultural support for families as an important component of the poverty alleviation strategy (Presidency, 2008).

South Africa has adopted a Multidimensional Measure to measure poverty which includes several factors that consider a person's experience of deprivation. These factors are poor health, lack of education, inadequate living standards, lack of income, disempowerment, lack of decent work, and the threat of violence (Statistics SA, 2011).

It is the researcher's argument that a combination of inaccessibility to natural resources and vulnerability of the rural poor due to the lack of basic needs should be regarded as appropriate measures of rural poverty. These measures would include a large portion of people who could easily be thrust into poverty when the natural resources they depend on to sustain their livelihoods are degraded (Duraiappah, 1998). Literature by Babier (1998) and Dasgupta (2003) show that an environmental protection policy cannot achieve its intended goal of protecting the environment outside the needs and aspirations of the rural poor. Babier (1998) further argues that the rural poor seldom accept their position in life and will circumvent environmental restrictions aimed at environmental protection in a desperate attempt to improve their livelihoods.

This study argues that an appropriate definition of poverty, which is context specific, will allow authorities to develop environmental protection policies which adopt less stringent environmental demands, particularly where the socio-economic priorities of poor communities are a concern.

2.3.2 Downward-Spiral Hypothesis

The downward-spiral hypothesis is a major concern of international development agencies and policy makers (Angelson & Vainio, 1995). This hypothesis argues that the poor are both agents and victims of environmental destruction (Broad, 1994; Duraiappah, 1998; and Ostrom, 1999). South Africa is not immune to this concern, particularly when its rural poor reside next to a threatened ecosystem such as a wetland.

The downward-spiral argument is based on two assumptions, firstly that poverty and environmental degradation co-exist; and secondly, that one cannot address environmental degradation without addressing poverty.

In the context of this study, the downward-spiral relationship between poverty and environmental degradation as argued by Brundtland (1987) is simplistic and weak. The theory ignores external factors that play an important role in the degradation of the environment. This leads to the unjustified assumption that the rural poor are responsible for environmental degradation. It further ignores the fact that the environment meets the basic needs of the rural poor who are dependent on the environment.

There are other motivating factors that cause the rural poor to engage in unsustainable activities, which are discussed hereafter.

2.3.3 Institutions

Institutions are central to the analytical framework. Institutions mediate and control access to the environment (Leach, *et al.*, 2004). Ostrom (1986) and Bromley (1989) view institutions as a set of rules. The views of the latter scholars help to distinguish institutions from organisations. Leach, *et al.* (2004:26) contest these views and argue that “institutions are a regularised pattern of behaviour that emerge from underlying structures or sets of rules in use”. Leach, *et al.* (2004) argue that organisations are a set of players or group of individuals bound together by some common purpose to achieve an objective. Therefore, a regularised practice, performed over time, eventually constitutes an institution.

Institutions can be both formal and informal. Formal institutions require enforcement by an external, third party through a set of rules or laws. Informal institutions are enforced and upheld through mutual agreement within a society. Our analysis of the downward-spiral hypothesis relationship between poverty and the environment leads to the conclusion that institutions are a regularised set of behaviours that emerge from underlying structures or set of rules (Leach, *et al.*, 2004).

This is an important tool in the analysis as it provides an understanding of the underlying causes of the downward-spiral relationship between poverty and the environment as opposed to blaming the rural poor for environmental degradation. In particular, how different social actors gain access to, use and exercise control over the environment as a resource.

2.4 Analytical Framework for the Literature Review

There are a number of causality relationships which exist between poverty and environmental degradation. The literature review has identified the following four orthodox frameworks that contribute to the downward-spiral relationship between poverty and the environment: short-term horizon; the lack of or low income; the lack of tenure; and economic growth (Angelson & Vainio, 1995).

2.4.1 Short-term Horizon

The environmentally unsustainable behaviour of the rural poor has been cited as a cause of the downward-spiral relationship between poverty and the environment. The argument is that the rural poor are concerned with short-term survival needs, and this condition provides little scope for taking long-term environmental impacts into account (Angelson & Vainio, 1995). The rural poor with insufficient meals or no meals at all, entertain little long-term environmental thinking (Babier, 1998).

Studies that have been undertaken in other jurisdictions show empirically that the rural poor in developing countries do rely on a wide range of natural resources and ecological services to sustain their livelihoods (Cavendish, 1996; Cavendish, 1998; Cavendish, 1999; Cavendish 2000; Bhattacharya & Innes, 2012; Dasgupta, 2003; Shiva & Verma, 2002). These studies further show that poverty is the main cause of over-reliance on natural resources by the rural poor.

In many parts of Asia, small and poor farmers have used animal manure to replenish lands (Duraiappah, 1996). However, as the wood fuel supplies began to diminish, animal manure had been increasingly used as a fuel substitute.

The impact has been that poor farmers have been forced to choose between the immediate demands of fuel for cooking and heating or fertilising the land. In instances like these, immediate and urgent needs are always satisfied at the expense of the environment.

However, the mentioned studies fail to address a fundamental policy gap presented by the downward-spiral relationship between poverty and the environment namely, to make the environment benefit the rural poor (Babier, 1998). These studies have led policy developers, over the past two decades, to take the orthodox position on environmental management that addressing environmental degradation must inform efforts to eradicate poverty, instead of the other way around.

This orthodox position has led to the failure of policy to recognise the marginalised and rural poor, encouraging these communities to circumvent environmental restrictions aimed at environmental protection out of desperation to improve their quality of life.

This behaviour by the rural poor is unlikely to change unless their basic needs – to be self-reliant as well as ecologically sustainable – are given due consideration (Babier, 1998).

The implementation of an environmental protection policy cannot be achieved outside the needs and aspirations that the rural poor have to achieve a higher quality of life. The environment must benefit the rural poor, not the rural poor benefit the environment (Babier, 1998).

2.4.2 The Lack of or Low Income

A lack of or low income is another factor that forces the rural poor to use more natural resources to meet their basic needs. Angelson and Vainio (1995) argue that the extent of poverty is reflected in an evaluation of the present livelihood considerations versus future livelihood considerations. A lack of or low income renders the rural poor with fewer options for investments that could enhance long-term productivity of the resource base (Angelson and Vainio, 1995).

The rural poor are aware when their activities lead to environmental degradation, as they are first in line to suffer the consequences of their actions (Broad, 1994 and Dasgupta, 2003). Their behaviour is driven by the lack of alternative resources to sustain their livelihoods. The experience of the affluent parts of society is different. This part of society, unlike the rural poor, has something else to do or somewhere else to go, which means that there are alternatives due to the availability of resources (Angelson and Vainio, 1995). To the rural poor whether or not there are substitutes for a particular resource is not entirely a technological matter, nor a mere matter of consumer taste (Dasgupta, 2003). The issue is that the rural poor have limited options to access available resources due to a lack of or low income.

Migration to better areas for the rural poor is not an option, as it does not offer them any relief from poverty because they are unable to find employment. Dasgupta (2003) refers to this phenomenon as the poverty trap. The poverty trap manifests itself as the rural poor cannot access land titles because land is costly and the poor can rarely afford to obtain titles to own land (Angelson & Vainio, 1995). The lack of or low income does have a direct impact on the increased use of resources by the rural poor.

However, Angelson and Vainio (1995) caution that access to higher income does not translate to conservation of the environment. They argue that insecure property rights make investment into the environment riskier. The collective good nature of many environmental resources reduces individual incentives for investments due to the problems relating to free or easy achievement of a collective resource. Furthermore, higher income can also be used for capital investments that increase pressure on natural resources.

When investments are made to enhance the long-term productivity of a resource base through subsidies, they are often misdirected. Richer farmers receive the majority of the subsidised inputs and the rural poor suffer from the negative externalities of production (Viaano, 1996). Viaano (1996) argues that the removal of such subsidies has in many cases helped to improve the environment and raised the living standards of the poor.

Concurrently, the government has saved funds which could be used in other ways for the benefit of the poor.

2.4.3 The Lack of Tenure

Security of tenure is an important dimension that increases poverty among the rural poor. Security of tenure informs investments made to the land and the ability of the rural poor to enforce rights on land. The existence or non-existence of secure land tenure systems act as primary reason for the rural poor to cultivate land excessively, to the point of exhaustion. The driver behind this conduct is that the rural poor have no vested interest in preserving an asset which they do not own (Mink & Mundial, 1993; and Duraiappah, 1996).

