



**A SYSTEMATIC APPROACH FOR EVALUATING CONSERVATION
INITIATIVES IN THE SUSTAINABLE LIVELIHOOD OF THE
KWASOKHULU COMMUNITY**

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DECLARATION

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ABSTRACT

This research develops a soft systems approach to evaluate conservation initiatives in the sustainable livelihoods framework of Kwasokhulu, and in so doing, contributes to the literature on Soft Systems Methodology (SSM). Whilst there is, in the theory of systems thinking and practice, much written on the subject of conservation in organizations worldwide, there is very little on the Kwasokhulu fisheries conservation context to promote livelihood, especially from within the soft systems paradigm.

Ezemvelo-KwaZulu-Natal Wildlife (EKZNW) is a conservation organization where natural resource management systems have been developed on a so-called conservation approach, where the focus has been on the characteristics of the conserved areas. A softer issue, which interrogates humans, and environment where conservation issues exist, has previously taken secondary position to the functionality of the system. The SSM approach as applied in this context considers conservation implementation to be complex and changing entities whose nature is repeatedly redefined by the people in it. The perception of the conservation authority is also shaped and redefined by the people in it.

This research illustrates the use of SSM in relation to protected area management and sustainable livelihood. A presentation and discussion of the use of SSM as a project framework of natural resource project implementation is provided in the paper. It is contested that SSM has the potential to provide a very rich picture of social environment complexity at hand through the use of individual stakeholders' interviews and cognitive maps. SSM provides an opportunity for systems development reflexive learning. The empirical and dialogue processes of SSM proved a very useful tool in creating discussion about possible futures as well as in disclosing stakeholders' attitudes and present system constraints in Kwasokhulu (the area of research). The researcher has appreciated SSM as a participatory research methodology, but it has not provided an automatic emancipation to the stakeholders of Kwasokhulu. Other issues such as political and cultural aspects of the research area may restrict the feasibility of using participatory process. This places an ethical responsibility on the problem intervener or facilitator of the Soft Systems Methodology process.

In conclusion, this research does not frame SSM as a sufficient method for solving all complex natural systems situations. Rather, it serves as a useful platform for structuring necessary learning, reflexivity, and deliberations that should be an integral part of Kwasokhulu development project management. If tabled recommendations are implemented by EKZNW, it could provide a means for participation, learning and dialogue about project content to all stakeholders.

LIST OF ABBREVIATIONS AND ACRONYMS

- BMCC**- Buhlebemvelo Mussel Co-management Committee
- CITES**- Convention on International Trade on Endangered Species
- CBD**-Convention on Biodiversity
- CM**- Co-management
- CNRBM**- Conservation of National Resources Based Management
- COGTA**- Cooperative Governance and Traditional Affairs
- DEAT**-Department of Environmental Affairs & Tourism
- DEDTEA**-Department of Economic Development Tourism and Environmental Affairs
- DSSF**-Draft-Small Scale Fisheries Policy
- DFID**-UK Department for International Development
- DNC**- Department of Nature Conservation
- ECA**- *Environment Conservation Act No 73 of 1989*
- EKZNW**- Ezemvelo KwaZulu-Natal Wildlife
- GSWLPA**- Great St Lucia Wetland Park Authority.
- IMF**-International Monetary Fund
- IUCN**-International Union for Conservation of Nature
- KZN**- KwaZulu-Natal Province
- KZNNCA**-*KwaZulu-Natal Nature Conservation Act (1997) KZNNCA*
- MOU**- Memorandum of Understanding
- MCM**- Marine & Coastal Management
- MRLA**-*Marine Resources Living Act (Act 18 of 1998)*
- MLRF**- Marine Resources Living Fund
- MPA**-Marine Protected Areas
- NEMA**- *National Environmental Management Act (108) of 1997*
- NGO**-Non-Governmental Organizations
- NORAD**-Norwegian Agency for Development

NPB- National Parks Board

PAs-Protected Areas

RDP-Reconstruction & Development Programme

RSA or SA-Republic of South Africa

SF-Subsistence Fishers

SFIU-Subsistence Fisheries Implementation Unit

SSM- Soft Systems Methodology

WHS- World Heritage Site

WSSD- World Summit on Sustainable Development

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CHAPTER ONE

RESEARCH FOCUS AND BREAKDOWN OF RESEARCH METHODOLOGY

INTRODUCTION

Conservation of natural resources and sustainable livelihoods development are two aspirations that have taxed the minds of conservation authorities and resource dependants alike. As Hersoug (2004:45) remarks “maintaining fish population in the sea whilst at the same time promoting fisheries development in activities such as feeding the poor, sustaining local communities and generating export earnings” results in hard choices. These hard choices are more complex given that fish resources are both renewable and exhaustible. Consequently, maintaining a balance between the development and management of fish resources is another complex matter. According to public domain information various opinions have been at the forefront of this enquiry. Theoretically, scientists with a conservation background might argue for fish habitats to remain undisturbed until fish stocks are replenished, whilst, economists argue for property rights to extract more fish for export earnings and human rights activists for the livelihoods of poor people. Conservationists are often criticised for their lack of human consideration. Ferrar (1983:12) agrees with this criticism in his scientific report on *Conservation Behaviour* in which he maintained that “nature conservation is a human activity for human purposes” as such you cannot remove people from their indigenous surroundings. But conservation authorities are reluctant to focus on people and their livelihoods (Ferrar 1983:3). On the other hand, it is the social scientists’ argument that advocates for the co-management of natural resources (Wilson, 2003:14).

In this research, I chose to use Soft Systems Methodology (SSM) when focusing on fisheries resources’ conservation and co-management as tools for developing people and for promoting their livelihoods. In its own right, community development to promote livelihoods is a discipline that requires thorough investigation. However, I have applied a soft systems approach analysis to conservation and co-management concepts in a case study since co-management is regarded as a new tool when promoting partnership management between conservation authorities and natural resource users. In South Africa, this new tool of co-management was implemented by Ezemvelo KwaZulu-Natal Wildlife (EKZNW) in order to drive partnerships for fisheries management and equitable redistribution of fish resources to rural communities called Buhlebemvelo Mussel Co-management Committee (BMCC) located at Kwasokhulu within the coastal region of northern KwaZulu-Natal. I also believe strongly that the application of SSM to co-management as a model can serve as a yardstick to determine whether or not conservation of natural resources improves the capability of local communities to sustain their livelihoods.

1.1. Coastal Resources challenges and possible remedies

Many pressures exerted by resource users today challenge the sustainable management of coastal resources all over the world. Challenges can be grouped as factors regarding the sustainability status, social equity and environmental justice, essential products for humankind, food security, recreational facilities, livelihoods and employment (Gunderson and Holling 2002). South Africa has experienced these challenges in the high rate of marine resources depletion due to overexploitation (Lasiak 1992:14). A major challenge that is highlighted in the *Draft Small Scale Fisheries Policy (2006:24)* is poaching of marine resources by unauthorised high-scale commercial operations. This dissertation seeks to focus on the application of SSM by the researcher in order to evaluate whether or not the adoption of co-management by EKZNW can work as an appropriate tool to sustain coastal resources for the livelihoods of fisher communities.

Before 1994 poor black people living in coastal areas in South Africa were marginalised from the formal fishing rights and associated economic benefits but still depended on coastal resources to meet their needs. . The management of marine resources was centralised to the state in order to issue fishing rights at its own discretion (Hauck and Sowman, 2002:14). Centralisation of fisheries management is not limited to South African boundaries, but it is a worldwide phenomenon. In Uganda, as Hersoug (2000:6) mentions, the state played a central role in managing fisheries until community organisations and civil societies exerted pressure for decentralisation in 2000.

Centralised management of fisheries by the state alone seems to have created many problems, as poor people were dependant on natural resources for their survival (Hara 1999:6). Consequently, there is a documented long history of utilisation of marine resources that dates back many centuries (Siegfried et al., 2000:16). For this reason the sole management of resources by the state has not been working very well “apart from being ineffective, sole management has generally become too costly for the state” (Hara 1999:2). The increasing evidence that central management of resources by the state was ineffective resulted in various governing states around the world adopting new models for managing natural resources.

1.2 The shift to management theory based on involvement of users

The role of natural resources beneficiaries coupled with conservation authorities’ interests has received positive and negative responses from various scholars. However, it is highly regarded with a lot of positive outcomes noted the benefits start with community involvement and participation in conservation practices. Martin and Maturana (2005:46) highlighted that community approaches to conservation have been “hailed for their power to stimulate face-to-face interaction and democratic

participation” that may help to resolve long-standing resources conflict. This is so because resource users are physically connected to the natural resources and possess a lot of social capital knowledge to manage them. Their involvement as co-managing partners, together with conservation authorities, should ease the tensions between them. In addition, it will encourage communities to use these resources sustainably (Jacobs 2004:31). Sustainable utilisation results in communities being keen to take long-term management responsibility that will also yield long-term benefits.

From a different perspective, some scholars in the field of co-management are cautioning that the co-management approach is not a universal remedy for problems that emanate from conservation authorities and resource users themselves. One of major challenges in co-management, as Hara (1999:66) explains, arises with the complexity of managing fish resources, considering that it has not been an easy task even for renowned scientists and governments with all their powers and resources. As in any other natural resource management approach, co-management is not an exception. Complexities of implementation, economic benefits, and scale of poverty of resource users, all need to be considered before its positive aspects can be realised. Jentoft (2004:12) feels that co-management can serve as a valuable model to improve sustainable livelihoods among fishermen if more attention is focussed on its design.

The co-management approach in South Africa was initiated as a policy after the promulgation of 1996 Constitution. In 1998, a law to support institutions of the co-management approach throughout the country was promulgated. The *Marine Resources Living Act of 1998 (MRLA)* featured as a crucial law in sustaining natural environments in order to guide the implementation of co-management. Much of the focus of this law was on the recognition of previously unrecognised resource users along the coast and to recognise people who are needy and who live adjacent to protected areas and reserves in South Africa.

In 2005 when I joined EKZNW as a Project Manager, I was tasked with the responsibility of implementing MRLA and the co-management of fisheries resources throughout the coastal areas of KwaZulu-Natal Province (KZN). One of the key measurable objectives of my duty was to determine whether or not the implementation of co-management has reduced the poverty rate among the poorest and whether or not it has contributed to sustainable resources management along the coastal areas. In addition, I was also required to evaluate whether or not co-management was effective in improving the livelihood of coastal communities. For this reason, when I chose to do research in Kwasokhulu, which was one of my working areas, this benefitted both my employer and my career and it resulted in a combination of carrying out my work-related duties and conducting academic research fieldwork at the same time. As such, it helped me to understand the way the conservation and co-management approaches can be designed as a system. It also made me

realise that South Africa has several laws regulating fishing resources in coastal areas, but that fishing practice is still carried out contrary to these laws.

I spent a lot of time between 2005-2011 doing site visits, interviewing people and holding meetings with various structures in the North of KwaZulu-Natal, specifically at Kwasokhulu and realised the extent of the scarcity of job opportunities coupled with high unemployment due to lack of industries. For this reason, fishing is mainly an employer and food provider to sustain local people's livelihoods. On the other hand, recreational fishermen regard the Northern-Natal coastal areas as scenic and a preferred area for recreational fishing activities. Accordingly, the former and the latter conflict with each other and this puts more strain on natural resources, which runs counter to the objectives of (MRLA) as a major law to guide the implementation of co-management and sustainable management of marine resources in South Africa.

1.3 Problem Statement

Sustainable management of marine resources, coupled with sharing of these resources with poverty-stricken communities, poses complexities all over the world. South Africa like the rest of the world experiences challenges in managing marine resources effectively due to the high dependency of the local population, pollution, and the high level of poaching and recreational activities along the coast. This realisation compelled South Africa to look for possible remedies in order to manage its coastal resources effectively.

The searching for possible remedies was coupled with the ushering in of democracy in 1994. This created many expectations amongst coastal resource users as they felt that they would be given greater access and recognition to utilise marine resources. Hauck and Sowmawn (2002:32) explain that black coastal communities were not recognised as lawful resource users by the apartheid government and they faced a lot of harassment through arrests, shooting and issuing of fines from conservation authorities. The events of 1994 drew world attention and this put pressure on South Africa to liberalise its economy and to introduce policies that recognise various human rights including those of coastal communities.

For this reason, South Africa enacted the MRLA to guide the implementation of co-management and sustainable management of marine resources in South Africa. It was also meant to benefit all South African marine resource users including the rich and recreational fishermen who were not disadvantaged before 1994 in the apartheid period. Under this MRLA there was a fund called Marine Resources Living Fund (MRLF) that was specifically set up to manage marine resources and to promote the sustainable livelihood of the people living along the coast concurrently. The

MLRF was funded by the Norwegian government through bilateral agreements with South Africa that were set to run until 2010.

Considering all the challenges that the fisheries resources of South Africa faced, the involvement of fisher communities to manage marine resources or co-management came in useful. It envisaged improving accessibility rights of fishermen to marine resources, and thereby to improve their food security and sustainable livelihoods. However, when I carried out my field research and work duties it emerged that there are a lot of challenges on the ground. In view of this, I asked the question: “Has the conservation and co-management initiative contributed to promoting the livelihoods of fishermen and their sustainable practices with regard to marine resources or it has worsened the situation?”

1.4 Research Subjects

For co-management to exist as Jentoft (2006:15) states, it needs an enabling environment, which is coupled with systematic design and proper institutional implementation. If this is not the case people who were wealthy and powerful before the implementation of co-management will remain so at the expense of the weaker in society. Conservation authorities like EKZNW have power and resources to undertake thorough designing and careful implementation of co-management. Failing which, the whole implementation exercise will carry on depriving the weakest, just as it did when they were not recognized in South Africa before 1994. “The weak in society do not sit and die but they adopt other strategies that enable them to survive or cope” (Anon 2005:10). Poaching activities and illegal harvesting of protected resources are some of the strategies that have been carried out by natural resources dependants throughout the world. The element of poaching is further exacerbated by a huge increase in population relative to the sustenance obtainable from natural resources.

Resource-constrained economies coupled with exponential growth of population can compromise the efforts of careful design and implementation of co-management and put more strain on natural-resources sustainable management (Margules and Presley 2000:40). To determine how this situation impacts on the Buhlebemvelo Mussel Co-management Committee (BMCC) is the concern of this research. The following points guide this research:

- A top-down approach in implementing policies and enforcing compliance in a manner that ignores the culture and existing institutions of local people is a common practice for conservation authorities according to most literature claims;

- Hara (1999:7) and Jones (2002:14) attest to this claim that implementation of co-management and management of fisheries resources follows similar trends worldwide. This research sets out to determine whether or not a similar trend is evident in the EKZNW-initiated co-management partnership with BMCC;
- It further seeks to expose the challenges created by the conditions that were not met; and
- Historically, people who have been poaching and who were in conflict with EKZNW before 1994 are the same people who have now become the members of the co-management in the BMCC. It is of the utmost importance to see if they have transformed from their old ways of illegal fishing.

1.5 Theoretical Framework

The writer's approach in this dissertation is to apply soft systems thinking to the application of co-management, and sustainable livelihood framework theories. SSM was selected as it offered a unique view of the co-management implementation in Kwasokhulu. Instead of the co-management in the BMC of Kwasokhulu being viewed as a stable system, SSM highlights it as a system characterised by nonlinear dynamic relations that result in uncertainties and surprises (Lewis 1994:82, Gunderson and Holling 2002:21).

1.6 Aim and Objectives

Ridley's (2015:118) qualitative research method maintains that any purpose of scientific research is not a complete demolition of other scholars' scientific literature. However, a negative critique of other scholars' work is likely to occur even though the aim is to balance the literature by filling the gaps. The author has reviewed a considerable amount of domestic and international literature in relation to the issue of co-management and SSM in order to compare them with this area of research (Kwasokhulu) and also to determine if there are crucial and missing links that need to be balanced and improved on.

In South Africa, for example, the implementation of co-management is still at a developing phase as it was piloted in the coastal fishing sector as recently as in 1999. Its primary aim was to recognise black fishermen who were previously deemed illegal and to make them comply with MRLA. Other burning social issues, as had been identified by the current research, have taken secondary consideration, especially the impact of the conservation and co-management implementation on the livelihoods of the community in question. Further, the available information concerning co-management in Kwasokhulu seemed to be distorted because it amplifies advantages of the project and downplays the challenges of implementation. The gaps identified by the current author lie in the co-management concept and they are only understood by a few people where they

are implemented in Kwasokhulu and other areas of South Africa. Those who are charged with responsibility for implementing conservation and co-management seem still to be confused about their roles. This research fills the gap by undertaking a paradigm shift within a context of applying SSM in theory and practice by relating it directly to the livelihoods of the BMCC community. Consequently, the research hopes to answer the question:-

Is a systematic approach to evaluating conservation initiatives for the sustainable livelihoods of the KwaSokhulu Community effective?

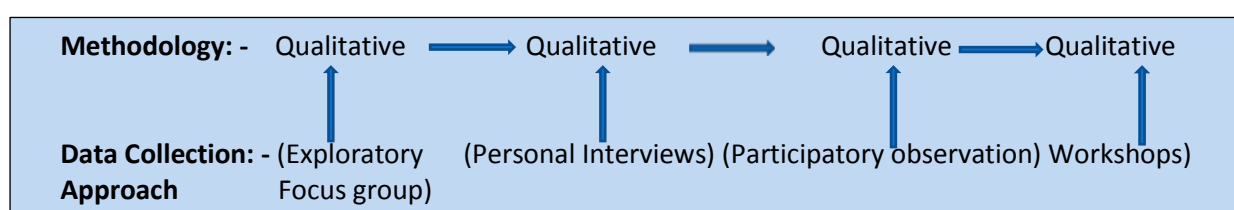
In order to answer this question the researcher:-

- Undertook a systemic approach to the complexity and centrality of implementing co-management in the BMCC;
- Applied SSM in order to determine the impact of co-management implementation by EKZNW on the livelihoods of the BMCC community; and
- Examined the sustainable management and provision of marine/coastal resources to users in relation to promoting their food security.

1.7 Method of data Breakdown

Ethical clearance was obtained from the University to carry out the study. The community members were informed that their participation was voluntary and that they could freely withdraw should they feel so inclined and that all the recorded and written results of the interviews would be kept in strict confidence and will be disposed of according to the stipulations of the ethical clearance certificate.

Table 1: The example of qualitative mixed method approach that was used in the research



Source: - (Fetterman, 2015:10).

The qualitative method was used which looked into the primary and secondary aspects of data and which divided the focus groups into three sections, which were fishing communities, other role-players and the implementing administration. All groups were important in order to formulate a rich picture. The fisher communities were sub-divided into two groups, namely, inter-tidal mussel harvesters and the line fishing group.

In the table of mixed methods the research used semi-structured interviews, face-to-face interviews, unstructured interviews, open-ended questions and workshops. The primary objective of conducting qualitative interviews was to identify the goals of the various stakeholders in the co-management of Kwasokhulu in order to determine the level of open communication, trust and overall efficiency. Data were analysed according to related subjects that were covered during the interviews and the first workshop. In addition, purposeful activity models were created after each and every interview and records and rich pictures were constructed by the participants of the workshop.

The second workshop was called to afford the participants with an opportunity to engage in a debate to apply the results of the first workshop to an abstract model that was compared to a real world situation and to discover how they were going to formulate the action that would bring about improvement to the tasks and issues that had surfaced. The research process demonstrated the importance of applying SSM in Kwasokhulu by bringing together the variety of stakeholders to address different perspectives on the issues that are considered as complex in the subsistence fisheries co-management of Kwasokhulu. It also created a space for stakeholder groups to identify various objectives as per each group's interests and to facilitate a common understanding of how to create a desired future jointly that could benefit all the stakeholders.

1.8 Dissertation Limitations

The research mainly covered the area of Kwasokhulu, whereas the co-management was implemented throughout the province of KwaZulu-Natal. For this reason, findings of this research cannot be generalised.

1.9 Overview of Chapters

Chapter One: This provided the general introduction to the study. It declared the problem statement, the research hypothesis, the theoretical framework, the research objectives, and the research methodology. It concluded by declaring the limitations and the structure of the study.

Chapter Two: This spells out the historical context of conservation in relation to the study area at Kwasokhulu in South Africa. This chapter summarises the policies and legislation relevant to conservation in South Africa. It specifically highlights the past in relation to the contemporary history of the country's conservation efforts with emphasis on the effects of such on the current geo-political and socio-economic conditions of the people. It sets the tone of inquiry by touching on co-management and sustainable livelihood theories which will be applied to the geographical location of the study area, to its natural resources, the abundance of wildlife and the good climate

and fertile land for agriculture. Major economic activities sustaining the livelihoods of fisheries in the country are pointed out.