However, Mendelsohn, Nordhaus and Shaw (1994) take a different approach and argue that the absence of land tenure does not encourage degradation activities by the poor people. Mendelsohn, *et al.* (1994) point out that the knowledge that land can be appropriated at any time encourages the rural poor to engage in unsustainable activities, which lead to environmental degradation. The provision of secure property rights to land must be used as an instrument to encourage the rural poor to undertake sustainable activities (Holden, *et al.*, 1996).

2.4.4 Economic Growth

The growth theorists (Solow, 1955; Beckerman, 1992; Grossman & Krueger, 1995; and Stern, 2003) argue that economic growth allows poor communities to meet their basic needs, to be self-reliant and to be ecologically sustainable. Economic growth has been cited as a tool for addressing poverty and by extension break the downward-spiral environmental degradation. The point here is that policies that promote economic growth often benefit the environment and by extension enable the rural poor to meet and enhance their basic needs.

These scholars identify economic growth as a tool that eventually reduces poverty, and enhances environmental conservation.

The argument is that natural resources that are depleted as a result of economic growth could be restored through technological advancement.

The depletion of resources is seen as an event not a catastrophe because technological advancement could restore the environment (Dollar & Kraay, 2000; Javanovic, 2000).

The growth theorists argue that the downward-spiral relationship between poverty and the environment is a result of weak regulatory frameworks, limited revenue collection and poor environmental awareness within the society. Economic growth changes the structure of society from poverty to affluence and environmental protection takes priority over economic growth (Beckerman, 1992; Grossman & Krueger, 1995; and Stern, 2003). As the majority of the rural poor are lifted up out of poverty and become more affluent, they demand stricter environmental regulatory frameworks to protect the environment. This places authorities, through well-established institutions, in a good financial position with a larger tax collection base to implement, monitor and enforce compliance with the environmental legislative framework (Kiström & Riera, 1996).

However, this argument ignores the fact that the environment consists of degradable resources, and one cannot enforce or protect something that no longer exists. It further ignores other important factors that exist in the downward-spiral relationship between poverty and the environment, and that economic growth does not often translate to improvement in the livelihoods of the rural poor. Even if a positive spin-off of economic growth trickles down to the rural poor, the likely impact is that agricultural land or forests

become depleted due to rapid industrialisation (Neumayer, 2003; Leach, *et al.*, 2004; & Dinda, 2004).

Leach, *et al.* (2004) cite a case from Aravalli Hills in Rajasthan, India. The study reveals that the region had undisturbed, green forest with a flourishing wildlife and abundant rainfall.

However, new market opportunities and changes in Rajasthan State policies, associated with post-independence land reforms, and growing populations resulted in the deforestation of large areas of hillside for commercial wood, fuel and timber sale. This deforestation has led to a decline in rainfall in Rajasthan State.

Ekoko (1996) refers to a study done in Brazil which found that, the export of commercial crops or cow meat had become a major cause of deforestation.

In his own study, Ekoko (1996) through studying the behaviour of the affluent Bamilekes, a community situated in the western province of Cameroon, found that economic growth is an important dimension that leads to environmental degradation.

Ekoko (1996:140) explains that “the Bamilekes have both the most fertile soils and the best infrastructure as far as roads, health, agriculture, water access and education are concerned”. The Bamilekes practise intercropping and in some places also agro-forestry. They produce enough crops to meet their needs and the surplus is sold in other regions and cities. Ekoko (1996) further explains that between 1971 and 1986 the Bamilekes increased their plantations and production of robusta coffee from 68% to 87% due to the international demand for this variety of coffee. The increasing demand led to the acceleration of the depletion of the primary forest for economic reasons. As a result the land occupied by the Bamilekes is almost completely destroyed by deforestation.

In some instances economic growth may act as an important catalyst in breaking the environment-poverty downward-spiral relationship; however this must not be a universally accepted argument (Forsyth, *et al.* 1998).

2.5 Key Lessons from the Literature Review

2.5.1 The Rural Poor Cannot be Blamed for Environmental Degradation

The downward-spiral relationship between poverty and the environment does not follow a linear process in all instances, and in circumstances wherein it occurs it must be analysed rather than be accepted as the rule. The growing body of literature shows that the rural poor need the environment to be protected because of the value it adds to their lives (Naess, 1989; Broad, 1994; Angelson & Vainio, 1995; Cavendish, 1996; Cavendish, 1998; Cavendish 2000; Rees, 1998; Roseland, 1998; and Dasgupta, 2003). This position is contrary to the literature published earlier, after the Brundtland report.

Literature over the years has placed blame for environmental degradation entirely on the rural poor (Dasgupta, 2003). However, there has been an increase in literature across various geographical jurisdictions that argues that the rural poor cannot be blamed for environmental degradation (Bhattacharya & Innes, 2012). Shifting the blame onto the rural poor fails to recognise that the rural poor do care about the sustainability of the environment. The following case studies argue that the rural poor do not degrade the environment but, in fact, protect it.

The downward-spiral relationship between poverty and environmental degradation has been challenged in case studies in Northern Thailand, the Philippines, Cameroon, Brazil and Côte d'Ivoire (Angelson and Vainio, 1995).

Forsyth (1996) in his study of farmers in northern Thailand, who farm on steep agricultural land slopes, found that the farmers were not the cause of environmental degradation. He argues that these farmers realised that increased cultivation of steep slopes leads to soil erosion and as a result they avoided cultivating on the steeper slopes. The study further found that much sedimentation from the hills to the lowlands was a result of naturally occurring gullies which are characteristic of granite landscapes.

The study that had been undertaken by Broad (1994) in San Fernando, Philippines, of 33 000 poor farmers who grew rain-fed rice and maize reveals that this community does not have secure property rights (a title) to the land but they have managed to live off of it for decades without degrading the environment.

However, in the mid-1980s, they witnessed drops in the water tables and erosion of topsoil which led to the harvests being greatly affected. Broad (1994) argues that harvests dropped by 50%. Floods, which had not occurred earlier, started to occur and farmers close to rivers lost their land due to erosion.

Broad (1994) finds that the reason for this environmental decay is not the farmers' poverty but the action of outsiders. The loggers treated their concessions with a short-term profit motive and effectively turned the forest into an open access resource. The poor farmers paid a very high price because the loggers had not taken into account the effect of their actions on the farmers. Broad (1994) concludes that in certain instances protection of the environment may be demanded by the poor.

Ekoko (1996) arrives at a similar conclusion in the case study of the Bakas community in Cameroon. This community's livelihood had survived because of both intensive and extensive agricultural practices associated with tree planting. The Bakas community use firewood for cooking meals.

The Bakas community, based on the basic needs model of poverty measurement (Ravillon, 1996), is the poorest community in Cameroon. It has little access to healthcare and child vaccinations are not provided. Similarly, the level of literacy is low and education is of a poor quality. Ekoko (1996) further finds, in the same study that in 35 years only one Baka member has managed to complete primary and secondary school. The Bakas do not have access to safe drinking water and they do not possess any belongings or houses; they live in temporary huts made of shrubs and leaves.

However, despite their state of deprivation, the Bakas do not cause deforestation. Eighty-five per cent of the Bakas who had been interviewed, have never engaged in any deforestation activities. They use 15% of the forest to build their shelters, and depend on the forest to meet their basic needs for food and health (Ekoko, 1996).

The Bakas do not consider the forest as merely a means of survival or a source of their livelihood; their perception of the forest runs deeper.

Ekoko (1996:4) reports that when the Bakas had been asked about their relationships with the forest and why they oppose deforestation, the common reply had been “because it is our life”. Even those involved in the project of sedentary settlement gave the same reply.

Ekoko (1996) further contrasts the behaviour of the Bakas with that of the more affluent Bamilekes situated in the western province of Cameroon. According to Ekoko (1996:4), “between 1971 and 1986, the Bamilekes increased their plantations and production of robusta coffee from 68% to 87% because of the international demand for this variety of coffee. At the same time there had been a stagnation in the cultivation of arabica coffee, despite the high demand. This latter variety of coffee is grown in highlands of which there is less land available. If there were more highlands covered with forests, deforestation would most likely have taken place. As a result, the land occupied by the Bamilekes is almost completely depleted due to deforestation. The West Cameroonian case shows that the clearance of primary forest occurs for economic reasons and not necessarily for meeting basic needs or tackling poverty.