Chapter Three begins with an exploration of the nature and utility of systems-thinking and it recalls Pinkerton's (1993:62) emphasis in various articles on systems-thinking that personal mastery makes us understand our connectedness to the world and to more of the interdependencies between our actions and reality. It further reiterates that systems-thinking is influential in our mental models as it exposes some assumptions that prevail in Kwasokhulu and it tests them to see if they are systematically flawed or not. For example, the identification of feedback was not previously accounted for. This chapter attempted to expose the influence of a system in a variety of aspects such as in shared vision where vision is prominent in collective feedback processes and less prominent in conflict feedback processes. System-thinking, as explained in this chapter, also applies to team learning as it identifies linear and inverse synergy in discussion and dialogue where, respectively, the whole becomes greater or less than the sum of the parts (Lewis 1994: 35). A crystal clear distinction is made between theories of hard and soft systems-thinking. This is done to prepare the ground for the hard core introduction of Soft Systems Methodology in the next chapter.

Chapter Four reinforces the theoretical framework of SSM as a methodology to be used in this dissertation. The researcher attempts to foreground SSM as a theory designed to shape interventions in the problematic situations encountered in livelihood situations, conservation management, organisational and policy contexts and where there are no straightforward problems or easy solutions. Much of the literature attests to the fact that systems-thinking is a point of departure for approaches informed by hard systems or an engineering approach, especially the SSM introduced in the 1960s. This chapter approaches SSM in a different way to the latter as it is more reflective of action-research in its philosophy and approach.

Chapter Five: In this chapter, a researcher enters a real situation in order to understand it by practically applying and illustrating the use of Soft Systems Methodology in relation to natural resources conservation in a protected area. Actual application of SSM in this chapter involves the researcher soaking up as much information as possible in the situation in which the researcher finds himself/herself. Further application of SSM shows that it has the potential to provide improvement in an area of social concern. In order to demonstrate the practical value of SSM as an aid to improvement in complex and uncertain situations, the researcher identifies core elements of the approach that he feels added value to the perception of those who are capable of unleashing change initiatives.

Chapter 6 is a detailed analysis of data covered during the implementation of conservation initiatives in the Subsistence Fisheries Project and the livelihoods of Kwasokhulu communities. It

also considers international literature in order to discover similarities and divergences with the findings of this research. It presents and analyses data, recommendations, limitations of the study and proposals for further research.

1.10 Chapter Summary

This dissertation believes that such an examination may enhance the natural resources management system to improve sustainable livelihoods of the BMC community.

CHAPTER TWO

BACKGROUND OF CONSERVATION, POLICIES AND THE STUDY AREA

2. Introduction

In order to lay out the basis for constructing the theoretical framework and the literature review, Chapter Two will profile background information of the study area in relation to the dissertation theme.

2.1 Conservation background

Conservation as explained by Hauck and Sowman, (2012:12) refers to the selection of priority planning units for conservation action. From a narrower perspective, it implies the inclusion of those areas identified by systematic planning as being irreplaceable and essential for inclusion within a protected area network for achieving targets. From a larger perspective, Kotze and Plessis (2011:27) maintain that it may include a different range of activities inside and outside of the protected areas. The practice of conservation in South Africa stretches back for centuries, as it does in other parts of the world.

Before 1994, the notion of race, power and privileges for the benefit of white societies shaped South African conservation (Patton1990):187). Accordingly, misunderstanding, conflict and a pattern of distrust between protected areas (PAs), authorities and neighbouring communities characterises conservation and bred bitter relations between those who were given and those who were denied access. The bitter relations were exacerbated by a hard conservation approach which continually excluded local residents from visiting, using or benefiting from protected areas (Pinkerton, E. (1993: 69). The hostilities between conservation authorities and local communities do not, however, deter South Africa from prioritising conservation as one of its tools to concurrently protect natural resources and to provide rural economic livelihoods.

However, activists always question the ability of the conservation approach to contribute to rural livelihoods. The reason being, as Ferrar (1983:14) argues, “conservationists choose to prioritize the interests of natural resources over the livelihoods of human beings” and this creates the perception that human livelihoods do not depend on natural resources and vice versa, whereas, both entities (humans and natural resources) need each other to exist in harmony. The livelihood interests of human beings cannot happen in a manner that is detrimental to natural resources existence and the same should apply to the flourishing of natural resources without benefiting human beings.

Conservation authorities and planners need to apply a comprehensive approach in order to harmonise the conflicting interests of these two entities. The policies that are legislated and implemented by authorities need to consider that humans and natural resources are inseparable but that humans need to exploit natural resources in a sustainable manner that will give time for the resources to replenish themselves.

Although not well documented, the evidence exists that before the colonisation of South Africa the indigenous people who lived at that time managed to balance their livelihood interests with nature to exist in harmony. They conserved varieties of natural resources such as wildlife and other resources whilst consuming them for livelihood purposes. They used sustainable indigenous methods to manage natural resources for livelihood needs as opposed to conserving them for economic or recreational reasons. The situation turned around when colonisers came to South Africa (Anderson 1987:17).

The first formalisation of conservation in South Africa (SA) took place in 1888 when the Cape government enacted the *Cape Forest Act of 1888* and declared Knysna as a protected area under the law. Declaration of protected areas framed by government were in response to declining wildlife stocks due to intensification of hunting for trophies, commercial purposes and meat consumption purposes (Anderson 1987:2, Warren and Goldsmith 1983:10). Proclamations of protected areas continued at the expense of the people living adjacent to the declared protected areas. More Conservation Acts and Land Alienation Acts came into being in order to dispossess the people living in and around the parks from the land especially blacks. *The 1913 Native Land Act*, as Warren and Goldsmith (1983:14) explain, reinvigorated previously-enacted and disparate laws by codifying them into an overarching system that facilitated and expedited land disposessions.

Conservation approaches through declaration of protected areas continued throughout South Africa. Protected areas such as Kruger National Park (which is one of the biggest parks in the world today) Hluhluwe, Umfolozi and St Lucia Game Reserve in Kwasokhulu came into being because of these proclamations. Eventually central government decentralised its conservation authorities to provinces (Grimble 1998:15). Provincial governments continued using the same format as central government. They continued to establish more nature reserves and lobbied private institutions such as conservancies to work with them in proclaiming more land for conservation purposes. In the Province of KwaZulu-Natal, which is central to this research dissertation, the Natal Parks Board (NPB) managed the conservation of natural resources.

According to the information extracted from Ekznw/archives NPB as an organisation had a rich heritage of nature conservation in the province extending back more than 200 years (Ekznw/archives 2005: 10-13). In the 1970s, the continuity of this heritage was fractured when the South African government split the NPB into two agencies in line with its apartheid policy. The NPB was given the responsibility of conservation in the 'whites only' conservation areas of Natal province and the Department of Nature Conservation (DNC) was allocated the responsibility for that portion which was designated as a Zulu 'homeland'. In 1994, the political landscape of South Africa changed and democratic elections were held which resulted in a new government coming into power (Ekznw/archives 2005:14). The new government drafted a supreme law called the *Constitution of the Republic of South Africa (1996)*. The main objective of the Constitution was to correct injustices that were created by the previous apartheid system in many aspects (Ekznw/archives 2005:13).

This dissertation concerns itself in particular with Section 24 of Chapter 2 of the Constitution that advocates for environmental management in both national and provincial governments. Chapter Two outlines an attempt by the democratic government to find consensus between the needs of conservation and development to the benefit of South African citizens. For this reason, in 1997 after the first democratic elections, two parastatal organisations, the NPB and DNC, were amalgamated to become the Ezemvelo-KwaZulu-Natal Wildlife (EKZNW). They were amalgamated through the *KwaZulu-Natal Nature Conservation Act (1997) (KZNNCA)* which is an Act that falls within the parameters of the Constitution. Parts of the EKZNW mandate were to implement the *National Environmental Management Act 107 of 1998 (NEMA)* which makes provision for the management and conservation of biological diversity but also notes the objective of providing for the declaration (Kotze and Plessis 2011:27).

Table 2.1 Summary of policy and legislation relevant to conservation planning

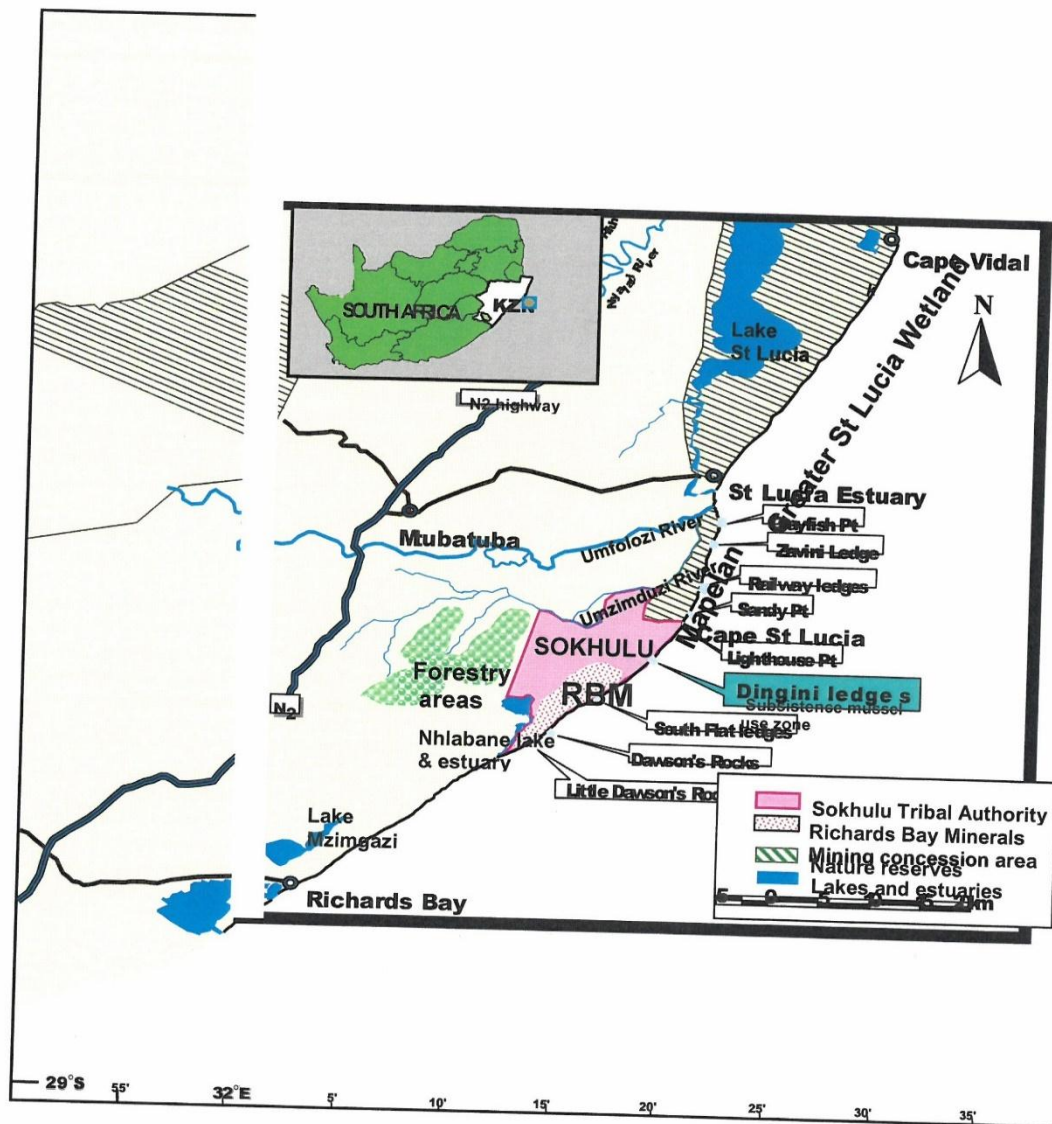
<i>Constitution of the Republic of South Africa Act of 1996</i>	Protects the Environment to exist in its own right and for the benefit of the citizens of South Africa	Enshrines the rights of South African citizens to enjoy an environment that is clean, safe and not harmful to their health
<i>National Environmental Management Act 107 of 1998(NEMA)</i>	It points out the need for ecological viability and preservation of South African biological diversity. It also provides	It lists the type of areas that can be declared as protected areas under this Act and all provisions for specially protected forest areas, forest

	for the classification of protected areas.	nature reserves and forest wilderness areas as declared under the <i>National Forest Act</i> (NFA).
<i>Marine Resources Living Fund Act 107 of 1998 (MRLF)</i>	It sought to recognise previously unrecognised resource users along the coast, protected areas and reserves in South Africa.	Promote sustainable management and uses of marine resources by people living along the coast
Convention on Biological Diversity	The Convention on Trade in Endangered Species of Flora and Fauna.	It recognizes the special value of natural resources and acknowledges our obligation as members of the global community to protect adequately the natural resources and biodiversity of the world.
National Biodiversity Strategy and Action Plan(South African National Biodiversity Institute)	National planning processes leading to the development and implementation of CBD and Agenda 21	Provide a conservation planning framework based on bioregionalism and priority areas. It also includes the listing of levels of ecosystem endangerment and targets for all vegetation types.
<i>Environment Conservation Act No 73 of 1989</i>	It regulates the activity and the permitting for the protection of the ecology, the biophysical systems and the biophysical beauty as well as preservation of biotic diversity in the biophysical environment	The establishment and improvement of environments which contribute generally to an acceptable quality of life for the inhabitants of the Republic of South Africa

Source: EKZNW Archives 2005:12

Figure 12.1: Map showing South Africa and the study area in Kwasokhulu

2.1 Figure Map showing South Africa and the study area in Kwasokhulu.



Source: Ferrar, 1983:16

2.2 Description of a study area

2.2 Description of the study area

Kwasokhulu is a rural reserve in the UMkhanyakude District Municipality of KwaZulu-Natal (KZN) in South Africa. It lies in the northern part of KZN along the East Coast of South Africa between St. Lucia and Richards Bay, immediately to the southwest of the Maphelane Nature Reserve, which forms part of the recently proclaimed Greater St Lucia Wetland Park World Heritage Site (GSLWP). Kwasokhulu falls within the Kwasokhulu Tribal Authority and it is located along the coastline and boasts several renowned scenic spots. The natural resources harvesting areas that are traditionally used by the Kwasokhulu community for livelihoods fall partly within the World Heritage Site and partly outside of it to the south. EKZNW set aside the two kilometres stretch as a subsistence-fisheries harvesting zone for the Kwasokhulu communities. It is called Dingini or Flat Ledges and lies at (-28 32 40 S) (32 23 42 E) in the region of the Maphelane Nature Reserve (Ferrar, 1983:16)

In the Kwasokhulu district there are an estimated 100 000 habitants that do not have access to electricity or piped water. The age profile of Kwasokhulu ranges as 15 to 64 with children accounting for about 36 per cent of an estimated slightly over 100 000 population of the area. The elderly only make up 4.2 per cent of the population (*Kwazulu-Natal Provincial government reports 2016:57*). Its challenge is to provide basic services such as water and sanitation to these people while stimulating local economic development, job creation and the growth of the small and medium business sector for livelihood purposes. The need to address poverty is one of the most pressing and critical issues. Historically the area was the source of cheap labour for the mining industry with mine salaries then being the main source of income in the community. Unemployment in the area increased exponentially and job opportunities have declined over the past years.

Poverty is widespread, predominantly in the villages faraway from St Lucia town. Those with temporary or permanent jobs are to be found in government services such as the Police Force, Army, Welfare Department or Health Services and in the local banks and shops. These represent a small minority of the population, the remainder subsisting on what they able to harvest from the sea or grow themselves, occasionally on poor pay for, casual employment and the pensions of the elderly members of the extended family (*Kwazulu-Natal Provincial government reports 2016:62*). As far as household income is concerned,, the verified total gross monthly income of all occupants over the age of 18 years of age does not exceed the combined total of the pensions of two old age state pensioners (estimated to be R2 400), or such other amounts as the district council may determine from time to time. On the positive side Kwasokhulu is situated within a World Heritage Site (WHS) and it is endowed with natural resources which are fundamental to its competitive

advantage. In addition, it has a good climate that opens up the potential for good agricultural tourism development. Good agricultural infrastructure is in place, and the scenic environment and coastal terrain create opportunities for employment.

2.3 Relevance of South African policy framework to study area

South Africa enacted new laws in 1994 in order to reverse the environmental injustice of apartheid. It enacted the *Reconstruction and Development Programme (RDP, 1994:6)* for South Africa. The RDP stated that the primary objective of the new policy would be to uplift impoverished coastal communities through improved access to resources (*Ekzwn/archives 2005:14*). South Africa strengthened its natural resources management policy framework position by becoming a party to various international and regional conservation agreements. These international conservation agreements seek to serve as natural resources management instruments that promote the proclamation of MPAs as a part of broader protected areas.

Hosting of *World Summit on Sustainable Development (WSSD)* in Johannesburg in 2002 and the *Fifth International Union for Conservation of Nature (IUCN) World Parks Congress* in Durban in 2003 played a leading role for protected areas as mechanisms to balance between nature conservation and poverty alleviation in South Africa and across the world. Adding to the above, South Africa is a signatory to international agreements and resolutions that were agreed to at a global level and they are binding. Some of these resolutions are in the South African Constitution as the supreme law of the country. For example, *Section 24 of the Constitution is the Bill of Rights*, guarantees the rights of people to an environment that is clean and not harmful to their lives (*Ekzwn/archives 2005:13*).

The National Environmental Management Act (NEMA) 107 of 1998 as listed in the preceding table on pages 12-13 is a suite of laws enacted after the passing of the new Constitution to consolidate environmental management provisions in the constitution. On its own, NEMA provides the principal legislative framework for environmental governance in South Africa. NEMA translates the environmental principles and the rights contained in the Constitution into legal provisions and identify procedures and mechanisms for implementing these principles (*Ekzwn/archives 2005:14*). Hersoug (1996:16) explains that fisheries resources before 1994 were highly skewed. White people had established small and large-scale fishing enterprises compared to blacks who were denied access to these resources. For this reason the *MLRA Act*, which came into effect in September 1998, attempted to correct the imbalances of access to marine resources by recognising subsistence coastal resource users as a formal sector for the first time. Provision of rights to this

previously neglected sector, as Anderson (1987:22.) explains, presented a major challenge as very little information about them existed and management systems had not been developed.

In December 1998 the Chief Director of the Marine and Coastal Management (MCM) of the Department of Environmental Affairs and Tourism (DEAT) appointed a special Subsistence Fisheries Task Group (SFTG) to provide recommendations with regard to systems for implementation of subsistence fisheries management. The SFTG submitted its recommendations to MCM in January 2001. Subsequently, MCM accepted the recommendations and it undertook a Feasibility Study to develop a Business Plan to implement a fisheries process with the original goal of issuing permits in 2001. For this reason, SFTG started with a process of identifying a large number of subsistence fishermen who lived on the east coast where MCM has almost no capacity or systems in place to manage the use of resources (*Ekzwn/archives 2005:19*)

The Department (MCM) received a five-year donor funding from the Norwegian Agency for Development (NORAD) in the year 2000 to implement a Subsistence Fisheries National Management Programme. The programme was to be implemented in KwaZulu-Natal by the provincial authority, Ezemvelo KZN Wildlife, whose staff had been crucial to the successful operation of the SFTG. It was chosen as the implementing agent to ensure that the process of rights provision to these fishermen, who had a long historical and cultural link to fishing in the region, could go ahead (*Ekzwn/archives 2005:18*). Other major objectives of the programme were to facilitate the establishment of local co-management structures in each subsistence community and to ensure that an adequate set of control and compliance mechanisms is in place (*Ekzwn/archives 2005:19*).

Co-management of fisheries resources between EKZNW and people living along the coast was an attempt by government to recognise the needs of subsistence fishermen who were dependent on natural resources for consumption purposes. One would appreciate, taking from historical information in the public domain, that the South African government's directional policy after 1994 was intermingled with various interests. For example, a neoliberal stance, which was an agreement between South Africa (SA) and the International Monetary Fund (IMF) that SA, adopts a new internationally aligned macro-economic policy.

That macro- economic policy involved promoting a large, commercial and export-oriented economy, which resulted in increased exploitation of natural resources. On the other hand, the SA government was responsible for bringing previously marginalised fishing communities into co-management with the fishing administration system that had in the past favoured mostly white commercial and recreational fishermen. Therefore, the creation of co-management after 1994

sought to level the playing fields by incorporating the interests of the subsistence fishermen who were previously side-lined by the system (Jentoft, 2004:16). The following section will elaborate on the linkages between fisheries and livelihood.