Leach, Mearns and Scoons (1997) undertook a landscape study in the northern forest-savannah transition zone in the Wenchi District in Ghana.

The northern forest-savanna transition zone is characterised by patches of savannah in the forest. Leach, et al. (1997) argues that during the pre-colonial times, the area had been entirely covered by natural vegetation. The surrounding communities maintained the vegetation through a collective long rotational farming style. This practice preserved the forest root mart of forest species. They further regulated forest product collection and fire setting. Recently, changes have occurred due to the increased settlement in the north of the area. The new migrants brought destructive farming practices, such as charcoal burning for commercial purposes that have hastened deforestation, with them (Leach, *et al.* 1997).

The above case studies show that the poor are dependent on the environment and have often maintained the environment. They are further able to maintain a good balance between their short-term needs to improve their livelihoods and the environment’s long-term health.

2.5.2 The Environment Must be Understood as a Basic Need

The rural poor have always lived in harmony with nature (Leach, *et al.*, 1997). Leach, *et al.* (1997) attribute this harmony to low population levels which resulted in little disturbance of the environment. Community institutions, including ritual and traditional authority, also regulated resource usage so that the society and the environment survived in harmony. But this harmony has been disrupted, leading to degradation. Leach, *et al.* (1997) argue that factors such as population growth, technological change, the breakdown of traditional authority, commercialisation, modernity, social change with new urban aspirations, the immigration of stranger populations, and the intrusion of inappropriate State policies are the causes of environmental degradation.

Dasgupta and Mäler (1994) and Bhattacharya and Innes (2005) argue that much of the environmental degradation in developing countries is gradual and almost invisible. These scholars (Dasgupta & Maler, 1994; and Bhattacharya & Innes, 2005) argue that the rural poor's inability to access employment opportunities, financial credit and capital markets are the main contributing factors to environmental degradation. It is from this point of view that Killeen and Khan (2002) argue that the environment is a basic need and its absence or denial constitutes absolute poverty.

As a basic need the environment must inform policies that are aimed at alleviating the poverty of the rural poor. To achieve this objective, environmental policy must start from a detailed understanding of who the rural poor are and the conditions under which they live. This understanding must include strategies that the rural poor use to sustain their livelihoods.

The understanding of the environment as a basic need must be the focal point of poverty alleviation in policy development. The lack of understanding this has led to policy developments that draw conclusions from narrow observations from a limited number of factors in a complex issue. The literature argues that due to the dependency of the poor on the environment the environment becomes a basic need (Killeen & Khan, 2002). Such an understanding will mitigate the short-term thinking of the rural poor.

2.6 Conclusion

The environment, because of its benefits to the rural poor, acts as a resource. It should be at the focal point of strategies aimed at eradicating poverty. The environment allows the rural poor to meet their basic needs, to be self-reliant and to be ecologically sustainable (Babier, 1998). For the rural poor to be ecologically sustainable is an important consideration as it allows them to have options and continually diversify and alter their uses of available natural resources as environmental conditions change.

The literature has shown that although the rural poor have limited resources, they still have considerable capacity to adapt their practices by either mitigating the environmental impact on their livelihoods or by rehabilitating the degraded resources (Broad, 1994; and Ekoko, 1996). Broad (1994) and Ekoko (1996) further reveal that proper policies and programmes are required to support the rural poor in coping better with environmental degradation and poverty. The downward-spiral argument is too simplistic to ascribe poverty as the cause of environmental degradation.

CHAPTER 3

3.1 RESEARCH METHODOLOGY

This section outlines the approach that has been used to execute the study. The research methodology discusses the preferred research approach used for the study, followed by a description of the research instruments, and lastly the research design. The research methodology also covers issues relating to data collection, presentation and analysis as well as reliability and validation.

3.2 RESEARCH APPROACH

Research approaches detail the plans and procedures for the research study and span the steps from broad assumptions to detailed methods of data collection, analysis and interpretation (Cresswell, 2013). For research studies, there are three approaches: qualitative; quantitative; and mixed methods. Cresswell (2013) argues that the qualitative approach is best used for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. Through this approach the researcher collects data from the participants and data analysis is undertaken inductively; building particulars and general themes, and the researcher interprets the meaning of the data. The final report would therefore have a flexible structure (Cresswell, 2013). The quantitative research approach tests objective theories by examining the relationship among variables. The mixed method approach involves collecting both qualitative and quantitative data.

This research study will focus on building familiarity and stimulating debate on the issues pertinent to the downward-spiral relationship between poverty and the environment – therefore a qualitative research approach has been adopted. Christensen, Johnson and Turner (2015:377) define the qualitative case study research approach as “the intensive and detailed description and analysis of one or more cases”. Qualitative research methods are designed to understand people and what they say or do, which is pivotal to this study (Myers, 2009).

This study has focussed on a local community and there is some interest in obtaining results that are broadly generalisable as in the quantitative research methodology (Christensen, *et al.*, 2015). This study has investigated and explored the behaviour of the rural poor and the impact they have on the environment, as well as the response of the authorities. As a result, the study has relied primarily on the collection of empirical, qualitative data (Christensen, *et al.*, 2015). Due to this research approach the downward-spiral relationship between poverty and the environment as a chosen theory has been studied using a case study of the unsuccessful development of the irrigation infrastructural project for the community of Maphophoma. These considerations have highlighted the appropriateness of the qualitative research approach for this study.

3.3 Research Instruments

This is a qualitative research study and the one-on-one in-depth interview has been selected as the preferred research instrument for collecting data. Boyce and Neale (2006:3) argue that “in-depth interviewing is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation”. Myers (2009) further argues that in-depth interviews are an important instrument for collecting data, particularly in qualitative research.

The researcher prefers in-depth interviews because they provide a more relaxed atmosphere in which to collect data, and the respondents are more at ease when having a conversation with the researcher about the study (Boyce & Neale, 2006). Through the one-on-one in-depth interview research instrument, the researcher has obtained rich data from the respondents who occupy various positions and play an active part in the proposed irrigation infrastructure project. In-depth interviews further ensure the collection of relevant data to the study and enable respondents to provide honest accounts of their experiences and attitudes in a consistent manner towards the study (Christening, *et al.*, 2015).

The interview questions that had been prepared for the respondents are open-ended. Respondents had been advised before the interviews started that the duration of the interviews would be approximately 45 to 60 minutes per person.

The interviews were conducted in two languages, IsiZulu and English. The reason for this is that some of the respondents, particularly members of the community could not communicate in English, due to the high illiteracy rate.

3.4. Sampling

This research study has followed a qualitative research approach and in-depth interviews with the respondents are the chosen research instrument. As a result, the study has required that the researcher physically interacts with the respondents. However, it had been challenging to study all the participants in the proposed environment and therefore sampling became important for the study.

Christensen, *et al.* (2015:162) argue that “sampling refers to drawing elements from a population to obtain a sample”. The sample has been selected with the goal of deepening the researcher’s understanding about larger processes and the downward-spiral relationship between poverty and the environment (Neuman, 2011). The aim of a sample in this study has been to obtain a representative sample, which will enable the study to draw a reliable conclusion and to make workable recommendations for policy development.

Neuman (2011) argues that sampling allows a researcher to examine the data in detail and learn from the sample of a larger set of cases. Sampling has been an important tool in this study as the study participants are members of the community, government and non-governmental organisations. The selected individuals therefore represent a larger group of the interested and affected individuals (Neuman, 2011). Familiarity with the case of the unsuccessful irrigation infrastructure project has determined the selection criteria of the respondents.

Efforts have been made to ensure that a representative sample is used. Its relevance to the research topic rather than representativeness determines the sample (Neuman, 2011). The equal probability selection method has been used; individual respondents had equal opportunity of being selected to participate as part of the sample.

The reason for obtaining a sample has been to obtain clear insight and understanding about issues or the relationship that exists in the irrigation project.

The sample consists of interested and affected parties of the project: ordinary members of the community of Maphophoma; one respondent from Ezemvelo Wildlife; one respondent from the Agricultural Division of the KwaZulu-Natal Department of Agriculture and Environmental Affairs; and Department of Environmental Affairs, whose main function is the development of policy aimed at wetland protection and rehabilitation.

Purposive sampling has been used to select relevant respondents in order for the researcher to collect data which would enable the researcher to assess the impact of the downward - spiral relationship for the rural community of Maphophoma.

3.4.1 Purposive Sampling

Punch (2011) argues that purposive sampling allows the researcher to choose participants in a deliberate way – with purpose in mind. Purposive sampling has been chosen for this study as the selected sample for the study has been selected based on knowledge, experience and an intimate knowledge of the project.

Purposive sampling has allowed the researcher to select respondents from the members of the community on the basis of their familiarity and intimate knowledge of the irrigation project. The 'number of years' in the community has been an important criterion for the selection of a member of the community as a preferred respondent. The criterion required that the respondent be a part of the community of Maphophoma for at least a generation. This is an important criterion because the irrigation project began in the early 1990s. Therefore, the respondent should be someone who has been involved since the beginning of the project. Purposive sampling has allowed the researcher to draw information from respondents who have intimate knowledge of the area as well as the project.

3.5 Research Design

The purpose of the research design is to outline, plan or strategies the specifics of the procedure to be used in addressing the research question (Christensen, *et al.*, 2015). The research design describes data gathering techniques, validity and reliability of the data, ethical considerations, and data presentation and analysis.

It further highlights the reasons that have informed this research study. Neuman (2011:93) argues that “Science is a human creation. It is not something handed down like sacred text written in stone”. Research designs are “the plan for [an] entire qualitative research project” (Myers, 2009:19). This research design allows the researcher to study social reality and use the strongest design available (Neuman, 2011; and Christensen, *et al.*, 2015).

3.6 Data Collection

Data collection is a technique used to collect empirical research data. It enables the researcher to obtain information on people’s actions and events that affect their social life (Neuman, 2011). It further contextualises the life history of the data collected as well as aid the causal trajectory that has influenced the case study (Christening, *et al.*, 2015). This has been the most important part of the research study because through the process of data collection, a theoretical framework that informs this study has emerged. The data that has been collected is both primary and secondary data.

3.6.1 Primary Data

Primary data has been collected through unstructured, undirected, in-depth interviews with the respondents. This has been the most important instrument for collecting data, especially as it is a qualitative research study (Christensen, *et al.*, 2015). This method of collecting data is preferred because it has enabled the researcher to obtain rich data from respondents in various roles and institutions. It has further allowed the researcher to interact with the respondents by asking questions, listening to responses, expressing interest to respondents’ views, and recording the responses.

The in-depth interviews

Boyce and Neale (2006:3) argue that in-depth interviews as a chosen method of collecting primary data “involve[s] conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation.” Through the use of one-on-one in-depth interviews, the researcher has obtained rich data from respondents who occupy various positions and who had played an active part in the irrigation infrastructure project. Myers (2009) argues that in-depth interviews are an important instrument for collecting data, particularly in qualitative research.

The in-depth research interviews are naturally long; therefore, respondents had been warned about the duration of the interview before the interviews commenced. The interviews were conducted in two languages, IsiZulu and English. The reason for this approach is that some of the respondents were older members of the community, and could not communicate in English. IsiZulu is the primary language used during the interviews, which ensured that respondents remained interested in the interview and it minimised any chances for conflict with the researcher. Efforts had been made to ensure that the interview focussed on the respondents' perspectives and experiences. Interruptions during the interviews were avoided at all costs.

To stay close to the respondents' experiences and to build a solid rapport with them, interview questions had been developed and posed to them using concrete examples. A friendly conversation style had been used as a stimulus to the interviews with respondents. This approach yielded positive results as trust had been established and this in turn encouraged collaboration from the respondents. It further enabled the interviewer to control the pace (Christening, *et al.*, 2015). This approach has ensured collection of relevant data and enabled respondents to provide their honest experiences and attitudes in a consistent manner towards the study.

In-depth research interviews have allowed the researcher to gain credible insights without being limited by the nature of the interviews. The interviews prevented respondents from providing inaccurate information. As the interviewer, the researcher had been able to record both verbal and non-verbal (body language) communication.

The non-verbal communication had provided information on the respondents' level of discomfort, emotions and behaviour during the interviews.

The information obtained from participants has not been used in a numerical form, as in the quantitative research methodology, as the main consideration has been relevance of data to the study. Adequacy of the study informed the amount of data collected, rather than the number of subjects as in quantitative research.

3.6.2 Secondary Data

Secondary data had been sourced from journals, articles and books and has been used to fill in gaps that arose during the in-depth interviews. The main objective of using secondary data in the study has been to gain valuable insights to the identified research problem. Secondary data refers to the data that has been collected from other sources, which is useful to the study (Boyce & Neale, 2006). The secondary data enhances the meaning of the responses in the primary data. It allows the study to develop a broader understanding of the underlying factors that have informed the theoretical framework, the downward-spiral relationship between poverty and the environment. A process of content analysis of the existing information on the chosen theoretical framework had been undertaken, which included but had not been limited to conference reports, information from both print and electronic media reports, and other published material relevant to the study.

3.7 Data Analysis

It is not sufficient to collect data for the study; data should be analysed. The qualitative analysis method has allowed the researcher to develop a theoretical understanding of the data, and the theoretical framework has not been imposed by the researcher but arose from the data (Cumberbatch, *et al.*, 2004). This has allowed the researcher to understand the respondents' insider-views and feelings of the research problem, as an objective outsider. The researcher's understanding has been deepened through the research instrument used in the study which has been less structured, thereby enabling the research to evolve throughout the process of data collection. Myers (2009) emphasises that qualitative research allows the researcher to see and understand the social and cultural context within which decisions and actions take place.

The method of agreement had been used to find out what is common among the respondents. The method of agreement is preferred and used because it focusses attention on what is common across the responses from respondents (Neuman, 2011). This method proceeds by way of elimination.

Findings had been compared with the chosen theoretical framework. The data had been analysed with the goal of building on the existing downward-spiral theory literature and developing a picture of social life and stimulating a better understanding of this phenomena.

Data analysis for the study followed two processes: evaluating the quality of the data; and organising the evidence (Christening, *et al.*, 2015).

3.7.1 Evaluating the Quality of the Data

The process of evaluating the quality of the data began when the primary and secondary data were being gathered during in-depth interviews with the respondents and from journals and books. Neuman (2011:507) argues that “to analyse data means systematically to organize, integrate, and examine; as we do this, we search for patterns and relationships among the specific details”. Data analysis improves the understanding, expands theoretical framework and advances knowledge.

3.7.2 Organising Evidence

Data analysis for the study has been based on the following question: how relevant is the evidence emerging from the research questions and the chosen theoretical framework? Through data analysis the study addressed issues such as the implicit conceptual framework, particular details, and factual statements on which there is agreement (Neuman, 2011).

In this study, data had been prepared for analysis by organising documents by their level of importance to the study. This process began with noting and eliminating the low-level general themes, which do not address the chosen theoretical framework. Data obtained from the interviews has been organised into conceptual categories to create themes.

3.8 Data Validation and Reliability

It has always been the intention of the study to provide theoretical claims that are plausible; not only possible claims but exact accounts of the one truth in the world (Neuman, 2011).

In this regard, validation and reliability of data are fundamental components of a study, as a study that is not based on validated and reliable data cannot be trusted (Christening, *et al.*,

2015). The integrity of a study rests on truthfulness, credibility and believability (Neuman, 2011).

Brink, Van der Walt and Van Rensburg (1996) argue that reliability in a qualitative study refers to the dependability and conformability of the data. Dependability places emphasis on the context within which the study is conducted. Conformability refers to the degree to which results could be confirmed or corroborated by others.

Validation and reliability are important considerations of the study, particularly in a study that involves a community that has felt negatively affected by a decision taken by the authorities, such as the refusal of the development of the irrigation infrastructure in favour of protecting the wetland. Neuman (2011:208) defines reliability “as dependability or consistency”. Neuman (2011:208) argues that “validity suggests truthfulness”. Through a process of validation and ensuring the reliability of sources, the researcher has been able to discard data that does not add value to the study.