2.4. Linking co-management and sustainable livelihood to fisheries conservation

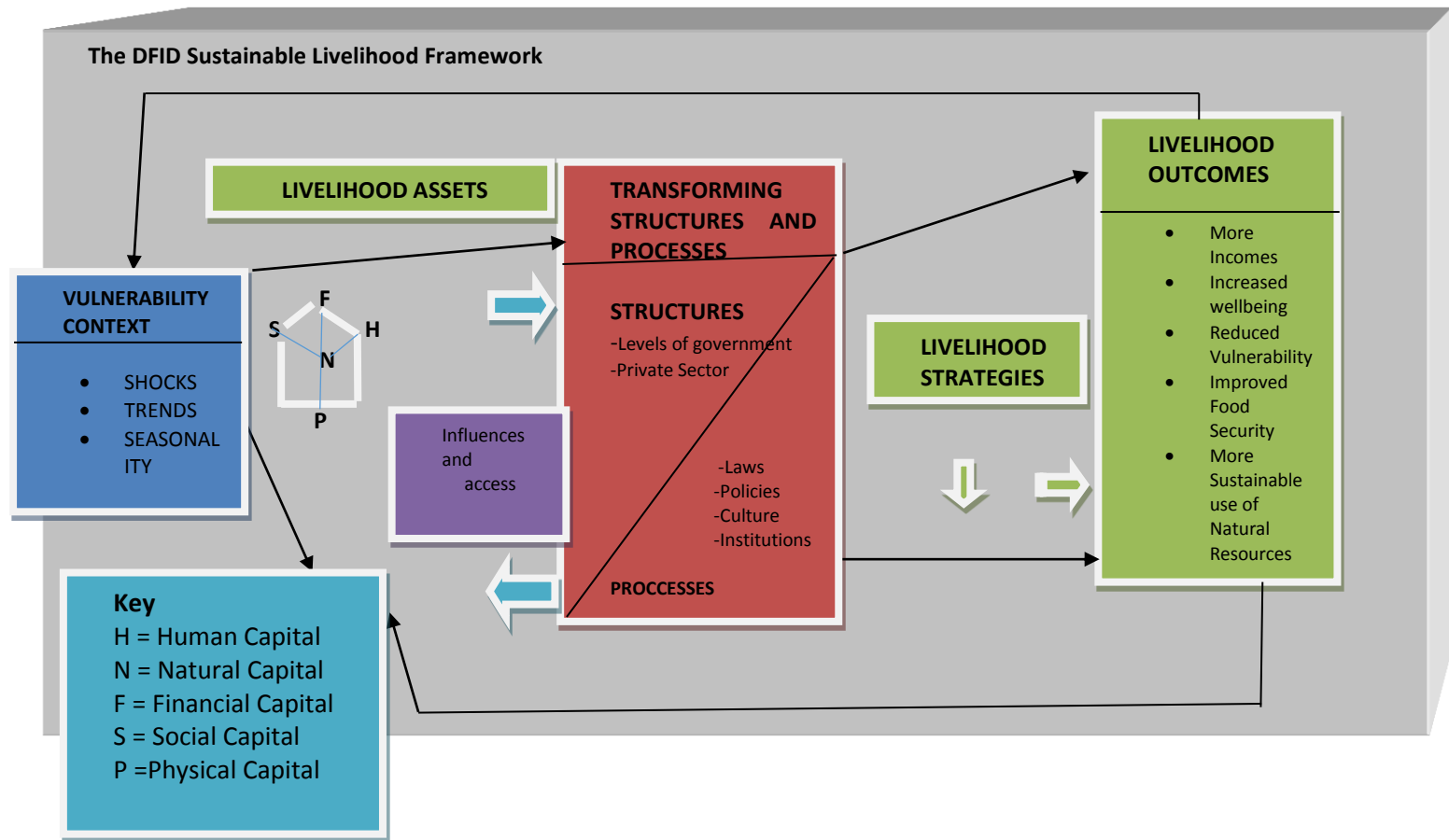
According to Maynard (2010: 117), the linkages between natural systems management and human needs are widely recognised. This is because the successes of natural systems of protected areas are intrinsically dependent on the behaviour of people in the use of marine coastal resources.

Therefore, one would need a midpoint between the interests of these entities rather than managing each entity in isolation. As has been mentioned, blacks were regarded as poachers by conservation authorities before the *Constitution Act of 1996*. The new laws, which came into being to give blacks along the coast access to fisheries resources posed complexities for conservation authorities which emanated from high expectations on the part of coastal communities to access fish resources in greater volumes. The concern was whether or not fish resources could adequately be replenished in the face of the expectations of greater exploitation and demand from the users.

This co-management effort was further complicated by the fact that Kwasokhulu falls within the parameters of the park declared a World Heritage Site in December 1999 and it is strictly monitored through international law which is covered by the *Convention on Biodiversity* (CBD), the *Convention on International Trade and on Endangered Species* (CITES), and the *Constitution of South Africa* (Kotze and Plessis 2011:25). In simplified terms, CITES would require South Africa, as a signatory to *International Environmental Law* (IEL) to incorporate international laws into South African domestic laws. It aims to provide for the protection of ecosystems that are threatened or in need of protection to ensure their survival in the wild; give effect to South Africa obligations under CITES and to ensure that the utilisation of biodiversity is managed in an ecologically-sustainable way (Kotze and du Plessis 2014:9).

In the same vein, the South African government has an obligation to its citizens and, in terms of the Constitution; they are obliged to ensure that they benefit from the exploitation of natural resources. The social livelihoods of Kwasokhulu residents deserve the same consideration, for protection, conservation and preservation of a World Heritage Site. In terms of literature, the development of sustainable livelihoods has been covered in many different ways over a long period. However, the most common approach is developed around the widely-used framework of the UK Department for International Development (DFID) (Armstrong 1991:15). The framework is used as a tool to improve our understanding of livelihoods, particularly the livelihoods of the poor. The next paragraph will briefly provide the framework as a guide.

Figure 2.2 Sustainable Livelihood Framework (SL)



Source: Carney et al., (1999: 35).

The framework presents the main factors that affect people's livelihoods and typical relationships between these factors. It can be used in both planning new development activities and assessing the contribution to livelihoods (Carney et al., 1999: 35). It is centred on people and does not try to present a model of reality. Its aim is to help stakeholders with different perspectives to engage in a structured and coherent debate about many factors that affect livelihoods, their relative importance and the way in which they interact. This in turn helps in the identification of appropriate entity points for support of livelihoods (Carney et al., 1999:3).

The historical context of EKZNW as a conservation authority was to ensure that communities adjacent to conserved areas are compliant with the mandate of the organisation. Its mandate was to conserve natural resources with minimal disturbances from adjacent communities. For many years, it has been trying to prevent the Kwasokhulu people from using the marine resources, which resulted in patterns of conflict. This was contrary to the realisation that conservation efforts cannot

work unless the social livelihood interests of the community where protected areas are located are considered (Grimble 1998:5). It has been suggested that a useful approach to dealing with poverty requires an understanding of how people earn their livelihoods (Carney 1998:13, Chambers and Conway 1992:16).

The livelihood approach is a concept that “attempts to identify the most pressing constraints faced by, and promising opportunities open to, people regardless of where (for example, in which sector, geographical space or level from the local through to international) these occur”(Chambers and Conway 1992:5). It further describes a manner in which people meet their basic needs in terms of acquired goods and services (*Oxford University Dictionary* 2004: 594). Objectives of livelihoods can be compromised if they have a detrimental impact on the surrounding environment such as inhibiting the capability of natural resources to replenish. Chambers and Conway (1992:13) emphasise that a livelihood could be environmentally sustainable if it maintains and supports assets on which the livelihood depends and which have a ripple effect on other livelihoods.

In Kwasokhulu people are directly dependant on marine resources in the form of fish, mussels, redbait, medicinal plants and other resources. Their direct dependence is on natural resources that are a critical component of their livelihoods. If EKZNW denies them opportunities to access these resources, it is possible that they would become vulnerable to all manner of social ills in their attempt to meet their needs. “The strength of poor people’s livelihoods depends on natural resources in the times of stress” (DFID 2002:14). That conservation authorities favoured recreational, aesthetic, preservation and commercial issues in isolation from the needs of social livelihoods have compromised co-management attempts to address the plight of livelihoods maintenance in South Africa, including the study area (Armstrong 1991: 19). The SL framework, as adopted in this dissertation, advocates the understanding of poverty and strategies to combat it as a component of a livelihood system. It facilitates the shift in thinking, especially for authorities, that conservation and livelihoods are two sides of the same system that is multi-dimensional with environmental, economic, social and political facets. It is for this reason that conservation initiatives must engage the linkages between conservation and sustainable livelihoods in order to improve the quality of the life of poor people.

The linkage between managing natural resources and community livelihoods poses complex challenges especially from the perspective of conservation. . The democratisation process pressured government to change the Apartheid era policies and practices on conservation that disempowered black communities. Changes involved government acknowledgement that biodiversity could succeed if it considers the basic needs of surrounding communities in protected areas (Armstrong 1991: 20). By the same token, one needs to appreciate that meeting the needs of livelihoods of the

poor is a complex phenomenon, which cannot be met by conservation objectives only. Particularly when one considers that the primary aims of conservation are not to fulfil the objective of sustaining livelihoods.

However, by using an inclusive approach, this can involve both the promoting of livelihoods in neighbouring communities and conservation objectives at the same time. It is in this context that EKZNW implemented co-management in Kwasokhulu conservation initiatives.

2.5. Implementing co-management to achieve livelihood needs

Marine resources in the form of fisheries provide essential ecosystem services to a large number of South African people living along the coast. The contribution of this sector to the South African economy and to the well-being of resource users is important and results in the positive development of the country's stability. The sustainable management of fish resources in the wake of poverty and natural disasters such as climate change is often compromised. It is also considered as a crisis to institutions that are tasked with conservation management (Andrew et al., 2007:12). Approaches to conservation of these resources by conservation institutions is another contributing factor to the crisis mentioned above.

“Co-management is an alternative approach to conventional management of natural resources which has found considerable traction within the fisheries sector” (Evans et al., 2010). Carlson and Berkes (2005:15), as mentioned earlier, define co-management as the sharing of responsibility and authority between the state and resource users but it includes any other stakeholders who may be interested. Much of the emphasis is to strengthen the potential protection of natural resources and meeting the needs of livelihoods at a local level whilst improving the legitimacy of the state involvement in fisheries management through more inclusive and transparent decision-making processes (Berkes 2009). Recognising everybody with an interest in natural resources can lead to a collective effort in managing resources, in reducing conflict and in encouraging compliance among resource users. It can also serve as a basis to integrate all value systems in knowledge that can improve problem definition, innovation of resources and social learning (Kuperan et al., 2008:7, Pomeroy et al., 2007:12).

There are different types of co-management, but the most common according to www.ccenet.net-10/09/2014 are-

Consultative co-management which is common and typically refers to situations where the decision-maker (usually a national level management institution such as a national department) merely seeks the opinion of other stakeholders on decisions to be made;

Collaborative management implies a stronger, and more equitable, partnership. Some people use the phrase **co-operative management** to mean the same thing; and

Delegated co-management includes, but is not limited to, community-based management where stakeholders outside of government are delegated nearly full decision-making powers. It is important to mention that various types of co-management as stated above do not form a sequence in time or as a continuum from good to best, but any one of them can be applied and may be appropriate according to the particular situation.

2.6. Reasons for implementing co-management in Kwasokhulu

NEMA 107 of 1998 articulates a number of principles, which support co-management (Pomeroy et al., 2007:12). As mentioned in the preceding statements NEMA was one of legislations meant to correct imbalances of the Apartheid period, which denied access to marine resources to the majority of black coastal residents.

A basic principle of NEMA is to promote-

Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.

The participation of all interested and affected parties in environmental governance must be promoted and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation by vulnerable and disadvantaged persons must be ensured. (www.uctscholar.uct.ac.za-02/06/2014).

Apart from EKZNW wanting to implement the above legislation in Kwasokhulu it also sought to move away from the conventional method of command and control with its strong reliance on heavy resource-monitoring regulations. In much of the literature, it is recommended that in managing resources effectively this requires an understanding of how people earn their livelihoods (Conway and Chambers 1992:12) As reported in the preceding statements about the dire economic situation in Kwasokhulu, it is a qualified assumption that there is a resource crisis in that area. Especially if one considers that people are highly dependent on coastal resources. As such, it warrants the stage where conservation authorities and the people are motivated to invest their time and effort to try new methods of managing resources such as co-management. According to Andrew et al. (2007:14) the sharing of resource management problems helps to establish a common interest between conservation authorities and resource users.

Responding to the resource crisis by including conservation authorities and resource users is assumed to work well as everybody can feel represented. It is a reasonable assumption that co-management can work well if everybody who is involved does not prioritize their self-interest, sometimes justified by custom and religion. This self-interest can be regarded as a higher priority than objectives of conserving resources in order to promote livelihoods. Moreover, Dixon (1994:8) supports this point by re-

emphasizing that “co-management requires teamwork, and to know the players and their agreed roles for the group to work well together.”

The implementation of co-management in coastal areas of South Africa was guided by definitions that were recommended by SFTG, which performed various task as mandated by MCM.

The SFTG (2000:23) recommended the following definitions of fishers:-

Subsistence fishermen: *They are poor people who personally harvest marine resources as their source of food, or sometimes to sell in order to meet their basic needs of food security.*

They operate on or near to the shore or estuaries, live in close proximity to the resource, consume or sell resources locally, use low technology gear (often as part of a long-standing community-based or cultural practice), and the kinds of resources they harvest generate only sufficient returns to meet basic human needs of food security(www.ajol.info-10/03/2014).

Criteria for qualification as a subsistence fisher: *Fishers must collect/fish personally, although immediate family members registered under their permit/license may collect on their behalf (but not on the same day). Fishers must not employ staff to undertake processing harvesting or sale. All resources must be categorized in terms of their suitability for use by subsistence fishermen Only low-technology gear that is not capital-intensive may be used for capture and processing of subsistence resources. Specifically excluded would be motorized boats electronic equipment, hookah and scuba gear. Subsistence fishing will be restricted to estuaries, the seashore, in the adjacent sub-tidal zone someone operating from the shore, if not motorized, can harvest that, or sailing boats are used. Subsistence fishers must live in close proximity to the resources (i.e., within 20 km) (www.ajol.info-10/03/2014)*

Commercial fishers: *They are fishers who fish for profit and earn an income that is sufficient to meet more than the basic human needs of life. They can employ staff or operate as profit-sharing collective groups; focus on resources that are managed by total allowable catch (TAC) or total allowable earnings (TAE) and which have a high value or can be caught in large quantities and may use capital-intensive high-technology gear and methods of processing.(www.eeu.uct.ac.za-10/032014)*

Criteria for recognizing commercial fishers

Commercial fishers operate as individuals, in groups or companies, and can either employ people or work as a group and share their profits within co-operatives.

They embark on a business with the aim of making a profit.

The resources they harvest either yield high prices or can be harvested in sufficient quantities to generate a profitable income. Capture of the resources is not limited to the shore or estuaries and sale of the resources is not restricted to the vicinity of the capture.

The resources are often processed to increase their value, and at least a part of the catch is often exported. (ww.ajol.info-10/03/2014).

Subsequent to the recommendation of definitions classifying different categories of fishers, the 143 communities were identified along the coast of South Africa. Nineteen of them were from KZN. Twenty thousand households were estimated to be dependent on marine resources and 30 000 fishermen were regarded as actively involved in fishing (Jentoft, 2004:16). In August 2000, EKZNW in consultation with fishing communities established co-management structures in KZN, including Kwasokhulu, a focus area of this dissertation. As a conservation authority, EKZNW was responsible for issuing of permits for communities to harvest marine resources for household consumption and a small amount of surplus is sold.

Figure 2.3: Co-management structures: Partners and Institutions

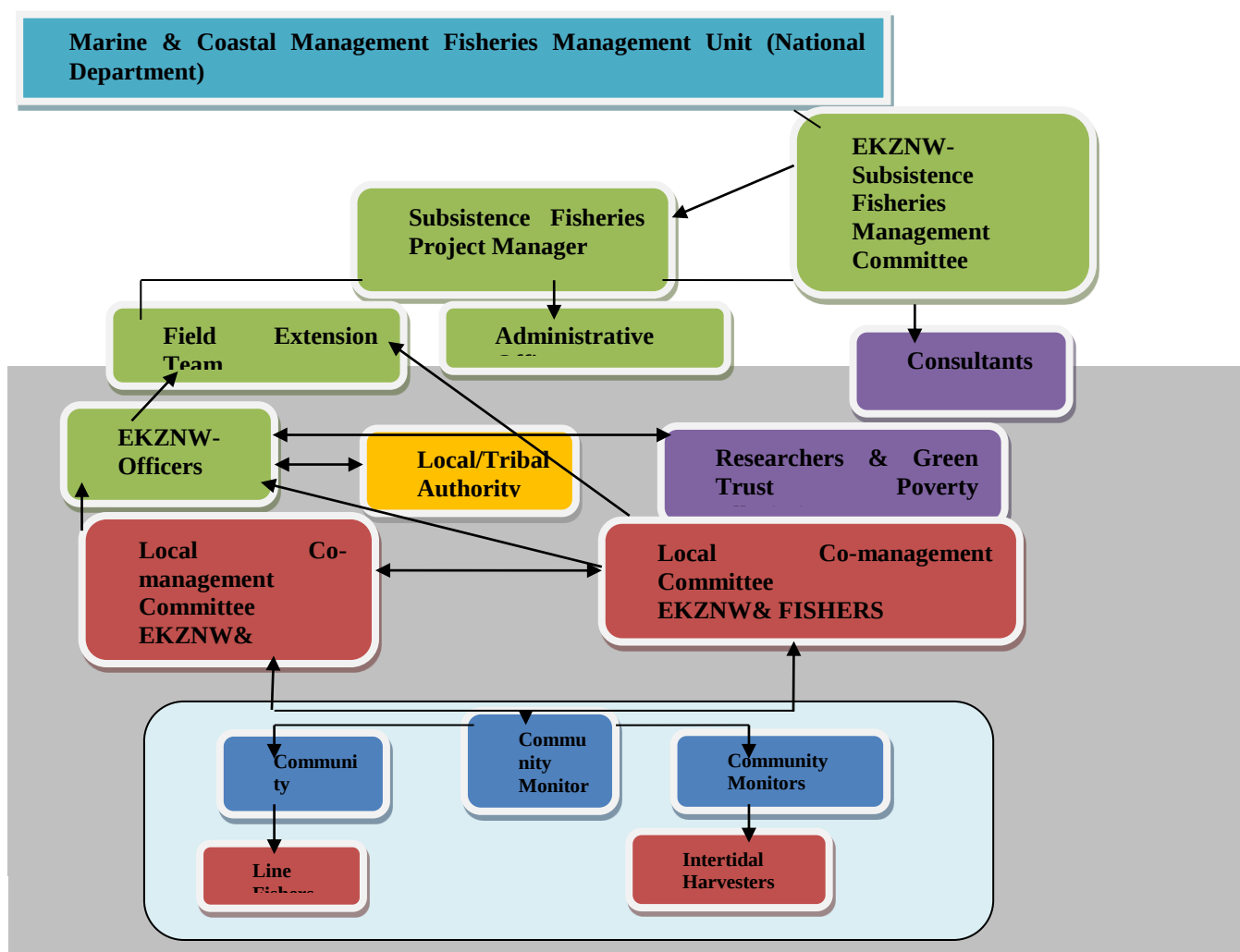


Figure 2.3: shows current management and linkages structures for subsistence fisheries in KZN, MCM at national level and EKZNW at provincial level play leading roles in management.

Source: Kemp (2009:45).

Explanation of Figure 2.3: Co-management structures: Partners and Institutions

The graph illustrates the co-management of a subsistence fisheries programme that is jointly managed by Marine & Coastal Management (MCM) and funded by the Norwegian Government as indicated in preceding paragraphs. The programme is managed through the Subsistence Fisheries Management Committee (SFMC) that controls issues of national concern, supports and co-ordinates the activities of provincial and local structures. EKZNW is the implementing agent in the province of KwaZulu-Natal and was mandated by MCM to work with the SFMC at a provincial level.

Under EKZNW, there is the Subsistence Fisheries Implementation Unit (SFIU) responsible for direct fisheries implementation in the province of KwaZulu-Natal. The unit comprises a project manager, project administrator, data capture clerk, data technician, four field extension officers, four monitor supervisors and thirty-eight community monitors. The above-stated unit is responsible for direct implementation of the fisheries programme for nineteen identified communities as qualifying for the fisheries beneficiation programme on the KZN coast. These identified communities are represented by forty-three local co-management structures that have been established and formalised by EKZNW subsistence fisheries implementation unit.

The EKZNW implementation unit is continuously engaging co-management structures about legislation, issuing of permits and all other issues relating to marine resources management. The Implementation Unit also engages with other important stakeholders in the fisheries programme such as the Local or Tribal authority that need to be consulted or sometimes represented in issues relating to co-management. EKZNW researchers also play an important role in the programme by conducting research and proposing recommendations based on their research findings (Kemp 2009:98).

It is difficult to say whether or not the implemented co-management approach has been beneficial to all parties concerned in the Kwasokhulu system. However, it needs to be remembered that the original context of co-management is sympathetic to social theory and to co-operative theory (Wilson 1993:4). In terms of Berkes's (1985:38) social and co-operative theories, co-management dates back to when natives used indigenous methods of managing natural resources. As time progressed indigenous methods were interwoven with and were greatly affected by the new world order of world economic policies (Charles 2001:5).