3.8.1 Methods of Data Validation

Johnson (1997) argues that there are three types of validation within qualitative research: descriptive validity; interpretive validity; and theoretical validity. Johnson (1997) explains that descriptive validity refers to the actual accuracy of the account as reported by the researcher in a qualitative study. Interpretive validity refers to the degree to which the participants’ viewpoints, thoughts, intentions and experiences are accurately understood and reported by the researcher. Theoretical validity refers to the theory or theoretical explanations developed from a research study and the degree to which it fits and is therefore credible and defensible. For this study, the researcher has preferred descriptive and interpretive validity as methods of data validation (Christening, *et al.*, 2015).

Descriptive validity and interpretive validity

Descriptive validity has allowed the researcher to ensure that the meanings of events are as accurate and factual as possible. Interpretive validity has also been used as a tool – feedback has been requested from the respondents on the interviews. Upon examination of the responses it became apparent that there is an agreement between the respondents’ responses and the interpretation by the researcher (Christening, *et al.*, 2015).

The method of agreement has been a useful tool in this regard, as it has focussed on what is common across all respondents' responses (Neuman, 2011). A process elimination of those responses that had been unreliable and cannot be verified has been conducted.

There had been different interpretations among the respondents about the purpose of this study. For the greater part, many hoped that the interview would provide employment opportunities for them. As a result, a message needed to be communicated to the traditional leader that the proposed interviews were meant for academic research purposes and that it would not generate income or employment opportunities for them.

Some respondents had been hesitant to share sensitive information despite being assured of confidentiality. They were informed that no names would be used in the research, in an effort to protect their identities. The ability to communicate in their home language had been a positive contributing factor to the interview and it created a certain level of trust with the respondents.

A process test and retest of the validity of responses with a view to establishing consistency within the responses was conducted. This process was undertaken by revising the responses given to the questions. The responses were sometimes long and, at times, not relevant to the research questions, particularly those from members of the community. At this stage, the emphasis has been on the processing of data in line with the research questions and research problem.

The method of agreement has been a useful tool in this regard, as it has focussed on what is common throughout the responses from the respondents (Neuman, 2011). The method proceeded by way of elimination of those responses that could not be verified. Findings have been compared with the chosen theoretical framework.

3.8 Limitations

This study has been carefully conducted, however it has had limitations. The data collected is local and particular, therefore it is difficult to generalise and apply to other areas. By its nature qualitative research is researcher biased, meaning that the researcher is unable to remove his or her feelings from the study (Christening, *et al.*, 2015).

However, this limitation has been mitigated through the constant reviewing of any bias that might arise from the researcher during the study. Two methods had been used in this regard, descriptive validity and interpretive validity (Christening, *et al.*, 2015). Descriptive validity shows in the report whether the researcher got the facts right (Burke, 1997). It is about the factual accuracy of the account that is reported.

Interpretive validity has also been used as a tool, through which feedback on the interviews had been requested from the respondents. Upon examination of the responses it became apparent that there had been constant agreement between the respondents' responses and the interpretation by the researcher (Christening, *et al.*, 2015). In the event that a selected individual had been available for the interview, another suitable and experienced individual had been asked to participate.

Cost had been a limitation with regard to the selected method of data collection as respondents are based in KwaZulu-Natal. However, the travelling costs of the researcher had been budgeted for. No additional people were involved in the research which made the costs manageable. The interviews had been time-consuming; however, sufficient time was allocated and the selected respondents availed themselves for the interviews on time.

3.9 Ethical Considerations

The study involved respondents whose positions were highly visible; therefore, the researcher had to assure them that their rights would be safeguarded and the study adhered to the ethics standards for social research (Neuman, 2011). Upholding the respondents' rights to confidentiality and privacy has been a central consideration in the research report. To retrieve accurate and dependable data from the respondents the privacy and identity of the participants needed to be protected (Trochim, 2001).

The study involved community members which meant that verbal permission was sought and received from the leader of the community to conduct the study.

At the beginning of the one-on-one interviews, respondents had been informed of the purpose of the research, and had been requested to sign a consent form as formal agreement to participating in the study.

The template of the consent form has been attached as an appendix to this report. In addition, the researcher had assured the respondents that the information they provide in the study is strictly confidential, and that anonymity is guaranteed. The respondents were further informed that none of their personal details will be mentioned in the report, if they did not specifically grant permission for it to be used. The respondents were further informed that raw data would be kept in a locker for a period of three years and no one would have to access the data except the researcher. Furthermore, privacy was ensured as the interviews with respondents were conducted in secluded places.

CHAPTER 4: PRESENTATION OF DATA

4.1 Introduction

The objective of this chapter is to present pertinent findings that have emerged from the answers to the interview questions. In order to realise the objectives of the study, data has been collected through both primary and secondary sources.

4.2 Profile of Data Sources

The study was conducted in a rural community with a high poverty rate (Buk'ndalo and Associates, 2008). A total of ten respondents had been interviewed. The targeted respondents for the study were members of the community of Maphophoma, one respondent from Ezemvelo Wildlife, one respondent from the Agricultural Division of the KwaZulu-Natal Department of Agriculture and Environmental Affairs, as well as one respondent from the Department of Environmental Affairs, whose main function it is to develop a policy aimed at wetland protection and rehabilitation. The views of the members of the community have been clustered together.

4.2.1 Selection Process of the Respondents

The main considerations for the selection of the respondents had been the expertise on issues pertaining to the importance and the impact of wetlands in the preservation of the ecosystem, and intimate knowledge of the project.

The table below depicts the number of years each respondent has lived as a resident of Maphophoma, which ranges between seven and thirty-four years. It further tables the number of years of experience other respondents have in the area of environmental management policy, which ranges from five to nine years.

The breakdown of the respondents as well as their respective designations are tabled hereafter.

Table 1: Demographics of Respondents

Respondent	Gender	Race	Designation	Number of years as a resident of Maphophoma
Respondent 1	Male	Black	Member of the community	34 years
Respondent 2	Male	Black	Member of the community	27 years
Respondent 3	Female	Black	Member of the community	10 years
Respondent 4	Female	Black	Member of the community	8 years
Respondent 5	Male	Black	Member of the community	30 years
Respondent 6	Female	Black	Member of the community	27 years
Respondent 7	Female	Black	Provincial Government Official responsible for implementation of the environmental protection policy	7 years
Respondent 8	Male	Black	Department of Environmental Affairs	5 years
Respondent 9	Female	Black	Agricultural Division of the KwaZulu-Natal Department of Agriculture and Environmental Affairs	7 years
Respondent 10	Male	White	Ezemvelo Wildlife, Kwazulu-Natal	9 years

4.3 Research Question

The findings of the study have been presented in line with the sequence of the following questions.

- i. Will development of the irrigation infrastructure for the rural community of Maphophoma lead to the degradation of a wetland?
- ii. What is the relationship between poverty and environmental degradation as seen by the community of Maphophoma, KwaZulu-Natal?
- iii. Does protection of a wetland sustain poverty for the community of Maphophoma?

4.4 Presentation of Data

4.4.1 Introduction

To complete the process of data presentation, from the in-depth interviews, the data has been organised and summarised. Through analyses of the responses different themes have been identified to make the analysis easier. The data (both primary and secondary data) has been carefully transcribed from tape to electronic copies, and has been carefully listened to with the goal of developing a sense of the respondents' attitudes towards the identified problem that informed the study. From this process, a list of themes and topics emerged in relation to the research question as well as the problem statement.

The data is presented in an organised fashion. The objective of this exercise has been to shorten and rearrange the transcribed interviews, and make the presentation of the findings easy and readable. Neuman (2011:510) argues that "in qualitative research you organise raw data into conceptual categories and create themes".

In-depth interviews had been conducted with the respondents on different dates. The first interviews were held with the members of the community, thereafter with the official of the KwaZulu-Natal Ezemvelo Wildlife, then the official from the Agricultural Division of the KwaZulu-Natal Department of Agriculture and Environmental Affairs, and lastly with the

official from the Department of Environmental Affairs. The presentation of the study findings will follow the same sequence.

4.4.2 Will Development of the Irrigation Infrastructure for the Rural Community of Maphophoma Lead to the Degradation of a Wetland?

Community Members' Views

Respondent One, Two and Five stated that the elevation of a protection of the wetland above the development of an irrigation infrastructure was a fundamentally wrong decision by authorities. The decision undermines the purpose of the project, to irrigate and grow crops that will feed their families.

Respondent One stated that “authorities do not appreciate challenges that the community went through putting together this project, with a view to complying with environmental management laws. If it was not for the financial support from the Agricultural Division of the KwaZulu-Natal Department of Agriculture and Environmental Affairs the project would not have been possible. Subsistence farming is the main source of livelihood in the community of Maphophoma”.

Respondent Two argued that “given the scarcity of employment and the high incidence of poverty, the irrigation infrastructure presented them with an opportunity to improve their livelihoods. Take their children to school and clothe them. The area is rural and there are no employment opportunities available to them, particularly for the youth”.

This point resonated with the majority of the respondents who expressed their disappointment with the manner in which authorities have treated them regarding this project. The wetland has always been there, and it has not provided the community with opportunities to put food on the table.

Respondent One argued fiercely that “we are small farmers, who are trying to make an honest living. The community of Maphophoma have the land that is fertile for crop farming, as well as Ntamu and Maphophoma Rivers, which provides the small farmers with water resources for irrigation”.

Respondent One further argued that “these rivers have been a source of water for generations, and they have never had a challenge of water running dry in the area, even during the driest seasons. The issue of climate change and shortage of water is not the concern of the community. Why, as the community of Maphophoma, should there be a concern about the needs of people who reside in big cities and are employed, while we are still subjected to abject poverty”.

Respondent One argued that “the issue that the irrigation infrastructure poses a threat to wetlands, which is the threatened ecosystem, does not concern us as the community of Maphophoma, but the next meal for our family is a concern”.

Respondents three and four stated that “a position of the authorities to refuse the project to proceed was wrong and ill-informed, as it does not take into account our needs to improve their livelihood. We are being undermined because we are rural community and uneducated; if it was a project that was driven by urban community authorities would have positively responded to the project”.

Respondent four argued that she felt undermined as a member of the community of Maphophoma. “People who oppose construction of the irrigation infrastructure are not residents, and have little knowledge of the challenges faced by the community. As a mother this was heart-breaking for me, as it means I will not be able to take my children to school. We are being deprived of a chance to educate our children.”

Views of the respondent from the Department of Agriculture, Environmental Affairs and Rural Development, KwaZulu-Natal

The respondent from the Department of Agriculture, Environmental Affairs and Rural Development in KwaZulu-Natal stated that “we support the project because of its economic and social value to the community”.

The respondent stated that they got involved in the project after they were approached by the community. The community made an application to the Department requesting financial support to undertake the application for environmental authorisation.

On receipt of the application, they undertook an investigation determining the desirability of the project. The main consideration had been the social and economic upliftment of the community.

The study found that vegetables are not grown in the area of Maphophoma due to a lack of irrigation infrastructure. In line with the anti-poverty strategy (The Presidency, 2008) the project was funded.

According to the Respondent “the project was preferred because of its potential to assist the community of Maphophoma to grow cash crops such as green peppers, tomatoes, beans, onions and potatoes. In order to maximise yields for these cash crops, irrigation infrastructure was an urgent necessity”.

As the Department of Agriculture, Environmental Affairs and Rural Development of KwaZulu-Natal understands the concern pertaining to the negative impact of the construction to the wetlands but they are satisfied that the project met all the environmental requirements.

The respondent argued that “the project must proceed, as there is an urgent need for irrigation infrastructure for the community of Maphophoma. For them the economic and social value of the project outweighs the environmental degradation.”

He argued that “the wetland specialist report indicated that the area of wetland that would be affected by the irrigation infrastructure is approximately 530 metres, out of the total area of 4 000 metres. That is a total of approximately 13 per cent of the wetland would be affected”.

The respondent agreed with the sentiments of the community of Maphophoma, that the position of the authorities to refuse the project to proceed was wrong and ill-informed, as it did not take into account their needs to improve their livelihood. He argued that “the studies revealed that the affected portion of the wetland will be developed in time”.

The impact of not building infrastructure for the community would be enormous compared to the impact on the wetland.

Views of the Respondent from Kwazulu-Natal, Ezemvelo Wildlife

The respondent from KwaZulu-Natal Ezemvelo Wildlife who had been interviewed holds a position as an Environmental Officer, responsible for wetland conservation. The respondent reported that he was involved in the environmental impact assessment process, as a representative of KwaZulu-Natal Ezemvelo Wildlife.

The respondent stated that “the reason they opposed development was because the identified site for construction of the irrigation infrastructure was a wetland. They have provided evidence in this regard through the environmental impact assessment process”. The site was identified as a no-go option, meaning that it cannot be used for the construction of an irrigation infrastructure.

He argued that “stopping the project from proceeding at the site was the only option available for saving the wetland”. The community was advised through the environmental impact assessment practitioner to explore other alternative sites, which were environmentally suitable. They further advised the community that they were prepared to provide technical expertise in this regard.

The respondent further stated that “as environmental conservationists they do not oppose the development in principle, as they understand the value of the irrigation infrastructure to the community. However, the chosen site was a challenge because of the impact on a wetland. Wetlands by nature are non-replenishable, once destroyed they become extinct. The wetlands are important because South Africa is a water scarce country, and KwaZulu-Natal has experienced a sustained dry season and the rivers are running dry”.

The KwaZulu-Natal Ezemvelo Wildlife is willing to work with the community to identify another site that will be more suitable for the construction and they could provide technical support in this regard.

Views of the Respondent from the Department of Environmental Affairs

An interview had been conducted with an official from the Department of Environmental Affairs who also stated his support for the irrigation infrastructure development because of its economic and social value to the community of Maphophoma.

He stated that “the environmental study undertaken for this project clearly showed that the project will have social and economic value to the community. However, it is also our responsibility to protect the wetlands, because of the value wetlands have on water conservation and [the] climate change mitigation strategy. Wetlands act as carbon sink and mitigate climate change”.

The responded stated that “as authorities this is the problem they encounter in environmental policy development and implementation, where they need to tread carefully and balance different interests, as in this case, that of the community of Maphophoma. As authorities we have to decide whether environmental protection without much attention to poverty alleviation should be the main consideration in policy developmental trajectory or poverty alleviation should be the main consideration without due attention to environmental protection”.

These were important and challenging considerations in the decision-making process to decide whether a project is authorised or not.

To demonstrate the importance of wetlands he explained that “South Africa is the 30th driest country in the world, and has less water per person than countries widely considered being much drier, such as Namibia and Botswana. Of the 223 river ecosystem types, 60 per cent are threatened with 25 per cent of these critically endangered. Less than 15 per cent of river ecosystems are located within protected areas, many of which are threatened and degraded by upstream human activities. Of the 792 wetland ecosystems, 65 per cent have been identified as threatened and 48 per cent critically endangered. Furthermore, 31 per cent of fresh water fish species indigenous to South Africa are threatened.

South Africa is a signatory to the Convention on Wetlands of International Importance. And it domesticated this Convention through various legislations”.

He further reported that he is aware that steps have been taken together with the Department of Water and Sanitation to assist this community. However, he could not confirm at what stage this process was as the Department has now been split into two.

4.4.3 Will Development of the Irrigation Infrastructure for the Community of Maphophoma Lead to the Degradation of the Wetland?

Community Members' Views

The most common answer amongst members of the community was that it will not lead to environmental degradation.

Respondent One stated “that even if we did know, it is not clear to us as to how the knowledge would help us to address challenges of poverty that we are currently facing. Protection of the environment is not our immediate interest”.

Respondent One suggested that authorities develop a plan to address the problem or else they would go ahead and develop the irrigation infrastructure, which they regard as a necessity, without the necessary authorisation.

Respondents Six and Seven stated that “we have never received any information about the importance of wetlands, except when there was public participation”.

Respondent Four stated that “even if we were aware it was not something that concerns rural communities, in fact issues of environmental protection and climate change were issues of educated and urban people, it has nothing to do with us. We want our irrigation infrastructure”.

Views of the respondent from the Department of Agriculture, Environmental Affairs and Rural Development in KwaZulu-Natal

The respondent reported that he supported the project because of its value to the community.