The discussion of co-management in this dissertation seeks to determine if it was applied with the aim of improving relations between conservation authorities and people who are reliant on natural resources. Further, to establish whether or not the indigenous knowledge is utilised and the pressing needs of local people is considered in possible combination with new technologies and expertise of the conservation authorities in managing natural resources. The key objectives of co-management according to Andrew et al., (2007:4) is to combine expertise of all role-players and to agree on the roles and responsibilities of management so as to develop a strategy of making decisions together. However, one should highlight the complexities that arise in application of co-management with people with limited or no alternative livelihoods.

Public domain information from studies in southern hemisphere countries indicates that communities do not consider themselves equal partners in the co-management initiated between conservation authorities and resource users (www.icsf.net-07/05/2013). While, there have been recent efforts to enhance community participation, a major problem is that communities are expected to participate in implementation, but are not part of the process of designing and implementing management initiatives(*EKZNW Archives 2005:12*). The studies emphasise clear costs to communities in terms of livelihood options lost, expulsion from traditional living grounds and spaces, and violation of community human rights (www.isf.net-10/052013).

2.7 Chapter summary

The affected communities regard alternative co-management options as providing limited, if any, support, and, in several cases in South Africa, they do not perceive substantial benefits from income initiatives associated with protected areas. There tends to be resistance among local communities to the concept of marine protected areas and a mistrust of government co-management initiatives eventually that lead to violations of rules and regulations by resource users and an undermining of the effectiveness of protected areas. It is premature to indicate whether or not Kwasokhulu local resource users share the same sentiments as those stated above. This will be revealed towards the end of the study (www.isf.net-10/052013).

CHAPTER THREE

INTRODUCTION OF THE THEORIES BEHIND THE RESEARCH

3. Introduction

After being exposed to systems-thinking as the underpinning theory in this research I began to realise that conservation in South Africa has historically been technical and in the form of command and control. In other words, conservation authorities relied on the data that was captured and collated by technicians and deemed this to be sufficient for them to formulate conservation policies and to implement them. It helped them then, but it is impractical to use this now in the current times of conservation complexities. Although it is a kind of an approach that still prevails in EKZNW as an institution that is mandated with conservation management, it would be difficult to apply it in Kwasokhulu area as issues involve humans and their livelihoods in conserved resources.

Working with EKZNW as a project manager to implement the fisheries co-management project exposed me to a great deal of literature around conservation and natural resources management. I also worked with various scholars and researchers from various institutions who had an interest in publishing and doing academic work on the Kwasokhulu co-management project. In the process, I realised that much of the research carried out resembled operations research (OR). The Operations Research method is more oriented to deal with hard issues that have clearly defined boundaries. One example for applying OR in the context of EKZNW is that it is a conservation authority tasked with managing wildlife nature reserves (NR) and marine protected areas (MPA). As such, it can achieve its mandate by employing its staff to perform key deliverable functions. However, when it comes to issues that are deemed complex it fails to probe below the surface.

Even so, operations research in terms of systems-thinking can still contribute to improving the understanding and to communicating the range of issues involved in natural resources management (Dykstra 1984:5). In other words, it serves specific purposes within each system and, at times, it is pertinent to both hard and soft systems.

The hard systems approach as Lewis (1994:7) explains it “encompasses an ontological view on the concept of a ‘system’ as it is used to label objects in the real world, and analysis is based on the idea that the world is made up of systems and subsystems”. In other words, hard systems as Lewis (1994) further explains, regard the organisations as logically-arranged goal-seeking mechanisms. Accordingly, a conservation organization like EKZNW can rely on OR as one of their information-seeking mechanisms.

Operations Research is the opposite of the systems-thinking perspective, but it is tackled through a central approach system of command and control in which authorities have all the powers to take decisions. Although, a central approach worked for South Africa, it resulted in conservation authorities treating conservation itself as an ordered stable system. Dahlbom and Mathiassen (1993:15) emphasise that possibilities for the use of a stable systems approach to hard systems is comparable to humans concluding that their thoughts are a true representation of the realities of the world. Our individual viewpoints make us see the real world as a system for us to discover and analyse. *The Marine Resources Living Act of 1998 (MRLF)* “sought to recognize previously unrecognized resource users along the coast” ([www.npb.co.za/archives 02/09 2012](http://www.npb.co.za/archives/02/09/2012)) in protected areas and reserves in South Africa. In addition, MRLF sought to address beneath-the-surface issues of EKZNW as a system. An appropriate metaphor to describe it would be an organisation that is a mechanistic system that adheres to a strict hierarchical structure, centralisation of authority and treating all objects, events and properties in terms of decisive elements.

The available literature and research referred to thus far paints a broader picture of the issues of the area. However, none of the literature goes beyond the hard issues in order to consider the soft issues in the system. Whilst the literature and research covered is comprehensive, it all revolves around what Checkland and Holwell (1998: 9) terms “organizations that are seen as goal-seeking entities and the roles of information are to provide an aid for decision-making”. In order to bring to the surface issues that were neglected by previous research, this dissertation broadens the produced knowledge by addressing the underlying soft issues in what is from this perspective an ill-structured/messy problem.

Those soft issues which this dissertation feels have not been addressed are important to unpack because it is a messy problem that is embedded in the Kwasokhulu system as a whole. This dissertation is not questioning the credibility of the research already undertaken and the literature that has been written in the past about Kwasokhulu. It proposes instead to strengthen the previous research by filling in the gaps and by enquiring into the capacity of the core systems partnership to achieve its objectives that lead to purposeful action in a continuous cycle. The researcher advocates applying Soft Systems Methodology (SSM) which is proposed by Dahlbom and Mathiassen (1993:9) as the “strategy for expressing different perspectives in the soft systems approach to engage people in debates with the purpose of reaching some sort of agreement of the problem situation and possible solution”. Consequently, this will provide some clarity on intended organizational and community transformation in systems-thinking and may provide broader perspectives into the nature, intentions and challenges facing Kwasokhulu community and EKZNW as participants in one system.

3.1. Broadening the clarification of Systems Thinking

Systems thinking gained its prominence after the 1940s as an approach trying to recognise that some problems cannot be resolved unambiguously to the satisfaction of those affected by the problem. People were frustrated with trying to explain complex issues by analysing cause and effect and they realized that a system as an entity was not an easily reduced, completely understandable composition of $A+B=AB$. As much as mechanistic thinking analysis was valuable to expand a knowledge base it also recognised that it did not provide an understanding of how the system could contain parts that were not immediately apparent in the system. Along with this awareness came the appreciation that a complex system does not operate in a vacuum, but that the surrounding environment affects it, and vice versa. A new way of thinking about the complex world was called for in order to highlight a phenomenon as a cohesive whole, appreciating interdependent parts of a system interacting with each other and their environment for purposeful action.

Systems' thinking as Armstrong (1991:20) and Weber (1978:28) explain recognises that some problems are more complex and at times have features involving a human activity system, which is invisible to all stakeholders. Often systems that are comprised of humans require a higher level of complex judgment about the level of abstraction to define the problem. Checkland (2005:17) expands on systems thinking as an interpretive approach to organisational or systems problem-solving which serves to provide a structure for action research in which desirable changes and institutional learning is the aim. Typically, change and learning is associated with the design, introduction and application of the new information systems. It is a way of dealing with high social, environmental and complex political systems.

3.2. Introduction of Systems Thinking

Luckert (2001:21) is credited with demonstrating that the systems thinking concept is fundamentally different from that of traditional analysis. Progress from the traditional concept was expedited because of a change in the world's collective thinking and views about reality. A change in a world's collective thinking as Checkland (2001: 40) states, led to the new dimension of thinking in social systems. Notably, that change did not refer to structural changes in a real world but it related to new ways of thinking and doing things collectively. To reinforce the above explanation, systems thinking, as a concept does not refer to a real situation as it exists in a real world, rather, it refers to human thoughts on organizing particular things. Whilst, this concept is not about how the real world exists, its application in systems serves as a metaphor to solve complex situations in the real world.

These metaphors, as Flood and Jackson (1998:37) explain, serve to characterise the system in terms of individual perception. Perceptions may play a vital role when people and organisations apply different kinds of metaphors to explain, clarify and make decisions on the situations they encounter in their daily living. The application of metaphors can be helpful when providing solutions in situations termed as complex, but, as stated in the preceding paragraph, caution is necessary because it is not a real world phenomenon. It is important to appreciate that organisations reserve the right to apply or not to apply styles and management theories that hold implicit worldviews and metaphors that make them see any situation in partial ways. The reason being, that organisations have their general conceptions about any systems in place especially when dealing with complex systems networks. Flood and Jackson offer a wonderful range of possibilities around metaphors from which to build our foundation. We often employ them as filters for looking at problem situations facing and shaping our organisations.

In the preceding paragraph, EKZNW was framed as a system that employs mechanistic or command and control thinking. Its mechanistic thinking characterises its conservation approach, where the management system puts emphasis on the visible issues of the conserved or protected areas. I also feel strongly that it would be of great benefit to the EKZNW system to develop openness to its environment. As a system, it should recognise that it is functioning with other parts as a whole. Consequently, it should strive to adopt mechanisms that appreciate the interdependence of different parts of the system as a whole.

Although, I suggest the above, on the other hand, I appreciate any organisational worldview like that of EKZNW that can determine the metaphor that each organisation should employ. At the same time, these metaphors make it difficult for any organisation to accept data and changes not aligned to its particular paradigm. This phenomenon might make a person conclude that system thinking is vague and subjective because of its limitations on the views of the organisation, researcher, observer or intervener. Moloi et al., (1998:35) suggest that this is happening because there is always disagreement by different parties on a complete understanding of the system. Even if the observer is willing to relinquish his/ her view of the world, the observed may not be willing to allow the observer to tap into *their* worldviews.

In light of the above, Morgan (1997) suggests that we should always appreciate the benefits of using systems thinking. Flood and Jackson (1991:89) endorse this notion by explaining that the advantages of systems thinking emanate from seeing the organisation as whole, or as a system that acknowledges multifarious interactions between all elements making up a complete system.

Advantages in systems thinking come primarily from the portrait of an organisation as a sum total, a collection of parts each with a valuable contribution to make to the system, rather than as a

collection of disconnected and separated parts. Systems concepts consist of a number of elements and it appreciates the interconnections between its parts. Consequently, a broad interactive group of elements can be isolated from those in which weak or minimal interrelations take place. This process is achievable by drawing a boundary around the broadly interactive group. The boundary plays a vital role in determining inputs, which could be abstract or physical. But it must be borne in mind that in the above-stated boundary process, the system and its interactive elements is porous to its environment which results in interactive elements feeding back to and altering their behaviour one way or another. For any organisation to appreciate that it is part of a whole, where all elements of the system are interactive, helps to promote the establishment of a self-learning organisation. What I find stimulating in any self-learning organisation is its capability to relate to the outside environment.

In the opposite of the above-stated situation, leadership and management of conventional organisations, tend to insulate themselves as impermeable systems that struggle against the environment, and treat it as a source of disruption and change. For example, the current trend in African conservation authorities as systems is to try hard to insulate themselves against the environment for as long as possible in an effort to preserve the structures they have acquired. Even though they know that they must be responsive to forces and demands operating beyond the boundaries of their system, they still focus their efforts on maintaining the strongest defensive structures possible.

If they were operating holistically as an inverse of a reductionist approach, they would be hard at work focusing on trying to understand how relevant soft issues system factors collectively interact to produce outcomes that are capable of renewing the system while maintaining its identity. To achieve this, part of its viability must be within its internal capacity. This will help the system to create structures that fit the pattern of the moment. The key success then becomes the capacity to manage the interaction between different parts not the parts themselves.

Churchman (1968:16) made us aware that a system cannot transform itself to recreate its structures to maintain its identity if it ignores aesthetics, morality, religion and politics. He further argued that even sophisticated simulation models could not challenge this. Simulation models can only reflect on the attained goals towards the linear interest of the organisations involved which does not reflect the true ethics of the whole process. Linking Churchman's caution to my practical duties as Project Manager for EKZNW, I realised that ethical responsibility is based on human values rather than on an organisational system and that a lack of ethical responsibility can influence the attainment of an organisation's goals negatively by steering it in a direction that is opposed to the organisational interests, but that this may not be visible if factored into simulation models. In other words, ethical

responsibility can result in someone executing normal duties in a manner that is not in the interests of the organisation, but which may be in line with ethics.

When I enrolled at the former Leadership Centre for a Masters Degree, I learnt about systems thinking theories for a first time and it improved my critical reasoning. It taught me that as much as a solution may appear to be academically sound, it may not be the solution to the problem. There are many theories that impact upon the problem context. In addition, it made me realise that neither one view nor a theory is superior to one another. In a given situation they contribute equally or proportionately. Accordingly, I was expected to apply systems thinking to my work environment and for academic purposes with an understanding and with an open mind in the knowledge that constant practising and engagement with any given activity can improve individual competency. Capra (1996:34) concurs with this by claiming that an individual who appreciates the importance of systems thinking, does not take decisions spontaneously, but instead bases decisions on the quality of cumulative intellect distilled from a systems thinking approach.

3.3. Mental models and Systems Thinking

System thinking is not a stand-alone concept but it involves various stages of learning in cycles. According to Buddrust (1996:64), cited in Bell and Morse (1999:85), “systems thinking is a way of transitioning oneself from being an observer of a reality, which is considered to be outside oneself, to a participant in the same reality and towards being co-creator of that reality. This requires fundamental cognitive and emotional reorientation”.

Emotional and cognitive reorientation of individuals is linked to mental models. Meadows et al., (1974:45) describe mental models as concepts carried by different people in their heads. It could be in the form of an abstract perception of the world, which they use to guide their decisions, but these mental models are intuitive generalisations from observations of a real world event. Venix, (1990:17) expands on this definition, by saying that mental models contain ideas, opinions, assumptions with respect to a policy problem and related issues. Senge (1990:8) concurred and claimed that, “mental models are deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action. Very often we are not consciously aware of our mental models or the effects they have on our behaviour” (Lozano 2008:3).

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3.4. Mental models in the processes of learning

Mental models do not become the behavioural norms of an individual in isolation from their surroundings. However, they evolve and vary to influence the interactions and thinking patterns of people within their micro- and macro-level situations. In macro-level perspectives, for example, the impact of mental models manifests itself in the way in which conservation areas are established in South Africa and in the rest of the world. Dixon (1994:3) claimed that they came into being in order to fulfil the interest that is an expression of influential societies over a period and which can shape the mental models of any given entity such as the conservation agency involved to serve those interests.

The influence of a powerful society's mental models shapes the management planning of various conservation authorities around the world. Management planning of conservation authorities as influenced by powerful societies centres on strict and militaristic conservation of natural resources (Hocking et al., 2000:57). Eventually that results in conservation practices that perpetuate the hegemony so that the powerful can continue to fulfil their interests. In the same context, weaker societies who depend on natural resources for their livelihoods have their sets of multiple mental models in relation to conservation of natural resources. As less influential, their mental models do not reflect in management planning strategy of conservation agencies. Thus far, like influential societies they expect conservation authorities to fulfil their interests. If conservation authorities do not fulfil their interest, they put pressure on them to advance them.

As pressures to benefit from natural resources continue from all sections of society, so does the management of natural resources continue to evolve according to what Senge (1990:19) relates to ingrained assumptions which reflect internal pictures and images that people hold about how the world works. As such, these ingrained assumptions become a representations of reality and influence the way conservation authorities manage their protected areas in relation to the varied interests imposed by resource users.

Murphree (1996:98) affirms that mental models held by certain individuals in any system may result in those individuals seeking to manipulate each other and to claim more of a stake in the system. As such, their behaviour reflects expressions of their mental models. Whilst acknowledging that it is our assumptions that guide our actions, Dimbi (1998:9) claims that we are jointly responsible for turning the situation around to travel in a more meaningful direction. We can turn around the situations to benefit our organisation and ourselves if we engage in collective learning. The collective learning is more important, especially considering that the connection between mental models, relationships and social learning has been lacking in many research studies (Ostro

and Jansen 2004:80). It was my duty to address the above-stated gap as an observing Masters Student researcher and participating Project Manager for EKZNW in the Kwasokhulu system. The manner in which to achieve those objectives was to apply systems thinking. By using systems thinking methodology I was bound to surface what Senge (1996:49) explains as different “subjective images or mental models” of the system participants.

According to Moloi et al (2002:3), the reason to unearth those generalisations is to scrutinise them. They can be scrutinised once the dialogue is encouraged to take place among the participants of the system. It is where a platform is created for people to begin to realize and to internalise different thinking patterns whilst paying attention to other worldviews of the systems counterparts. The surfacing of mental models through dialogue is a process that James, cited in Ostro and Jansen (2004:19), regards as the greatest discovery for changing inner attitudes in the minds of human beings and it can change the outer aspects of their lives.

The preceding statement does not suggest that, as individuals, we can change the system, but we need to acknowledge that the process of learning goes beyond the acquisition of the systems knowledge. At the same time, the processes of learning come at a hefty price, as they are associated with a lot of stress that compromises safety. Whilst, learning requires safety, if safety is somehow detached from people, it forces them to submit that learning is difficult or an impossible mission (Senge 1990:19).

During my personal engagement with the Kwasokhulu community, both as an academic researcher and project manager, I thought that my competences complimenting experiences in natural resources management would be sufficient to execute my objectives. I assumed that it also applied to EKZNW as an organisation responsible for conservation and to the Kwasokhulu community at the receiving end. We were combining different elements as participants within the system. In relation to our mental models, we thought of our experiences as sufficient to cope with or to manage the system, not knowing that we still have to learn by being humble and disorientated.

In addition, as Senge (1990:7) says, “to be a real learner is to be ignorant and incompetent, not so many people are up for that”. For us to move forward in learning inquiry within the Kwasokhulu system we had to discard our old mental models of behaviour and had to develop an understanding of how to initiate a new culture. Schein, cited in Senge (1990:8), says that learning requires patience, reflecting, and a willingness to find a new balance between focusing on results and the focus on how we are operating while we are trying to achieve those results. There is also a question of what our new role is in a new system or organisation. As such, it becomes very difficult to shed the baggage of old mental models because we see them as a source of our competencies.

This dissertation has made it clear that it is the responsibility of a researcher to surface issues that have not been captured in previous researches whilst engaging in a learning inquiry at the same time. The surfacing of underlying issues in mental models alone through dialogue processes was inadequate to unleash the full learning inquiry processes. Processes of learning require more cycles of learning that will be undertaken by the researcher as he continues with the compilation of this dissertation which are not easy tasks because, as Jackson (1991:17) reminds us, system methodologies are not theories. They are not accounts of what the real world is like, but are attempts “to set out a principles method for system researchers to follow when they seek to learn about and especially to intervene in a real world” (Jackson 1991:17).

In order for me as a researcher to engage in collective learning, I should have discarded my baggage of mental models. Dahlbom and Mathiassen 1993:76) argued that old mental models need to be done away with for new learning processes to happen. However, any research methodology implemented by a researcher carries embedded assumptions that are stated explicitly or remain hidden (Jackson 1991). Whether these assumptions are consciously or unconsciously included in the research design, they are about how we should learn about reality and about the nature of reality (Jackson 1991:18).

My exposure to systems thinking helped me to balance the impacts of my mental models in designing my research tools in Kwasokhulu. Systems theory enabled me to see participants in my research area as active agents of change in learning together and shaping reality (Senge 1990). Seeing them as active rather than helpless reactors is a cornerstone to “create learning communities by learning together and from each other” (Longworth and De Geest 1995:55). For learning together to succeed it has to involve the building of shared vision, which the following section will now consider.

3.5. Shared vision as a stepping stone for collective learning

Senge (1990:9) starts from the idea that for any organisation to hold together it requires “the capacity to hold a shared picture of the future we seek to create”. Such a holding has the capability to be uplifting in working for collective experimentation and innovation. This is important for a learning group as it fosters a sense of commitment and aspiration to learn. Senge (1990:15) argued for shared vision by cautioning managers or leaders about personal vision that is never translated into shared vision. The reason for this is that they lack principles and guiding practices of translating personal into shared vision. This argument relates to my capacity as project manager and researcher in Kwasokhulu. Beside my personal vision to do a research for my dissertation, I had a responsibility to translate that into a future we seek to create. That future we sought to create

relates to a personal vision of my employer EKZNW (to conserve natural resources) and my research participants, the Kwasokhulu people (to consume natural resources). Accordingly, the shared vision translates into collective learning.

I am totally convinced that shared vision can be a futile exercise if it does not build on the personal vision of all parties in a system. All parties in the research area had personal interests including writing a dissertation, managing resources and consuming of resources. For any researcher it would be very difficult to make EKZNW and Kwasokhulu people engage voluntarily in a shared vision. They would want to know what the fulfilment would be of their visions in the future we sought to create.

One should bear in mind that unlike a researcher they did not have the exposure to the learning practices of systems thinking. Therefore, it would be unfair to expect them in their own right to translate their personal interests into combined interests of a shared vision. However, as Senge (1990:9) indicates, my duty involved “unearthing shared pictures of the future that fosters genuine commitment and enrolment rather than compliance”. In addition, commitment to collective learning could help to develop research participants into critical thinkers so that they could understand the way in which they were disadvantaged by the situation of not being involved in systems thinking.

Selence (1997:65) looks at the issues of shared vision from a liberalist viewpoint. According to that view, a researcher needs to learn together with participants so that they are empowered to learn to create self-awareness, through collective self-enquiry and reflection. Collective learning as Senge (1990:66) maintains, cannot take place if the participants in a system are not working as a team. The following section will highlight the importance of a team in learning organisations.

3.6. Team learning invigorates organisational learning

Senge (1990:60) emphasised that when individuals learn they seldom contribute to organisational learning but when people learn together, their collective efforts can surpass the learning efforts of individuals. “Teams can produce more, while all of their members grow more rapidly than they could by learning on their own” (Senge 1990:10). He further maintains that team learning starts with dialogue wherein the capacity of a team suspends assumptions and enters into thinking together.

Smith (1988:107) argued that in order for individuals to realise the benefits of learning organisations the following conditions must always be present:

- Everyone shares in the programme development and evaluation;
- Freedom of expression is permissible;
- Group members possess the skills of joint inquiry and problem-solving; and
- A diagnostic attitude towards processes is encouraged.

Smith (1988:110) further re-emphasized that when all of the above-stated is present, people share in a learning development. As such, a discussion is shared and a goal becomes something each learner wishes to help to achieve because he or she is helping to achieve it.

3.7. Personal mastery imperatives in collective learning

Senge (1990:139) claims that “organisations learn through individuals who learn”. Individual learning does not guarantee organisational learning. Nevertheless, without it no organisational learning occurs. Personal mastery, according to Smith (1988), does not only provide some key learning skills, but it goes beyond that. For us to engage in personal mastery, “fear of knowing”, as Maslow 1968, cited in Smith (1988:28)), says is the key. In other words, we fear to get to the other side of fear and for this reason, we deprive ourselves of the fear of knowing. Fears of knowing as Ferguson (1980) claims are risks with their own rewards. They are the “exhilarations of breaking through, of getting to the other side, the relief of the conflict healed, and the clarity when a paradox softens” (Ferguson 1980:46). Once the paradox is dissolved, personal mastery becomes a calling, which goes beyond others such as competency and spirit to mention two. Senge (1990:18) claims that if we develop a high level of personal mastery, we live in a continual learning mode that never stops. In other words, it is not the knowledge or skills you possess, rather, it is a process of a lifelong discipline.

3.8. Point of advantage in learning organisations

Senge (1990:28) argues that the advantage in organisational learning results from transformation from the traditional view of leadership that relies on people’s powerlessness. Changes and actions in structures can lead to significant improvements. “Systems archetypes”, as described by Senge (1990:19), are key concepts for learning. Consequently, they play a leading role in aligning our perceptions to determine the structures and their role in the advantage of learning organisations.

3.9. Chapter Summary

This section has re-emphasised the point of the framed problem by introducing the literature on systems thinking. Chapter four will introduce and engage fully with Soft Systems Methodology (SSM) as a major component in the literature review of this dissertation.

CHAPTER FOUR

THE ORIGINS OF SOFT SYSTEMS METHODOLOGY (SSM)

4. Introduction

The previous chapter presented an introductory exploration of systems-thinking literature related to the study. The systemic perspective as a base line leading to full-scale soft systems thinking is suitable for dealing with messy issues in the area of research. As such, it is now my intention to introduce Soft Systems Methodology (SSM) constructed from Checkland's point of view as an organised way of exploring human problem situations. In the view of Checkland and Scholes (1990:67), SSM has the potential to provide policy makers, managers and organisations with a valuable addition to management approaches.

Luckett (2001:524) emphasises, "SSM aims to bring about improvements to the problems of social concern by activating, in the people involved in the situation, a learning cycle which is ideally never-ending". In human activity systems as Luckett elaborates, there are many different factors, interpretations, and feasible combinations of action, which may result in possible feasible actions being taken by the different role-players in any human situation (ibid).

Jackson (1993) describes the term 'System' in the phrase 'Systems Methodology' as a concept that refers to an ideal-type grid of the problem context that can be used to classify systems methodologies according to their assumptions about the problem situation. Clearly, there can always be an argument and differences of opinion about how the real world problem context is best classified. One of the points about the classification is that it should inform a debate which has been found to be useful in a group-problem context of systems and participants. Usefulness and characteristics of such a debate also determine whether or not the system can be classified as complex or simple. The problem context located in simple or complex systems needs further investigation to determine whether it characterises what is unitary, pluralistic or coercive (Jackson 1999:69).

Simple unitary systems, as Flood and Jackson (1991:53) explain, are relatively simple with a small number of elements, with few or, at least, regular interactions between them. They are often governed by well-defined laws, largely closed to the surrounding environment, unaffected by behavioural influences and have subsystems that are passive to pursue their purposeful action. Relationship in this system context is mostly based on genuine agreement on a number of objectives. In other words, the probability of participants sharing common values is high. Their interests, beliefs and values are compatible because they all participate in decision-making.

Consequently, it is anticipated that the problem context of this system will be less difficult to handle.

The large number of elements, that are complex and highly interrelated, characterise complex pluralist systems that are the antithesis of simple unitary systems (Lasiak 1992: 69). They are probabilistic, evolve over time, are open to the surrounding environment, have purposeful parts and are subject to behavioural influences. Divergent values and beliefs, differing interests and values characterise the relationship among the participants of complex/pluralist systems, but a compromise is reachable where all parties agree on particular issues, because their fundamental interests are reconcilable.

Apart from the above explanation there are other systems such as complex and coercive, where powerful groups of participants can only reach consensus through the exercise of power and domination over others. In the context of this dissertation, the system is covered in the explanation of Flood and Jackson (1991:65) and Checkland's (1985:23) learning cycle and action research, aimed at linking SSM theory and practice to real world problems. The development of SSM commenced around 1970 through an action research programme aimed at developing a methodology useful for developing purposeful action, in complex management situations, through explicit applications of systems thinking ideas. In current times, academics advocate the well-established versions of SSM to be vehicles for action research in various programmes around the world. This dissertation can confidently assert that academic circles now know of SSM and consider it as a research tool for a wide range of academic and non-academic projects (Checkland 1981:10).

The primary objective of using SSM as a research tool in this dissertation was to find a better way of dealing with a situation which affects many people including myself in everyday life. A use of SSM takes into consideration the strong views of Checkland and Poulter (2006:70) who maintain that there is secondary literature about SSM, which is of poor quality and littered with misunderstandings and inaccuracies. I will attempt to eliminate most of the inaccuracies in applying SSM as a research tool. In the context of the hard systems perspective, EKZNW is a conservation organisation where a management system has been developed on a so-called strict conservation approach and where the focus has been on the characteristics of the conserved areas. The softer issues of the environment where conservation exists take a secondary position to the functionality of the system (Personal Observation 2005-2011).

The point of departure in this research is premised on the claim by Checkland and Poulter (2006:2) that SSM seeks to tackle perceived problems in any given social situation. "It organizes thinking

about such situations so that action to bring about improvements can be taken.” The application of SSM in the context of this dissertation is moving away from focusing on the technical side of the research area. In other words, that EKZNW is solely responsible for conservation in Kwasokhulu and the communities do not have a say other than that they are dependent on those resources and it ends there. This kind of practice, in terms of Checkland (1981:12), is underestimating the importance and complexity of the human element and, consequently, it might result in a solution that is not ideal.

For example, the staff of EKZNW as an organisation that embodies authority to conserve natural resources in Kwasokhulu cannot operate effectively if they isolate recipient communities in Kwasokhulu and other stakeholders who have interests in the local resources. The SSM approach, as Jackson (1999:36) reiterates considers any organisation as a complex and changing entity whose nature is repeatedly redefined by the people in it. In other words, the social view of the organisation sees it as a relationship-managing entity. It is important to look at the organisation and its surrounding environment. By the same token, it is important to note that the views of the researcher and the perspective from which he observed the organisation whilst conducting the research, also play an important role in this area of research (Churchman1968:89).

4.1. Relevance of SSM in Kwasokhulu

The researcher opted for SSM as a research tool in the above-stated area because it includes a set of principles that guide action research in an attempt to manage challenges of conservation in the face of Kwasokhulu’s real situations. Many researches and literature in the area in question have been conducted scientifically and these explored issues from the conservation and academic perspectives without considering the soft issues at play in the areas concerned. Avison and Fitzgerald (1995:23) argued that a researcher or analyst in any given situation does not control the situation or the way in which action develops.

The observed group should not be considered as submissive participants. All parties in the system must be actively involved in undertaking purposeful action, which can improve the problem situation. In this scenario both EKZNW as conservation authority and the community recipients of the natural resources are all part of the problem situation and should be considered. Application of SSM is, therefore, appropriately situated to compensate for gaps in the previous literature. It also deepens the rich picture to approach the investigation through action research where both parties are actively involved in the issues of the area under investigation (Checkland, 1986:19).

4.2. Learning-cycle

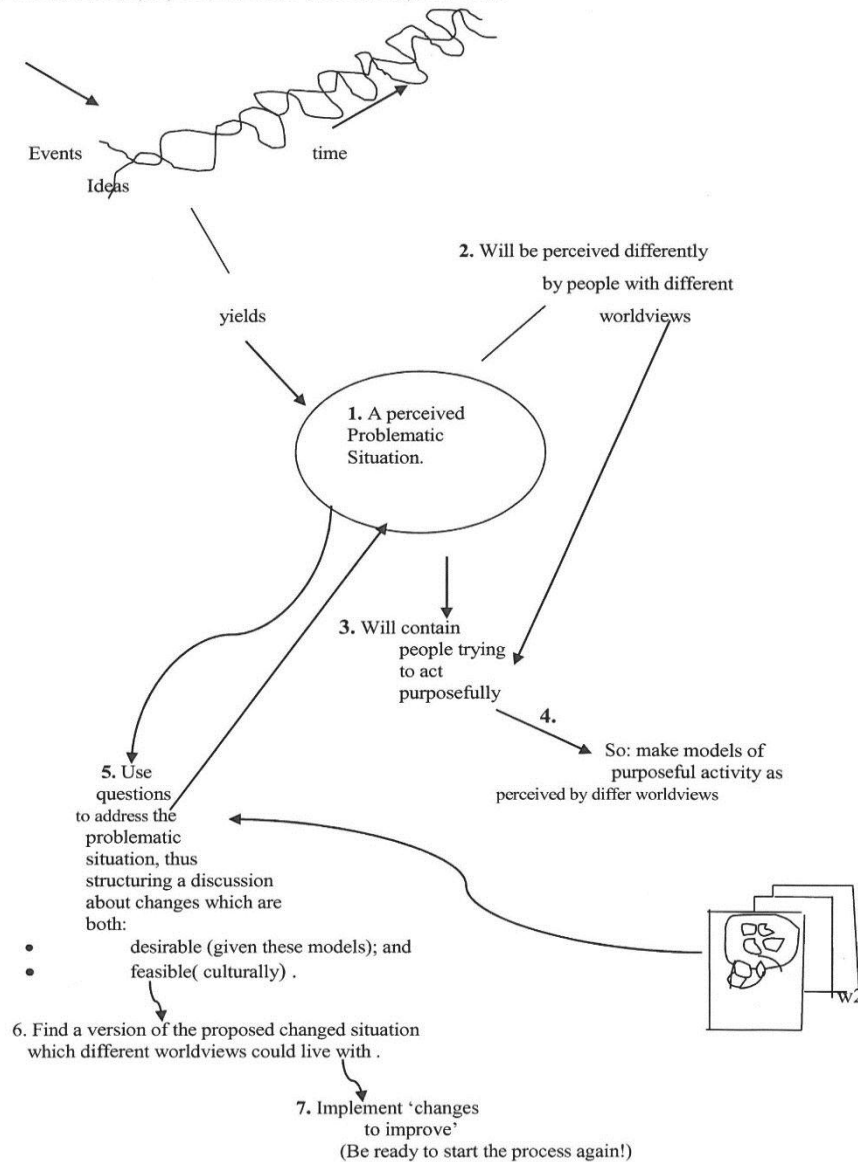
Coincidentally in Kwasokhulu, I was an academic researcher and a Project Manager by virtue of my work. As a result, I preferred SSM as the most appropriate approach to reinvigorate my practical work and academic experience and to provide a new learning experience for myself as a researcher and for all other participants within the system. Further, it is an enriching methodology that provides a means for all actors to understand and to manage the problem situation. Checkland and Holwel (1998:45) support the above-stated position that a researcher should be thought of as being involved in the problem situation as much as the other participants are. “They are not seen as external, objective observers accordingly they too are participants in the problem situation” (Checkland and Holwel: 36).

Avison and Fitzgerald (1995:18) feel that a learning system is achieved by using SSM because “it is a process of operating an endless cycle from experience to purposeful action in order to learn and understand an organisation”. It is an idea involving the people within the situation in a model-based stream of analysis. (Checkland and Holwel: 34). According to Checkland and Poulter (2006:5), “the first account approach to tackling real world situations that became known as Soft Systems Methodology was published in 1972” and, as time passes by, its development as a theory has been accounted for in different ways. In Checkland and Poulter’s (2006:5) model, the SSM, as described, focuses on different elements of the model. The model illustrates the evolution of SSM as an experiential learning dimension of management and as a more flexible use of methodology (Checkland and Holwell1998:7).

Figure 4.1: Illustration of SSM's basic process

Figure Illustration of SSM's basic process

1. The flux of everyday lifetime events worldviews, yields ideas:



Source: (Checkland and Poulter 2006: 38)

4.3 Think ‘problem situation’ not ‘problem’

As shown in figure 4.1 the process of SSM can be derived from the flux of everyday life. Depending on the nature of any situation, events or ideas can become too complex and this results in perceived problems. But the application of SSM to resolve a perceived problem involves the person who uses it. New users of SSM specifically will start with a step-by-step version of using it, but, eventually, they will become accustomed to using it and become flexible users. Whether the user of SSM is a newcomer or an experienced user, the fact remains that what humans see and think on a daily basis can have an impact on the application of SSM. This was stressed by Checkland (1985:35) that a perceived problem related to any situation is described according to the interpretation of humans and their perceptions. The perceptions are collections of thoughts and beliefs concerning objects they perceive in the real world rather than objects of real world. Therefore, the element of subjectivity cannot be separated from the process of modelling any system.

By looking at the above statement a perception may have been created that the worldview of an observer always takes an upper hand during the finding-out stage, whereas, this should not be the case. Checkland (1990:65) emphasised that “when exploring and finding out about a situation it is important that neither the worldview of an analyst nor a specific structure is imposed upon a situation.” As much as the worldview of an observer cannot be separated from what is being researched, it is important that what is being researched should not be led in a predefined direction. The research process must be flexible enough to capture and reflect the interests and to accommodate the views involved in the researched situation. It can also manifest itself in the process of discovering what the problem situation is which can include the political and cultural aspects of the system being modelled.

4.4 Find out about it, Rich Pictures

The manner in which I interpret a rich picture is according to the information I read from the various literature sources. According to this, I begin to develop a metaphor of a sponge-like situation that is clean and an outsider to a system that needs to develop a particular kind of thinking. For a sponge to have an impact on that kind of thinking it needs to soak up as much as possible of what a situation presents to it before it can have an impact and play a contributing role to influence the improvement of the system.

Checkland and Poulter (2006:24) corroborate the above by describing the aims of a rich picture as being to “capture informally the main entity structures and viewpoints in the situation, the

processes going on, the current recognized issues and any potential ones”. This helps to unveil underlying circumstances and range of choices predominantly in the analysed situation. More often than not, systems are made up of humans and, consequently, the multiple interacting actions of humans are complex. Construction of a rich picture serves as one of the best tools to surface the human complex relationships involved in the system (Checkland and Poulter 2006:25). Noteworthy is the fact that no matter how many informative, rich pictures there are, they are only ‘snapshots’ of the investigated situation that will change over time. For this reason, a researcher needs to reproduce and model new pictures all the time in order to capture and reflect new changes. Frequent modelling and reproduction of pictures would serve SSM practitioners as an aid to thinking and intervening to improve a problematic situation.

4.5 Carrying Out the Intervention from the Rich Picture (Analysis One)

Whenever we apply SSM to intervene in a problem situation we have to consider that it has three separate roles to play. The rationale behind these roles would be a determining factor to capture and to surface the interests of all parties within the investigated system. The first determining factor in a system is the client: who is the client and what does the client want in terms of aspirations and interests? The second role is to determine who would be a problem-solver and what does it take to solve the problem in terms of the resources involved and constraints that have to be taken into account when solving it. The third determining factor lies with the problem owner and what the implications that rest with this problem owner are, especially, what the problem owner cares about and how the outcome will affect the problem-owner? In summing up these three key roles:

- Often there must be an individual person or people who could have played crucial roles, without whom the intervention could not have taken place;
- There is always someone or persons who are determined and willing to surface or to investigate beneath the surface issues; and
- Whoever the practitioner is, they have the discretion to determine the interested and affected parties in the framed situation. This can result in deliberation which can precipitate the improvements in the situation.

These activities are referred to as roles rather than to particular persons. The reason being that one person can be involved in more than one role. For example, the owner can also be the investigator of the problem (Checkland and Poulter 2006:24). As a Project Manager of EKZNW, if I had been involved in conduct-systems thinking or a SSM study of the messy-problem of managing the subsistence fishers’ project, I would have been both client and a practitioner. My role would also feature as problem owner who is interested in the results. However, if I were to carry out an

investigation for another client I must ensure that my investigation is in the open and that whoever I am representing as a client is aware of the result of the outcome and is not taken by the surprise at the end. Resources available need to match the effort and the ambition of the study. It is not advisable to undertake a task that needs more resources in terms of work force, time and funds than those which are available as this may affect the practicability of the investigation.

4.6 Carrying Out the Analysis: Two (Social Analysis)

According to Wood and Gray (1991:140) a social system describes a social environment involving human interactions. As such, a practitioner ought to be sufficiently immersed in the situation in order to identify that which warrants the necessary intervention. An action-oriented approach alone is not enough. It should also be desirable and culturally feasible (Checkland and Scholes 1990). The investigator needs to understand the culture that goes beyond the individual worldviews of the participants. Culture can be modelled around three important aspects which are the roles, norms and values operating within a social collective.

Table 4.1 Illustration of roles, norms and models.

ROLES	NORMS	VALUES
They are social positions which mark differences between members of a group or organisation	Norms involve specific behaviour which is associated with, and helps to define, a role.	Values are standards or the criteria by which behaviour in a role gets judged.
Roles could be formal or sometimes informal.	For example, if you had a meeting with the Minister of Education and you are aware that the minister was drinking from a can of beer and burping whilst the meeting was in progress. His behaviour would go against the norm.	In most societies, people like to discuss the behaviour of someone according to their own interpretations and judgements.
In an organisation or in a big company, for example, the position of a director or chief executive officer is a formal role.	Such behaviour is way outside the expected behaviour of someone in a role of a member of the	Such examples of value judgements are sometimes praised or disparaged.
The informal roles which are accepted in a specific culture tell you a lot about it.		

	executive in the South African politics.	
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Source: It is constructed according to information extracted from Checkland and Poulter (2006:37).

4.7 Carrying out the analysis: Three (Politics)

Political aspects could affect the cultural analysis. This involves power relations. The interaction of human beings as explained in the above social analysis is pursued according to different interests of power. The politics of a situation are very powerful and often a deciding factor in any matter in what is or is not to be done. In any organisation, institution or community it is important to find out about the disposition of power in a situation and the processes for containing it. It helps to determine what is culturally feasible, especially when considering that at times the element of politics might not be covered in the analysis of roles values and norms. Politics could be referred to as a commodity that contains power. In human societies and organisations commodities that contain power are numerous. But at the same time there are similarities between politics and the roles of individuals since roles carry power within them. For example, a powerful role in communities could be exhibited as a commodity of power in the personal charisma of a person, or for that matter ,take the situation of an accountant in a particular organisation who has less influence than the chief financial officer. Political powers can be used to prevent others from accessing valuable information and all of this is part of the power play of politics (Checkland and Poulter 2006:42).

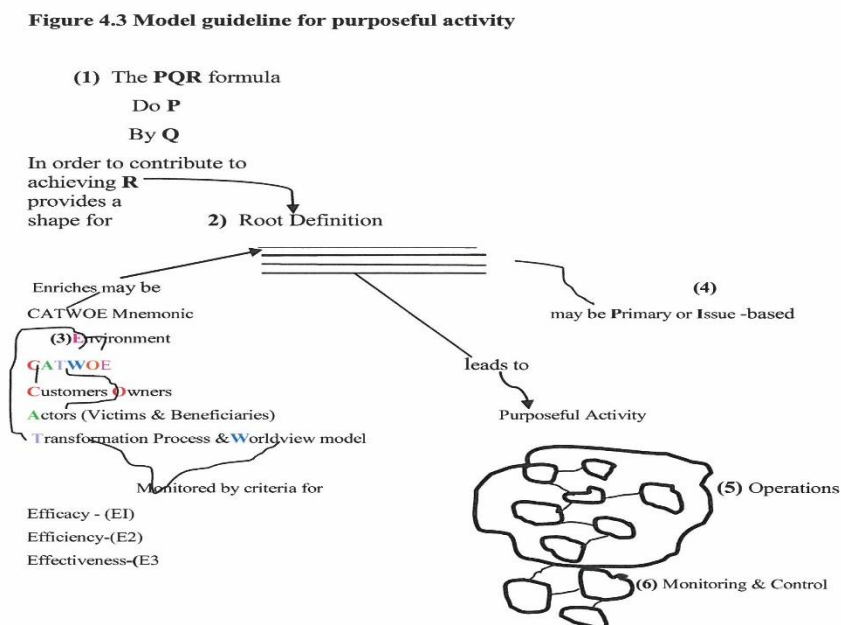
4.8 Effecting SSM Learning Cycles by building Purposeful Activity Models

The learning cycle is a never-ending process that should take place throughout the research process and the building of models of purposeful activity systems is an organised process of learning and enquiry. Building of models is not a representation of what is taking place in a real world, but they are the exemplification of concepts grounded in the worldviews of the people in the problem situation. The identified worldviews must be regarded as relevant to the investigation of the problem situation (Checkland & Scholes 1990:49). World views are involved in processes of interaction in human activity systems where a number of models are built. The building of various models is a reflection that a situation cannot adequately and appropriately be reflected in one model. As these models are based on declared worldviews it cannot be said that the construction of one model is more correct than another. “There cannot be a correct representation, since they only represent a number of ways of perceiving the real world” (Checkland, 1985:37).

4.9 Build Models of these Notional Systems

As has been mentioned and explained a number of times in the preceding sections, the user of SSM needs to ensure that learning is captured in order to create an organised process of enquiry and learning. The process of learning can be achieved “by making purposeful activity and using them as the basis for asking questions of the real world situations” (Checkland and Poulter 2006:38). The core principle behind using these models relates to human interaction trying to act purposefully. When South Africa was preparing to host a World Cup it had to model the situation around to a declared single worldview such as organising soccer games from the perspective of a host city. But, its models could never be descriptions of a real world. Its models were one way of dealing with complex reality and they served a purpose of organising a learning process in a particular direction. The model that is used to model purposeful activity within a system is considered as relevant to any identified SSM investigation. The statement describing the system to be modelled in SSM is known as the Root Definition (RD) (Checkland and Poulter 2006: 40). The metaphor root emphasises that it is the only preferred or core method describing the system.

Figure 4.3: Model guideline for purposeful activity



Source: Checkland and Poulter (2006:41)

4.10 Explanation of figure 4.3in the context of Soft Systems Methodology

Building a purposeful activity model as illustrated in figure 4.3 is not a representation of a reality in a real world. But it is an account of concepts based on the worldviews of the people faced with a

problem situation. To construct a model, in other words, involves viewing the situation from an identified perspective of a declared worldview which is relevant to the specific investigation. In order to achieve this, one needs a statement that describes the system to be modelled. In SSM such a system is called the Root Definition (RD) meaning that it is a core way or the only way to describe the particular system (Checkland 1985:39). ‘A system to obtain a Master’s Degree in Commerce’ would be a simple example to clarify the RD. Root Definition could be richly expressed in A Masters student-owned system to obtain a degree in order to improve qualification status.

The model as taken by a student lies in a declared worldview as given (register with the University) in order to obtain the qualification. This worldview does not only show, what the system does (i.e. register with the University), it also says, how (by studying) and why (to improve qualifications status) this declared worldview reveals a link between the effort of studying and improving the qualifications. Checkland & Poulter suggest that a link “would lead to a richer questioning of the real situation to which this purposeful activity was thought to be relevant as a device to structure the questioning.” (Checkland & Poulter 2006: 42

The RD as expressed in the above example in relation to figure 4.5 is known as the **PQR** formula, which says that you must do **P** by applying **Q** in order to get **R**. A Masters student shall have to (register with the university = **P**) thereafter (study=**Q**) in order to (obtain a Masters Degree=**R**). The PQR formula in relation to the above example allows the student to write the Root Definition as a statement which describes the purpose of the activity being modelled as a transformation process. In this instance the student has a lower qualification than a Masters Degree and is being transformed to a better state of being qualified with a Masters Degree. According to the SSM perspective, the above stated is the only way to express any purposeful activity one can think of and, consequently, it is simple and straightforward.

The transformation process is a set of activities enclosed in a human activity model. It represents sets of interconnected actions needed to transform input into output (Checkland & Scholes 1990:15). Wood and Gray (1991:17) suggest that in order for a root definition to be transformational it must always be in the mind of a person or in the minds of people who are likely to be transformed. Certain people use various methods in order to remember something permanently. The mnemonic is a popular one in the context of Systems Thinking and it can help someone to remember something. In simpler terms *the Oxford Dictionary (2005):652* explains mnemonic as a “pattern of letters or words which helps one to remember something”.

Table 3: The element of the CATWOE as outlined in the Root Definition

CATWOE				
Clients or Customers (C)	Victims or beneficiaries of Transformation		Weltanschauung or Worldview (W)	Worldview: issues that may lead to constraints
Actors (A)	Those who could stop Transformation		Owners (O)	Those who could stop Transformation
Transformation Process (T)	Need → Need met		Environment (E)	Constraints, elements outside the system which it takes as given.

Source: Checkland and Scholes (1990: 20).

The application of CATWOE is necessary to ensure that the (RD) captures the structure of the real world situation in a manner that represents the relevant system. The most important aspect for a researcher at this stage is to appreciate that both CATWOE and RD are complimentary processes. For example, it would require **A**-actors to do the activities which make up the **T**-transformation. This will have direct impact on the **C**-customers who are the beneficiaries or victims of transformation. **W**-*Weltanschauung* defines the worldview which makes this system meaningful. In other words it is the underlying belief which attributes the meaning to what is perceived. **O**-owners' worldview always dominates in any defined system, and in a human activity system and it becomes valid in real world events. The owner's worldview plays a crucial role in directing the event or in closing it down. It has the power to approve or cancel the transformation processes in a system. **E**-environment relates to environmental constraints that limit or take for granted what a system can do. (Wilson 2001: 17-18, Checkland and Scholes 1999: 35-36, Checkland 1999: 224-225).

4.11 The Whole application of SSM as the Learning Cycle is revisited: The component of Seven principles as outlined in Figure 8 of this dissertation:

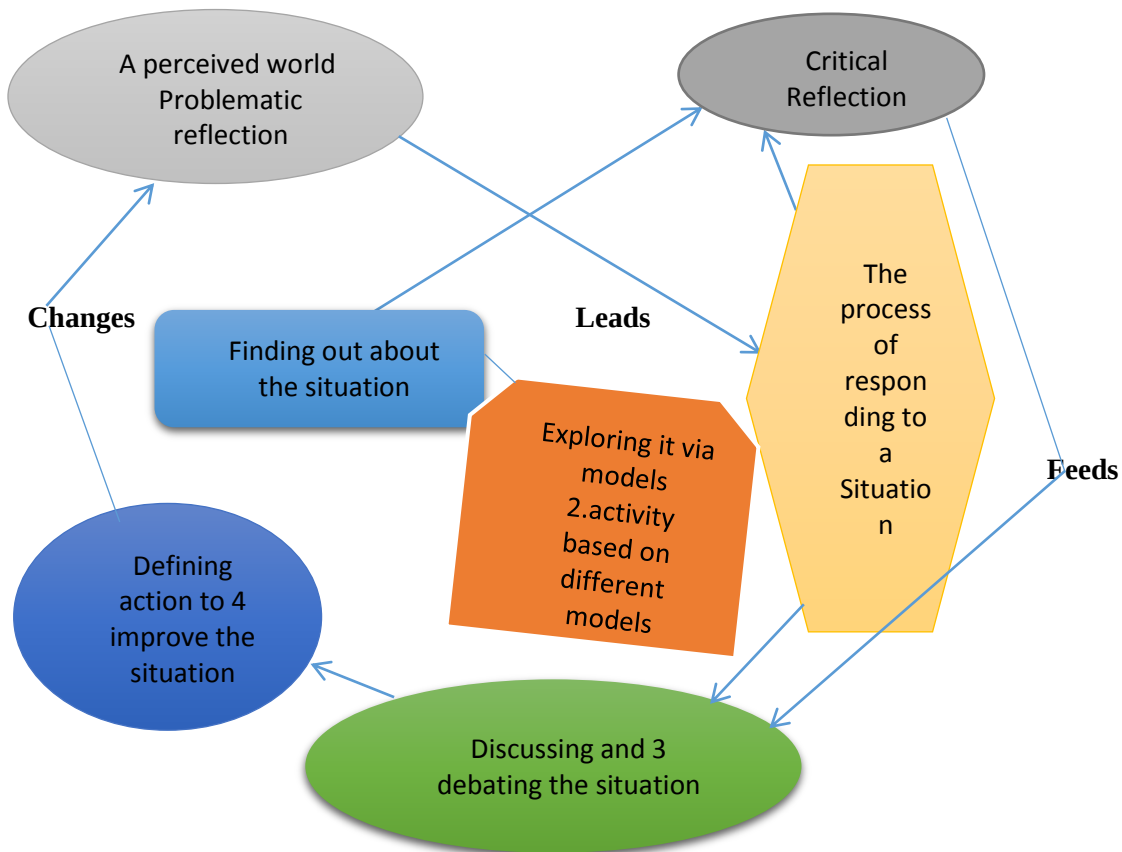
1. In the context of SSM, as revised in Checkland & Poulter (2006:60), the real world is accommodated broadly in the concept of a real world problematic situation, which is to say that the real situation needs an intervention and specific action;
2. The thinking action and talking about a surfaced problematic situation is driven by the worldviews of the people in the situation;
3. The worldviews are inborn and internalised assumptions that make us interpret the world in a particular way. Like in the saying: one man's meat is another man's poison;
4. In every real-world situation there are people in a deliberate dialogue with the intention to build models that are purposeful in terms of worldviews;
5. The action undertaken to improve any situation in a real world entails finding, in the course of the discussion or debate, an accommodation of different worldviews. An accommodation is finding a version of the situation which different people with different worldviews can nevertheless live with;
6. The SSM principle of the enquiry being never-ending can be realised and the enquiry can be deemed as never-ending if action undertaken to improve the situation changes its characteristics. The characteristics of a situation will then be less-problematic and the process of intervention could begin again and it is never-ending; and
7. All of the above are explicit in an organisational process which embodies a conscious critical reflection about the situation itself and also about the thinking about it. The reflection which leads to learning will never ever be confined to a particular stage of a situation. It happens continuously. It could be before the situations begin or during and after intervening in a situation to improve it. As such, the process invigorates a reflective practice norm for those who make use of it. Once the practitioner has internalised the SSM process, she or he has no longer to stop and keep on asking questions about it. The questions always revolve around the PQR formula which is Why, How, and What. The reflective practice becomes a built-in process and the SSM user becomes a reflective practitioner (Checkland and Poulter 2006:61).

4.12 The Final summary description of SSM as outlined in Methodology and Seven Principles

The core interpretation of SSM is summarised in the seven principles as stated above. Further to that, these principles are classified in four actions of the Figure 4.3 above. They are visible in stages 1-5 where it starts by finding out details of a problematic situation and they make models to explore these. The exploration is based on different worldviews and, consequently, it questions the situation using models in order to reach a point of desirable and practical change. This results in defining and

taking action to change the situation for the better. The fifth level of the diagram takes a point of departure from the other four and it is where the lessons are learned and captured.

Figure 4.4. The five principles which flow from SSM's seven principles



Source: Checkland and Poulter (2006:63).

The diagram in figure 4.4 summarises what is stated above, that level 5 captures lessons learned from all other four levels. According to Checkland and Poulter (2006: 20), this learning is the same as the LUMAS model which interprets the situation of Learning for a User by a Methodologically Informed Approach to a Situation. However, it is important to mention that SSM does not seek solutions to solve real world problems. Rather it seeks to engage with complex situations to offer an organised process of thinking which enables people to learn a way to initiate an improvement in a problem situation. As such, this approach ensures that it produces learning that will accumulate over time, leaving a practitioner equipped to cope with future complexities. The diagram in figure 10 summarises what is stated above, that level 5 captures lessons learned from all other four levels. According to Checkland & Poulter (2006: 20), this learning is the same as the LUMAS model which interprets the situation of Learning for a User by a Methodologically Informed Approach to a Situation.

4.13. Chapter Summary

This chapter covered the detailed academic literature about the Soft Systems as the research methodology that was applied to surface the soft issues that were framed in Kwasokhulu. It also detailed its relevance in relation to the study. The next chapter shows the real application of SSM in the research area.

CHAPTER FIVE

THE APPLICATION OF RESEARCH METHODOLOGY IN THE REAL RESEARCH SITUATION

5. Introduction

In Chapter One of this research I outlined the mental illustration of the data collection method that I used. A blow-by-blow account was provided of the mixed method used and details were given of how the data that formed the main analytical tool of the study was obtained. This study was qualitative in nature and interrogated both primary and secondary data. It is in this section where I mention areas in which data were chosen and why they were chosen. I also declare personal information about how I am connected with the fisheries industry in South Africa.

5.1 Researcher's standpoint, justification and predispositions

According to Blaikie (2000:16) observation data collection method has been instrumental in the social sciences for a very long time, especially as a tool for collecting data about people processes and culture. In July 2005 I joined the fisheries sector in South Africa as Subsistence Fisheries Implementation Manager with EKZNW which is an organisation that is responsible for marine conservation in the KZN province. I was responsible for 78 people who had a variety of expertise ranging from junior researchers, social ecologists, geography information system technicians, data captures and other skills and they were directly responsible for overall administrative duties.

The primary purpose of introducing the *MRLF Act* was to manage and regulate fish resources and the fishing industry by strict law enforcement in the country and the law enforcement was part of my key responsibility functions. I travelled throughout the province carrying out part of this mandate over and above other duties. The issue of the people's livelihoods was a secondary factor compared to the protection of fish resources by strict law enforcement. The transgressors who contravened the law faced harsh penalties which included serving jail terms, imposition of fines and other punitive measures. This scenario put me in a very difficult position to balance between my career primary responsibilities to enforce the law and to conduct a Masters research which requires neutrality and ethical responsibility from the researcher. My enrolment with the Leadership Centre and exposure to SSM made me balance the trade-offs between law enforcement for fish protection and the sensitive social issue of promoting livelihoods of the fishermen.

Becoming an SSM practitioner made me view the system as a whole and I understood the desire of fishermen as dependants on fishing resources to gain a better livelihood than they had before. My personal career involvement in the fishing sector exposed me to different data collection that I used in this study.

5.2 Data gathering system

Primary data gathering

The researcher by virtue of his work which was to manage the implementation of a fisheries project in Kwasokhulu created a valuable opportunity to combine the data gathering with his academic work. There is a lot of data gathering which has taken place for both work employment and academic purposes. In the previous submission of this dissertation in 2016 the data gathering process only reflected the process of 2013 to 2015 and omitted the continuation of the processes which lasted up to August 2016. The reason for this was that the researcher deemed that this was sufficient for the research purposes. However, after the recommendations of the examiners, the researcher revisited the area of data gathering and added more information to what had already been collected between August 2015 and 2016. The researcher deemed the latter data gathering process as the most improved of all the other previous processes. Consequently, the study will focus strictly on the period of 12 months from August 2015 to August 2016.

After the researcher had been granted a permission letter by Buhlebemvelo Mussel Co-management Committee (BMCC) of Kwasokhulu and ethical clearance from the University, he immediately began with different methods of qualitative data collection. The meaning of primary data in this research refer to the data that is a result of direct contact between the researcher and all the people who were interviewed. The primary data collection method spreads across face-to-face interviews, participatory observation meetings, designed research questionnaires and participatory workshops.

5.3 Participatory observation data collection

Participatory observation as a data collection method has been recognised traditionally in social sciences over a period of time (Yin 1989: 75). According to Fetterman (1989: 62), it is best suited to a variety of disciplines, especially when collecting data about people processes, and cultures in qualitative research.

Table 5.1: Qualitative data collection table

ADVANTAGES OF PARTICIPATORY OBSERVATION	DISADVANTAGES OF PARTICIPATORY OBSERVATION
Provides direct information about the behaviour of individuals	Expensive and time-consuming
Permits the evaluator to enter into and understand the situation/context	Needs well-qualified, highly-trained observers; may need to be experts
Provides good opportunities for identifying unanticipated outcomes	May affect behaviour of participants
Exists in natural, unstructured, and flexible settings	Selection perception of observer may distort data
It helps the evaluator to develop the holistic perspective	Behaviour or set of behaviours observed may be atypical.

Source: Smith (1988:56)

In Kwasokhulu I applied participant observation through to involvement in the routine of the fishermen's daily activities. As much as it was part of my work and my working team on a daily basis, I spent two months from the beginning of August 2016 to the end of September 2016 specifically involved in this research. I visited fishing sites that were demarcated for fishing and mussel-harvesting purposes with an aim to observe a variety of things such as body language gestures whilst fishermen were carrying on with their normal fishing and harvesting activities. I observed the fishing gear and equipment more closely considering that I had more time to spend with them. What I also realised was that, at times, as much as they are using isiZulu which is my primary language, at the same time they could change and use Isithonga, a language with which I am not as familiar. I personally did not have too much of a problem with Isithonga as I have been working in the area for quite some time, so I understood everything and this exercise of participatory observation proved to be a good method as it enabled me as the researcher to pay more attention to non-verbal expression.

5.4 Interviews

Paton (1990: 51) asserts that "interviews can be used at any stage of the evaluation process" and they can be carried out in different forms such as the face-to-face interview, structured interview, focused groups discussions and in-depth interviews.

Table 4.2: Advantages and Disadvantages

Table 5.2

ADVANTAGES OF INTERVIEWS

Usually yield richest data, details and new insights.

Permits face-to-face contact with respondents.

Provides the opportunity to explore topics in depth.

Allows the interviewer to experience the affective as well as cognitive aspects of responses.

Allows the interviewer to explain or to help clarify questions increasing the likelihood of useful responses.

Allows the interviewer to be flexible in administering interview to particular individuals or in particular circumstances.

DISADVANTAGES OF INTERVIEWS

Expensive and time-consuming.

Needs well or highly-trained interviewers

Interviewee may distort information through recall error, selective perceptions, and desire to please the interviewer.

Flexibility can result to inconsistencies across interviews.

Volume of information very large; may be difficult to transcribe.

It can trigger the expectation of an incentive on the part of the interviewee.

Source: Smith (1988:56).

In order to prepare for the process of this interview the invitations were sent to the participants who were chosen by the researcher using purposeful sampling in January 2016 for an interview workshop in February 2016. According to Patton (1990: 62), this is relevant when a researcher uses personal judgments to select participants who best meet the criteria of the research area. Invitations were sent to (30) members of the BMCC, (2) EKZNW Biodiversity Conversation Managers, (5) EKZNW Compliance Enforcement Managers, (4) EKZNW Subsistence Fisheries Extension and (20) members representing various households in Kwasokhulu. Subsequently, the first interview workshop was held on the 25 -26 of February 2016 in Kwasokhulu with a total number of 61 respondents who were invited to the workshop. On the 25th with the help of six Bachelors and Honours graduate research interns from the Department of Economic Development Tourism & Environmental Affairs (DEDTEA), I personally interviewed 30 respondents and 31 respondents on the 26th of February 2016 and both interviews lasted for two full days. The set of interview questions was structured and written in both isiZulu and English. The example of questions will be provided in the Appendix section of this research. After this process of data collection the researcher went back to the literature which is secondary data in order to process the captured responses.

5.5 Secondary data

The process of secondary data was carried out within a period of three months as from the 1st of March 2016 to the 30th of May 2016. The main sources of secondary data were derived from documents from EKZNW, MCM, and literature from the University libraries, South African, and international fisheries policy documents, *Fisheries Acts* and Draft Bills, information from internet and other information that was relevant to the research. After thorough analysis of the secondary data the researcher went to the field again for the last time in order to finalise the process of data collection.

5.6 SSM workshops

The SSM workshops for data collection were carried out within a period of two months between the sixth of May and the 7th of July. The invitations were sent out to 15 Subsistence Fisheries that were representing all sectors of fishing in Kwasokhulu, four monitors who are employed on part time basis by EKZNW to monitor the project, two members from the traditional authority, four EKZNW officers from conservation management and compliance management and four Extension Officers who were employed full-time in the Subsistence Fisheries Implementation Unit. Subsequent to this, the workshop was held on the 25th of June in the local traditional hall. The workshop was facilitated by the Subsistence Fisheries staff and the author by virtue of their background experience in managing the fisheries operations in KZN.

The workshop kicked-off by dividing the participants into three random groups. Each participant was asked to write down key objectives and the goals of EKZNW, Kwasokhulu Subsistence Fisheries, and Community leaders in terms of:

- Fishing;
- Sustainable Household Livelihoods;
- Conservation; and
- Compliance management in St Lucia and Kwasokhulu.

The aim of random groupings was to break the ice and to create an environment that would encourage all participants to contribute meaningfully and to write down their ideas on a piece of paper. It also sought to point out the various views of those who participated in the implementation processes of the co-management approach in Kwazulu-Natal Subsistence Fisheries Project. The questionnaires also intended to surface the way the implementation of co-management in fisheries was done in South Africa and in Kwazulu-Natal. Thereafter, they pasted their findings on a wall.

They eliminated all overlapping issues and came up unanimously with a priority list of emergent issues. As a task team we complemented the list of emergent issues by further engaging them as groups using guided questionnaires and structured and semi-structured interviews. This helped us to draw a rich picture that put all the framed issues into perspective.

Further to the guided questionnaires we also applied the Delphi model as the most appropriate means to achieve the goals and objectives of eliminating bias in interviews. According to Armitage (2005:49), the Delphi model is a method that provides a way to solicit and gain consensus by experts or facilitators on an emerging issue while enriching problematic group dynamics such as bias. Dellebague et al., (1975), quoted in Luckert et al., (2001), viewed Delphi as a neutral method to eliminate bias because participants are free to express their views and remain anonymous” (Luckert et al., 2001: 535). Delphi in this instance was a complementary process over and above all other qualitative methodology that had been applied in order to construct a very rich picture. Participants were given one 5x5 centimetre size card per individual and were asked to write in their desired statement of purpose. Subsequently, we collected and combined their written contributions into one list.

We then opened discussion to clear any identified disagreements and finally compiled a list that the majority favoured. We thought that the whole process was meant to be a transforming one and as such, we attempted to level the playing field by using a method that would eliminate bias and allow the marginalised (fishers) and the powerful (conservation authorities) to create a Purposeful/Human Activity System(HAS) equally. At the end of this workshop we arranged a second workshop for the 6th and 7th of July at the same venue with a primary aim of giving a report feedback and presenting an SSM models to the stakeholders and having them cross-examine and propose what they thought was important. The workshop was attended by the same people who had also participated in observation and interview sessions that had taken place before the SSM workshop.

5.7 RESULTS

Problem Situation Unstructured

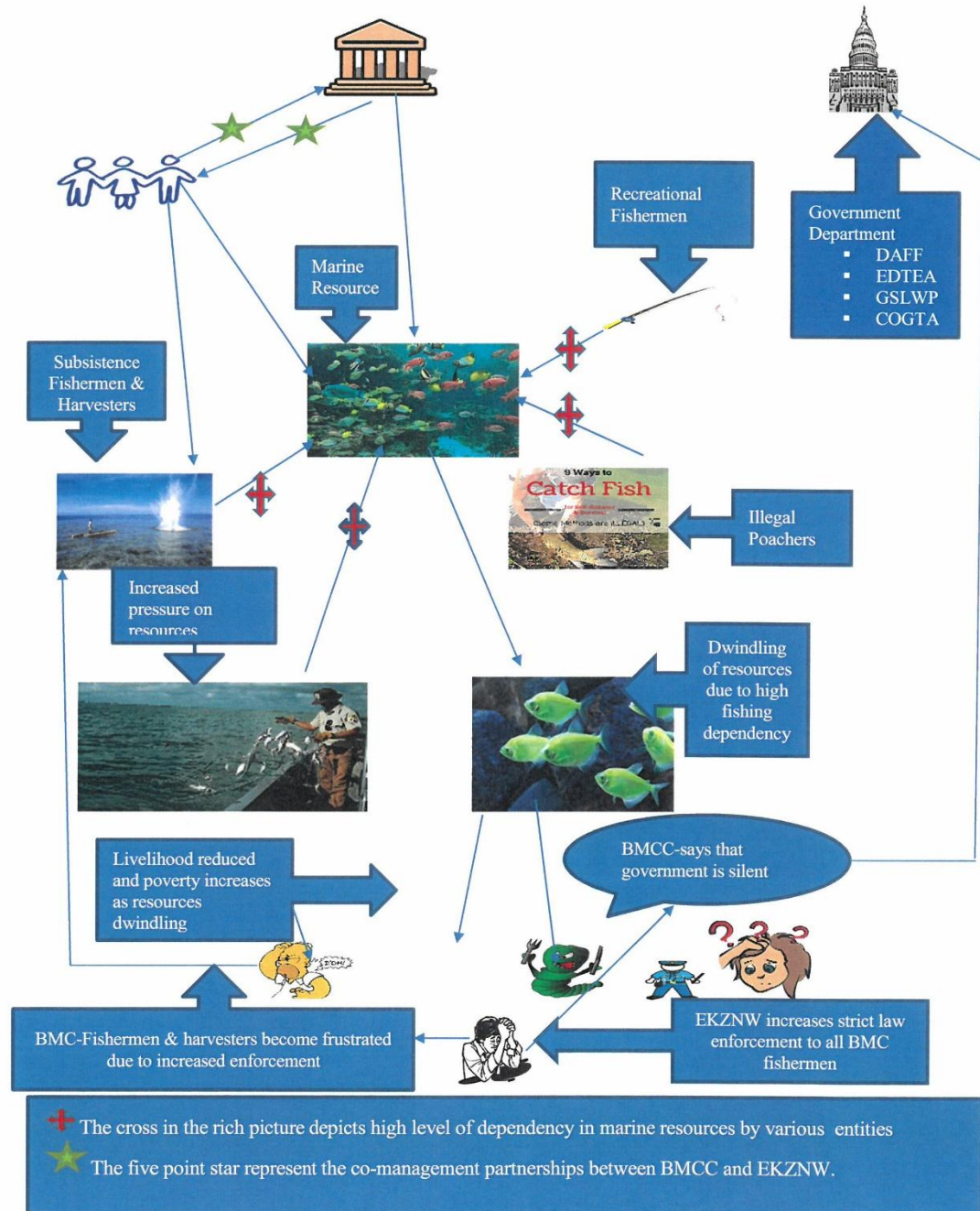
The workshop presented us with an ample opportunity to report back to our clients by means of the rich picture. The developing of a rich picture as Checkland and Scholes (1990: 6) contend can be viewed as an enquiry process with well-illustrated strategies to depict multiple cycles in an interaction between different information sources. A broad-based theme that emerged during the construction of the rich picture was the role of EKZNW and other major government role-players in providing alternative livelihoods for marine and wetland communities. This issue came out very

strongly in pictorial depiction of a situation in coastal areas. On the same side of the dividing line all fishers, community leaders and conservation authority personnel felt very strongly that all role-players should play visible roles in paying attention to and in attempts to find solutions to complex issues such as the provision of alternative livelihoods and all other prime issues arising in the Kwasokhulu area.

EKZNW did not like the perspective, which implied that fishers saw them as sole determiners of all solutions with regard to Kwasokhulu challenges, but they knew what motive lay behind this perception. EKZNW does not have the power to make provincial and national conservation laws and final decisions and there is, therefore, a perception that decisions have been externally determined. The exercise of drawing the rich picture was exciting, but also frustrating to others, especially the fishermen, taking into consideration their sour relations with EKZNW officers, especially the compliance enforcement section. But they expressed themselves in detail during the rich picture construction exercise even though they had resentment that this might further damage their relations with compliance enforcement staff. By the same token, all of the stakeholders agreed that, through a rich picture construction, it would be important for all of them to understand that the actions of one party affect the other stakeholders in the system. After analysing the entire data collection processes up to the first SSM workshop, the researcher constructed a rich picture which is depicted in the following diagram.

Figure 5.1: Rich Picture Constructed During SSM Workshop

Figure 5.1 Rich Picture constructed during SSM Workshop



Source: Personal constructed on the basis of the perused SSM literature

5.8 Emergent issues out of the Rich Picture construction

Purpose of Fishing for Livelihood purposes:

- It seeks to improve household income in the fishing communities of the area;
- It promotes food security and contributes to sustainable livelihoods for impoverished communities in Kwasokhulu;
- Historically, fishing areas have been used as a useful provider for food security purposes;
- Kwasokhulu communities are historically and traditionally accustomed to fishing practice;
- Fishing should allow fishers a range of activities from consumption of fish resources to the sale of fish to needy customers;
- As Subsistence fisheries they are looking for an upgrade from being where they are to becoming part of a small or large-scale commercial enterprise;
- They are expecting to be capacitated to embark on business with the aim of making a profit;
- The resources that they harvest must yield high prices or should be harvested in sufficient quantities in order to generate income; and
- Fishing activities must not be limited to the near shore or estuaries, but should be extended to the larger part of the oceans and part of their catch must be exported in order to yield a high profit margin.

5.9 Purpose of Co-management:

- They perceive co-management as a system that is a partnership that involves locals and national government, various stakeholder entities, interested and affected parties, and local beneficiaries as resource users;
- The joint management of resources must create positive economic and social effects that will promote sustainable livelihoods in Kwasokhulu;
- Co-management must identify the groups of people which have a stake in fishing resources in Kwasokhulu;
- Co-management must identify alternative livelihood opportunities in order to relieve the pressure and excessive dependency on the fishing resources;
- It must promote good working relationships among all parties that have anything to do with natural resources;
- The co-management must be in a position to establish and identify how people are dependent on the resources;
- It must establish whether fishing resources are sufficient to meet sustainable livelihoods of Kwasokhulu communities.

- It must also be in a direct position to determine if use of resources creates conflict among users, stakeholders and conservation authorities;
- If there are conflicts among all above-stated individuals, co-management ,as partners in managing resources, needs to lessen or resolve such conflicts;
- To continually engage in all matters that will promote food security and sustainable livelihoods of the Kwasokhulu people;
- To lessen all barriers that impede Kwasokhulu communities to access fishing resources; and
- Identify alternative livelihoods development projects and link subsistence fishing communities to poverty alleviation programmes.

5.10 Purpose of Conservation:

- To conserve marine life as natural resources for future generations;
- To maintain biodiversity and sustainable use of fisheries resources;
- Marine resources are crucial for recreational fishers' activities;
- To ensure sustainable utilisation of natural resources especially to permit holders and recreational fishers;
- To enforce strict regulations on Marine Protected Areas (MPA); and
- To ensure that permit holding fishers achieve Total Allowable Catch (TAC) yield and Total Allowable Effort (TAE).

5.11 Purpose of Compliance:

- Protection of marine resources and fisheries should be enforced on the basis of strict ecological principles;
- To achieve a high conviction rate; and
- To maintain legislation to cover strict and sustainable use of resources.

5.12 Kwasokhulu Subsistence Fisheries Culture: Roles, Norms, Behaviour and Attitudes:

- Subsistence Fisheries thought that the conservation authority should be an organisation that is constantly engaged with the community and that it should provide information to the public and to resource users on scientific research and availability of natural resources;
- Facilitates permission and allocation of fishing rights to subsistence fishers in permitted areas and other areas of the oceans; and
- Authority must establish a clear demarcation between Permitted Fishing Areas (PFA) and Marine Protected Areas (MPA)

5.13 EKZNW Management and Culture: Roles, Norms, Behaviour and Attitudes

What conservation authorities think should be essential qualities of the Kwasokhulu Fishers:

- The conservation authority thought that fishers are people who encourage voluntary compliance through education awareness and sustainable use of resources;
- They limit their dependency on natural resources by resorting to alternative livelihoods;
- They take responsibility for encouraging conservation initiatives;
- The Department of Forest and Fisheries should recognise the role and effort of fishers in participating with conservation authorities to co-manage marine resources;
- Conservation Officers felt that members of co-management are resource users, and , consequently, they need to ensure that resources are used sustainably;
- They felt that, although they have good working relations in co-management, fishers are not influential in decision-making processes;
- They are not sure whether the co-management process is achieving its intended objectives, but it has been in existence for a while;
- They have a strong conviction that the majority of fishers are only participating in co-Management because they fear being arrested by EKZNW in most instances;
- EKZNW needs to respond to a crisis of fish resources depletion, but, the assumption is that it works well when everybody is involved;
- Co-management requires teamwork and to know all the role-players and their agreed roles for the group to work together;
- The nature of conservation in South Africa has been pursued largely in protected areas particularly in fenced parks and MPAs devoid of human settlements and the need for sustainable livelihoods. The benefits include resources conservation, but the impact on local livelihoods is not well documented; and
- They felt that as much as authorities are prioritising conservation issues, it would be difficult to separate them from livelihood issues as humans are dependent on these reserves.

5.14 Burning Tasks and Issues

- Fishers (women & men) were previously forbidden and forcefully removed by conservation authorities from fishing areas therefore their rights of fishing should be currently recognised.
- To promote access to the resources by means of permits to the communities who were previously denied access.
- They live in the area that is poverty-stricken with very limited or no alternative livelihoods.
- Some members of the communities have no farmlands or any livelihoods for that matter so fishing is the only available food and income provider.
- Fishers reported that rules and regulations that are managing fish resources are unfair.

- They felt that they are being excluded from management decision-making.
- Other fishers felt that communication between fishers should be more frequent, and that they as fishers should develop community structures to facilitate consultation with conservation authorities.
- EKZNW chooses to prioritise conservation over poverty and sustainable livelihoods of fishers.
- The application of compliance enforcement is selective especially when it comes to recreational fishermen. The perception is that they are given special treatment by EKZNW because they are mostly rich people, whereas, some of them are committing offences such as fishing protected species during closed season and at times exceed their required fishing limits.
- Illegal fishing is also rife and illegal fishermen are major players.
- Most of the fishers have been intimidated and harassed by EKZNW and it seems as if they are coerced in the form of a top-down approach where decisions are being imposed by authority upon them.

According Checkland and Poulter (2006:184) the most critical issues need to be selected in the rich picture as it would aid the engagement and transformation of an unstructured problem into an expressed situation. Consequently, out of 58 issues that were raised in the construction of the rich picture on the previous day, the researcher, as a practitioner in applying the SSM to deal with identified issues in Kwasokhulu, listed ten relevant systems with regard to issues that emerged through the process of data analysis:

- The priorities of EKZNW as conservation authority must spread across conservation of marine resources for sustainable development and the promotion of the livelihood of Kwasokhulu community;
- Improving communication within and across all role-players is important and should be frequent;
- Compliance, monitoring and enforcement should also apply strictly to recreational and illegal poachers;
- Kwasokhulu is a poverty-stricken area with less opportunity, therefore, alternative livelihoods must be identified;
- Response to fish stock depletion is a responsibility of everybody not only the conservation authority;
- Quotas and bag limits of subsistence fishermen must be increased;
- Government departments at a provincial and national level must be involved;
- Harvesting and fishing areas must be clearly demarcated;

- There must be training and skills provision for subsistence fishermen; and
- There must be upgrading of subsistence fishers and mussel harvesters to commercial operators.

5.15 Root Definition and Conceptual Model EKZNW and Kwasokhulu System

The root definitions, CATWOE and conceptual model were developed according to the critical systems that were framed above. This was a relevant opportunity for stakeholders to take forward the framed issues. After interrogating all systems that were framed, the stakeholders unanimously agreed that the priority of the livelihoods of the community, joint monitoring of marine resources, involvement of provincial and national government and identification of alternative livelihoods are critical and that they are top priority. The construction of root definitions was based on the seven-stage SSM process as modelled by Checkland and Poulter (2006:12) and Flood and Jackson (1991:8) and other scholars who believe in this concept. Normally, as facilitators we had discretion to create a rich picture on our own on the basis of the surfaced information. We felt all the participants should get involved in the development of root definitions in order for the process to be transforming.

Figure 5.3: Stages in the root definitions

Stage	Description
1 .Recognition and exploration of the problem situation	Stakeholders in the problem situation explain the problem situation and analyse its characteristics. This produces rich pictures that aid the expression of problem situations.
2. Identify relevant systems and produce root definitions	Stakeholders in the problem situation apply systems thinking by selecting relevant systems that might be useful, given the problem situation. Root definitions of these systems represent subjective viewpoints of systems that might address the problem situation.
3. Produce conceptual models	Conceptual models are an aid to thinking about the purposeful activities of the relevant systems. The models can generate discussion and questioning among the wider group of actors.

4. Compare	Returning to the real world from the systems thinking allows for the comparison in two and three above with the situation in the real world.
5. Agree on changes	The prioritisation of desirable and practical priorities for improvement.
6. Action for improvement to be embodied in the strategy	Specific actions embodied in improvement/change strategy.

Source: constructed as per literature adapted from Checkland and Scholes (1990:31)

Having noted the root definition as modelled by Checkland and Scholes (1990:31), we modelled our own situation according to the outcomes of the workshop and from information surfaced in the rich picture. Our formulation was for an issue-based system root definition of community sustainable livelihoods and coastal resources conservation. We felt that the process of formulating root definitions was very useful in providing a setting for dialogue discussion and inquiry as well as assumption surfacing within the research team and in all the participants. CATWOE as modelled in a following section, as well as our own modelling provided a relevant framework to deal with underlying assumptions and the ethical responsibility of problem solvers. It afforded researchers with an ample opportunity to demonstrate a two-fold focus on Kwasokhulu community facilitation of sustainable and alternative livelihoods on the one hand, and on the other, the facilitation of the sustainable management of resources. Consequently, a root definition on a transformation that reflects the core purpose of Kwasokhulu community livelihoods and EKZNW coastal resources management is proposed.

5.15.2 Root Definition and Conceptual Model

Figure 5.15.3 and Figure 5.15. 6 present the root definition and conceptual model matching the defined system for sustainable conservation in order to promote the community livelihoods for food security purposes.

Table 5.4 Root definition for the conservation to provide livelihoods.

An EKZNW & Fishers'-owned system that facilitates the provision of Sustainable and alternative livelihoods for the people of Kwasokhulu in order to uplift the social life of these people and sustainable management of resources by conservation.

Table 5.5 CATWOE (Customers, Actors, Transformation, Worldview and Environment)

C	Kwasokhulu community or fishers
A	Fishers, Researchers and EKZNW staff
T	EKZNW to practice sustainable conservation of coastal resources that integrates the objectives of improvement to rural livelihoods. Upgrading of subsistence fishers to small scale and commercial fisheries so that they can fish and trade on a broad range of fish species
W	Demarcated fishing zone that is big enough and that has sufficient species to contribute effectively to the Kwasokhulu livelihood economy. The co-management of the fisheries project is to be consultative and inclusive in a manner that would yield incentives to subsistence fishers in order to gain their compliance with the sustainable management of resources.
O	Kwasokhulu community represented by BMCC and EKZNW
E	The sustainability of coastal resources is fully dependent on good relations in co-managing them between fishers and the authorities for their protection. At this stage EKZNW is seen as an organisation that employs a top-down approach which could be improved if it considers indigenous knowledge of fishers to preserve coastal resources

Source: Flood and Jackson (1991:27).

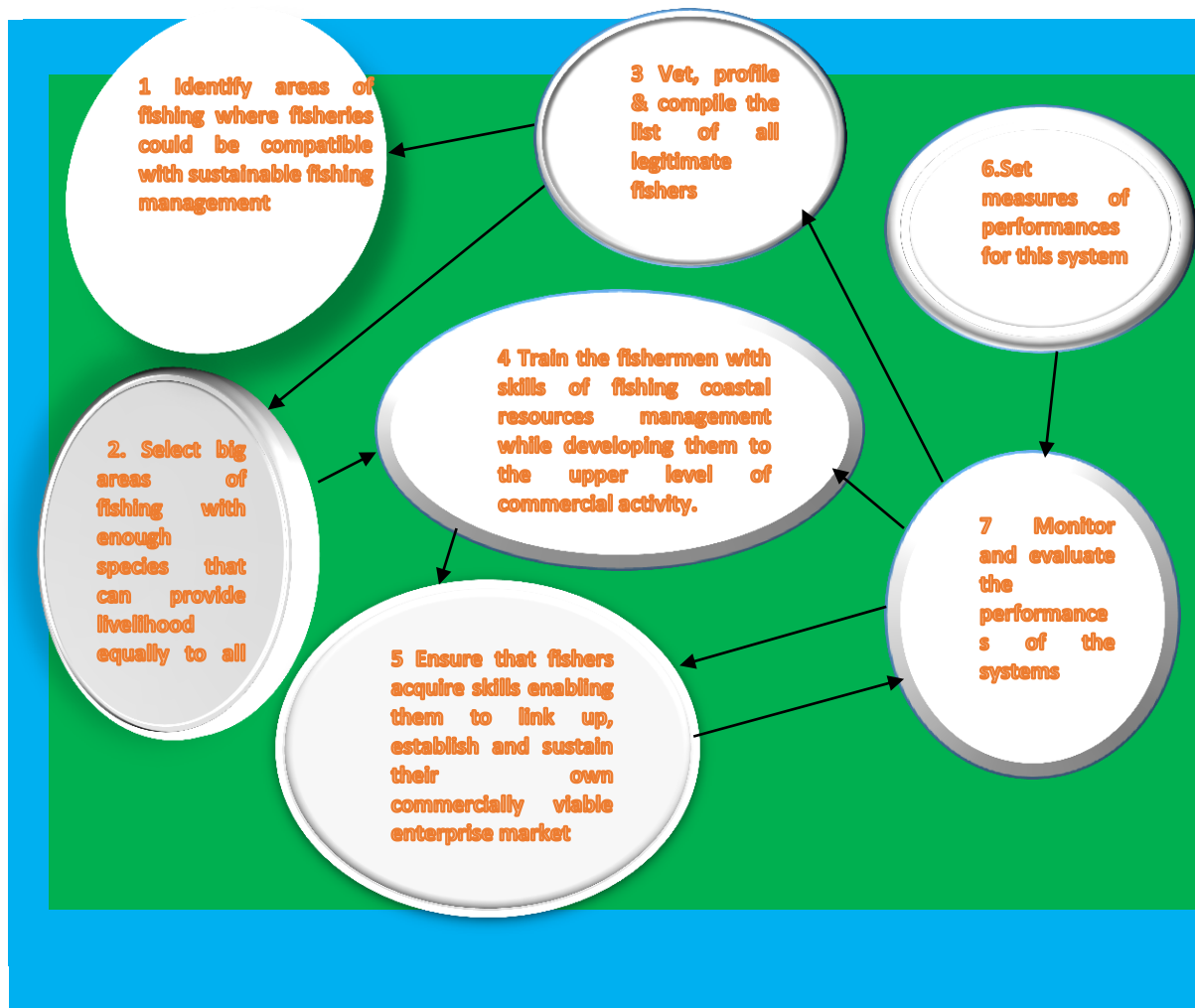
Table 5.6. A guide for creating conceptual models

▪ 1. Start by writing down the verbs from the root definition and activities that spring from the CATWOE (dependencies) ▪ 2. Select activities that could be done at once, that are not dependent on others. ▪ 3. Draw those activities that are dependent on those of bullet point no. 2. Indicate dependencies with arrows. ▪ 4. Redraw to avoid overlapping arrows where possible ▪ 5. Make sure that the root definition and the CATWOE justify all activities in the model.
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Source: It was developed from the literature of Checkland and Poulter (2006: 70).

Step 1 and 2 of exploration and identification of relevant systems according to Checkland & Scholes (1990) were already addressed in our CATWOE application. So, we moved on to the development of the conceptual models. The formulation of conceptual models captured what had emerged in the root definition in order to allow the transformation process to take place, resulting in the desired output. According to literature produced by Avison and Fitzgerald (1995:8), Checkland and Scholes (1990:12), and specifically a direct quotation from Checkland and Tsouvalis (2001: 31) who say, our “conceptual model is a model of the root definition and not a model of anything else”

Figure 5.2: Conceptual model for sustainable conservation to promote livelihoods



Source: developed according to literature perused in Checkland and Poulter (2006:163)).

5.16 Debate and Action

Checkland and Poulter (2006:163) inform us of a capability of an individual person to carry out an investigation, but preferably it would be more rewarding when there is a group involved. Against that backdrop, the group was given an opportunity to compare their presented opinions in a conceptual model with real world examples. That session presented the participants with the chance to test the differences between what they perceived at an abstract level to a real situation so that they would determine the way forward of improvement to the framed situation. Other SSM literature perused in building up towards this research process indicated that participatory researchers are people with authority to expose weaknesses and shortcomings in any problematic situation. At the end of their research they are in a strong position to suggest solutions to improve the situation. But, in this instance, more authority was given to workshop participants to determine the conceptual model as critical in initiating debate among them as way forward.

It has been explained in the preceding sections of SSM that debate or using systems models among stakeholders does not serve or lead to an improvement of a complex or problematic situation, but it factors in and accommodates different perspectives. Luckett and Grossenbacher (2003: 31) also indicate that systems models are merely meant to encourage dialogue among the participants and cannot be imposed on any given situation. When questioning the conceptual model in detail it emerged that the Kwasokhulu community and EKZNW conservation authority featured prominently in the debate. Prominent issues were with the joint management of marine resources in order to promote harmonious living and working together co-operatively. It was coupled with another important issue in the view of participants which is the implementation of alternative livelihood projects that would limit the intensity of fishing and dependency on natural resources.

It was also interesting to hear that fishers viewed employment of their children by EKZNW as an alternative livelihood to fishing. Whilst others, especially the fishers, wanted the total control of the fisheries sector in order to achieve their livelihood objectives. Dependency on natural resources as opposed to other coping strategies of making a living was another angle that was hotly debated during the comparing of a conceptual into a real world situation. Out of all this dialogue it emerged that there is a dependency syndrome within Kwasokhulu people on EKZNW for employment purposes and to the marine resources for consumption purposes which results in the whole system succumbing to pressure. Across the line of the dependency syndrome, it also emerged that other sections within the same fishers group are capable of earning their livelihoods through other means. Other sections of the community members stated that their children are working as professionals and others are operating successful business ventures which results in the relieving of pressure on the whole system.

The stakeholders complained that Economic Development Tourism & Environmental Affairs (DEDTEA) and Cooperative Governance & Traditional Affairs (COGTA) are provincial departments that are tasked with the mandate of growing the economy and of creating jobs in the province and traditional affairs respectively, but they play passive role in the whole issue. That also applies to the Department of Forest & Fisheries (DAFF) as the national department that controls fisheries in the country. Other than the above-stated departments as major role-players that are regarded as silent stakeholders in Kwasokhulu issues, it also emerged that Isimangaliso Wetland Parks Authority (IWPA) is another key organisation that is allocated with budgets of millions annually by national government to manage sustainable livelihoods, economic development and local key opportunities to the people living around marine and wetlands areas. But, it plays a low profile in all matters relating to the context of wetlands and marine resources. As a consequence there was significant disagreement and confusion among all parties involved in the workshop as to what are the roles of the above-mention government departments in this messy problem.

5.17 Discussion

The point of departure as it unfolds in the application of SSM in this real situation sought to achieve what Checkland and Poulter (2006:12) describe as the cycle of learning process. The application of SSM in Kwasokhulu as the study area revealed beneath the surfaces issues which were structural and social in nature. Although there were always burning issues and unstructured messy problems between EKZNW and the BMCC including other fisheries that are not part to co-management, but the workshop gave them an opportunity to discuss and debate the issues together. Another part which played an important role in the un-structuring of the problem was a construction of the rich picture. At first the participants were uncomfortable with the whole exercise eventually they get used to it and participated with ease and as such realised it was for their benefit to jointly decide on the issues which were afflicting the system.

Checkland and Holwell (1998:26) say that a learning cycle takes place through stakeholder's dialogue and debates, but the same learning cycles can be caught up in a middle within which people have in normal situations and who will have their own perceptions of the world by making their judgments using their own values. By the same token, Luckett and Grossenbacher (2003:41) see multiple perspectives as a rich process to surface politics and social issues as they were highlighted on the rich picture. He further elaborates that it helps people to understand the poorly-organised system and subsequently undertake an action to improve the situation. SSM can be applied to interrogate the supremacy of politics in a system. The role of politics in human activity systems can be characterised as according to the preceding table which illustrated norms, roles and

values (Checkland and Scholes 2006:20). The inherent politics which surfaced during the application of SSM in Kwasokhulu is discussed in the following paragraph.

5.18 Analysis of the Political System in relation to the workshop

The political analysis showed that EKZNW exercised too much power in enforcing conservation as opposed to meeting the livelihoods of fishing communities. This surfaced especially when for a first time EKZNW shared the same sentiments with the fishermen, something that was unheard of and unprecedented before the sitting of the SSM workshop. One of the Conservation Managers from EKZNW was visibly emotional when he said that the implementation of the fisheries project by his organisation was top-down and a bureaucratic system which limits the free flow of information to the community. He emphasised that, although the fisher community are represented in co-management with EKZNW, they don't have a say in the important decision-making processes and end up being co-opted in decisions taken. Accordingly, it relegates them as (fishers) to a weaker position which results in uncertainty and confusion when it comes to their fishing rights. He regarded the powers of the EKZNW as a double-edged sword because EKZNW (using one edge of the sword) has an MOU with fishers in managing fisheries resources, formalisation of fishing permits to fishers and promotion of their food security and livelihoods. But (using the other 'edge'), outside the co-management partnership, EKZNW is autonomously instructing its compliance officers to harass, issue fines and to arrest the same fishers who are in partnership with them.

The fishers echoed the sentiments of the Conservation Manager as stated in the above-paragraph by equating the co-management to a smokescreen that only benefits conservation at their expense. Quotas of resources and conditions outlined in fishing permits were strict, harsh and inadequate to sustain their livelihoods. EKZNW do not recognise their indigenous knowledge of natural resources management although they have been using it to manage natural resources for a very long time even before the conservation authority came into being. They have a strong conviction that, when it comes to their needs for a sustainable livelihood, they are in a better position to make recommendations to the conservation authorities not the other way around.

5.19 Analysis of the Social System

In the social system the same sentiments emerged that surfaced in a political system that EKZNW used a top-down approach in the implementation of the co-management of the fisheries conservation in relation to Kwasokhulu community livelihoods. Kwasokhulu mussel and fish consumers (fishers) perceived EKZNW as a control body that is primarily concerned with protecting coastal resources against encroachment. This in turn led to situations where the communities are restricted and at times are totally prohibited from using the coastal resources.

Products which they are allowed to harvest for livelihoods are mussels and very few fish species which does not guarantee their food security, especially, as the majority of them are single women and unemployed. The partnership with conservation authorities in the co-management initiative could have been experimented, harvesting practical experiences for both parties. It could also have been applied in a manner that would have been addressing the objectives of MRLA which is to recognise their rights to coastal resources coupled with sustainability.

5.20 Would-be improvers of the problem situation

The taking of action to improve a situation is preceded by social learning of people undertaking the study which will of course change the starting situation into a new situation. However, as Checkland and Poulter (2006: 12) clarify, the purpose of SSM cannot be reduced to a specific set-up or a project, but, it emphasises a way of managing any “real world purposeful activity in an on-going sense”. In looking at the problem situation, a foregone conclusion was that Kwasokhulu fishers would be satisfied with a resource inventory system that would show growth and yield models in fishing resources and a computer designed model that would show spatial data of resources and fishing activities. From this problem situation it emerged that the ‘would be’ improvers comprised a research team and EKZNW staff members. However, the list of other stakeholders such as government departments who play a low profile in this system must be kept open until they show up to play their roles in the system. Eventually, at the end of the session, as a researcher and the participants we agreed that socio-economic livelihood of the community and coastal resources are two sides of the same coin in this complex system. As a result, Kwasokhulu community/ fishers were included in a list of ‘would be’ improvers.

5.21 Boundaries and Environment

If one pays attention to the prevailing issues in this research the perception may be created that the roots of the complexities are framed around the deeply-embedded conflicts between the EKZNW and fishers as well as government departments who were seen to be passive in executing their roles. However, more than that the issue of pending upgrading from Subsistence Fishers to Small-Scale commercial fishers and Commercial fishers around main parts of the ocean was a thorny and prominent issue that was highlighted at the workshop and it was beyond the capacity and control of the conservation authority to resolve.. Organisations whose primary responsibility it is to effect this mandate such as DEDTEA and DAFF government departments were not represented in the workshop. Consequently, that left a gap and confusion among all parties involved in the workshop as to how this issue of transforming subsistence fisheries into small-scale and commercial fisheries is going to be achieved.

5.22 Value of the study to the problem situation

The contention of Checkland and Scholes (1990:6) about the importance of SSM as an inquiry process carries more weight if you relate it to the manner in which SSM was carried out in the research context of Kwasokhulu. By using the SSM as a research methodology it has given a chance to the researcher to point out the surface beneath the surface or soft issues. The study facilitated by the researcher has put itself in a position of a sponge in order to engage with divergent worldviews, norms, culture and social politics of the messy problem situation. This process has not only focused on the participants' perspectives, it went beyond to the surfacing of how the whole social system is constructed. This has helped to initiate and stimulate a dialogue process which has precipitated a robust debate, construction of a rich picture and development of a conceptual model. All of the above-stated were more than relevant to enable all of the stakeholders to engage in an action which would result in collective learning and contribute to bring about an improvement in the system.

5.23 Brief comparison of co-management in Kwasokhulu and other areas around the world

According to Pinkerton (1993:21) co-management is mainly established to replace conventional and centralised government systems which have proved to be inefficient. In most cases especially in the coastal African environment most fishers and their families are solely and totally dependent on fishing with no alternative livelihood at all. This is more or less the same scenario with Kwasokhulu fishermen. Consequently, in the African perspective co-management has mainly been established at a local and district level and the representation involve local authorities and local people. The involvement of provincial and central government, therefore, becomes minimal for on-going and routine co-management operations and becomes more overriding when it comes to proclamation of laws and making of policies which affects local processes. Eventually, it results in a situation where local people perceived co-management as a mechanism which co-opts them into a central approach which would reduce them into becoming complying objects to whatever is being proposed at the central level.

In international contexts such as the Philippines co-management has developed and has been improved to such an extent that central government recognises the roles of fishermen and Non-Governmental Organisations (NGO) as valuable partners in decision-making and establishment of partnerships. Co-management in the Philippines is highly successful and has been used to achieve ecological balance, local development enterprise, and advancement of social wellbeing and opportunities of the local people (Fetterman 1997:11).

5.24 Summary

This chapter covered core findings of the study which dealt with the learning from the reflective exercise. There were important discussions based on the comprehensive co-management of fisheries that were raised. Learning to learn as an exercise that arises from the Soft Systems Methodology approach enlightened the conservation authorities and Kwasokhulu communities about the importance of pragmatic and continuous discussion in fisheries management. The conclusion that can be learned from this research is that shortfalls that surfaced from co-management partnerships between conservation authority and fishermen can be managed continuously through SSM dialogue processes.

CHAPTER SIX:

RECOMMENDATIONS AND CONCLUSIONS

6. Introduction

At this point I return to my earlier statement that this study set out to evaluate whether the implementation of co-management initiatives by EKZNW has either improved or compromised the livelihoods of the Kwasokhulu people. Investigations of this research have been characterised by a particular emphasis on how the co-management was implemented and on how this was received by the intended beneficiaries. The research noted that conservation authority shortfalls in successful implementation of fisheries management in Kwasokhulu may have been biased in favour of EKZNW's operational management plan that seeks to ensure adequate control and compliance rather than to improve and sustain the livelihoods of the community. The limitations of the research now will briefly be highlighted before the recommendations and suggestions prompted by this research are considered.

6.1. Limitations of the research fieldwork

The study required a substantial amount of qualitative data that required a long time to gather. Communities in this co-management venture are expecting positive spin-offs out of this partnership, such as, more power to use natural resources in the long run. For this reason they are cautious in their responses to questions that might reveal a negative sentiment towards the project.

Communities in the Northern- KwaZulu-Natal are patriarchal and conservative. Consequently, they felt a little uneasy to be interviewed by someone who does not come from their community. Even though we worked with them on an on-going basis, at times they displayed uneasiness with regard to responding to the questionnaires because they felt they might be revealing sensitive information to someone not from their community. Gender restraints cannot be over-looked as some male participants thought that they were in a better position to give a true reflection on personal questions by comparison to the responses provided by women.

The work nature of the researcher as project manager, made him vulnerable to be viewed as someone associated with material gains by those being researched. They always emphasised that the researcher must tell government to pump more money into the project and sometimes expected money for answering questionnaires. The above are some of the things that made this research a difficult process.

6.2. Suggestions emanating from the research

This research has revealed that SSM presents a tremendous opportunity to pursue an understanding which can precipitate and enlighten the action research and also be enlightened by that action at the same time. Analysis of the outcome of this research, SSM can also contribute to the body of knowledge and to the development of professionals in order to carry out meaningful research. Action research can play a significant role in conservation, co-management and sustainable livelihoods of all stakeholders in the fisheries sector. There are many issues entangled in one complex web of the research area which warrant action research which is thoughtful and enquiry-oriented.

6.3. Recommendations

Probably there is no universal approach that is appropriate to the variety of complexities, but SSM is deemed appropriate to interrogate a multitude of topics as demonstrated in a variety of studies. The implementation of co-management in fisheries management and regulation has been widely practised all over the world. However, in the context of South Africa it has only recently been introduced. South African laws which protect the rights of individual fishermen are well entrenched in the constitution as well as in the MRLF. However, limitations facing the government, national, provincial and local authorities, conservation authorities and all other stakeholders are enormous. However, as Checkland (1985:28) states, the SSM in the research area serves as an efficient means to provide a platform for inclusion of multiple stakeholders and their concerns during the stages of inquiry. As such, the inquiry resulted in the learning and integration of new insight into future decision-making that is independent but it takes into consideration worldviews, norms and politics.

To summarise the findings of this research, I recommend the collective continued effort between EKZNW and Kwasokhulu community including all other relevant stakeholders to work together for the benefit of preventing the marine resources depletion, whilst, providing the community with a livelihood at the same time. The Kwasokhulu people claim to have indigenous knowledge related to fisheries management which is true, but it is incomplete as it does not extend to other complexities such as biology of fish. It would be an inherent danger for government (EKZNW) to leave them alone to facilitate complex measures such as recovery and replenishment of fish stocks. Government must therefore provide on-going empowerment, capacity building, training and scientific support which would help the co-management partners so that they appreciate the support and ensure that management measures taken are sufficient.

It has been proven beyond reasonable doubt that marine resources are being depleted due to competing interests of recreational fishing, livelihood purposes, commercial and other interests. In order to curb the deterioration of the situation, I highly recommend that EKZNW and Kwasokhulu communities urgently engage in a continuous rigorous dialogue that will facilitate the establishment of a platform for fishermen to explore alternative livelihoods for food provision. This rigorous dialogue process can be in a form of quarterly meetings which can help to pick up any negative sentiments as and when they surface. There must also be a mid-term review in order to determine the shortfalls and to map the way-forward for the future benefit of all stakeholders.

6.4. Proposal for further study

Co-management in South Africa is of recent origin and this is exacerbated by the fact, that, the country is still developing economically. Information in the public domain asserts that South Africa as a country is well-endowed with fish resources which are commercially harvested by foreign agencies, legally and illegally. This public domain information also implies that the majority of fishing vessels in South African waters are foreign owned. However, livelihood for impoverished people is a big issue which is also impacting directly and exerting pressure on the depletion of resources. The introduction and implementation of co-management in South Africa was an attempt to balance the sustainable management of marine resources with provision of food security to the Kwasokhulu community for subsistence purposes. According to the results of this investigation in Kwasokhulu, the objectives of co-management were not fully realised. Against that backdrop, it would be an ideal prospect to undertake a larger study at a doctoral level to determine whether or not co-management between the South African citizens (beneficiaries) and the government (fishing rights holder) could be established to improve on the objective which was not realised in the present Kwasokhulu study. This could also pave the way for new approaches to promoting the economy, Gross Domestic Product (GDP), the social wellbeing and the livelihoods of the people. In addition, it may also play a valuable role in lessening the conflict between the resource rights holder (government) and the resource rights seeker (citizens).

6.5. Conclusion

The primary aim of this study was to expose, through the application of SSM, the impact of conservation and co-management in the livelihoods of the Kwasokhulu community. SSM, as applied in this context, has managed to facilitate and provoke the debate which added to a dialogue process between the conflicting parties. Discussions throughout the research process managed to prompt consideration of burning issues that contribute to the messy problem and complex system. The issue of free riders such as illegal poachers and recreational fishers was identified as problematic as they are not part of the co-management. But, , they are important constituents of the

whole system as they benefit from the fish resources. Other issues that came to the surface relate to sustainability and management of these resources. Agreement on the way to resolve these issues is clearly essential to both parties as a means to harmonise their relations and to subdue the current hostilities. The study examined complexities of the socio-political and cultural environments that impacted upon the implementation of the co-management project in Kwasokhulu.

Lastly, I conclude by reiterating a statement from the Abstract of this dissertation to the effect that the SSM is not a suitable method for solving all complex natural systems situations. Rather, it serves as a useful platform for structuring the necessary learning, reflexivity, and deliberations that should be an integral part of considering the complex problem. In the case of this dissertation, this involved the Kwasokhulu development project and its management. A platform for dialogue between all the stakeholders should be provided by EKZNW which would encourage participation, learning and dialogue and, ultimately, a solution to the problem. Using SSM brought valuable information to the surface, and some important lessons were learnt as a consequence. Adding to this, the participants took part in the construction of a root definition and could understand how it led to a Rich Picture of the problem.

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25 January 2017

Mr BG Gwala 991239028
Graduate School of Business and Leadership
Westville Campus

Dear Mr Gwala

Protocol reference number: HSS0758/07M

Project title: A systematic approach for evaluating conservation initiatives in the sustainable livelihood of KwaSokhulu Community

Recertification Approval

This letter confirms that you have been granted Recertification Approval for a period of one year from the date of this letter. This approval is based strictly on the research protocol submitted in 2007.

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study must be reviewed and approved through the amendment/modification prior to its implementation. Please quote the above reference number for all queries relating to this study. PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years

Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully



.....
Dr. Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

cc Supervisor: Professor Kriben Pillay
cc Academic Leader Research: Dr Muhammad Hoque
cc School Administrator: Ms Zarina Bullyraj

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