According to this respondent “we are satisfied that the project met all the environmental requirements. For us the project must proceed, as there is an urgent need for irrigation infrastructure for the community of Maphophoma.” For them the economic and social value of the project outweighs the environmental degradation.

Views of the Respondent from the Department of Environmental Affairs

This Respondent acknowledged that there was a knowledge gap regarding the issues pertaining to environmental protection, wetlands in particular, amongst the rural poor. He attributed this to the poor state of information dissemination and campaigns that take time to reach the rural poor.

He argued that “urban communities are easily accessible compared to the rural areas”. He maintained that “they have developed awareness campaigns around issues of environment protection, particularly wetlands”. Programmes have been developed that are meant to address the issue of degradation of wetlands through programmes such as “Working for Wetlands”.

The Respondent stated that “this programme has rehabilitated more than 1 011 wetlands and created 17 575 employment opportunities since 2002. All these programmes are aimed at raising awareness, among the communities. They have further preserved specific dates for the celebration of wetlands, annually.”

4.4.4 Does the Protection of a Wetland Sustain Poverty for the Community of Maphophoma?

Community Members’ Views

Respondent One argued fiercely that “we are small farmers, who are trying to make an honest living. We have the land that is fertile for crop farming, as well as Ntamu and Maphophoma Rivers, which provides us with water resources for irrigation”.

Respondent Five stated that “the decision of the authorities to stop the project leaves us with no choice but to proceed with the construction without necessary authorisation”.

Views of the respondent from the Department of Agriculture, Environmental Affairs and Rural Development, KwaZulu-Natal

It had been explained that the government had been in favour of the development of the irrigation infrastructure; however, such development must not compromise the ability of future generations to meet their own needs.

In direct contrast to this Respondents One and Six argued that as long as they are unable to meet their own needs, as a generation, there will be no future generations because the existence of the coming generation depends on their livelihood.

The needs of the current generation must be taken care of first. Therefore, government cannot claim that it is protecting the environment for future generations because there will be no future generation if the current generation is destroyed by poverty.

4.5 Discussion of the Data

The interview drew different responses from the respondents. These responses showed the challenge authorities face, particularly in developing countries. Whether environmental protection without much attention to poverty alleviation should be the main consideration in policy developmental trajectory or whether poverty alleviation should be the main consideration without due attention to environmental protection is the challenge.

The downward-spiral relationship of poverty and environment denies the rural poor a chance at improving their well-being and capabilities.

Poverty alleviation and environmental protection are challenges that need to be addressed jointly, and where environmental degradation is more pronounced it should be the main consideration and in the context where poverty is more pronounced it should be the main consideration. The answer to this is to localise the challenge of the environment-poverty relationship with a view to developing local solutions, rather than universal solutions. Local solutions could be achieved through decentralising agencies and institutions that are concerned with environmental management. This must include devolving responsibility for the development and implementation of environmental policies to local communities and non-state associations (Lane and McDonald, 2005).

The responses have revealed a gap in environmental policy development and implementation – failure to recognise the marginalised and rural poor’s effort to improve their livelihood. The interviews have further revealed that the environmental policy must recognise that the rural poor are not going to accept their fate, and are going to develop strategies to address their immediate challenge of poverty.

The failure of an environmental policy to acknowledge the rural poor will encourage these communities to circumvent environmental restrictions aimed at environmental protection out of desperation to improve their livelihood.

Institutions play an important role in this regard through deliberate, programmatic decentralisation of authority and resources to communities for the purposes of environmental management and planning (Lane and McDonald, 2005). Institutions must be concerned with mobilisation of communities in order to secure a range of community objectives. The State as an institution has a responsibility to frame environmental protection policies and laws to shape relations in society and local natural resource management and to enhance the rural poor's capabilities to improve their livelihood through environmental sustainable practices.

Environmentally unsustainable behaviour by the poor is unlikely to change unless their concerns to meet basic needs, to be self-reliant and to be ecologically sustainable are given due consideration in the policy framework. The data shows that environmental protection cannot be achieved outside the needs and aspirations of poor people for a better quality life. The environment must be for the benefit of the poor not the poor be for the benefit of the environment.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The main aim of the study has been to challenge the prevailing view, since the publication of the Brundtland Commission Report, that poverty and the environment are inextricably linked and self-reinforcing. This Chapter presents the conclusions of the study, which are informed by the literature and the data. Six themes have emerged from the study and this chapter presents conclusions to these themes.

5.2 New Thinking on Poverty

To address the unsustainable behaviour of the rural poor, a new thinking on poverty is required. Monetary issues must not be the only measure and definition of poverty. The study revealed that a multidimensional definition of poverty is an appropriate measure and definition, as it allows for a variety of issues that are fundamental to development including environmental degradation. The study further revealed the importance of livelihoods and well-being beyond income-based definitions of poverty.

The new thinking on poverty will further allow a proper analysis of the unsustainable behaviour of the rural poor. This approach will allow the development of an environmental policy that reflects social concerns and aspirations of rural communities at a local level. Furthermore, it will allow for the development of proper policies instead of taking an easy option and blaming the rural poor, without addressing the real concerns of the community. Such blame undermines the relationship that communities have with the local environment and the adaptation strategies used by rural communities to survive without degrading the environment. It ignores other important variables that lead rural communities to engage in unsustainable environmental activities.

The benefit of new thinking on poverty is that it discourages a top-down approach to the development of environmental and poverty policies. It encourages a bottom-up development process of environmental and poverty policies. Environmental policies that are developed in this manner embrace community-based approaches to natural resources.

They enable sensitivity and deployment of indigenous knowledge in environmental planning. The rural poor would take ownership of the environment as they regard it as a resource that benefits their livelihood and protects it. The environment must be for the benefit of the poor not the poor for the benefit of the environment.

5.3 New thinking on Economic Growth

To break the downward-spiral relationship between poverty and the environment a new mentality regarding economic growth is required. The economic growth argument rests on the fact that growth changes the structure of society as it lifts up the majority of society from poverty to affluence, and at this stage environmental protection takes priority. As the majority of poor people are lifted out of poverty and become more affluent, they demand stricter environmental regulation to protect the environment. At this time, authorities, through well-established institutions, are in a better financial position, through a larger tax collection base, to implement, monitor and enforce compliance with environmental legislation.

As the study shared in the literature review, economic growth does not often translate to improvement in the livelihoods of the rural poor. Even if a positive spin-off of economic growth trickles down to the rural poor, the likely impact is that agricultural land or forest will be depleted due to rapid industrialisation (Neumayer, 2003; Leach, *et al.*, 2004; and Dinda, 2004). Empirical evidence shows that such depletion can be attributed to policies aimed at economic growth.

5.4 The Lack of Income

The lack of income translates to weak security of tenure by the rural poor, and this reinforces the downward-spiral relationship between poverty and the environment. The rural poor have limited or no income.

This lack of income further limits investments to be made on the land, as well as the ability of the rural poor to enforce their rights on land. The absence of secure land tenure systems is an important dimension that forces the rural poor to cultivate land to exhaustion.

Environmental resources by their nature are for the collective good, meaning that they are open to all for use and this reduces individual incentives to invest in the resource.

The lack of income makes it is impossible for the rural poor to invest their limited resources in preserving an asset that they do not own; and such assets in most instances are open to the whole community.

5.5 Weak Community Institutions

Weak community institutions, including ritual and traditional authorities, which serve to regulate the use of a common environmental resource, so that the community and environment remain in equilibrium, has in most instances been undermined. Community institutions play a key role in mediating access to and control of an environmental resource. These community institutions are developed through regularised practices, performed over time by the community. They are maintained by mutual concern of the members of the community.

Weak community institutions lead to an imbalance between people and the environment; hence the downward-spiral relationship between poverty and the environment. As has been revealed by the responses, the respondents felt that their vulnerable position was worsened by the fact that they are a rural community regardless of the protection of a wetland.

5.6 Weak institutional Support

The literature has showed that the rural poor in general continue to live under impoverish conditions, however, they tend not to accept these adverse circumstances passively. The rural poor will do their best to improve their circumstances and the environmental sustainability of their actions is not a priority. The role of the State through a clearly defined institutional framework is an important element in breaking the downward-spiral relationship between poverty and the environment.

This study has revealed that institutional failure is an important dimension that drives the rural poor to engage in environmentally unsustainable practices, which lead to degradation of the environment.

This study has also revealed that unless the rural poor's aspirations of eradicating poverty and improving their livelihoods are met, environmental degradation will continue. Institutions are an important component in the management of a relationship between the environment and the community. They regulate patterns of behaviour between individuals and groups of society. Through institutions social actors are able to interact about issues that affect the environment as well as poverty, and they can develop coherent solutions.

Institutions should allow the rural poor to have a voice on environmental matters that concern them. By supporting the rural poor, the institutions will assist the rural poor in meeting their basic needs, being self-reliant and being ecologically sustainable. With the support of institutions, the rural poor can take ownership of development that affects them, and be part of the solution aimed at environmental protection.

Institutions must strive for the betterment of the livelihoods of the poor. An effort must be made to investigate the prevalence of the poverty rate, its depth and severity, and develop strategies to discourage over-dependency on natural resources that lead to environmental degradation. With proper institutional support for the rural poor, an environmental policy will be able to address the immediate challenges of the rural poor to improve their livelihoods and discourage them from ignoring environmental restrictions aimed at environmental protection.

5.7 Recommendations

The chosen theoretical framework, institutional failure as the cause and effect of environmental degradation, has been argued through a case study of an unsuccessful irrigation project in the rural community of Maphophoma, located in KwaZulu-Natal, as a result of the protection of a wetland. Case studies from other jurisdictions have been used to reveal that the rural poor depend on the environment, and they have been protecting the environment from time immemorial.

The concerns about the role of poverty on environmental degradation must be based on the understanding of environmental change that reflects the social concerns of the rural communities. The forces driving poverty and environmental degradation should be addressed through local practices.

In certain jurisdictions where problems of poverty and environmental degradation are jointly more pronounced, it may be more cost-effective to address them jointly.

However, in jurisdictions where incidents of poverty are more prevalent than environmental degradation, poverty alleviation must be a priority. This requires a bottom-up institutional support of rural communities by authorities, through well-researched policy analysis and development, which is context specific. This is better than a blanket implementation of environmental protection policies. These policies must additionally address the downward-spiral relationship between poverty and the environment through employment opportunities for the rural poor (Sham, 1993).

Poverty alleviation and environmental management are legislated basic social goals, in our Constitution, and other legislative instruments. The State is tasked with progressively realising these social goals. Institutions are an important element in achieving these objectives, simultaneously. Institutions have financial and human resources as well as expertise, and must act as an enabler of poor communities to meet their own aspirations, through a clear bottom-up environmental policy development and its implementation.

Institutions must create employment opportunities with a view to increasing demand for the most valuable assets of the rural poor – labour and investment in human resources (Sham, 1993). This will achieve the goal of environmental protection, and address the needs and aspirations of the rural poor to achieve a better quality of life. Failure to achieve this will lead to environmental protection policies being delegitimised as the rural poor will circumvent them through unsustainable activities in pursuit of better lives.

Taking into account the conclusions drawn in this Chapter, the following recommendations are made.

- i. A better understanding of the rural poor through a multidimensional definition of poverty must be preferred over a narrow, monetary definition in environmental policy development.
- ii. The study has revealed that our understanding of the environment-poverty relationship is deficient. There is a need to clearly formulate the relationship between the poor and the environment and the manner in which the rural poor accesses these resources.

Therefore, environmental policy development must address local needs of the rural poor rather than universal environmental problems.

- iii. Institutions that are concerned with environmental management have the expertise as well as financial and human resources, and should be strengthened so that they can act as enablers for the rural poor to meet their aspirations, through a clear bottom-up environmental policy and implementation.
- iv. A multi-level and multi-actor governance approach to environmental policy integration and implementation is required. This approach must include strengthening community institutions, and increasing incentives for environmental management by the rural poor. Environmental policy is more likely to be implemented if there is a strong social, political and economic demand that is supported by the affected communities.
- v. The environment must benefit the rural poor. The most effective way to achieve this objective is to create employment opportunities for the poor. These employment opportunities must increase the demand for the most valuable assets of the poor – labour and investment in human resources (Sani, 1993).

Employment for the protection of the environment (Sani, 1993 and 1994) must be the focal point in environmental governance. Employment for the protection of the environment provides entry points for intervention which can break the poverty-environment downward-spiral relationship.

- vi. Important lessons can be learnt from Malaysia, where the growth in labour intensive sectors that are focused on local communities was used as the best long-term strategy for providing employment (Sani, 1993). Malaysia's experience shows that environmental protection programmes play a significant role in the reduction of absolute poverty as well as income inequality. The Malaysian experience shows that between 1970 and 1989 the incidence of poverty in Malaysia declined from 49.3 per cent in 1970 to about 15 per cent in 1989. This was achieved through labour absorptive environmental programmes showing that poverty eradication can be achieved while ensuring that the environment is safe-guarded (Sani, 1993).

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APPENDIX A: INTERVIEW QUESTIONS

Research Question	Interview Question
<p>What is the relationship between poverty and environmental degradation for the community of Maphophoma, KwaZulu-Natal?"</p>	<p><i>Is environmental protection and poverty inextricably linked? If they are, can one be achieved outside the other?</i></p> <p><i>Do you think that if the community involved in the project was not rural poor, the decision of the authorities would have been different?</i></p>
<p>Will development of the irrigation infrastructure for rural community of Maphophoma lead to the degradation of a wetland?</p>	<p><i>What is your understanding of the role played by the wetland, particularly with regard to water conservation, climate change and poverty alleviation?</i></p>
<p>Will protection of a wetland sustain poverty for the community of Maphophoma?</p>	<p><i>What is the impact of wetland degradation on future generations?</i></p>

APPENDIX B: INTERVIEW GUIDE

Name of respondent:

Designation of the respondent:

Name of organisation:

Name of Business Unit/ Directorate:

Dear Respondent

My name is Thamsanqa Zwane, a student at the School of Governance, Faculty of Commerce, Law and Management, University of the Witwatersrand, completing a Masters of Management and Public Development (MM) degree. As part of the requirements of my degree, I am conducting research on, **The relationship between poverty and environmental degradation, KwaZulu-Natal.**

The objectives of this study are to:

- Provide an analytical view of poverty and environmental degradation for the rural poor;
- Identify gaps in the orthodox view that the key to remedy environmental unsustainable behaviour of rural poor is to address poverty;
- Test whether the downward spiral theory considers the role played by other actors in the degradation of the environment;
- Test whether a weak institutional framework is the main cause of environmental degradation; and
- Highlight policy and research priorities for future policy development.

I hereby wish to invite you to participate in my study. You are advised that your participation in the study is voluntary and that non-participation will have no negative consequences.

In the event you feel that you no longer want to participate in the study at any stage, you can withdraw at any time. Equally, if you feel that some of the questions are too personal or if you feel uncomfortable answering them, you have the right to refuse to answer.

Kindly be advised that all the information obtained will be treated as strictly confidential and under no circumstances will it be used for any reason other than academic purposes.

Your participation in this study will contribute immensely towards improving the successful implementation of environmental as well as poverty alleviation policies.

In the event you agree to participate in the study, you are kindly requested to sign the attached consent form.

Yours faithfully,

Thamsanqa Zwane

(Researcher)



Title of research project: The relationship between poverty and environmental degradation, KwaZulu-Natal.

Name/s of principal researcher/s:

Department/research group address:

Telephone:

Email:

Name of participant:

Nature of the research:

Participant's involvement:

What's involved?

Risks:

Benefits:

I acknowledge the following:

- I agree to participate in this research project.
- I have read this consent form and the information it contains and had the opportunity to ask questions about them.
- I agree to my responses being used for education and research on condition that my privacy is respected, subject to the following:
 - I understand that my personal details will not / may be included in the research / will be used in aggregate form only, so that I will not be personally identifiable (delete as applicable.)

- I understand that I am under no obligation to take part in this project.
- I understand I have the right to withdraw from this project at any stage.

Signature of Participant / Guardian (if under 18):

Name of Participant / Guardian:

Signature of person who sought consent:

Name of person who sought consent:

Date: