

**INTEGRATING NATURAL SCIENCES AND INDIGENOUS KNOWLEDGE  
SYSTEMS FOR RURAL ECONOMIC DEVELOPMENT: A *MODEL FOR  
RURAL ENTERPRISE DEVELOPMENT, HEALTH AND NUTRITION  
INITIATIVES IN THE EASTERN CAPE, SOUTH AFRICA***

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## DECLARATION

I declare that “Integrating Natural Sciences and Indigenous Knowledge Systems for Rural Economic Development: *A Model for Rural Enterprise Development, Health and Nutrition Initiatives in the Eastern Cape, South Africa*” is my own work, that all other sources used as reference material either as written text and verbal communication or quoted, have been indicated and acknowledged by means of complete references and that this thesis has not been submitted for a degree at any other university.

Pumezo Lupuwana

April 2008

Signature.....

Supervisor: Professor M. L. Magwa (University of Fort Hare)

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This thesis is dedicated to all the struggling poor rural masses of the African Continent.

## ABSTRACT

This study demonstrated that the demographic profile of the Eastern Cape Province portrayed high levels of poverty and underdevelopment in the mostly rural population. This is despite the fact that the Eastern Cape is characterized by a rich endowment of natural resources, hosting a wide range of natural plant species, numerous rivers, water springs from mountains and no less than six biomes due to the variety of climatic conditions prevalent in the Province. In contrast, the natural resources found in the Province were regarded to have a high potential to grow and transform the economy of the Province.

In this study, the integrated approach was conceptualized, developed and implemented in action within the rural communities selected with varying degrees of success, as a function of the material and objective socio-economic conditions prevailing in each community. A model for rural enterprise development based on agricultural production utilizing the principles of Community-Public-Private Partnerships was conceptualized and executed with the assistance of specialist professionals from various disciplines and organizations. Case studies structured on the basis of methodologies derived from the integration of natural sciences and indigenous knowledge systems were conducted to demonstrate the feasibility of the conceptual framework of the study as indicated by the following case studies.

The first case study undertaken was the development of agricultural enterprises in the selected rural communities in joint ventures through the commercial production of food and vegetable crops for local markets and to provide nutrition for the rural communities as the first line of therapy against the HIV/AIDS infection and other diseases associated with malnutrition.

The second case study was the establishment of an agricultural enterprise in partnership between rural communities, government agencies and agricultural specialist for the commercial production of grain crops, namely, Sorghum alternating with Wheat to satisfy the demand of local markets for these crops.

The third case study was the establishment of a community-based enterprise through the commercial production of two *Pelargonium* plant species, namely, *Pelargonium reniforme* and *P. sidoides*. The two species had a high market demand in the pharmaceutical industry; hence, the plant species were

domestically cultivated to satisfy the industry demand and to ensure the survival of the plant species. The enterprise succeeded in sustaining the livelihoods of the rural communities and conserving the plant species.

The fourth case study was the commercial production of essential oil-producing plants in six selected rural communities providing employment for some of the members of these communities even though the initial phase of the start-up enterprise was a trial cultivation to determine the suitability of the environmental and climatic conditions for the propagation of the selected essential-producing plants. The demand for essential oils in local and international markets was determined to be relatively high.

The incorporation of Indigenous Knowledge Systems of the rural communities in the planning and implementation processes in the areas of Commercial Agricultural Production and Primary Health Care resulted in a gradual paradigm shift on the part of rural communities from a dependence mindset to one of self-reliance that is critical for sustainable rural economic development and the improvement of rural livelihoods. An integrated approach in the strategic planning and execution that involved the rural communities by government stakeholders, the academic community and other stakeholders from the Private Sector was piloted.

The recognition of Indigenous Knowledge Systems by all the relevant stakeholders and their essential role in rural enterprise development, food production and primary health care as a pre-requisite for a successful transformation agenda was highlighted as never before. An all-inclusive approach that accorded the rural communities the status of equal partnership had a positive impact on most aspects of planning and implementing programmes for sustainable rural economic development and biodiversity conservation. Working in partnership with rural communities was found to be a challenge; hence, an understanding of the sub-cultures and the social dynamics that often manifested themselves in the form of internecine conflicts became necessary for successfully initiating the research programme in the rural communities. Furthermore, recognition of the rural communities as an integral part of the solution towards biodiversity conservation and the sustainable exploitation of natural resources was found to be a critical component for an effective strategy to ensure the continued survival of the endangered plant species. This attitude underpinned the co-operation of the rural communities and the overarching goals of rural transformation towards the consistent and sustainable improvement of rural livelihoods. The

approach also marked a radical shift from all the preceding practices in biodiversity conservation and the management of sustainable natural resource utilization.

The study demonstrated that the integration of Indigenous Knowledge Systems and Natural Sciences for sustainable rural economic development with the ultimate strategic objective of contributing towards the reduction of poverty, the improvement of the quality and cost-effectiveness of primary health care and adequate food production is feasible.

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## LIST OF ABBREVIATIONS

AEDA	: Amathole Enterprise Development Agency
AIDS	: Acquired Immune Deficiency Syndrome
AMT	: Agrimark Trends
ANC	: African National Congress
ART	: Antiretroviral Treatment
ARV	: Antiretroviral Drugs
BOT	: Board of Trustees
CBD	: Convention on Biological Diversity
CBOT	: Chicago Board of Trade
CHDM	: Chris Hani District Municipality
CIPRO	: Companies and Intellectual Property Registration Office
CITES	: Convention on International Trade in Endangered Species
CONNEP	: Consultative Management Process
COSATU	: Congress of South African Trade Unions
CPPP	: Community Public Private Partnerships
CRD	: Centre for Rural Development
CRMP	: Community Resource Management Plan
CSIR	: Council for Scientific and Industrial Research
DBSA	: Development Bank of Southern Africa
DC	: District Council
DEDEA	: Department of Economic Development and Environmental Affairs
DST	: Department of Science and Technology
DTI	: Department of Trade and Industry
DWAF	: Department of Water Affairs and Forestry
ECA	: Environmental Conservation Act
ECDC	: Eastern Cape Development Corporation
ECSECC	: Eastern Cape Socio-Economic Consultative Council
EU	: European Union
FDI	: Foreign Direct Investment
FHISER	: Fort Hare Institute for Socio-Economic Research

FMCG	: Fast Moving Consumer Goods Environment
GAP	: Good Agricultural Practice
GDP	: Gross Domestic Product
GEAR	: Growth, Employment and Redistribution
GGP	: Gross Geographical Product
GMP	: Good Manufacturing Product
GVA	: Gross Value Added
HIV	: Human Immune Virus
HPLC	: High Performance Liquid Chromatography
HSRC	: Human Sciences Research Council
IDC	: Industrial Development Corporation
IDT	: Independent Development Trust
IK	: Indigenous Knowledge
IKS	: Indigenous Knowledge Systems
IMD	: Insitute for Management and Development Studies
IMF	: International Monetary Fund
IMKS	: Indigenous Medicinal Knowledge Systems
ITK	: Indigenous Technological Knowledge
JV	: Joint Venture
JHB	: Johannesburg
LED	: Local Economic Development
MCC	: Medicines Control Council
MDG	: Millennium Development Goals
MERG	: Macro-Economic Research Group
MOU	: Memorandum of Understanding
MRC	: Medical Research Council
MTEFP	: Medium Term Expenditure Framework Period
NAMC	: National Agricultural Marketing Council
NEPAD	: New Economic Policy for African Development
NHS	: National Healthcare System
NPPO	: National Plant Protection Organization

NRF	: National Research Foundation
OI	: Opportunistic Infection
OTC	: Over-The-Counter Products
PGDP	: Provincial Growth and Development Plan
PHC	: Primary Health Care
PLWA	: People Living With Aids
RSA	: Republic of South Africa
RSS	: Rapid Services Survey
SACP	: South African Communist Party
SADC	: Southern African Development Community
SAFEX	: South African Food Exchange
SAFIRE	: Southern African Alliance for Indigenous Resources
SAP	: Structural Adjustment Policy
SAPO	: South African Post Office
SD	: Sustainable Development
SEDA	: Small Enterprise Development Agency
SWOT	: Strengths, Weaknesses, Opportunities, Threats
TM	: Traditional Medicine
TRACOR	: Transkei Co-operative

## **SECTION A**

# **INTRODUCTION, BACKGROUND AND THE ENVIRONMENTAL PROFILE OF THE EASTERN CAPE PROVINCE**

## **CHAPTER 1: INTRODUCTION AND BACKGROUND**

### **1.1 INTRODUCTION**

#### **1.1.1 Poverty and Underdevelopment in the Eastern Cape**

The socio-economic outlook of contemporary Eastern Cape Province is a legacy of a protracted and uninterrupted historical evolution of processes of underdevelopment and institutionalized racism that have shaped the formidable challenges of poverty and underdevelopment currently confronting the Province, more than a decade into a new political dispensation that saw the broadening of the franchise to the majority of the population of South Africa (Eastern Cape Provincial Government, 2006). Over two centuries of systematic colonial dispossession, followed by four-and-a-half decades of social engineering apartheid policies and legislations have left the Eastern Cape with enduring infrastructural backlogs and distinct social features of underdevelopment (Roux, 1948; Le Cordeur, 1981; Nolutshungu, 1982; Peires, 1982; McLennan, 1986; Eastern Cape Socio-Economic Consultative Council (ECSECC), 2002). Prominent among these social aberrations, are extremely high levels of poverty, glaring social inequalities, and huge disparities in accessing basic services such as housing, clean water, sanitation, education, health facilities, electricity and a well-maintained roads infrastructure (Eastern Cape Government, 2006). The functional derivative of the interaction of these factors has been an escalating unemployment rate, overall economic decline and sub-optimal performance in key sectors of the Provincial economy thus rendering the Eastern Cape into the unenviable position of being rated as the poorest of all the nine provinces of South Africa (ECSECC, 2002; Global Insight, 2002; Stats SA, 2002; Eastern Cape Government, 2006).

Having a deeper insight into the causality and profile of poverty and underdevelopment in the Eastern Cape Province with a special emphasis on rural livelihoods with respect to health, nutrition and rural economic development acquired from earlier studies, the primary objective of this study was to develop practical intervention programmes that would actively engage rural communities and other stakeholders in addressing these socio-economic challenges in a meaningful way. To this regard, the thesis has drawn on exhaustive analytical research studies on the rural socio-economic status and aspects of the land tenure systems in the Eastern Cape that have been independently undertaken by various researchers and organizations and on behalf of the Eastern Cape Government by institutions such as the Eastern Cape Socio-Economic Consultative Council (ECSECC), Statistics SA, the Eastern

Cape Provincial Government sector departments and independent researchers based in local tertiary academic institutions (Beinart, 1992; Manona, 1998; Webber et al., 1999; Kepe & Scoones, 1999); (Bonti-Ankomah & Fox, 2000; Cocks & Dold, 2000; Kepe, 2002; ECSECC, 2002; Global Insights, 2002; Light et al., 2005; Sparg et al., 2005; Eastern Cape Government, 2006).

It is pertinent to give a broad overview of the Eastern Cape Province economic outlook in order to put into a proper perspective the status and the extent of poverty before embarking on a journey that seeks to translate into action the potential of its human and natural resources such as medicinal plants, indigenous crops and the systematic approach of Biotechnology techniques coupled with the processing of mature crops; hence, from this multi-dimensional approach, practical intervention strategies for rural development could be developed.

The economy of the Eastern Cape is characterized by extreme levels of uneven and combined development that are distinctly discernible through a number of inherent contradictions that are uniquely South African; between the two urban industrial manufacturing centres of East London and the Nelson Mandela Metropolitan Municipality on the one hand and the poverty-stricken and extremely underdeveloped rural hinterland of the former homelands of Ciskei and Transkei on the other; between a well-established traditional commercial farming sector that is almost exclusively white and the almost extinct and dysfunctional rural subsistence agricultural sector that is overwhelmingly black and is largely dependent on remittances generated, mainly, from social state grants and relatives employed in the major industrial complexes of South Africa; between the urban centres with a relatively well-developed and productive industrial infrastructure situated in the Western district of the Province, such as the Nelson Mandela Metropolitan Municipality and Buffalo City in East; and the extremely underdeveloped rural areas to the East and the North, such as the rural districts of the OR Tambo District Municipality and the Alfred Nzo District Municipality, respectively. Acute and sharply distinct social inequalities - characterized by the co-existence of large-scale poverty in contiguity to islands of affluence - that had come to typify the contemporary South African society, are most evident in the Western District of the Eastern Cape where a dominant sector of white commercial farmers stands in sharp contrast to a large black underclass of landless, destitute and unemployable populace in the small farming towns and settlements situated along decrepit and desolate railway sidings that are relics of a bygone era (Eastern Cape Socio-Economic Consultative Council, 2002; Eastern Cape Government,

2006). According to a number of social science researchers and historians who have conducted in-depth studies on the socio-economic environment of rural communities in the Eastern Cape, there is an adequately compelling evidence to the effect that the demographic patterns of the Eastern Cape population, over an extended period of time, have largely been determined by, among others, landlessness and the progressive dissolution of subsistence farming in the rural areas, a situation that, by and large, has led to mass migrations of rural dwellers to the more economically developed centres of the country (Roux, 1948; Peires, 1989; Slater, 2001; Bryceson & Bank, 2001; Manona, 2001; Kepe, 2002). Hence, the evolution and emergence of the social formations that constitute contemporary South Africa and more pertinent to this study, the Eastern Cape, can be attributed to a protracted historical process that has always been invariably characterized by an uninterrupted conflict over land ownership and other natural resources and a polarization between wealth and poverty as well as the dominance of the urban over the rural sector of the South African society. These social dynamics were playing themselves out from the earlier decades of the Twentieth Century as the country was progressively evolving into a modern industrial state that was rapidly integrating into the global arena driven by the powerful centrifugal forces of capitalist development.

In the early 1990's, the period leading to the first all-inclusive elections in South Africa, the African National Congress (ANC), the dominant political tendency within the South African liberation movement and several social science researchers on the South African political economy had independently pioneered a process of formulating economic policy guidelines and recommendations for a future democratic dispensation as part of the endeavours aimed at addressing the formidable twin challenges of poverty and underdevelopment in a post-apartheid South Africa (MERG, 1993; Hart, 1994; Nattrass, 1994; Kaplinsky, 1994; Sender, 1994). In 1996, the then newly elected ANC government released its Growth, Employment and Redistribution (GEAR) plans as the economic blueprint intended to address the legacy of socio-economic imbalances in South Africa. GEAR was subsequently adopted through parliament as the official macroeconomic policy that, supposedly, would most effectively reshape the country's economic landscape through confronting the high priority issues of poverty and underdevelopment (RSA, Department of Finance, 1996). The most pertinent aspect to confront the democratically elected government in the implementation of the GEAR policy was the fact that the majority of the poorest people in South Africa resided in the rural areas where basic social services were either grossly inadequate or non-existent. Research surveys undertaken in the relatively

recent past had revealed that South Africa remained one of the most unequal societies in the world with 75% of the population residing in rural areas living well below the poverty line (Wilson and Ramphele, 1989; Standing et al, 1996; Republic of South Africa, 1996; 1998). In essence, the GEAR policy was advocating a macroeconomic framework that placed more of an emphasis on tight fiscal policies and austerity measures in tandem with a commitment to free market policies in an attempt to attract Foreign Direct Investments (FDI). This change of stance, on the part of the erstwhile dominant political tendency of the South African liberation movement, was regarded by political formations to the left - both within and outside of the ANC-led Tripartite Alliance and some progressive social science academics - as a radical shift from the pre-1990 thinking of the ANC whose election campaign manifesto in 1994 had been premised on an expanded social spending programme and an active interventionist role for the state in the economy (Mather, 1998). The fundamental contradiction here, according to those who were opposed to GEAR, such as the largest South African labour federation, the Congress of South African Trade Unions (COSATU), the South African Communist Party (SACP) and other leftwing social movements such as Jubilee 2000 and the Soweto Electricity Crisis Committee, was the fact that the policy seemed, in their view, to resonate well with the principles of Structural Adjustment Policies (SAP) favoured by the International Monetary Fund (IMF) and the World Bank, and as such, its implementation would, instead, result in massive job losses, exacerbation of poverty and a perpetuation of social inequality, especially in the rural areas of the country (Nattrass, 1994; 1996; Rix, 1996; Broham, 1996; Eidelberg, 1997; Taylor, 1997; Bond, 2001; 2002).

The pertinent question then, with regards to the marginalized rural poor communities, was whether South Africa's macro-economic policy framework, informed by the GEAR principles, would have a positive impact on agriculture and improve rural livelihoods given its minimalist approach on government social spending and intervention. Since poverty and unemployment were closely correlated, Agriculture was and would continue to be, even if potentially, an important source of livelihood for the rural poor; hence, according to Mather (1998), GEAR's emphasis within the land reform programme and employment creation would be a point of departure in exploring the relationship between rural poverty and South Africa's new macroeconomic strategy.

Over the thirteen-year period that it has been in power, the ANC government has been progressively coming under pressure from various quarters - not least, from their poorest constituencies in both rural

and urban settings - to rethink their approach and strategies towards improving the livelihoods of poor people, especially in the rural areas, more so in the critical areas of health, nutrition and rural economic development. The deteriorating situation in these areas has been further exacerbated by the rapid spread of the Human Immune Virus and the Acquired Immune Deficiency Syndrome (HIV & AIDS) pandemic and its devastating consequences, especially in the rural countryside and the densely populated and poverty-stricken urban black residential areas around all the major cities and towns of South Africa. The Department of Health's Antenatal Survey report published in October 2002 revealed that the HIV & AIDS pandemic continued to escalate, year-on-year, thus posing a major challenge and threat to the populace of South Africa and the Eastern Cape. In the last ten years, the Eastern Cape has experienced an escalation in the spread of the HIV & AIDS pandemic, a situation concern that has galvanized the Provincial Government into calling for a multisectoral response across government departments, civil society and other sectors of the Provincial society to join forces and pool resources in the war against the pandemic (State of the Province Speech given by the Premier of the Eastern Cape Province on the opening of the Legislature on 10 February 2006).

In view of the socio-economic environmental trends exposition above, this study was an attempt to move beyond the terrain of the well-established theoretical exposition and academic discourse on the fundamental causality and effect of rural poverty and underdevelopment and the resultant derivatives thereof such as the compromised health status, malnutrition and the rapidly deteriorating rural livelihood conditions, particularly in the rural landscape of the Eastern Cape. From conceptualization, the research objective of the study was, primarily, to determine the feasibility of unlocking the potential value of natural resources, with which the Eastern Cape is so well-endowed, and the indigenous knowledge contained in the collective memory of rural communities and the extent to which it could play a fundamental role in addressing these socio-economic challenges. In a practical manner, the study engaged poor rural communities and other relevant rural development stakeholders in a participative process that sought to design and execute integrated development strategies and solutions in confronting poverty and underdevelopment and their impact on the health status and food production. Through natural science applications in tandem with Indigenous Knowledge practices, the overarching strategic goal of the study has been to transpose abstract natural sciences theories into practical applications in an endeavour to transform the socio-economic environment prevailing in rural communities and improve their livelihoods. Most of the studies undertaken on rural socio-economic

aspects have mostly been from a social science perspective and have served to provide a profound and valuable insight in understanding the social dynamics of rural poverty. On the side of natural science research on rural poverty, the inputs have, by and large, been more academic with minimal practical application to address the actual material conditions on the ground. Given these facts, therefore, this study adopted an action research approach to problem-solving and decision-making rather than mainly dwelling on examining social theories and their feasibility in addressing the challenges as stated above since much work in this regard has already been undertaken (Mather, 1998; Cousins, 1999; Slater, 2001; Shackleton et al, 2001). More critical to the study, has been the manner in which formal education and training in South Africa has evolved. Over the decades since the establishment of South Africa into a country with the features of an evolving modern semi-industrial state, there has been a disjuncture and a lack of coherence between human resource development at tertiary level institutions and the technical expertise requirements of the country's industrial economy. In a nutshell, tertiary education in South Africa has developed in isolation with minimal relevance to the skills demands of a sophisticated urban industrial economy. It must be stated though that, attempts are afoot to address this situation.

As a point of departure, questions that were formulated in the conceptualization of the research and the desired outcomes, before the commencement of the project, were as follows:

- ❖ How can poverty and underdevelopment be defined from the perspective of the rural communities in so far as it impacts on health and nutrition?
- ❖ What is the feasibility of exploring and designing intervention strategies to these challenges within the scope of rural communities themselves to ensure sustainability and permanence of such solutions? The ideal scenario in this instance would be to create an enabling environment whereby the solutions and responsive strategies are generated from within the communities rather than importing them since this would negate the very purpose of this undertaking.
- ❖ Are meaningful partnerships between rural communities and other stakeholders in the areas of health and nutrition feasible without imposing on the communities?
- ❖ How can health and nutrition be defined and addressed from the perspective of rural communities such that issues of culture, paradigm, mindset and the understanding of rural people are encapsulated?

- ❖ What is the potential role of natural resources and indigenous knowledge of the rural people in addressing poverty and underdevelopment in so far as they impact on health and nutrition?
- ❖ At a conceptual level, is it possible to shift the mindset of rural communities from subsistence farming towards commercial farming thus enabling them to realize the power of their collective knowledge and experiences in achieving self-sufficiency and independence?
- ❖ Is it feasible to develop the ‘ultimate solution’ utilizing natural resources with a view to long-term sustainability of rural communities given the deeply entrenched causes and effects of poverty and underdevelopment?
- ❖ What would the implications of the macro-economic policy of South Africa be on sustainable development largely informed by environmental factors?

The endeavours of this study to contribute towards poverty reduction were based on the understanding of the existing body of scientific knowledge and its application towards sustainable rural economic development. The rural communities engaged in this study had a high level of recognition that health and nutrition are inextricably linked to poverty and underdevelopment. One of the critical success factors in designing a development model was an appreciation of the underlying cultural and social perspectives of rural communities in so far as matters related to health are concerned (Ngubane, 1977; Singer, 1977; Liengme, 1983; Hutchings, 1989; Cunningham, 1989; Mzimela, 1995; Posey, 2002; Cocks & Moller, 2002).

### **1.1.2 Health and Indigenous Knowledge**

Through African oral traditional history and practice, the healing properties of indigenous medicinal plant species have been handed down through generations of traditional medical practitioners and community individuals who possessed some knowledge and a certain level of skills on indigenous medicinal plant therapies without necessarily being practitioners. This was the case in Southern African communities and elsewhere on the African continent as documented in internationally recognized scientific literature (Geest, 1991; Tsey, 1995). In recognition of the wide usage of Traditional Medicine in contemporary indigenous African societies, the World Health Organization (WHO, 1978), the World Bank (1996) and a crop of African scientists (Chavanduka, 1994; Chi, 1994; Jingfeng, 1978; Tsey, 1997; Cocks & Moller, 2002; Kepe, 2002) have documented that over 80% of the population in Africa use indigenous medicine as first line healthcare.

It is an established fact, that in traditional African communities, medicinal preparations developed from indigenous medicinal plant species have found application in the management of a wide range of degenerative medical conditions and diseases with an ethos that is informed by a specific set of cultural beliefs and practices (Geest, 1991; Tsey, 1995; Cocks & Moller, 2002; Posey, 2002). However, due to the prevailing socio-economic and political dynamics worldwide, Western-trained scientists and medical practitioners on the African continent have yet to take up the challenge to conduct large-scale validation of these medicinal entities through internationally recognized scientific methodologies and protocols. In this period, most of the Western-trained African academics and medical experts in South Africa lack an understanding of the economics and the utilization of scientifically approved medication derived from Traditional Medicine and how it stands to benefit rural economic development; and so far, none of the South African institutions of higher learning offer curricula on Indigenous Medicine or Indigenous Knowledge Systems. Despite these challenges, it still remains the historical task of the African scientists and intellectuals to place indigenous African medicine on an equal footing with Western science and medicine. Ironically, while African traditional medicine, as practiced by the indigenous people, has yet to be accorded recognition and status in scientific and medical circles, countries in the developed Western World such as North America, Western Europe and the Scandinavian countries are leading manufacturers and consumers of natural medicinal products some of which have been misappropriated from underdeveloped countries (Ngubane, 1977; Singer, 1977; Tsey, 1997; Cocks & Dold, 2000; Cocks & Moller, 2002; Posey, 2002; Botha et al., 2004). The Food & Medicines Regulating Authorities in the developed countries have put in place comprehensive approval protocol for the testing and usage of natural herbal products in their health care systems. In South Africa, the strategy adopted by the government has been to integrate university curricula, which are more inclined to be theoretical, with the former Technicon which placed an emphasis on a more practical approach.

In South Africa, well established natural self-medication and health care product manufacturers such as Weleda, Lennon and others, have carved a niche` in the marketplace with their brands occupying considerable shelf-space in pharmacies, national chain stores in the Fast Moving Consumer Goods (FMCG) environment and health care retail stores around the country. Such products are marketed as over-the-counter medicine (OTCs) or self-medication products and constitute part of the well developed Category Management that is practiced in the modern retail environment, complete with shelf-space and shop-floor display material management techniques in combination with

merchandizing and in-store promotions. Neither is there any mainstream company trading in products derived from the Indigenous Knowledge Systems nor is there any contribution from institutions of higher learning in this regard with the exception of the University of the Western Cape which has established a centre that focuses on this subject.

More specifically, sustainable development programmes were intended to improve rural livelihoods through, mainly, the integration of Indigenous Knowledge Systems and modern biotechnology applications in scientifically proven plants as the initial part of setting up a manufacturing supply chain in the health and nutrition arena on a platform of Agriculture thus setting the stage for the establishment of viable commercial enterprises based in the rural areas with communities taking ownership of such initiatives. The study also addressed the development of sustainable rural communities through the use of practices and systems that invoked and enhanced the ability of the people to provide for their social and cultural well-being, the economic viability of Agriculture as a basis for a commercial enterprise development utilizing the natural resource base, the ecosystems influenced by planned agricultural activities and safe commercial production.

As a point of departure, the research investigated and highlighted the current use value of indigenous plant species with medicinal applications and how they have been utilized for livelihoods and well-being by rural communities over the years and whether that value could be amplified through mainstream commercialization and integration with the principles and techniques of Biotechnology. The most critical issue relating to sustainable rural developmental economics was the beneficiation process for rural communities from these valuable natural resources. To a considerable extent, the beneficiation process underpinned the value dynamics of the natural resources and their potential to reshape the historical economic development of the communities. Other critical aspects with a fundamental role in the sustainability of the targeted natural resources and the success of the proposed development strategies, revolved around the issues of intellectual property rights of indigenous peoples and their contributions to the enhancement and conservation of biodiversity. Although increasingly recognized in international academic discourse, the rights of the indigenous peoples to continue their traditional practices are threatened by the encroachment of a globalizing economy (Posey, 2002). The issue of biodiversity conservation, on the other hand, was a cause for concern in that some of the important plant species have become extinct in the process while others are officially classified as being on the endangered list as a result of over-harvesting, which in itself was found to be a function of

poverty and underdevelopment (Liengme, 1983; Cunningham, 1989; Cawe & Ntloko, 1997; Cocks & Dold, 2000a; Kepe, 2002; Botha et al, 2004).

## **1.2 THESIS OUTLINE**

This thesis is categorized into four major themes with nine chapters. *Section A* consists of Chapters 1, 2 and 3; *Section B* consists of Chapter 4. *Section C* consists of Chapters 5, 6, 7 and 8. *Section D* consists of Chapter 9. The four main themes and synopses of the key issues discussed in the nine chapters are outlined below:

# **SECTION A: INTRODUCTION, BACKGROUND AND ENVIRONMENTAL PROFILE OF THE EASTERN CAPE**

## **CHAPTER 1: INTRODUCTION AND BACKGROUND**

*Chapter 1- presents an introduction and background to the themes of this study. The chapter gives a high level overview and background of the socio-economic outlook of the Eastern Cape Province. The potential role of the natural resources and Indigenous Knowledge System in contributing towards poverty reduction is discussed. A case for an integration of Natural Sciences and Indigenous Knowledge Systems as a strategy for the socio-economic transformation of the rural economy and improvement of the rural livelihoods is outlined. A brief sojourn into the historical background and role of Indigenous Knowledge Systems in the evolution health care of the indigenous African population is undertaken. The chapter progressively builds its argument to the literature review presented in Chapter 2. Chapter 1 concludes with the mapping of the outline of the thesis.*

## **CHAPTER 2: POVERTY, HEALTH AND INDIGENOUS KNOWLEDGE SYSTEMS: A LITERATURE REVIEW**

*Chapter 2 - is an overview of the literature on the profile of poverty and underdevelopment in the Eastern Cape Province. The historical background on the origins and evolution of the social formations and poverty in the Province is presented. The chapter discusses the concept and various definitions of poverty. The literature on the role of the indigenous medicinal plants in the Province is reviewed against the background of the rural economy and the value dynamics of its natural*

*resources and how they might influence the economic development in rural communities. Chapter 2 also gives a high-level overview of the literature on Indigenous Knowledge Systems relative to the aspects of rural economic development, health and nutrition as the first line of response to poverty, underdevelopment, health and nutrition making a case for the designing of development model. A comparative analysis of poverty and underdevelopment indicators is reviewed within a global context. The concept, the proposed model and the theoretical framework of the study is discussed thus laying the foundation for the execution of the model presented in Chapter 4 within the theoretical framework adopted by the study.*

### **CHAPTER 3: A GEOGRAPHIC AND DEMOGRAPHIC PROFILE OF THE EASTERN CAPE**

*Chapter 3: Chapter 3 is an environmental scan and reviews the environmental and demographic profiles of the Eastern Cape to give a contextual perspective to the aspects of poverty and underdevelopment as well as the natural resource value and the potential role of the natural resources to address the socio-economic conditions and transformation of the rural economy. The discussions in the chapter also deal with issues of biodiversity conservation and lead to the introduction of Chapter 4.*

## **SECTION B: INDIGENOUS MEDICINAL PLANTS, HEALTH AND COMMERCIALIZATION**

### **CHAPTER 4: MEDICINAL PLANTS, RURAL LIVELIHOODS AND THE COMMERCIALIZATION MODEL**

*Chapter 4- discusses the concept that underscores the rural development model and the background to its conceptualization. Chapter 4 presents the problem statement, the objectives of the study, the research design, methodology, the rationale behind the choice of study and the choice of study areas. The model description is presented with a discussion on how it is to be utilized in agricultural enterprise development in tandem with health and nutrition initiatives in rural communities and the participation of other stakeholders with an interest in rural development. The mainstream commercialization of Agriculture and some natural resources is discussed. A proposal on the integration of Indigenous Medicine into the National Primary Healthcare System is discussed with an emphasis on its potential contribution to transform the primary health care systems. The chapter*

*also discusses the integration of all the principles underlying the case studies presented in the subsequent chapters.*

## **SECTION C: AGRICULTURE, NUTRITION AND RURAL ENTERPRISE DEVELOPMENT: CASE STUDIES**

### **CHAPTER 5: RURAL ENTERPRISE DEVELOPMENT: CASE STUDIES**

*Chapter 5- is a review of irrigation schemes in specific sites in the Eastern Cape, their performance and the rationale for their revival. The attempts to revive the irrigation schemes are discussed as a potential platform to launch strategies for integrated and sustainable rural development. The emphasis is on the role of Public-Private Partnerships between the rural communities and the relevant stakeholders in the Public and Private Sectors in Agricultural Enterprise Development.*

### **CHAPTER 6: AGRICULTURAL ENTERPRISE DEVELOPMENT: CASE STUDY OF LUBISI SORGHUM-WHEAT INITIATIVE**

*Chapter 6- gives an account of the Lubisi Sorghum-Wheat Agricultural Initiative Case Study, which was launched by a Public-Private-Partnership between the Ndonga rural communities, the research group of the author, the Eastern Cape Government Departments of Economic Affairs and Agriculture, supported with funds by the Eastern Cape Development Corporation. The Initiative was in support of South Africa's recommitment to the Agenda 21 principles of the Earth Summit on Sustainable Development held in Rio de Janeiro, Brazil in 1992, later reconvened in Johannesburg, South Africa in 2002. The agenda of the Sorghum Initiative was a case for the role of Agriculture in rural economic development and nutrition.*

### **CHAPTER 7: MEDICINAL PLANTS COMMERCIALIZATION: CASE STUDY OF THE PELARGONIUM SPECIES IN THE NKONKOBÉ LOCAL MUNICIPALITY**

*Chapter 7- presents a case study on the two Pelargonium plant species, *P. reniforme* and *P. sidoides* found in the semi-arid regions of the Eastern Cape. The two species are of medicinal value and are, therefore, in high demand in the Pharmaceutical Industry. The case study is an ideal example of an intervention strategy whereby the concept of Public-Private-Partnerships with rural communities was applied on natural resources for the economic beneficiation of the communities while observing*

*the objectives of biodiversity conservation. The study explores the potential economic opportunities presented and the development of methodologies towards mainstream commercialization of indigenous medicinal plant species products for sustainable rural development.*

## **CHAPTER 8: RURAL DEVELOPMENT: COMMERCIALIZATION OF ESSENTIAL OILS**

*Chapter 8- is a case study on the essential role of Public-Private-Partnerships in rural economic development. This chapter presents the business case for essential oils extracted from indigenous plant species, mostly prevalent in the natural habitats of the Eastern Cape. The multiplicity of its climatic conditions, as defined in Chapter 2, has meant that the Province is a host to a highly diverse range of natural plant species, some of which produce essential oils that are in high demand in a number of industries. The case study is an account of the development of a network of partnerships with rural communities in areas where these economically important plant species are found with a view to utilize the communal lands belonging to the communities. The business case of the essential oils presented opportunities for rural economic development.*

## **SECTION D: DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

### **CHAPTER: 9 CONCLUSION, DISCUSSION AND RECOMMENDATIONS**

*Chapter 9- is a synopsis of the research work result and observations during the course of the research project. Conclusions and discussions on the various themes of the study are presented with recommendations on current and future prospects for rural economic development that can transform the rural community livelihoods and economic landscape for the better with the implementation of appropriate strategies. The chapter also discusses some of the perceived limitations established in the course of the study with a potential to prevent the achievement of some of the strategic objectives of rural development, thus recommending vigilance on the part of those researchers, rural activists, state agencies and any other parties with an interest and genuine intentions towards the improvement of livelihoods and self-determination of rural communities. The most important aspect would be the recommendation to roll out the successes of the study to other rural communities who find themselves in similar circumstances to those defined in this study.*

### **1.3 CONCLUSION**

In conclusion, Chapter 1 has outlined the contextual framework of the study through elaborating on the socio-economic background of rural communities in the Eastern Cape within the broader socio-political environment of contemporary South Africa. Issues of underdevelopment and poverty and the challenges facing the relatively new democratic state have been stated within a contextual framework by posing pertinent questions as guidelines for the research project. Chapter 1 presented an introduction and background to the themes of this study. A high level overview and background of the socio-economic outlook of the Eastern Cape Province was discussed introducing the issues of poverty and underdevelopment. The chapter made a case for the potential role of the natural resources and Indigenous Knowledge System in contributing towards poverty reduction. A case for an integration of Natural Sciences and Indigenous Knowledge Systems as a strategy for the socio-economic transformation of the rural economy and improvement of the rural livelihoods was outlined. A brief sojourn into the historical background and role of Indigenous Knowledge Systems in the evolution of primary health care of the indigenous African population was made. The chapter progressively built its argument leading to the literature review presented in Chapter 2. Chapter 1 concluded with a mapping of the outline of the thesis.

Chapter 1 also introduced the concept foundation in a contextual framework towards the feasibility of developing strategies for rural economic development with an emphasis on the role of the natural resources, specifically targeting health, nutrition and rural economic development in selected communities. Flowing from the foregoing sections, the central theme of this research, therefore, was to explore the feasibility of developing intervention strategies to achieve sustainable development in rural communities of the Eastern Cape with the long-term objective of contributing towards the reduction of poverty and underdevelopment. To this end, one of the critical success factors identified was the formation of strategic partnerships for sustainable community development. The vehicle for the development of the proposed strategies in the areas of health, nutrition and rural economic development was an integration of the modern principles of applied natural sciences with Indigenous Knowledge Systems. In the same vein, it must be categorically stated that this thesis does not purport to be a panacea for all the formidable challenges posed by poverty and underdevelopment. It was merely one of the collective efforts that are currently being developed and applied by various institutions, both public and private, as well as individuals who are genuinely concerned about the ravages and the

devastating consequences of poverty and underdevelopment in the rural communities of the Eastern Cape and the rest of South Africa. Throughout the study, there was an understanding that uncertainties would, undoubtedly, still remain as to whether such efforts as this one could make a fundamental impact towards the improvement of rural community livelihoods given the inherent limitations of a profit-driven motive and the capitalist wealth accumulation within the individualistic framework in the ownership of the means of production and the complexities that underscore the social dynamics of capitalist accumulation and property relations that are enshrined in the Constitution of South Africa (The Constitution of the Republic of South Africa, 1996; section 25: 1). The redeeming feature in Community-Public-Private-Partnerships applied in the commercialization process adopted in the study called for co-operation and teamwork among the emergent farming clusters in order to scale up agricultural production to meet market demands through the establishment of economies of scale. The next chapter presents a literature overview that deals with the concept and origins of poverty and the social class formation brought about by the historical events in the evolution of the modern Eastern Cape.

## **CHAPTER 2: POVERTY, MEDICINAL PLANTS AND INDIGENOUS KNOWLEDGE SYSTEMS: A LITERATURE REVIEW**

### **2.1 INTRODUCTION**

Chapter 2 is an overview of the literature on the profile of poverty and underdevelopment in the Eastern Cape Province. The historical background to the origins and evolution of the social formations and poverty in the Province was a discussion in order to contextualize the tentative solutions recommended to address the socio-economic conditions prevalent in the rural communities. The chapter discusses the concept of poverty and its various definitions to provide a contextual perspective for generating informed solutions to the complex socio-economic problems confronting the rural communities. The literature on the role of the indigenous medicinal plants in the Province was reviewed against the background of the rural economy and the value dynamics of its natural resources and how they might influence the economic development in rural communities. This chapter also provided a high-level overview of the literature on Indigenous Knowledge Systems in relation to the aspects of rural economic development, health and nutrition as the first line of response to poverty, underdevelopment, health and malnutrition leading to a case for designing a development model. A comparative analysis of poverty and underdevelopment indicators was reviewed within a global context. The concept, the proposed model and the theoretical framework of the study was discussed thus laying the foundation for the execution of the model presented in Chapter 4 within the theoretical framework adopted by the study.

### **2.2 MEDICINAL PLANTS AND LIVELIHOODS: AN INTERNATIONAL PERSPECTIVE**

Worldwide, an extensive body of literature that lends recognition and credence to the critical importance of Indigenous Knowledge in combination with modern management systems for biodiversity conservation, sustainable economic development and resource planning has been in the public domain for some time. A growing portion of this literature has highlighted the need for the establishment of conservation and resource planning that integrates natural sciences with Indigenous Knowledge Systems rather than merely incorporating parts of Indigenous Knowledge into modern Western management systems (Brokensha et al.1980; Freeman & Carbyn, 1988; Klee, 1980; Johnson, 1992; Posey, 1999; Quansah, 2004; Smith, 2006). Smith (2006) reported on the development of an

integrated approach to conservation and resource planning undertaken in the Gwich'in Settlement Area in northern Canada among the indigenous communities of the Inuvialuit, Métis and non-indigenous people of the Gwich'in Settlement Area. The Gwich'in indigenous community, for an example, had been dependent on the harvesting of wild flora and fauna for livelihood for generations, and despite the major changes in lifestyles in the 20<sup>th</sup> Century in the surrounding environments, they continued to be heavily reliant on the natural resources provided by the land and wildlife without any adverse impact on these resources. The Canadian Government initiated the programme of integrated management to ensure the survival of the environment without jeopardizing the livelihoods of the indigenous communities through recognizing them as equal partners in the development strategy and implementation. In Zimbabwe, the Southern African Alliance for Indigenous Resources (SAFIRE) developed the concept of an integrated resource management plan in the Tombo community of Nyanga (Sola, 2005). This community had been dependent for livelihood on the harvesting of thatch grass for both subsistence and commercial purposes for centuries. Through the development of a community resource management plan (CRMP) in partnership with SAFIRE, the community was able to sustain the resources and is marketing the grass to both local and international markets without depleting the natural resources (Sola, 2005).

Further afield, China and India are, perhaps, the most appropriate examples where the usage of natural medicinal plants has been fully supported and regarded as an important integral component of both the national health systems and economy (Lambert et al. 1996). In China, Traditional Medicine has a market share of approximately 40% with the majority of manufactured drugs being processed from medicinal plants while it was reported that in 1986, 300,000 people were employed in factories and traditional drug stores throughout the country with factory-manufactured traditional medicinal preparations exported to, mainly, Asian countries, Europe, United States and Canada (Kuipers, 1996). According to reports, the value-chain in the manufacturing of medicinal products from these plant species starts from huge cultivation programmes in the rural countryside encouraging biodiversity conservation while providing employment to thousands of rural community citizens of that country (Lu Rongsen, 1992; Anon, 1993). India is reputedly one of the few countries that are capable of producing most of the economically important medicinal plants used both in modern as well as traditional medicine systems as a result of its vast area with a wide variety of climatic conditions, soil types, altitude and latitude (Lewington, 1993; Grunwald, 1994; Lambert, 1996). India is also a major exporter

of raw medicinal plant materials and processed plant-based drugs to countries such as Germany, the United Kingdom, France, Switzerland, Japan and the United States (Lewington, 1993; Grunwald, 1994; WWF/IUCN, 1995). China and India together have a population of approximately more than 2 billion, thus accounting for 40% of the world's population, the bulk of who are heavily reliant on medicinal plants (Lambert et al. 1996). Underdeveloped countries, particularly in Africa, could learn much from the programmes and experiences of these two countries in areas such as biodiversity conservation of medicinal plant resources, cultivation programmes, rural community participation and sustainable rural development (Lewington, 1993; Grunwald, 1994; Lambert et al. 1996; Kuipers, 1995; Srivastava et al. 1995). These case studies were inspirational to the undertaking of the research study reported in this thesis and were also critical points of reference in the design and development of strategies for sustainable rural development in the target rural communities of the Eastern Cape as discussed in the later chapters of this thesis. However, before a model could be developed, an overview and a scan of the Eastern Cape geographic and demographic profiles as well as the origins of poverty in the Province were provided as discussed in the sections below.

With regards to the selected rural communities as sites for this research, the socio-economic conditions of poverty and underdevelopment in the Eastern Cape have generated much interest among researchers from various disciplines; hence, prolific literature from various perspectives on most of the issues discussed in Chapter 1 has been published over the last three decades. Chapter 2 reviews some of this literature with particular reference to the Chris Hani District Municipality, in which most of the selected rural communities for the research study were located. This was an attempt to situate the specific aspects pertaining to poverty and underdevelopment and the concomitant issues of health and nutrition in a manner that would present a case for the proposed interventionist rural development strategies in an area that has some of the poorest rural communities in the Eastern Cape and Southern Africa as a whole. Chapter 2 outlines the contextual perspective behind the rationale for the proposed approach in attempting to confront the challenges as mapped out in Chapter 1. From this point of departure, the discourse shifts its focus towards an attempt to address the pertinent issues that are located within the domain of poverty and underdevelopment, such as the rural community livelihoods and the socio-economic dimensions that underscore them as well as their historical origins. It is also an attempt to offer an insight into the evolution of livelihood challenges confronting the rural communities

and those individuals and institutions who are supposedly, the protagonists of rural transformation in a democratizing South Africa.

### **2.3 EVOLUTION OF POVERTY AND UNDERDEVELOPMENT IN THE EASTERN CAPE: *AN HISTORICAL PERSPECTIVE***

The historical origins of the prevailing socio-economic landscape and the resultant class formations in the social strata of contemporary Eastern Cape Province can be traced back to the colonial period that started towards the end of the 1700's. This uninterrupted evolutionary process reached its culmination in the middle of the Twentieth Century after the victory of the Afrikaner Nationalist Party in 1948 in exclusively white political party elections in South Africa. The sign of things to come for the indigenous African population under the rule of Afrikaner Nationalists was first signaled by the statutory forced removals of the indigenous African population from the most fertile arable lands of the country to make way for the white farming community. In the following two decades, the forced removals were subsequently followed by the balkanization of the Eastern Cape Region into the two former homelands of Ciskei and Transkei and the Eastern Cape Area of a greater Cape Province of the Apartheid South African State that included the Western and Northern Cape (Roux, 1948; Le Cordeur, 1981; Peires, 1981). However, a detailed account of these historical events is not within the scope of this thesis, but more pertinently, some historians of the Eastern Cape have authored a vivid account of the manner in which the political and socio-economic foundations of the pastoralist subsistence economies of the indigenous African population in the Eastern Cape were progressively shattered by the aggressive systematic colonial expansion; hence the ruthless undermining of the tribal polities of the indigenous Eastern Cape communities and consequently, the pastoralist social and property relations that rested on them by these encroachments on the land. Inevitably these colonial inroads led to the Eastern Cape Frontier Wars of resistance by the Africans against colonial dispossession that spanned over a period of one hundred years (Roux, 1948; Le Cordeur, 1981; Peires, 1981; 1989).

The events reported above resulted in the wholesale alienation of the majority of the Eastern Cape indigenous African communities from the most fertile and productive portions who - with no alternative resources to support their pastoralist existence - were forced to sell their labour, the only asset they had in the aftermath of the successive bloody wars of land dispossession fought by gunpowder against spears, to the White Colonial Farming Community who had since permanently settled on what used to be the pastoral lands for crop cultivation, grazing fields for livestock and

hunting grounds of the indigenous African population to supplement their pastoral subsistence (Roux, 1948; Le Cordeur, 1981; Peires, 1981; 1989). The eventful epic of the relentless conflict between the Eastern Cape Xhosa-speaking ethnic groups and the colonizing Europeans is described by Peires (1989) in his comprehensive historical analysis of the events leading to the mass-scale Cattle-Killing by the amaXhosa in 1856-7, an event commonly termed as “uNongqawuse” by the Xhosa-speaking population of the Eastern Cape (named after the young female traditional healer trainee (umkhwetha wegqirha) whose “vision” was, by and large, a catalyst to this event, although not exclusively so). This catastrophic event was a watershed that signaled a turning point in the evolution and future transformation of the Eastern Cape; to this day, Nongqawuse is a Xhosa colloquial term used to refer to an unpleasant event or situation in Xhosa folklore. The Cattle-Killing event of 1856-7 was, perhaps, the most significant milestone in the history of the Eastern Cape as thousands of the African population, confronted by starvation on a massive scale, flocked to the surrounding white colonial towns to beg for food. The event also marked the end of an era and the ultimate dissolution of the pre-colonial independent Xhosa polity and subsistence economy, thus paving the way for the evolution of new social formations in the Eastern Cape characterized by African wage labour utilized in white-owned farms and the earliest development of the socio-economic conditions of poverty for those of the African population who opted to remain on the downsized land plots left after the colonial wars of land dispossession.

Roux’s (1948) landmark account of the systematic alienation of the indigenous African population from the land goes beyond the colonial period into the emergence of a modern unitary industrializing South African State that was established in 1910. The dynamic compromise reached between British Imperialism and the Boer Republics after the debilitating Anglo-Boer War of 1899 – 1902, that led to the formation of the Union of South Africa in 1910, excluded the indigenous African majority from power sharing thus creating the foundation and favourable material conditions for the modern proletarianization of the African indigenous population, which at this stage was, by and large, leading a peasant subsistence livelihood. Before the amalgamation of the two Boer Republics of the Oranje Vrystaat and Transvaal with the British colonies of Natal and the Cape to constitute the Union of South Africa, the chief architect of British imperialist expansion in Southern Africa, Cecil John Rhodes, the then Prime Minister of the Cape Colony, had, through the Cape Colonial Parliament, promulgated the notorious Glen Grey Land Act of 1894 whose aim was to forcibly remove the African peasant

population in the rural countryside of the Cape Colony from the most fertile arable land portions and confining them to just 7% of the land (Ntsebeza & Hall, 2007). This Act served to force the rural African population to migrate to urban areas and white-owned farms in search of work as they could no longer derive adequate subsistence on the land portions allocated to them by the Colonial Government (Ntsebeza & Hall, 2007). As described in the publication edited by the two authors, the proletarianization process of the African peasantry was given a fresh impetus by the rapid industrialization of South Africa stimulated by the discovery of diamonds in Kimberley in 1857 and Gold in the Transvaal in the 1880's the which developments created a huge demand for labour in the mines and commercial farms. Subsequent to its establishment, the government of the new South African State passed the Native Land Act of 1913 that forbade indigenous Africans to buy and own land outside of the 7% reserved for them while further consolidating the Glen Grey Land Act to apply to the rest of country after the formation of the Union of South Africa. Furthermore, the Native Land Act also abolished sharecropping and labour tenancies, which by and large, was accountable for the demise of the peasantry in South Africa (Bundy, 1988). The discovery of the precious mineral resources, in turn, stimulated the development and growth of secondary industries in the Manufacturing and Agricultural Sectors in and around Johannesburg and the surrounding areas of Transvaal as well as around the seaports of Durban in Natal; Cape Town, East London and Port Elizabeth in the Cape Province as the young industrializing South African State was experiencing an influx of large numbers of immigrants from other regions of the African Continent and European countries while simultaneously being rapidly integrated into the World Trade (Roux, 1948; Callinicos, 1980; 1987; Bozzoli & Delius (eds), 1990).

Against the backdrop of marginalization of the indigenous African population, more specifically in the Eastern Cape, from participating in the growing industrial capitalist economy except as a source of cheap labour, new social classes that were not dependent on peasant subsistence farming, began to emerge as a function of the changing socio-economic conditions and the transformation of South Africa into a modern industrial capitalist state in the pre-First World War period after the Anglo-Boer War of 1899-1902 and the subsequent formation of the Union of South Africa in 1910. The direct consequence of these historical events was the rapid urbanization of South Africa as whole populations of the landless erstwhile peasantry from the rural hinterland of the Eastern Cape and other parts of the country and beyond migrated to the growing mining and industrial towns in search of livelihood opportunities.

This migration phenomenon resulted in the enduring neglect of the African communal lands in the rural areas, which had been transformed into cheap labour reservoirs by the urbanization process, thus developing the future foundations for the socio-economic conditions of underdevelopment and extreme poverty in the Eastern Cape. The crisis of landlessness among the Eastern Cape African population ultimately left them with 13% of mostly, overpopulated, barren and unproductive land (Ntsebeza & Hall, 2007). Furthermore, the 'Native Reserves' (as they were termed by the officialdom of the Union of South Africa) were demarcated with foresight, along ethnic language lines, on the part of the discriminatory white government of the Union, as a strategy of reinforcing ethnicity and the maintenance of the pre-capitalist social relations among the indigenous African population as well as pre-empting any possible future development of unity among the indigenous South African ethnic language groups and the emergence of African Nationalism that could pose a threat to its hegemony at any stage in the future designs of the new segregationist state; hence, it came to pass that the role of the so-called Native Reserves was to serve as holding grounds for surplus labour and those workers who were no longer fit enough, healthwise, to work on the mines and other industries in the urban centres of South Africa. Hence, indigenous Africans were, statutorily, classified as temporary sojourners in the urban metropolitan areas and were legally bound to return to their "respective homelands" on the expiry of their employment contracts or when they could no longer work due to either old age, ill-health and as well as in cases where they could not secure stable employment (Roux, 1948; Davenport, 1977; Davenport & Saunders, 2000; Ntsebeza & Hall, 2007). This piece of legislation became applicable even to black Africans whose families had been city dwellers for several generations and no longer had any family ties in the 'ethnic homelands' whence their first generation ancestors supposedly originated, to settle in the then frontier-style shanty towns that were the forerunners of contemporary modern urban metropolitan centres of South Africa (Roux, 1948; Legassick, 1972; Davenport, 1977; Davenport & Saunders, 2000). The political agenda of successive white minority government administrations since 1910 - as a dependent variable of capitalist economic considerations and other self-serving white commercial interests - acted in collaboration with the Mining, Agricultural and Manufacturing Capital interests to coerce Africans into cheap unskilled wage labour to satisfy the labour requirements of the industrializing state. More fundamentally, the landless former peasantry of the colonial era was being organically transformed into a modern and largely migrant working class (Roux, 1948; Legassick, 1972; Alexander, 1977; Davenport, 1977; Davenport & Saunders, 2000). The earlier colonial establishments and the subsequent post-colonial apartheid South Africa codified the

1913 Land Act in tandem with numerous other discriminatory policies and laws to effectively transfer 87% of the land to white ownership and control while millions of the indigenous African population were displaced into the overpopulated 'Native Reserves'. The end result flowing from these legislations was the large-scale impoverishment of the African population and the consequential acceleration of the degradation and deterioration of the rural communal lands, rendering them to a status of dependence on urban areas (Streek & Wicksteed, 1981; Bond, 2002; Ntsebeza & Hall, 2007).

An additional corollary to the development of the modern South African State in the Twentieth Century has been the constant migration of, mostly, young able-bodied African men and women to the cities in search of better livelihoods, especially those with academic and professional qualifications that were relevant to the needs of an industrial economy (Bank, 2001). This overwhelmingly unidirectional migration, over the decades, effectively undermined any potential economic development among the rural African communities through a lack of essential labour and technical expertise required to make productive use of the communal lands that were mostly lying fallow. This situation further deepened the crisis of poverty and underdevelopment with the consequential dependence of rural communities on revenues from relatives working in the urban centres and State Social Security Grants for the elderly, the disabled, children below the age of 14 years and the HIV/AIDS compromised citizens in contemporary South Africa. Almost fifteen years into the establishment of a democratic dispensation in South Africa, the social dynamics of poverty, unemployment and underdevelopment in the rural Eastern Cape seem set to worsen well into the foreseeable future in the absence of any radical intervention programme and transformation strategies for rural economic development with an emphasis on health, nutrition and sustainable employment opportunities. It seems to be common cause in South Africa that unless a radical intervention at the level of human and material resource development, more especially in rural areas is realized within the next decade as per the Millennium Development Goals of the United Nations (United Nations, 2000), all the political rhetoric on social transformation through poverty alleviation and eradication and employment creation, the 'National Democratic Revolution' agenda of the ANC as the ruling party, the New Economic Policy and Development (NEPAD) plans and the African Renaissance vision, will come to mock their authors and protagonists in years to come (Alexander, 2002).

## **2.4 SOCIAL DYNAMICS OF RURAL POVERTY AND UNDERDEVELOPMENT**

### **2.4.1 Introduction**

Section 2.3 above, attempts to give a brief overview of the historical background of the socio-economic transformation of the Xhosa-speaking African society of the Eastern Cape in the late 18<sup>th</sup> Century from being a semi-federal institutional arrangement of several pre-feudalist polities based on pastoral-cum-subsistence agricultural economies in the pre-colonial period to an impoverished rural reserve serving as a labour reservoir to satisfy the needs of a semi-modern underdeveloped industrial capitalist state of the 20<sup>th</sup> Century from the colonial conquest and land dispossession period through to the relatively more recent segregationist state of the Apartheid era. This section reviews documented statistics and literature on the profile of rural poverty in the Eastern Cape Province from a perspective of the social architecture of the rural communities as a function of an historical evolution. The section also reviews literature, definitions and measurements of poverty as well as the basic determinants of poverty and underdevelopment at interplay in the social milieu of the targeted rural communities such as the human development index, the rate of unemployment, lack of basic social facilities and a skills base and the culture of dependence on external sources of income (that is, external sources relative to the communities) to support livelihoods.

The Report on Poverty and Inequality in South Africa, commissioned by the Office of the Deputy President and the Inter-Ministerial Committee for Poverty and Inequality, published on 13 May 1998, cited the limitations of rural communities as being underscored by the inability of these communities within a given set of social circumstances to utilize natural resources available to them to support livelihoods due to a lack of the requisite technical and entrepreneurial skills combined with the inaccessibility of loan finance and markets in cases where they manage to produce crops for commercial purposes as was established in the field research conducted in the sample rural areas of the Chris Hani District. A comparative analysis at the global level in relation to poverty and underdevelopment and the resultant impact on the social dynamics and the causality thereof is reviewed in order to have a contextual perspective of the socio-economic conditions that would enable the formulation process for the development of appropriate strategies for sustainable rural economic development.

## 2.4.2 Poverty Literature Review

What is poverty? How is poverty to be defined? According to Duncan (1987), few aggregate economic indicators are watched as closely as poverty statistics, and yet there is probably less professional consensus on the measurements of poverty than any other indicator. De Vos and Hagenaars (1988) state that these problems arise at the individual level of identifying a household or person as poor, and at the aggregate level, in the construction of a summary statistics of poverty for a particular country or subgroups within that country. These authors conclude that an analysis of the theory and assumptions underlying specific poverty definitions is especially important, as both the population of the poor and the extent of their poverty appear to be dependent, to a large extent, upon the definition chosen. More critically, in the consideration of poverty, they also state that the choice of the household as the unit of analysis is based upon the assumption that poverty of household members cannot be considered independently of each other since they share the products of both market labour and household labour. Once the unit of analysis is chosen, the yardstick of poverty is developed utilizing three different concepts, which are used in the poverty literature in order to define a household as poor or non-poor, these being: **1. Income; 2. Consumption; 3. Welfare.** Hagenaars (1991) refers to relative and absolute poverty in the definition and measurement thereof; hence, a poverty line may be described as being relative or absolute. A relative poverty line is directly derived from an income distribution in a society, reflecting a definition of poverty as a state of relative, rather than absolute deprivation. In 1962, Townsend stated that poverty is a dynamic rather than a static concept. This author remarked that, “Man is not a Robinson Crusoe living on a desert island. He is a social animal entangled in a web of relationships at work and in the family and community which exert complex and changing pressures to which he must respond, as much in his consumption of goods and services as in any other aspect of this behaviour. Our general theory, then, should be that individuals and families whose resources over time fall seriously short of the resources commanded by the average individual or family in the community in which they live, whether that community is a local, national or international one, are in poverty”. Sen (1999) analyses poverty from a perspective of individual freedom and social justice, stating that a strong case exists for judging individual advantage in terms of the capabilities that a person has, that is, the substantive freedoms he or she enjoys to lead the kind of life he or she has reason to value. In adopting this perspective, Sen also states that poverty must be seen as the deprivation of the basic capabilities rather than merely a lowness of incomes, which is a standard criterion in the identification of poverty. According to this author, the perspective of what he terms capability-poverty does not

involve any denial of the sensible view that low income is clearly one of the major causes of poverty, since the lack of income can be a principal reason for a person's capability deprivation. Going into detail, Sen believes that claims in favour of the capability approach are the following:

- ❖ Poverty can be sensibly identified in terms of capability deprivation; the approach concentrates on deprivations that are *intrinsically* important (unlike low income, which is only *instrumentally* significant).
- ❖ There are influences on capability deprivation-and thus on real poverty- *other* than the lowness of income (income is not the only instrument in generating capabilities).
- ❖ The instrumental relation between low income and low capability is *variable* between different communities and even between different families and different individuals (the impact of income on capabilities is contingent and conditional) (Sen, 1999).

One of the most striking aspects about poverty in the South African society is the poverty gap or gini coefficient, which is a measurement of the difference between the richest and the poorest individuals in any given environment in the country as reflected in official publications referred to in Chapter 1 (Statistics SA, 2000; ECSECC, 2002; Eastern Cape Government, 2006). Sen (1999), from a global perspective, sums up the argument by stating that, "We live in a world of unprecedented opulence, of a kind that would have been hard even to imagine a century or two ago. The Twentieth Century has established democratic and participatory governance as the preeminent model of political organization. Concepts of human rights and political liberty are now very much a part of the prevailing rhetoric. And yet we also live in a world with remarkable deprivation, destitution and oppression. There are many new problems as well as old ones, including persistence of poverty and unfulfilled elementary needs, occurrence of famines and widespread hunger, violation of elementary political freedoms as well as of basic liberties, extensive neglect of the interest and agency of women, and worsening threats to our environment and to the sustainability of our economic and social lives" (Sen, 1999). The critical aspect about Sen's writings is the fact that he adopts a functional approach in his analysis of poverty and inequality, which he says lead to what he terms "unfreedoms", implying lack of freedom of making choices and decisions by poor people about their livelihoods. Sen (1999) also emphasizes the fact that there are good reasons for seeing poverty as a deprivation of basic capabilities, rather than merely as low income. Deprivation extends to fundamental capabilities and can be reflected in premature

mortality, significant undernourishment (especially of children), persistent morbidity, widespread illiteracy, lack of social services and facilities such as clean water, housing, sanitation, health and education thus creating a general environment of helplessness for communities living in such conditions.

On the definition of poverty, it is patently obvious that there is no consensus on a single definition in literature or in perceptions of even those who are generally regarded as victims of poverty. The responses of some of the individuals from the targeted communities on being asked to define what they regarded as being poor were revealing. Expressions associated with poverty were terms such as, “lack of enough food”, “lack of jobs”, “lack of income”, and “inability to access capital to start up a business”, “lack of money to buy cattle feed in times of drought. According to Qizilbash (2000), there is no single definition for poverty, for poverty is a vague concept. The issue of a lack of consensus on determinants of poverty flows from what the dimensions of poverty should constitute. Basic food requirements to sustain life, appropriate shelter for security and protection, clothing, good health are important dimensions for the well-being of human life, but then, so too is income, education, literacy, sanitation and clean drinking water, as well as productive economic activity. The list goes on. The uncertainties still remain since lack of or less of some of the determinants or dimensions, according to Qizilbash (2000), contribute more to poverty than others, depending on time and space in what this author terms as the horizontal vagueness of poverty. In all environments, individual requirements of nutrition, for example, differ widely and are a function of factors such as age, gender, height and weight. It is also a moot point as to when education is enough since societal requirements differ from place to place and at different periods in the evolution of societies. In the determination of the Poverty Line, a line below which an individual, a household, a community or society is regarded as poor, numerous authors have adopted different approaches (Hagenaars, 1991; Gopalan, 1997; Boltvinik, 1998; Lanjouw, 1998; Madden, 2000). The traditional approach to poverty measurement has highlighted two distinct features, viz. the uni-dimensional approach, which isolates a single dimension of poverty and the classification of the population under study into two distinct groups, these being the poor and non-poor. The approach then shows the extent of poverty through three poverty indices, viz.

1. The Poverty Rate, also termed the Headcount Ratio,
2. The Poverty Gap or Poverty Ratio, and
3. Index measuring the Severity or Intensity of Poverty.

The Poverty Rate is defined as the number of poor individuals expressed as a percentage of the whole population. Other methodologies in the determination of poverty have been developed, the most commonly utilized in research studies being:

- ❖ The Foster-Greer-Thorbeck Method (Foster, Greer & Thorbeck, 1984)
- ❖ The Sen-Shorrocks-Thon Method (Osberg, 2000; Myles & Picot, 2000).

In a research study conducted by Van der Walt (2002) towards an Honours degree at the University of Stellenbosch on the analysis of poverty in the Eastern Cape, he compared results obtained using the traditional approach and the Fuzzy Approach, the latter having been developed by Zadeh (1965) and expanded by Dubois and Prade (1980). Van der Walt found that a large percentage of deprived households from the Fuzzy Approach were excluded from the set of poor households based on the traditional approach indicating that the poorest of the poor households were often missed by the traditional approach.

In a more recent research report on the definition of poverty in South Africa, undertaken and published under the aegis of the Human Sciences Research Council of South Africa, the essence of the research study is stated as a contribution towards the theoretical debate on the conceptualization and definition of poverty in South Africa from the perspective of a national survey of the views of South Africans from various walks of life in the South African society. According to the authors (Wright et al., 2007), the analysis of report was undertaken based on questions in a module on 'socially perceived necessities' that formed part of the South African Social Attitudes Survey. Wright and co-authors (2007) also report that, the concepts and definitions of poverty have moved from a narrow focus on absolute resource-based subsistence definitions to those that are both relative and multi-dimensional. Furthermore, when defining poverty and social exclusion utilizing direct measures, the definitional stage of the process can be categorized into two stages:

1. Construction of a list of possible necessities for full participation in society;
2. Incorporation of the list of possible necessities into a survey to explore which items are defined as necessary by members of the society.

Stage 1, being the list of necessities, could be undertaken through, either using the 'Delphi Technique', which is the use of a panel of expert opinion of academics and specialist professionals or by establishing the views of members of society using focus groups with carefully constructed and tested non-leading questions. The report regards this distinction as being important even though, by either

route, the outcome of Stage 2 is a nationally representative definition of necessities. In using the latter approach, the people themselves have a greater role in drawing up the list of possible items. The report emphasis of Wright et al. (2007) is inclined to be on Stage 2 of the definitional process, which is the quantitative measurement of definitions of socially perceived necessities. In several concluding remarks, the report recommended that the measurement stage should be undertaken using a nationally representative survey to identify which items people do and do not have. Furthermore, this process can be refined to distinguish between those who do not have an item and have no need for it, and those who do not have an item and do not want it but cannot afford it, although this brings with it further methodological challenges. An appropriate cut-off point should be investigated to distinguish between who is and is not poor on the basis of these socially perceived necessities, as an example, the percentage of people lacking three and more of the socially perceived necessities (Wright et al. 2007).

In a report on the Measurements of Poverty in South Africa published by Statistics South Africa in 2000, the poorest province in terms of average monthly household expenditure was the Eastern Cape. The poorest District Council was the Wild Coast followed by the Kei District Council, both in the Eastern Cape. The poorest Magisterial District was Elliotdale followed by Willowvale, both in the Eastern Cape (Statistics SA, 2001).

## **2.5 RESEARCH BACKGROUND**

Chapters 1 and 3 reviewed specific elements of the geographic and demographic landscape of the Eastern Cape and more pertinent to this study, the profile of the Chris Hani District with an emphasis on the social dynamics of poverty and underdevelopment. The rationale underlying the review was to demonstrate the bountiful variety of the natural resources of the Eastern Cape Province and the paradoxical situation of the depressed socio-economic conditions prevailing among the overwhelming majority of the rural population of the Province, its natural heritage abundance notwithstanding. Furthermore, the discussion in the two chapters was a prelude to the development of social strategies, supported by a scientific approach, with the paramount objective of turning around the adverse environmental conditions in endeavours to improve the livelihoods of the rural communities of the Eastern Cape. Having mapped out the terrain in first three chapters, the subsequent chapters provide an account of integrated interventions based on the potential role of scientifically approved indigenous medicinal plant species and food crops in an attempt to address the challenges posed by poverty and underdevelopment. A literature review of earlier studies undertaken by various researchers on the

historical and current usage of traditional medicinal plants by the indigenous African population in South Africa as well as similar communities elsewhere in the world is followed by a report and discussion on the work that has been undertaken in this study towards the development and implementation of strategies to achieve the objectives of some of the Millennium Development Goals as described in the current chapter. The strategies to this end were intended to unlock the potential commercial value-added production of existing and alternative grain and vegetable crops as well as medicinal plants and essential oil-producing plants. This was implemented through an integration of Indigenous Knowledge Systems with natural sciences and biotechnological applications on a platform of sound commercial agricultural practices towards the enhancement of the rural economic development and the provision of the food requirements of rural communities in the Eastern Cape with a long-term view of rolling out the campaign to similar rural communities throughout the country.

In the course of this study, some of the pertinent aspects that had to be addressed were issues such as; the nature of the engagement between the researcher and the target communities with regards to the development and ownership of the proposed intervention strategies; biodiversity conservation in view of the over-harvesting of the more popular medicinal plant species by various medicinal plants interest groups resulting in their extinction, this being a corollary to the prevailing depressed economic circumstances in these rural communities; unprotected intellectual property rights of indigenous knowledge and information; the roles of and relationships with stakeholders, other than the rural communities themselves, who also have an interest in the appropriation of these natural resources; a comprehensive business model for the sustainability of the development strategies designed to ensure an equitable outcome for the ultimate beneficiaries; agrarian reforms and the state investment in skills development, land and infrastructure improvement plans in tandem with ease of access to finance, markets and technical expertise for agricultural enterprises in rural communities with the objective of redressing the legacy of imbalances in land distribution and other means of production and the consequential determinants of poverty and underdevelopment in combination with the vagaries of uneven and combined development within the framework of a market-driven economy.

## **2.6 USAGE OF INDIGENOUS MEDICINAL PLANTS IN SOUTH AFRICA**

South Africa is a country that is endowed with a plethora of both floral and cultural diversity. Southern Africa boasts an impressive floral diversity, with an estimated 30, 000 higher plant species, many of which are endemic to the region (Goldblatt, 1978; Wynberg, 2002). In literature, it is a well

documented fact that Traditional Medicine still constitutes a role of considerable significance in the health care of the majority of South Africans despite the history of having been deliberately sidelined over the centuries by successive South African governments from the colonial to the current period (Hutchings, 1989; Cocks & Dold, 2000; Dold & Cocks, 2002; Light et al., 2005). According to Hutchings (1989), the first written records of Xhosa and Zulu medicinal plant usage were published as early as 1885 and 1909 (see also Smith, 1895; Bryant, 1966). These studies referred to the age-old oral transmission of herbal knowledge as the 'heritage of experience'. In her classical work on Nyuswa-Zulu traditional medicinal practices, Ngubane (1977) describes the social norms and cultural beliefs of this community in the domain of illness causality and effect, the perceptions of which inform their approach to health care whereby health is regarded as being inextricably linked to matters of spirituality. The work by Ngubane is of particular significance since it was the first publication of its kind in South Africa by an academic of indigenous African extraction portraying issues pertaining to health and medicine from the perspective of the traditional communities.

In South Africa, as is the case in most if not in all of the developing countries around the world, traditional herbal medicine still remains a cornerstone in primary health care among the rural poor partly as a result of either socio-economic circumstances from the point of view of non-affordability or as a result of the socio-cultural context in which Traditional Medicine is preferred by such communities (Cocks & Dold; Tsey, 1997; Fassil, 2005; Kiringe, 2005; Light et al., 2005; Quansah, 2005). Although the Department of Health has recently established a unit on Traditional Medicine, the state health care services in South Africa still provide only Western-oriented health care services although the majority of the population still consults traditional medical practitioners for some or all of their health care needs (McGaw et al., 2005). What is Indigenous Knowledge Systems? According to the definition by the National Research Foundation of South Africa, which could be regarded as the official definition within the South African context; "Indigenous Knowledge Systems refer to the complex set of knowledge and technologies existing and developed around specific conditions of populations and communities indigenous to a particular geographic area". Indigenous Knowledge Systems – according to this definition – can also develop within communities descended from populations that inhabited the country at the time of conquest or colonization. These populations – irrespective of their legal status – retain some of, or their entire own social, economic, cultural and political institutions. In the event, Indigenous Knowledge refers to knowledge developed by these populations, and knowledge developed

through interaction with other populations from elsewhere in the world (NRF, 2003). A similar definition of Indigenous Knowledge Systems has been quoted by Smith (2005) from Johnson (1992) stating that it is “defined as a body of knowledge built by a group of people throughout generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment and a system of self-management that governs resource use”. An extensive body of international literature that recognizes the importance of indigenous knowledge as well as the critical need for management systems of biodiversity conservation and resource planning (Brokensha et al., 1980; Klee, 1980; Freeman & Carbyn, 1988; Cocks & Dold, 2000; Cocks & Moller, 2002; van Wyk, 2002; Quansah, 2004; Kiringe, 2006).

An extensive range of indigenous plant species is used for medicinal purposes in South Africa due to the wide plant and cultural diversity (Light et al., 2005). Several South African researchers in the area of medicinal plant species utilization by local African communities have noted that Zulu traditional healers use 1032 plant species from 147 families, which is estimated to constitute 25% of the natural flora found in the province of KwaZulu-Natal (Hutchings et al., 1996), while it has been estimated that approximately 3000 plant species are used as medicine in South Africa as a whole (van Wyk et al., 1997). Eastern Cape-based researchers, Dold and Cocks (at the time of the writing up of this thesis, this couple was based at Rhodes University in Grahamstown, Eastern Cape) have published several papers on the usage and trade of medicinal plants by four social groups which are: **1.** the informal street hawkers; **2.** owners of traditional medicine stores; **3.** traditional healers; and **4.** consumers of traditional medicines among the Xhosa-speaking people of the Eastern Cape (Cocks, 1997; Dold & Cocks, 1997; 1999; 2000a; 2000b; 2001a; 2001b). These authors, in their detailed research surveys, reported a minimum of 166 medicinal plant species being traded within six city centres of the Eastern Cape only, providing a total mass of 525 tons of plant material valued at approximately R27 million, annually. The plant species were harvested from the diverse range of biomes referred to in the Chapter 1, namely, Valley Thicket, Afromontane Forest, Coastal Forest and Moist Upland Grassland. Similar studies in other regions of South Africa have reported a thriving trade on medicinal plants, a situation that has led to a serious concern with regards to the endangered status of most of these natural plant species as a result of over-harvesting with some reportedly being already extinct (Hutchings et al., 1996; Mander, 1998; van Staden, 1999; Williams, 1996; Williams et al., 2000; Kepe, 2002).

The earliest references to the Southern African indigenous *Materia Medica* were found in travellers' records on early ethnobotanical studies (van Wyk, 2002). One of the classical writings with records of indigenous botanical medicines was first published in 1928 by the two researchers, Watt & Breyer-Brandwijk who made quite a substantial contribution to the study of medicinal plants in Southern Africa in the earlier decades of the 20<sup>th</sup> Century. According to Liengme (1983), the appearance of the second edition of the publication by the two authors in 1962 (Watt & Breyer-Brandwijk, 1962), was a watershed in the study of medicinal plants in Southern Africa and marked the ushering in of a modern era in medicinal plant research in South Africa. In a review of ethnopharmacological research in South Africa, Light et al. (2005) have reported a worldwide resurgence in scientific research in the discipline of Ethnopharmacology. The renewed interest in medicinal plant species has been as a result of a number of factors; such as the acknowledgement by the Western World of the continued utilization of Traditional Medicine in virtually all of the developing countries; the need for novel drug development since the Research & Development programmes of leading pharmaceutical companies have not had much success in developing new drug entities of any significance over the last decade (Srivastava et al., 1996; Cragg & Newman, 2001; George & van Staden, 2000; George & et al., 2001; Buenz et al., 2004; Mulholland & Drewes, 2004; Fennell et al., 2004a; 2004b; Light et al., 2005). Over the last twenty five years, contributions of ethnopharmacological research publications in the *Journal of Ethnopharmacology* from South Africa have been steadily increasing; from less than 10% from 1980 to 1989 increasing to 55% in the period 2000 to 2005 (Light et al., 2005). In comparison with the rest of the African continent, contributions of publications in the *Journal of Ethnopharmacology* from South Africa in the last five years alone constitute 45%. Another important development that has given an impetus to ethnopharmacological research in South Africa is the fairly recent elevation of the status of Traditional Medicine by the South African government, as stated earlier, whereby the trend is to integrate it with primary health care combined with the prioritization of funding of research in this area by state research agencies such as the Medical Research Council (MRC) and the National Research Foundation (Light et al., 2005). Koopman (2005) makes a similar point in stating that, "Traditional Knowledge combines different types of propositional knowledge (e.g., spirituality) and the same prescriptive (applications, technology) knowledge types. It also broadly combines the propositional with the prescriptive, and thus entails a holistic model". Elvin-Lewis (2006) broadens this view by stating that this information may be associated with a community, clan, and ethnic group through a sense of custodianship, guardianship or

cultural responsibility and its exclusivity is often circumscribed to either a particular indigenous or non-indigenous local group or groups.

The definition of “Indigenous Knowledge” (IK) has been dealt with to a significant detail by several South African practitioners in the discipline of Ethnobotany (Jager et al., (Ed) Lawes et al., 2004). These authors have described the status of Indigenous Knowledge in South Africa with reference to medicinal plants, Bioprospecting and plant product development. The 1992 Symposium on Indigenous Knowledge and Sustainable Development came to agree upon the following definition: ‘The term “indigenous knowledge” (IK) is used synonymously with “traditional” and “local” knowledge to differentiate the knowledge developed by a given community from the international knowledge system, sometimes also called “Western” system, generated through and developed by universities, government research centres and private industry. According to Brouwer (1998), Indigenous Knowledge refers to the knowledge of indigenous people as well as any other defined community. IK has also been defined as the totality of the knowledge and skills which people in a particular geographic location possess thus enabling such people or community to derive optimally from their natural environment. The definition goes on to state that most of this knowledge and the skills have been handed down from earlier generations, but individuals from such communities, in every generation, adapt, improvise and innovate to this body of knowledge in a dynamic fashion thus constantly adjusting to changing circumstances and environmental conditions, and in turn, they also pass on the body of knowledge in a pristine form to the next generation (Jager et al., 2004 based on Brouwer, 1998: 13). In the latter definition, indigenous knowledge is described within a spatial and time context; hence this definition differs from the others stated earlier in that it attempts to encapsulate the dynamic nature of the body of indigenous knowledge. The authors, Jager et al., (2004), quoting from Brouwer (1998), differentiate between indigenous knowledge as a general, all-embracing concept and ‘indigenous knowledge’ (IKS) and ‘indigenous technological knowledge’ (ITK). They state that “the concept of an indigenous knowledge system describes a cognitive constitution in which premises and perceptions of nature and culture are conceptualized, thus including definitions, classifications and concepts of the physical, natural, social and economic environments. Indigenous technological knowledge is of a practical nature, concerned with operational-based local thinking in fields such as agriculture, fisheries, health, horticulture, forestry and crafts”.

Despite the fact that South African research trends in Ethnopharmacology have shown a dramatic increase over the last two decades, acquisition of information on medicinal plant species and their usage by most researchers still remains a challenge (Light et al., 2005). According to Buenz et al. (2004), ethnobotanical information forms the starting point for many ethnopharmacological studies and remains a critical aspect of this area of research. Cragg and Newman (2001), in contrasting the two well developed systems of Indian Ayurvedic and Chinese Traditional Medicine, which have been well documented over centuries as a result of the development of writing skills in these societies, have found virtually little recorded documentation on most African Traditional Medicine as practiced in the pre-colonial period. The reason for this state of affairs is the fact that African Indigenous Knowledge Systems have largely been oral and not written (van Wyk, 2002). Another inherent weakness in most Western research methodologies' design is the lack of involvement of traditional communities at the level of research partnerships, resource management and decision-making over the natural resources considering that they are an integral component and custodians of such information and knowledge (Riewe & Gamble, 1988; Feit, 1988; van Wyk et al., 1997; van Wyk & Gericke, 2000). Most of the information and knowledge on the usage of medicinal plant species that came to be recorded has been acquired from the traditional communities who have always been the developers and custodians of such knowledge and information. Although most publications in scientific journals on medicinal plant studies have shown an extensive involvement of communities in their research, most of these studies still have to be translated into implementable intervention programmes that would have an impact on socio-economic development in the communities involved. Authors, Riewe & Gamble (1988) and Feit (1988) have been conclusively emphatic about the traditional communities' involvement at a planning and decision-making level since no long-term strategy would be sustainable if they were being excluded at the strategic level. Smith (2005), in her work with the Gwich'in in northern Canada, made some critical observations about social advocacy and facilitation in the process of building relationships between Western-trained experts and government officials on the one hand and the indigenous people of the Gwich'in Settlement Area on the other. She noted the radically different perceptions and outlooks of these two groups towards issues of health, value systems and approaches to management and conservation. She concluded that it would be highly improbable to develop integrated strategies in a conflict-ridden environment where there was no agreement on fundamental issues of management and planning. In South Africa, and specifically in the Eastern Cape context, Kepe and his co-researchers, in several studies on the indigenous plants resource value, livelihoods and social

dynamics of indigenous communities around the natural vegetation of the Mkambati Nature Reserve on the Wild Coast of the Eastern Cape, clearly demonstrated that any imposition of externally conceived strategies for natural resource conservation and management were more than likely to fail if the communities who derived their livelihoods from them were not part of the decision-making and resource management of these critical natural resources (Kepe, 1997a; 1997b; Kepe et al., 1998; 1999; 2001a; 2001b; 2002; Kepe & Scoones, 1999; Kepe et al., 2000; Kepe et al., 2001).

Although the details and implications of an integrated approach might not be clear on most implementation programmes designed for the regulated usage and conservation of natural medicinal plant species by various authorities worldwide including South Africa, the approaches adopted by the Canadian authorities in the Gwich'in Settlement Area in Northern Canada on the issues of integrated management and planning were found to be quite pertinent to the aspects being addressed by this study (Smith, 2005). The increasing number of publications on natural medicinal plant research in international scientific journals is testimony to the recognition and importance that Ethnobotany has come to assume in Western medicine and pharmacological research in the last two decades of the 20<sup>th</sup> Century and the early 21<sup>st</sup> Century (van Wyk, 2002; Stafford, 2004 (Ed. By Lawes et al., 2004; Light et al., 2005). The importance of natural medicinal plants in the global economy and their potential in addressing the unfavourable socio-economic conditions of mostly rural communities in developing countries has been recognized by the World Health Organization (WHO), resulting in the publication of a document titled "Guidelines on the Conservation of Medicinal Plants" (WHO, 1993). According to the WHO, the trade in medicinal plant species, worldwide, is estimated to have grown from US\$500 million in 1980 to US\$60 billion in 2004, a formidable growth of 11900% over a quarter of a century by any standards even though it might be from a relatively miniscule revenue base compared to the global sales of allopathic medicines (WHO, 1993; WHO, 2006).

## **2.7 CONTRIBUTION OF MEDICINAL PLANTS TO COMMUNITY LIVELIHOODS**

South Africa is repository to a vast and complex body of indigenous knowledge that has been accumulated over millennia to which rural communities, in particular although not exclusively, countrywide engage in as part of their daily livelihood practices (Ngubane, 1977; Hutchings, 1989; van Wyk et al., 1997; George & van Staden, 2000). This knowledge pertains to traditional subsistence farming practices, usage of natural foods and medicines as well as cultural practices related to traditional religions, cultural site and ceremonies. According to Cunningham (1993), indigenous

medicinal practices in South Africa can be traced back thousands of years to the establishment of the Khoi and San ethnic groups in the region. As stated earlier, although indigenous medicinal knowledge in South Africa has been atomized and undermined by the country's colonial and apartheid past and the resultant rapid urbanization, it has survived in the collective memory and cultural practices of the indigenous populace, especially in the rural areas, and has tenaciously lingered on as it became an integral component of the cornerstone to the evolving culture of resistance and identity among the African people in their epic confrontation with these forces, dating back to the colonial period (Peires, 1989). This knowledge and practice is extensively used and held by, particularly, older people in rural areas and traditional medical practitioners who are ubiquitous in the South African landscape and were reported to be approximately 100 000 in 1998 (Mander, 1998). Over and above this report by Mander (1998), it has also been estimated that 80% of the indigenous African population in South Africa use traditional medicine for self-medication resulting in a vibrant and high growth of the trade in indigenous medicinal plant species. This growth is driven by several socio-economic factors such as the relatively high population growth, an escalating unemployment rate and the high cultural value of these plant species. Furthermore, the trade has not been confined to traditional medicinal practitioners, but has entered both the informal and formal entrepreneurial sectors of the South African economy and the consequential increase in the number of herbal gatherers and traders as a function of the socio-economic factors stated above (Mzimela, 1995; Mander, 1997; Shackleton & Mander, 2000; Dold & Cocks, 2002; Botha et al., 2004). According to several authors, the depressed socio-economic status of the large, predominantly rural, Eastern Cape population suggests that the overwhelming majority in this province use traditional methods of health care while several authors have documented that the use of traditional medicine cuts across the income spectrum of the indigenous African population and is not confined to low income groups since it is often a basic requirement for treating certain conditions irrespective of education and income status (Hirst, 1990; Pretorius et al., 1993; Ainslie et al., 1997; Cocks, 1997; Dold & Cocks, 1997; Matsiliza, 1997; Marshall, 1998; Cocks & Dold, 2000).

Flowing from the 1992 United Nations' Convention on Biological Diversity (UNCBD), the South African Government, on the basis of the National Environmental Strategic Action Plan, developed a white paper on the conservation and sustainable use of South Africa's biological diversity (Department of Environmental Affairs and Tourism, 1997). The recognition by the post-Apartheid South African Government of the irreplaceable and unique value of indigenous knowledge and its significantly

important role in the livelihoods of the rural poor is indeed a monumental milestone and bodes well for the future of rural economic development strategies in the epic struggle being waged against poverty and underdevelopment in the country and the Sub-Continent as a whole. Concerns tabled at the UNCBD were about the rapid extinction of the Indigenous Knowledge Systems worldwide to which the South African Government and stakeholders responded by drawing up an agreement with the following list of resolutions:

1. Review and where appropriate, modify national policies and legislation to ensure that they support the rights of holders of Traditional Knowledge;
2. Investigate, through appropriate structures, the development of a system to provide legal protection for collective intellectual property rights;
3. Explore further mechanisms to protect Traditional Knowledge, practices and cultures concerning the conservation and sustainable use of biodiversity;
4. Promote the development of a code of ethics for researchers engaged in work concerning Traditional Knowledge practices and cultures;
5. Ensure that information concerning Traditional Knowledge practices and cultures is used for research only with the consent, co-operation and control of holders of that knowledge. Wherever possible, the use and collection of such knowledge must result in social, economic or environmental benefits to the rightful owners through formal prior informed consent procedures and mutually agreed terms;
6. Encourage, with the consent and involvement of those from whom knowledge is gleaned, the recording of Traditional Knowledge practices and cultures concerning the conservation and sustainable use of biological diversity;
7. Ensure that this recorded knowledge is made accessible to those people from whom it is gleaned.
8. Ensure that curricula promote an understanding and appreciation of the importance of Traditional Knowledge practices and cultures that promote the conservation and sustainable use of biodiversity.
9. Promote the integration of Traditional Knowledge and in particular, previously ignored and/or undermined knowledge and practices concerning the conservation and sustainable use of biodiversity into research programmes and formal sector innovations.

As early as 1937, South African researchers were conducting investigations on the nutritional value of natural plants used by the indigenous population as a source of food which they found to be rich in mineral salts, particularly calcium, and also contained considerable amounts of vitamins A and C (Fox & Weintraub, 1937). These researchers concluded that common weed plants such as pigwood, goosefoot and others could contain as much anti-scorbutic vitamin as orange-juice and had a valuable role in supplementing the deficiencies that were most apparent in cereal-rich diets commonly used by the indigenous African people in rural areas; hence, according to these two authors, it was setback that there was a tendency to despise their usage, which was being eroded by substituting them with European foods such as white bread, sugar and tea which had far less in terms of nutritional value.

According to some South African researchers (Ngubane, 1977; Hutchings, 1989; Cocks & Dold, 2000a; Cocks & Moller, 2002), the holistic concept of traditional medicine and the cultural attitudes of the indigenous African people towards health and disease, specifically among the traditional and mostly rural although not exclusively the Xhosa and Zulu-speaking people, form the basis of the usage of medicinal plants and differs from the modern Western orthodox approach to medicine. In highlighting these differences, Hutchings (1989) and Ngubane (1977) both state that a holism, involving both the relationship between body and mind in the individual and the relationship between the individual and his/her social and physical environment, is to be found in traditional Xhosa and Zulu attitudes to health and disease. According to these two authors, the differences in the understanding of the causality factors to ill-health and the approach to the remedial actions taken largely account for the differences in approach, attitude and intervention between Western and Traditional medicinal practices. Whereas the Western approach to medicine has the predisposition to be clinical, isolationist and reductionist with an emphasis on single entity drugs, the traditional Xhosa and Zulu medicinal practice is inclined to adopt a metaphysical and spiritual approach underpinned by a wellness philosophy that views the human body and soul as integral parts of the universe; hence, ill-health implies that the individual is not in harmony with the cosmos and to attain wellness, the intervention must ensure that the equilibrium or cosmic state is achieved. In order to achieve the state of wellness, referral to Western-trained medical practitioners as an option is not excluded should it be deemed necessary to do so (Hutchings, 1986).

In their investigations on the role of what they termed ‘African Chemists’ in the general health care system, co-authors, Cocks and Dold (2000a) found very little in the form of records or documentation on self-medication among the indigenous African population of the Eastern Cape. However, their research established that self-medication was an important initial response to illnesses and at this stage; many illnesses were managed successfully with Amayeza stores or ‘African chemists’ being an important source of medicines for self-medication. Although an undertaking of large-scale clinical trials combined with scientific laboratory screening tests aimed at investigating and validating efficacy, toxicity levels, pharmacological activity, side-effects, cross-reactivity and the shelf-life of most medicinal plant preparations have yet to be reported in literature, the indicated activities of the extracts from some of these plant species have been widely reported by several researchers as shown in the tables in Section 2.8 below.

## **2.8 MEDICINAL PLANT USAGE AND PHARMACOLOGICAL ACTIVITIES**

The progress and innovations in the fields of Pharmacology and Biotechnology in the later decades of the 20<sup>th</sup> Century have made it possible to conduct laboratory tests on minute quantities of materials using highly sensitive diagnostic techniques. Several laboratories focusing on the ethnobotanical research of medicinal plant species have published results on the pharmacological activities of preparations from these plants; some of the documented tests are discussed in this section. More recently, a research group based at the University of Fort Hare has published a paper on the biological activity of essential oils from the leaves of the medicinal plant species, *Plecostachys serpyllifolia*, commonly termed Vaaltea or trailing licorice (Mhinana et al., 2007). This plant species is found in natural habitats near watercourses on the slopes of the Amathole Mountains in the Eastern Cape. The species, long used by the Khoi people and their descendants as a remedy for colds and chest pains, was found to exhibit antifungal and antibacterial activities (Mhinana et al., 2007). Another plant species tested for biological activity in the same laboratory is *Sesuvium portulacastrum*, whose essential oil was found to exhibit antifungal activity against ubiquitous fungi such as *Candida albicans*, *Aspergillus niger*, *Aspergillus flavus* and *Penicillium notatum* (Magwa et al., 2006). The essential oil of this plant also exhibited antibacterial activity against *Acetobacter calcoacetica*, *Bacillus subtilis*, *Clostridium sporogenes*, *Clostridium perfringens*, *Escherichia coli*, *Salmonella typhi*, *Staphylococcus aureus* and *Yersinia enterocolitica* (Magwa et al., 2006). All these micro-organism are associated with common infections. The extract of this plant species has been used in traditional medicine to treat various infections and kidney conditions. Hutchings (1989), in her research on medicinal plant usage in the

Eastern Cape over a period of 4 years, compiled a list of plants and their indicated activities as shown in **Table 1**. Hutchings consulted various community individuals whom she categorized according to their knowledge and status relative to the indigenous medicinal plants used.

***Table 1: Medicinal Plant Usage Recorded in Transkei, 1983 – 1987 (Hutchings, 1989)***

Plant; family; Xhosa name	Category of informant	Part used/prep. /appl./ of ailment	Record/habitat/voucher number	Observed characteristic/ indicat constituent	Indicated activity
Alepidea amatymbica Eckl. & Zeyh. Apiaceae Iqwili	Villager; herbalist; Healer; homeopath	Root sucked for sore throat and for coughs and colds	Recorded and confirmed by informant from Hutchings 2175	Aromatic, resinous, tastes of turpentine	Antihypertensive*; antimicrobial*; diuretic*
Aloe striatula Haw.; Liliaceae; ingcelwane	Herbalist	Crushed root infusion administered orally or as enema for constipation	Growing as kraal fence Hutchings 846	Aloins and resins recorded in A. ferox Mill. (Watt et al., 1962)	Reputed putgative action in A. ferox Mill. (Watt et al., 1962)
Artemisia afra Jacq. Ex Willd.; Asteraceae umhloniyane	Herbalist; healer; homeopath; villager	Plant infusion drunk or inhaled or leaves inserted in nostrils for influenza/colds	Cultivated by healer. Collected in open grassland Hutchings 392	Aromatic, bitter taste reported by informant	Antihistamine*; narcotic*; analgesic*
Brunsvigia grandiflora Lindl.; Amarylidaceae Isichwe	Villager	Outer bulb scale used as circumcision dressing – rapid healing reported	Open grassland collected and cultivated in Hutchings's garden	Mucilagenous drops on bulb scale	Protective anti-irritant coating from mucilage
Bowiea volubis Harv. Ex Hook.; Liliaceae umgagana	Herbalist	Bulb boiled, water changed many times then used as purgative	Forest margin. Hutchings 837	Bulb irritant to touch. (Watt et al., 1962) Cardiac glycosides	Toxic, procedures extreme gastric irritation. (Watt et al., 1962)
Carpobrotus edulis (L.) L. Bol.; Mesembryan- themaceae	Homeopath	Leaves chewed or sap extracted for sore throats. Sap used for allergies and diabetes	Observed cultivated in homeopath's garden	Succulent. Catechol tannins (Watt et al. 1962)	Antiseptic (Watt et al. 1962); astringent
Chenopodium spp.; Chenopodiaceae; ; iyeza lomkhondo	Healer	Ground leaves mixed in a medicine rubbed into cuts on painful joints caused by sorcery or evil spirits. Medicine taken orally	Cultivated by healer. Hutchings 2259, 2260	Vitamin C; mucilage; iron; salts; (C. bonus-henricus L.) (Chiej 1984; Watt et al. 1962)	Antiscorbutic (C. album L.) (Watt et al. 1962); antispasmodic; anthelmintic; diaphoretic (C. ambrosioides L.)
Duchesnea indica (Andr.) Focke; Rosaceae; iqunube	Herbalist	Crushed roots an ingredient in a decoction for diarrhoea known as isisu senja	Recorded from description- observed growing in disturbed areas	Tannins common in family	Related plants, e.g. Alchemilla spp. Antidiarrhoeal, anti- inflammatory (Fluck 1976) Anti-tumour (Drewes et al. 1983)
Hypoxis spp.; Hypoxidaceae; inongwe (Xhosa); inkomfe (Zulu)	Homeopath; healers	Rhizome extraction used for heart palpitations and cancer by homeopath and for hysteria and ulcers by Zulu healers	Recorded from local and botanical names and genus confirmed by homeopath from herbarium specimens	Yellow rhizome	
Matricaria negellifolia DC. Var. tenuior DC.; Asteraceae; umhloniyane	Villager; herbalist	Leaf and stem infusion drunk for influenza	Stream banks on commonage. Hutchings 377	Aromatic. Volatile oils in related spp.	Carminative

\* **Confirmed by Noristan Laboratories**

**Table 1 (continued)**

Plant; family; Xhosa name	Category informant	of	Part used/ prep. /appl./ ailment	Record/habitat/voucher number	Observed characteristic/ indicat constituent	Indicated activity
Pachycarpus concolor E. Mey.; Asclepiadaceae; ishongwe	Villager; healers	herbalist;	Dried ground tuber used for stomach pains (a spoonful in cold water) also used as snuff for headaches and hysteria	Open grassland, information also recorded using Xhosa plant name. Hutchings 347	Bitter taste	Cardiotonics in family (Oliver-Bever 1986)
Pelargonium sidifolium (Thunb.) Knuth; Geraniaceae	Herbalist		Crushed roots an ingredient in a remedy for intisila stomach disease in small babies and also in a decoction for severe diarrhoea (isisu esikhulu)	Disturbed grassland commonage. Hutchings 845	Red root. Tannins in genus (Watt et al. 1962)	Astringent (P. luridum (Andr.) Sweet) (Watt et al. 1962)
Pentania prunelloides (Klotzch ex ECKL. & Zeyh.) Walp.; Rubiaceae icikamlilo	Homeopath		Dried powder tubers used for diarrhoea and vomiting in fever remedy	Observed in field next to surgery of homeopath		Anti-biotic*; family has many anti-pyretic properties (Oliver-Bever 1986)
Phytolacca octandra L., Phytolaccaceae; Iyeza lesilonda	Villager		Leaves applied to septic wound caused rapid healing	Collected by ranger for author. Hutchings 2299	Saponiside (Oliver-Beyer 1986)	Anti-inflammatory (Oliver-Beyer 1986)
Plantago lanceolata L.; Plantaginaceae	Homeopath		Dried powdered leaves mixed with L. major L. in Vaseline for sores	Cultivated in garden of informant. Hutchings 2291	Mucilage and aucubin (Fluck 1976)	Soothing (Fluck 1976)
Plantago major L.; Plantaginaceae	Homeopath		Dried powdered leaves mixed in with L. lanceolata L in Vaseline for sores	Cultivated in garden of informant. Hutchings 2291	Mucilage and aucubin (Fluck 1976)	Wound healing (Fluck 1976)
Punica granatum L.; Puniaceae; pomegranate	Herbalist		Rind an ingredient in decoction drunk for diarrhoea (isisu senja)	Recorded from English name. Trees cultivated in area	Red rind. Tannin found in rind	Astringent
Rhus dentate Thunb.; Anacardiaceae; ntlokokotshane	Villager; homeopath		Fruit eaten to relieve thirst, leaves used in sore throat remedy	Observed and collected. Hutchings 52	Fruit sour, Tannins known in some spp. (Watt et al., 1962)	Anti-inflammatory* (Rhus sp.)
Rumex sp.; Polygonaceae	Homeopath		Leaf infusion drunk for indigestion	Growing in homeopath's garden. Hutchings 2290	Lennon-scented. Anthraquinones common in genus (Trease et al., 1983)	Purgative
Sarcophyte sanguinea Sparm.; Balanophoraceae; umavumbuka	Herbalist; homeopath	healer;	Crushed rootstock an ingredient in decoction drunk for diarrhoea (isisu senja)	Recorded from name and description, confirmed by Johnson 222	Red rootstock	? Astringent (Hydnora spp.) (Visser et al., 1986)
Schinus molle L.; Anacardiaceae; pepper tree	Herbalist		Leaf infusion inhaled or drunk for cold and influenza	Observed in garden	Aromatic, pungent-tasting. Resin, volatile oils*	Analgesic*; anti-inflammatory*; anti-hypertensive*; anti-depressant*; anti-arrhythmia*

\* Confirmed by Noristan Laboratories

**Table 1 (continued)**

Plant; family; Xhosa name	Category informant	of	Part used/prep. /appl./ ailment	Record/habitat/voucher number	Observed characteristic/ constituent	indicat may	Indicated activity
Solanum supinum Dun.; Solanaceae; umthuma	Herbalist		Ground roots an ingredient in a decoction for severe diarrhoea (isisu esikhulu)	Disturbed commonage. 847 Hutchings	grassland Hutchings	Solanine	Antibacterial S. nigrum L. (Oliver-Bever 1986)
Sutera aurantiaca (Burch.) Hiern; Scrophulariaceae; Phantsi komthi	Herbalist		Leaf infusion inhaled or drunk for cold and influenza. Leaves also inserted in nostril	Open Hutchings 836	grassland.	Aromatic, therefore contain volatile oils	Carminative
Sutera pauciflora (Benth.) Kuntze	Villager		Plant used as anthelmintic	Disturbed commonage. Hutchings 1534		Triterpenoid and steroidal saponins in family (Trease et al. 1983)	Toxic irritant
Viscum anceps E. Mey. Ex Sprague; Viscaceae; Isisele	Homeopath		Plant used to treat hysteria and skin complaints	Parasite on Acacia sp. Hutchings 2262		Sticky; choline; acetylcholine; inositol (V. album L.) (Chiej 1984)	Hypotensive; vasodilatory; anti-epileptic; diuretic (V. albumL.) (Chiej 1984)
Xysmalobium undulatum (L) Ait. F.; Asclepidiaceae; itshongwe	Villager; herbalist; healer; homeopath		Dried ground tuber used for stomach pain, as a purgative and as snuff for hysteria and headaches	Recorded from Xhosa name and collected in open grassland. Hutchings 2294		Bitter taste; acid saponin	Weak CNS depressant*; anti-depressant*; anti-arrhythmia*

**\*Noristan Laboratories**

## 2.9 MEDICINAL PLANTS USAGE, ECOLOGY AND RURAL LIVELIHOODS

The diverse range of climatic conditions soil types and topography in the Eastern Cape account for the richness and diversity of vegetation types (Low & Rebelo, 1996). The team, Dold & Cocks (2002) from their field research on the trade of medicinal plants in the Eastern Cape compiled a list of the 60 most frequently traded medicinal plants in the order of frequency and the vegetation type from which they were harvested and the plant part used as shown in **Table 2** below.

**Table 2: The 60 most frequently traded plants in order of frequency (adapted from Dold & Cocks, 2002)**

<i>Number</i>	<i>*Frequency</i>	<i>Botanical name and vernacular name</i>	<i>Vegetation type and part used</i>
1	98	<i>Hypoxis hemerocallidea</i> <i>Inongwe, Ilabatheka</i>	Grassland; Rhizome
2	50	<i>Ilex miti</i> (L.) <i>Isidumo, Ubhubhubhu, Umkwekwe</i>	Forest; Bark
3	47	<i>Rhoicissus digitata</i> <i>Uchithibunga</i> <i>Rhoicissus tridentata</i> <i>Uchithibunga</i>	Forest & Valley Thicket Tuber
4	37	<i>Rubia petiolaris</i> <i>Impendulo, Ubulawu</i>	Valley Thicket; Root
5	36	<i>Helichrysum odoratissimum</i> (L.) <i>Impepho</i>	Grassland; Leaf & stem
6	35	<i>Curtisia dentate</i> <i>Umlahleni</i>	Forest; Bark
7	33	<i>Protorhus longifolia</i> <i>Uzintlwa</i>	Forest; Bark
8	33	<i>Bulbine latifolia</i> (L.) <i>Irooiwater</i>	Valley Thicket; Rhizome
9	32	<i>Gasteria bicolor</i> <i>Intelezi</i>	Valley Thicket; Whole plant
10	32	<i>Rapanea melanophloeos</i> (L.) <i>Umaphipha</i>	Forest; Bark
11	29	<i>Polygala serpentaria</i> <i>Inceba</i>	Valley Thicket; Root
12	27	<i>Strychnos henningsii</i> <i>Umnonono</i> <i>Strychnos decussata</i>	Forest; Bark

**Table 2(continued)**

13	26	<i>Cisampelos capensis</i> (L.) <i>Idabulitye, Umayisake</i>	Forest; Bark
14	25	<i>Rhoicissus tomentosa</i> <i>Impinda bamshiye</i>	Forest; Tuber
15	25	<i>Dioscorea sylvatica</i> <i>Ufudo, Uskolipati</i>	Forest; Tuber
16	25	<i>Drimia elata</i> <i>Umredeni</i>	Grassland; Bulb
17	25	<i>Asparagus africanus</i> <i>Umathinga</i>	Valley Thicket; Rhizome
18	25	<i>Dianthus thunbergii</i> <i>Inkomo yentaba, Umgcana</i>	Grassland; Root
19	19	<i>Alepidea amatymbica</i> <i>Inkathazo, Iqwili</i>	Grassland; Root
20	17	<i>Gunnera perpensa</i> (L.) <i>Iphuzi</i>	Wetlands; Root
21	17	<i>Bulbine abyssinica</i> <i>Uyakayakana</i>	Valley Thicket; Whole plant
22	15	<i>Hydnora Africana</i> <i>Umavumbuka</i> <i>Sarcophyte sanguinea</i> <i>Umavumbuka</i>	Valley Thicket; Whole plant Valley Thicket; Whole plant
23	15	<i>Boophone disticha</i> (L.) <i>Ishwadi</i>	Grassland; Bulb
24	15	<i>Behnia reticulata</i> <i>Isilawu</i> <i>Helinus integrifolius</i> <i>Isilawu</i>	Forest; Root Forest & Valley Thicket; Root
25	14	<i>Ranunculus multifidus</i> <i>Ujojo, Umvuthuza</i>	Wetlands; Root
26	14	<i>Albuca setosa</i> <i>Inqwebeba</i>	Valley Thicket; Bulb
27	14	<i>Dracaena alettriformis; Umayime</i>	Forest; Root
28	14	<i>Perlagonium reniforme; Pelargonium sidoides</i> <i>Intololwana Uvendle</i>	Grassland; Rhizome
29	14	<i>Clausena anisata</i> <i>Iperepes, Isifutho, Isiqhumiso</i>	Forest & Valley Thicket; Leaves
30	13	<i>Sansevieria hyacinthoides</i> (L.) <i>Isikolokocho</i>	Valley Thicket; Leaves
31	13	<i>Clematis brachiata</i> <i>Ityholo</i>	Forest & Valley Thicket; Leaves

32	13	<i>Pentanisia prunelloides</i> <i>Icikamlilo</i>	Grassland; Roots
33	12	<i>Bersama lucens</i> <i>Isindiya</i>	Forest; Bark
34	12	<i>Dolichos falciformis</i> <i>Uvuma</i>	Grassland; Roots
35	12	<i>Diospyrus villosa</i> <i>Inyama yempunzi</i>	Forest & Valley Thicket; Root
36	11	<i>Tulbaghia alliacea</i> <i>Umwelela</i>	Grassland; Rhizome
37	11	<i>Cassipourea flanaganii</i> <i>Ummemezi</i>	Forest; Bark
38	11	<i>Brachylaena ilicifolia</i> <i>Umqqeba</i>	Valley Thicket; Leaves
39	11	<i>Talinum caffrum</i> <i>Uphuncuka bemphethe</i>	Valley Thicket; Rhizome
40	10	<i>Bowiea volubis</i> <i>Umagaqana</i>	Forest & Valley Thicket; Bulb
41	9	<i>Ipomoea crassipes</i> <i>Ubhoqo</i> <i>Ipomoea crispa</i> <i>Ubhoqo</i>	Grassland; Tuber Grassland; Tuber
42	9	<i>Cyrtorchis arcuata</i> <i>Iphamba</i> <i>Polystachya pubescens</i> <i>Iphamba</i> <i>Eulophia streptopelata</i> <i>Iphamba</i>	Forest: pseudobulb Forest; Whole plant Grassland; Root
43	9	<i>Hippobromus paucifloris</i> (L.) <i>Ulatile, Umfaz'onengxolo</i>	Forest & Valley Thicket
44	8	<i>Scabiosa columbaria</i> (L.) <i>Isilawu, Iyeza lamehlo</i> <i>Tritonea lineate</i> <i>Isilawu esibomvu</i>	Grassland; Root Grassland; Corm
45	8	<i>Asparagus suaveolens</i> <i>Imvane, Inqatha, Isilawu esimhlophe</i>	Valley Thicket; Whole plant
46	8	<i>Trichilia dregeana</i> <i>Isibarha, Umkhuhlu</i>	Forest; Bark
47	8	<i>Kedrostis foetidissima</i> <i>Utuvishhe</i>	Valley Thicket; Tuber
48	8	<i>Grinidia capitata</i> (L.) <i>Isidikili, Umsila wengwe</i>	Grassland; Root & stem
49	7	<i>Vernonia mespilifolia</i> <i>Uhlunguhlungu</i>	Forest & Valley Thicket; Whole plant
50	6	<i>Elephantorrhiza elephantine</i> <i>Gwej'obomvu, Intolwane</i>	Grassland; Root

51	6	<i>Pachycarpus concolor</i> Itshongwe <i>Xysmalobium undulatum</i>	Grassland; Root Grassland; Root
52	6	<i>Ledebouria sp.</i> Isithithibala	Grassland; Bulb
53	6	<i>Capparis sepiaria</i> (L.) Intsihlo yombomvu	Valley Thicket; Bark
54	5	<i>Xysmalobium sp.</i> Intsema <i>Euphorbia clava</i> Intsema	Grassland; Root Valley Thicket; Whole plant
55	5	<i>Senecio coronatus</i> <i>Iyeza lamasi</i> <i>Gerbera viridifolia</i> <i>Iyeza lamasi</i> <i>Nidorella sp.</i> <i>Iyeza lamasi</i>	Forest & Valley Thicket; Root Grassland; Root Grassland; Root
56	3	<i>Hypoxis sp. c.f. filifolia</i> Ikhubalo likathikoloshe	Grassland; Rhizome
57	3	<i>Ocotea bullata</i> Umnukane	Forest; Bark
58	3	<i>Eucomis comosa</i> Umphompo	Forest; Bulb
59	2	<i>Pteronia incana</i> Ibhosisi	Grassland; Leaves
60	2	<i>Rumex steudelili</i> <i>Idolo lenkonyane</i>	Grassland; Roots

\*The frequency in the table above refers to the number of respondents from each group who listed the plant species amongst their top 10 most commonly sought plant species. The four groups were: street traders; traditional healers; store owners; and clinic patients making up a total of 282 respondents from six urban centres of the Eastern Cape. Out of the plant species in **Table 2**, the *Pelargonium sp.* was selected as an example of a significant medicinal plant species with a high economic potential which was used as a case study as reported in Chapter 7.

***Table 3: Top 12 most traded medicinal plant species in Ngwenyeni village (adapted from Kepe, 2002)***

Local name	Scientific name	Scarcity	Protection status
<b>Impepho</b>	<i>Helichrysum melanacme</i> ; <i>H.odoratissimum</i> ; <i>H. natalium</i>	Abundant	Not restricted
<b>Umayisake</b>	<i>Agasthoma ovata</i> ; <i>Thesium pallidum</i>	Abundant	Not restricted
<b>Mayime</b>	<i>Clivia miniata</i>	Relatively scarce	Restricted
<b>Umathinga</b>	<i>Eucomis automnalis</i>	Very scarce	Restricted
<b>Umalilisa</b>	<i>Kniphofia sp.</i>	Very scarce	Restricted
<b>Isidungamzi</b>	<i>Euclea natalensis</i>	Very scarce	Restricted
<b>Ummemezi</b>	<i>Cassipourea gerrardii</i>	Very scarce	Restricted
<b>Umthuma</b>	<i>Solanum incanum</i>	Relatively scarce	Not restricted
<b>Incotho; Ishwadi</b>	<i>Boophone disticha</i>	Very scarce	Not restricted
<b>Umaphipha</b>	<i>Rapanea melanophloeos</i>	Relatively scarce	Restricted
<b>Amafuth'omhlaba</b>	<i>Callilepis laureala</i>	Abundant	Not restricted
<b>Undiyaza</b>	<i>Bersama lucens</i>	Very scarce	Restricted

In his field research on the Grassland vegetation resource value and social dynamics in Ngwenyeni village on the Wild Coast of the Eastern Cape, Kepe (2002) found that medicinal plants made a considerable contribution to rural livelihoods of the community both as a critical component of their health needs and as a source of revenue. In this study, Kepe compiled a list of the 12 most traded medicinal plant species by those members of the Ngwenyeni village community who harvested these plant species to meet the demands of external markets (refer to **Table 3** above). The most critical aspect argued by Kepe about this economic activity was the increasing pressure brought to bear on the ecology and survival of these most sought after species and the serious implications, in the long-term, this situation might have on the sustainability of livelihoods of Ngwenyeni community and other external stakeholders who depended on the availability of these resources. Out of the 12 plant species, Kepe noted that only seven were accorded official protection in terms of legislation (Section 12 (1d) of the National Forest Act, No. 84 of 1998 and the Environmental Conservation Decree No. 9 of 1992 of

the former Transkei). There is still no legislation in South Africa protecting all economically important medicinal plants.

The key issues that Kepe observed in his analysis of the study were, firstly, that what appeared to be crucial in the potential contribution of medicinal plants to rural livelihoods was the fact that the major constraints or opportunities to the community members were directly and indirectly determined by external forces. International and national concerns with regards to the negative impact that commercial medicinal plant harvesting had on local biodiversity resulted in the implementation of restrictive legislations. Secondly, of all the stakeholders within the value-chain of medicinal plant trading, the village traders were the most disadvantaged while the more affluent, urban-based entrepreneurs and some traditional medicinal practitioners with better access to cash, facilities and clients, appeared to derive the most benefit. In the event, he concluded, therefore, that any external intervention that sought to enhance the realized value of medicinal plants to rural livelihoods had to take into account the wider socio-economic dynamics.

## **2.10 CONCLUSION**

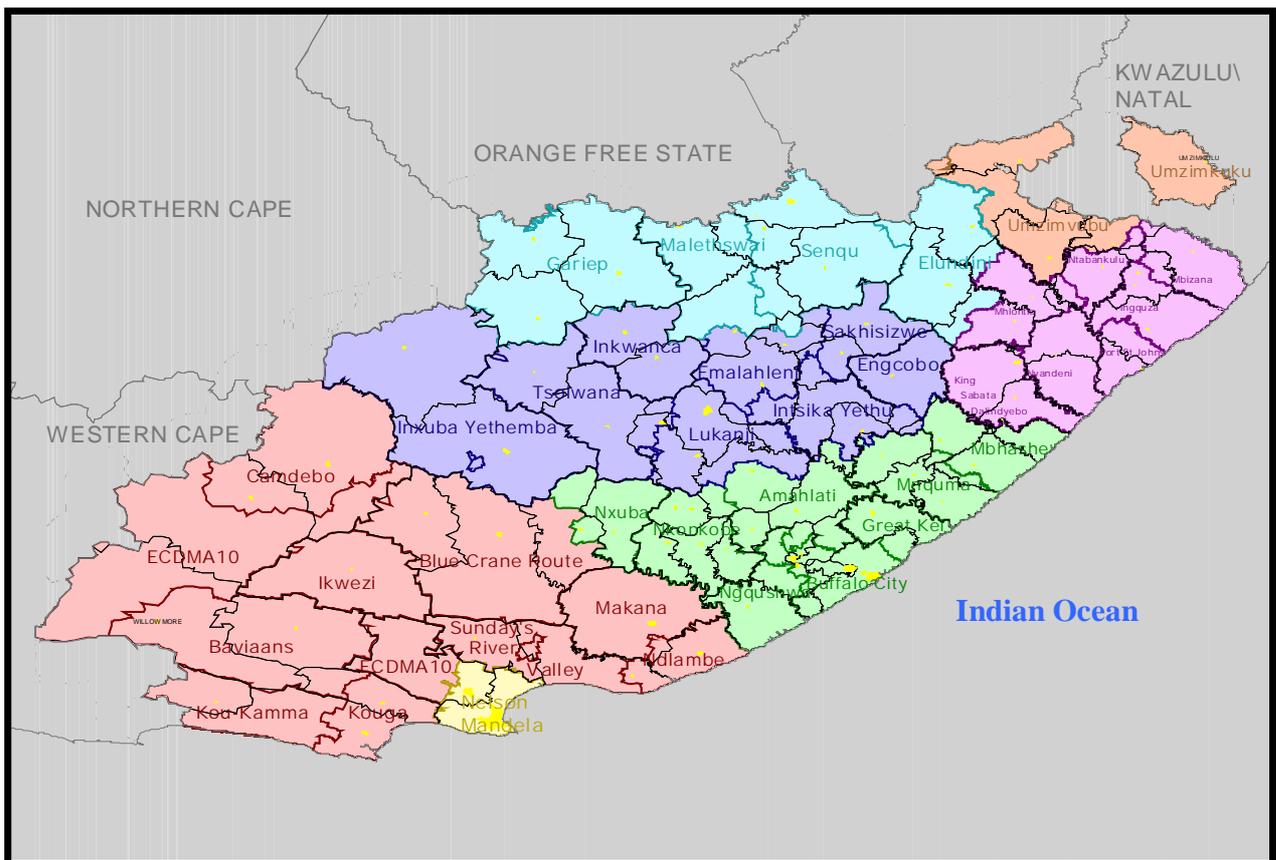
Chapter 2 reviewed some of the recent literature on the role of medicinal plants in rural community livelihoods. An international perspective on the usage and the pharmacological activities of some of the more common medicinal plants was discussed. The chapter also gave a brief literature review on the definitions of poverty and some of the perspectives on the issue as reported in literature. A historical overview on the origins of poverty and its evolutions and the resultant social formations in the Eastern Cape was discussed. The discussion also included issues on the social dynamics of poverty and underdevelopment with an emphasis on the transformation of South African society from the colonial period to the contemporary period. The evolving semi-industrial state of South Africa and the political agenda of land dispossession underpinned by economic considerations were described. The literature review was an attempt to provide a contextual perspective of the socio-economic outlook of the Eastern Cape Province for a proper understanding of the challenges of poverty, underdevelopment and marginalization confronting not only the rural communities, but also the rest of the Provincial society. The discussion also presented research that has been undertaken in attempts to generate solutions based on the sustainable utilization of the natural resources with which the Province is so richly endowed. The literature review attempted to demonstrate existing gaps and outline guidelines for the development of a model on the basis of the natural resources and the Indigenous Knowledge Systems

practices complemented by natural science applications. The potential role of relevant stakeholders such as the academic community, state agencies and the Private Sector with an interest in rural development was introduced. The arguments in this chapter lead to the next chapter, which gives an overview of the environmental and demographic profiles of the Eastern Cape.

## CHAPTER 3: A GEOGRAPHIC AND DEMOGRAPHIC PROFILE OF THE EASTERN CAPE

### 3.1 EASTERN CAPE GEOGRAPHIC PROFILE

The Eastern Cape is the second largest province of the Republic of South Africa occupying a land surface area of approximately 200 893 square kilometers, which represents approximately 13,9% of the total land surface area of South Africa (Statistics SA, 2004). The Province is situated to the East of the country, stretching from the Indian Ocean on its Eastern boundaries to the North-Western hinterland that ends on the banks of the Great Orange River and Ukhahlamba (Drakensberg) Mountain Range on the boundaries of the Free State Province and the Mountain Kingdom of Lesotho. On the Northern side, the Eastern Cape shares boundaries with the Province of KwaZulu-Natal while on the South-Western side are the Northern Cape and the Western Cape Provinces as illustrated in the map in **Figure 1** below.



**FIGURE 1:** A Geo-Political Map of the Eastern Cape (*Dept of Agriculture, EC, 2004*)

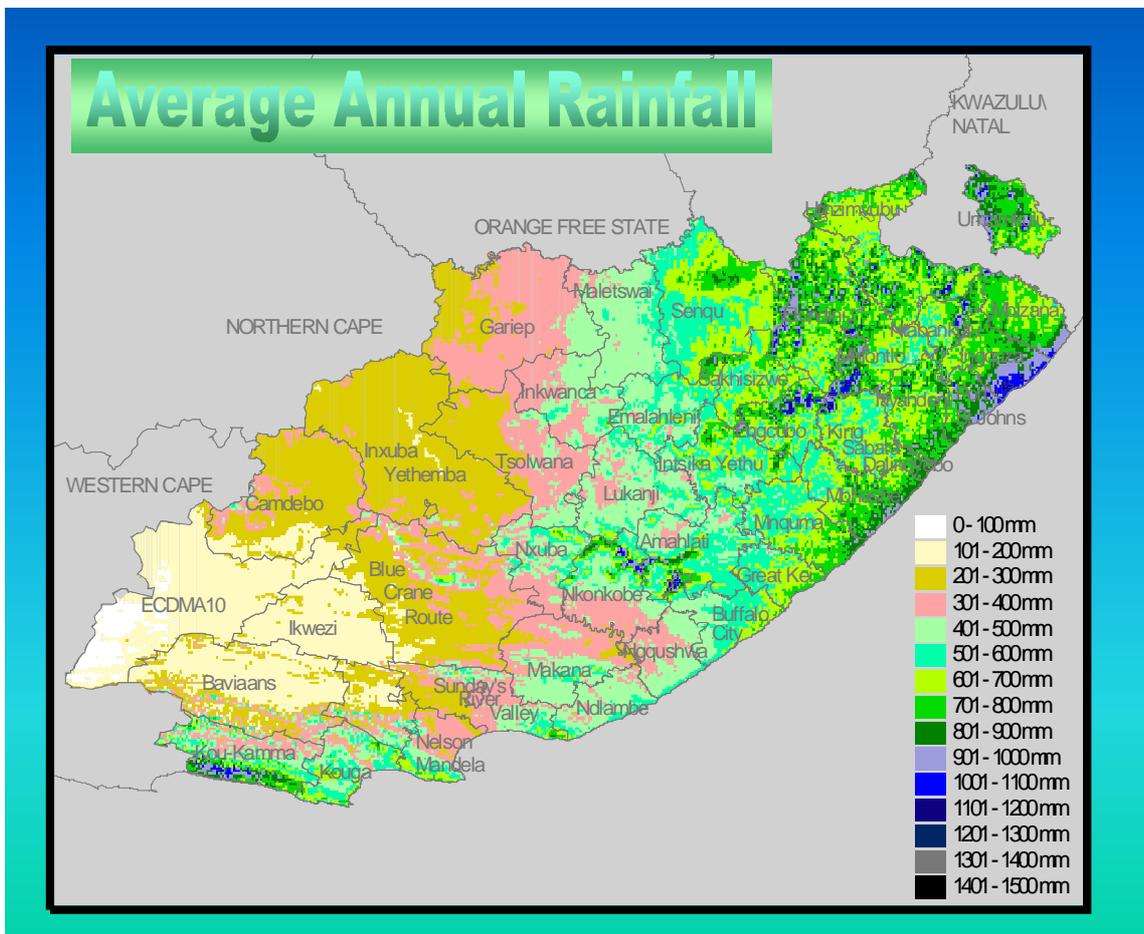
Due to its geographic location, the Eastern Cape experiences almost the entire range of varying climatic conditions prevalent elsewhere in the country; hence, it has several distinct biomes that host a remarkable diversity of natural flora (Dold & Cocks, 2002). The biomes range from the Grassland (Coastal Grassland, South-Eastern Mountain Grassland and Moist Upland Grassland) to the Thicket (Valley Thicket and Xeric Succulent Thicket) and from the Forest (Coastal Forest and Afromontane Forest) to the Fynbos biome (Grassy Fynbos) of the Great Karoo semi-desert on the Western boundaries and the Temperate Grasslands to the North-West of the Province (Low & Rebelo, 1996) as shown in **Figure 2** below. The Average Annual Rainfall in the Province varies from a low of 0 – 100mm in the semi-arid areas of the Great Karoo in the South-Western regions to a high of 1401 – 1500mm in the North-East Coastal Forest region next to the KwaZulu-Natal boundaries and the small coastal enclave of Kouga-Kamma in the Western region as shown in the Rainfall Map in **Figure 3** below.



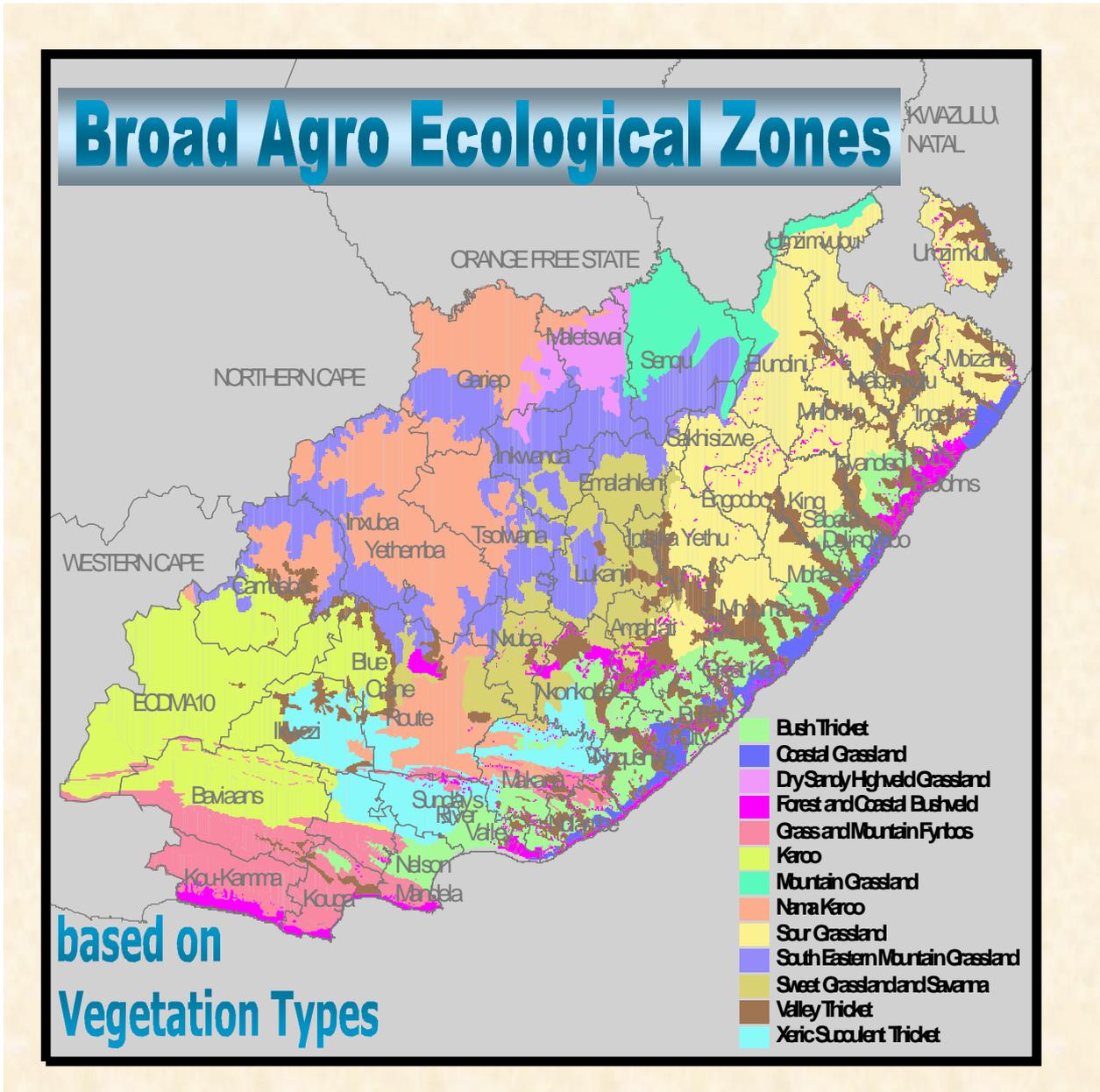
**FIGURE 2: Some of the Biomes found in the Eastern Cape (Dept of Agriculture, EC, 2004)**

The Eastern Cape is well-endowed with a network of rivers most of which originate from the Drakensberg Mountain Range to the North-West of the Province and meander towards the East Coast to open into the Indian Ocean. The confluence of geographic factors - such as rainfall patterns, soil types, terrain and rivers – combined with human settlements and activity have, by and large, been the

major determinants in the evolution, the genetic combinations and the resultant phenotypic plasticity of the indigenous plant species range hosted by the Eastern Cape biomes (Lubke et al., 1986; Cunningham, 1993; 1994; Low & Rebelo, 1996; Struhsaker, 1996; Burgener, 2001; Dold & Cocks, 2002). The geographic factors, the resultant ecological zones as shown in **Figure 4** below and the significance thereof are addressed in detail in later chapters and are discussed within the context of the social dynamics that have been largely influenced by a lengthy period of economic stagnation, extreme poverty and underdevelopment that are prevalent in all rural communities across the expanse of the Eastern Cape. This is so, notwithstanding the potential value derivative of these natural resources in tandem with the wide range of climatic conditions found in the Province and an equally variable topography; hence, these remarkably diverse ecological and climatic environments lend themselves to a panoply of opportunities for the development of strategies for sustainable rural development within the context of an agrarian economy.



**FIGURE 3: Average Annual Rainfall in the Eastern Cape (Dept of Agriculture, EC, 2004)**



**FIGURE 4:** Agro Ecological Zones of the Eastern Cape (*Dept of Agriculture, EC, 2004*)

Despite the fact that the geographic factors are the key indicators in the advancement and improvement of the rural economy, there is as yet no model developed to enable rural communities, Government and the Private Sector to utilize the intellectual capacity of the research institutions such that optimum benefit can be derived from such unique multiple vegetation types and arable land of approximately more than 1 million hectares as found in just but one of the nine provinces of South Africa.

### 3.2 EASTERN CAPE DEMOGRAPHIC PROFILE

Contemporary Eastern Cape Province is an amalgamation of the two erstwhile homelands of Transkei and Ciskei with the Eastern Cape Region of the former Cape Province of the Apartheid South Africa. For administrative purposes and the streamlining of government service delivery to all the local communities, the current Eastern Cape Province was demarcated into 38 local municipalities falling under six district municipalities these being, Alfred Nzo (DC 44), Amathole (DC 12), Cacadu (DC 10), Chris Hani (DC 13), O R Tambo (DC 15), Ukhahlamba (DC 14) and one Metropolitan Council, the Nelson Mandela Metropolitan Municipality encompassing the urban industrial centres of Port Elizabeth, Uitenhage and Despatch and the surrounding poverty-stricken black residential townships as illustrated in the map in **Figure 1**, depicting the municipal boundaries of the Eastern Cape.

According to Statistics SA (2001), the population of the Eastern Cape grew by 4.6% from 6,5 million in 1996 to 6,8 million in 2001 and was estimated at 7,14 in 2004 (Statistics SA, 2005). However, in relation to the total population of South Africa, the Provincial population had decreased from 15.7% of the total in 1996 down to 15.5% in 2001. This decrease has been attributed to the migration of people from the Eastern Cape to the more affluent provinces such as Gauteng, Western Cape and KwaZulu-Natal with relatively better work opportunities and living conditions (Statistics SA, 2001). Nevertheless, the Eastern Cape is still the third most populous province after the provinces of KwaZulu-Natal and Gauteng. The Provincial population is distributed disproportionately between its constituent districts, with the two largest districts of Amathole and O R Tambo being home to a population of 1.8 million and 1.6 million respectively, followed by the Nelson Mandela Metro with a population of 1.0 million while Alfred Nzo and Ukhahlamba are the least populous at 553 562 and 341 148 respectively (Statistics SA, 2001; Eastern Cape Government, 2006). The uneven population distribution between the relatively more developed urban centres and the extremely underdeveloped rural countryside of the six districts is a common manifestation throughout the Province and is the single most prominent socio-economic indicator that defines the highly depressed status of the agrarian economy in the Eastern Cape (Eastern Cape Government, 2006). Researchers on the sociology of poverty and rural development in the Eastern Cape have proposed compelling arguments to the effect that the dominance of the complex industrial economy in the two metropolitan centres of East London in the Amathole District and the Nelson Mandela Metro and other industrial centres elsewhere in the country over the extremely underdeveloped rural areas of the former Ciskei and Transkei homelands

has always been the catalyst driving the rapid urbanization process in South Africa. This has found its expression in the almost unidirectional influx of the population into these urban areas in search of better livelihoods since the early decades of the Twentieth Century (Mather, 1998; Slater, 2001; Bank, 2001; Bryceson and Bank, 2001; Manona, 2001; Kepe, 2002).

### ***3.3 POVERTY IN THE CHRIS HANI DISTRICT: A PROFILE OF UNDERDEVELOPMENT***

The profile of the constituent districts of the Eastern Cape Province have been documented in detail by the Eastern Cape Socio-Economic Consultative Council (2001), Census, 2001 conducted by Statistics South Africa and the Rapid Services Survey by the Fort Hare Institute For Socio-Economic Research (2006) commissioned by the Office of the Premier of the Eastern Cape. The information provided in this section has been obtained from these three sources. Statistics on poverty in the Eastern Cape show that poverty is widely and evenly spread in all the Seven District Municipalities with minor variations except for islands of wealth in and around the two cities of East London and Port Elizabeth as discussed in Chapter One. For the purpose of this study, the Chris Hani District Municipality (CHDM) has been selected to illustrate the typical profile of poverty and underdevelopment in the population of the Eastern Cape since most of the communities used in the research were selected from this District Municipality. The CHDM, named after Chris Hani, the late leader of the South African Communist Party who was born in this region, is a land-locked district situated in the centre of the Eastern Cape hinterland, between the Eastern Cape coastline and the imposing Drakensberg Mountains to the West. The District incorporates both the former Cape Provincial Administration areas of the Karoo to the West, as well as the areas of the former Transkei homeland in the East, making for a region of varied geo-physical conditions. The topography of the Chris Hani District indicates mountains to the North and South-West, with the low West-lying area being a part of the former Transkei, which slopes gently towards the coastal region.

### ***3.4 RAINFALL, DRAINAGE AND VEGETATION***

Rainfall patterns of the District vary from a low rainfall in the West around the Karoo area, to a high rainfall in the East around the former Transkei portions. The natural vegetation follows this pattern within the large areas of the Eastern Mixed Nama Karoo in the West with some South-Eastern Mountain Grassland becoming predominant in the district centre around Queenstown and in the East, Moist Upland Grassland. The centre also has pockets of Dry Sandy Highveld Grassland and Valley Thicket. The District is drained by numerous rivers throughout that make their way from the

Drakensberg Mountains towards the coast in a south-easterly direction. There is a concentration of boreholes in the centre of the district around Queenstown and Sterkstroom and along the river banks across the district (ECSECC, 2001).

### **3.5 DEMOGRAPHICS OF THE CHRIS HANI DISTRICT MUNICIPALITY**

The Chris Hani District Municipality (CHDM) has a population of approximately 911 890, which constitutes 13% of the total population of the Eastern Cape Province (Stats SA, 2004). Most of the population is rural and lives in the former homeland areas of Transkei and Ciskei. Poverty (measured in this instance as a percentage of households under the Poverty Line) is widely spread and is estimated to be 74.9% with an unemployment rate that is estimated at 61.6% (Stats SA, 2004). The CHDM covers an area of approximately 37 111 square kilometres with a population density of approximately 22 people per square kilometre. There are approximately 170 605 households with an average family size of ~5.9. The CHDM is constituted of 8 Local Municipalities as shown in **Table 1**. The CHDM shows a high youth dependency ratio, with 48% of the population in the age group 0 – 14 years, and 45% in the 15 – 64 years category. This youth dependency places a tremendous burden on the small economically active population to sustain the high numbers of dependants, considering the high rate of unemployment.

#### **3.5.1 Development Indicators**

The Human Development Index (HDI) is a dependable indicator of the status of human development in a community and measures overall achievement in three basic social dimensions, viz. average lifespan, knowledge and standard of living. It is, therefore, a function of life expectancy, literacy and income. As shown in **Table 5**, Hofmeyer (0.39) has the lowest development index followed by Whittlesea (0.40), Engcobo (0.41), Cofimvaba (0.42) and Queenstown (0.60) which has the highest HDI. Former Cape Provincial Administration rural towns such as Hofmeyer have been affected by the decline in Agriculture, a phenomenon that has resulted in an influx of farm-work into these small towns as can be observed by the increase of informal dwellings that are scattered in open spaces on the outskirts of the towns (Chris Hani District Municipality, 2006). Statistics on persons living in poverty as shown in **Table 5** reflect the high ratios of persons living in poverty in Hofmeyer (76%), Indwe (82.2%), Whittlesea (76.4%), Cofimvaba (76.2%), Tsomo (77.6%), Wodehouse (76.3%) and Engcobo (76.6%), with Queenstown having the lowest ratio (54%). Household incomes in the CHDM are relatively depressed (Table 3 below) reflecting low levels of affordability combined with a low revenue base for

most of the local municipalities. At Intsika Yethu 70% of households have an income that ranges from R0 – R6 000 per annum. Low household incomes are also indicated for Engcobo and Emalahleni with 69% and 67% of households being in the lowest category, respectively. Only 7% of households in the CHDM have an income exceeding R42 000 per annum as shown in **Table 6**. Household incomes are lowest in the former Transkei within this District Municipality and are indicative of the absence of sustainable economic opportunities as well as being reflected by the poverty gap.

### **3.5.2 Poverty Gap**

As stated in Chapter One, the distribution of income and wealth in South Africa is one of the most unequal in the world (Mather, 1998), a situation that is even more dramatic when a comparison is made between the former homeland regions and the rest of the country (ECSECC Info, 2001). The Poverty Gap is a quantifiable social indicator that incorporates both the depth and incidence of poverty, indicating the proportion of households living in poverty as well as their relative position below the Poverty Line. The Poverty Gap is quantified through summing up the differences between the income of each poor household and the Poverty Line. According to ECSECC Info, in 1995 the Eastern Cape's share of the total poverty gap was highest at 24% out of all the nine provinces of the Republic of South Africa. The spatial distribution of the poverty gap indicates that the largest poverty gap occurs in the former Transkei/Ciskei areas. In the Chris Hani District Municipality the following towns have the highest poverty gaps: Cala, Engcobo, Cofimvaba, Tsomo, Lady Frere and Sterkstroom. All these areas display a poverty gap above the R500 range (HSRC, 1998).

### **3.5.3 Poverty Index**

The Poverty Index shows the Chris Hani District Municipality to be the third poorest in the Eastern Cape out of six districts with the Alfred Nzo and O.R. Tambo District Municipalities, which fall squarely within the former Transkei, having the highest poverty indices in the Province as shown in **Table 7** below.

<i>LOCAL MUNICIPALITY</i>	<i>TOWNS</i>	<i>POPULATION</i>	<i>PERCENTAGE OF TOTAL POPULATION (%)</i>
<b>Inxuba Yethemba</b>	<i>Cradock; Middelburg</i>	<i>62 921</i>	<i>6.9</i>
<b>Tsolwana</b>	<i>Hofmeyer; Tarkastad;</i>	<i>39 212</i>	<i>4.3</i>
<b>Inkwanca</b>	<i>Molteno ;Sterkstroom</i>	<i>21 885</i>	<i>2.4</i>
<b>Lukhanji</b>	<i>Queenstown;</i> <i>Whittlesea</i>	<i>197 880</i>	<i>21.7</i>
<b>Intsika Yethu</b>	<i>Cofimvaba; Tsomo</i>	<i>229 796</i>	<i>25.2</i>
<b>Emalahleni</b>	<i>Lady Frere; Indwe;</i> <i>Wodehouse</i>	<i>138 608</i>	<i>15.2</i>
<b>Engcobo</b>	<i>Engcobo</i>	<i>165 964</i>	<i>18.2</i>
<b>Sakhisizwe</b>	<i>Elliot; Cala</i>	<i>55 624</i>	<i>6.1</i>
<b>Chris Hani District Municipality</b>	-	<i>911 890</i>	<i>100</i>

**TABLE 4: Population Statistics: Chris Hani District Municipality (Stats SA, 2004)**

<i>MUNICIPALITY</i>	<i>TOWNS</i>	<i>HUMAN DEVELOPMENT INDEX</i>	<i>PERSONS LIVING IN POVERTY (#)</i>	<i>PERSONS LIVING IN POVERTY (%)</i>	<i>PER CAPITA POVERTY GAP</i>
<b>Inxuba Yethemba</b>	<i>Cradock</i>	<i>0.48</i>	<i>23 080</i>	<i>57.7</i>	<i>364</i>
	<i>Middelburg</i>	<i>0.52</i>	<i>11542</i>	<i>56.8</i>	<i>368</i>
<b>Tsolwana</b>	<i>Hofmeyer</i>	<i>0.39</i>	<i>4 806</i>	<i>80.9</i>	<i>450</i>
	<i>Tarkastad</i>	<i>0.47</i>	<i>5 832</i>	<i>70.6</i>	<i>408</i>
<b>Inkwanca</b>	<i>Molteno</i>	<i>0.45</i>	<i>10 758</i>	<i>74.8</i>	<i>452</i>
	<i>Sterkstroom</i>	<i>0.47</i>	<i>6 888</i>	<i>74.4</i>	<i>556</i>
<b>Lukhanji</b>	<i>Queenstown</i>	<i>0.60</i>	<i>37 899</i>	<i>58.8</i>	<i>279</i>
	<i>Whittlesea</i>	<i>0.40</i>	<i>13 302</i>	<i>81.5</i>	<i>447</i>
<b>Intsika Yethu</b>	<i>Cofimvaba</i>	<i>0.42</i>	<i>99 806</i>	<i>81.1</i>	<i>953</i>
	<i>Tsomo</i>	<i>0.47</i>	<i>60 219</i>	<i>82.5</i>	<i>887</i>
<b>Emalahleni</b>	<i>Lady Frere</i>	<i>0.45</i>	<i>147 271</i>	<i>76.4</i>	<i>665</i>
	<i>Indwe</i>	<i>0.49</i>	<i>10 061</i>	<i>89.7</i>	<i>430</i>
	<i>Wodehouse</i>	<i>0.50</i>	<i>22 528</i>	<i>81.2</i>	<i>395</i>
<b>Engcobo</b>	<i>Engcobo</i>	<i>0.41</i>	<i>163 480</i>	<i>81.5</i>	<i>1 148</i>
<b>Sakhisizwe</b>	<i>Elliot</i>	<i>0.47</i>	<i>14 693</i>	<i>73.6</i>	<i>471</i>
	<i>Cala</i>	<i>0.45</i>	<i>50 839</i>	<i>78.4</i>	<i>1 171</i>
<b>CHDM</b>		<i>0.48</i>	<i>683 006</i>	<i>74.9</i>	<i>1 081</i>

**TABLE 5: Poverty Indicators (Source: Stats SA, 2004)**

The poverty score (out of 100) for each municipality is calculated on the basis of the following variable social dimensions: **1.** Education; **2.** Employment Rate; **3.** Access to sanitation, refuse removal, electricity, telephones and water; **4.** Structure of houses; **5.** Poverty indicator; **6.** Household size / density; **7.** Household composition; **8.** Distance from the nearest welfare service point. The poorest municipalities are those with the highest Poverty Indices (ECSECC, 2001).

<i>MUNICIPALITY</i>	<i>R0-6000</i>	<i>R6001-18000</i>	<i>R18001-42000</i>	<i>R42000+</i>
<b>Inxuba Yethemba</b>	<b>5 086</b> (42%)	<b>3 944</b> (33%)	<b>1 503</b> (12%)	<b>1 563</b> (13%)
<b>Tsolwana</b>	<b>4 135</b> (55%)	<b>2 308</b> (31%)	<b>668</b> (9%)	<b>441</b> (6%)
<b>Inkwanca</b>	<b>2 371</b> (58%)	<b>1 077</b> (26%)	<b>368</b> (9%)	<b>306</b> (7%)
<b>Lukhanji</b>	<b>16 869</b> (45%)	<b>8 637</b> (23%)	<b>4 809</b> (13%)	<b>3 873</b> (10%)
<b>Intsika Yethu</b>	<b>28 416</b> (70%)	<b>8 477</b> (21%)	<b>2 094</b> (5%)	<b>1 384</b> (3%)
<b>Emalahleni</b>	<b>15 919</b> (67%)	<b>5 385</b> (23%)	<b>1 472</b> (6%)	<b>1 097</b> (5%)
<b>Engcobo</b>	<b>19 046</b> (69%)	<b>5 864</b> (21%)	<b>1 525</b> (6%)	<b>1 068</b> (4%)
<b>Sakhisizwe</b>	<b>6 206</b> (63%)	<b>2 140</b> (22%)	<b>822</b> (8%)	<b>638</b> (7%)
<b>CHDM</b>	<b>98 048</b> (62%)	<b>37 832</b> (24%)	<b>13 261</b> (8%)	<b>10 370</b> (7%)

**TABLE 6: Household income by category (Source: ECSECC Info, 2001)**

<i>District Municipality</i>	<i>Poverty Index</i>
<b>CACADU</b>	<b>26.3</b>
<b>AMATHOLE</b>	<b>39.0</b>
<b>CHRIS HANI</b>	<b>46.6</b>
<b>UKHAHLAMBA</b>	<b>42.0</b>
<b>O R TAMBO</b>	<b>49.6</b>
<b>ALFRED NZO</b>	<b>52.0</b>

**TABLE 7: Poverty Index (Source: October Household Survey, 1997)**

<i>MUNICIPALITY</i>	<i>NO FORMAL SCHOOLING</i>	<i>GRADE 0 - 6</i>	<i>GRADE 7 - 9</i>	<i>GRADE 10 - 11</i>	<i>GRADE 12 ONLY</i>	<i>GRADE 12+</i>	<i>TOTAL</i>
<b>Inxuba Yethemba</b>	<i>4 899</i> <i>(12%)</i>	<i>12 257</i> <i>(29%)</i>	<i>11 502</i> <i>(27%)</i>	<i>5 874</i> <i>(14%)</i>	<i>4 939</i> <i>(12%)</i>	<i>2 393</i> <i>(6%)</i>	<i>4 1864</i>
<b>Tsolwana</b>	<i>1 979</i> <i>(14%)</i>	<i>5 117</i> <i>(37%)</i>	<i>3 233</i> <i>(24%)</i>	<i>1 664</i> <i>(12%)</i>	<i>1 210</i> <i>(9%)</i>	<i>462</i> <i>(3%)</i>	<i>13 665</i>
<b>Inkwanca</b>	<i>1 371</i> <i>(16%)</i>	<i>2 426</i> <i>(29%)</i>	<i>2 560</i> <i>(31%)</i>	<i>941</i> <i>(11%)</i>	<i>701</i> <i>(8%)</i>	<i>298</i> <i>(4%)</i>	<i>8 297</i>
<b>Lukhanji</b>	<i>5 389</i> <i>(8%)</i>	<i>13 179</i> <i>(21%)</i>	<i>18 276</i> <i>(29%)</i>	<i>12 843</i> <i>(20%)</i>	<i>10 624</i> <i>(17%)</i>	<i>3 656</i> <i>(6%)</i>	<i>63 967</i>
<b>Intsika Yethu</b>	<i>12 190</i> <i>(13%)</i>	<i>35 247</i> <i>(38%)</i>	<i>30 702</i> <i>(33%)</i>	<i>9 440</i> <i>(10%)</i>	<i>3 564</i> <i>(4%)</i>	<i>2 430</i> <i>(3%)</i>	<i>93 573</i>
<b>Emalahleni</b>	<i>16 274</i> <i>(13%)</i>	<i>40 856</i> <i>(34%)</i>	<i>34 315</i> <i>(28%)</i>	<i>15 505</i> <i>(13%)</i>	<i>9 986</i> <i>(8%)</i>	<i>3 810</i> <i>(3%)</i>	<i>120 746</i>
<b>Engcobo</b>	<i>665</i> <i>(13%)</i>	<i>1 852</i> <i>(37%)</i>	<i>1 251</i> <i>(25%)</i>	<i>733</i> <i>(9%)</i>	<i>226</i> <i>(4%)</i>	<i>267</i> <i>(5%)</i>	<i>4 994</i>
<b>Sakhisizwe</b>	<i>4 778</i> <i>(11%)</i>	<i>14 160</i> <i>(34%)</i>	<i>1 231</i> <i>(30%)</i>	<i>560</i> <i>(14%)</i>	<i>3 001</i> <i>(7%)</i>	<i>1 291</i> <i>(3%)</i>	<i>42 021</i>
<b>CHDM</b>	<i>47 545</i> <i>(16%)</i>	<i>114 670</i> <i>(38%)</i>	<i>37 455</i> <i>(12%)</i>	<i>52 960</i> <i>(18%)</i>	<i>34 251</i> <i>(11%)</i>	<i>14 607</i> <i>(5%)</i>	<i>301 488</i>

**TABLE 8: Educational Status (Source: ECSECC Info, 2001)**

### **3.5.4 Health**

The Eastern Cape Province has been divided into 5 Health Regions by the Provincial Department of Health as listed below:

**Region A:** Graaff-Reinert, Uitenhage, Port Elizabeth, Humansdorp.

**Region B:** Cradock, Queenstown, Aliwal North, Elliot

**Region C:** Fort Beaufort, Albany, King Williams Town, East London, Butterworth.

**Region D:** Mthatha, Qumbu, Libode, Mqanduli.

**Region E:** Mount Fletcher, Mount Frere, Flagstaff.

Overall, with the exception of Emalahleni Local Municipality, local communities in the CHDM reported fairly high levels of access to primary health care facilities as shown in **Table 9**. Although the health care infrastructure was found to be fairly widespread and theoretically accessible to most communities, the quality of service delivery as measured by the number of health care personnel and availability of medicines in dispensaries of health centres and hospitals was found to be quite low (Rapid Services Survey (RSS), 2006). The accessibility of facilities was further hampered by other factors such as low levels of rural roads infrastructure maintenance and lack of ambulance services as shown in **Table 9**.

<i>LOCAL MUNICIPALITY</i>	<i>ACCESS TO CLINICS</i>	<i>ACCESS TO PRIMARY SCHOOLS</i>	<i>ACCESS TO WELL-MAINTAINED ROADS</i>	<i>ACCESS TO AMBULANCE SERVICE</i>	<i>INFORMAL HOUSING AVAILABILITY</i>	<i>SAFE COMMUNITY NEIGHBOURHOOD</i>
	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>
<b>Inxuba</b>	95	88.5	28.8	68.1	0.4	82.5
<b>Yethemba</b>						
<b>Tsolwana</b>	96.1	100	14.1	57.0	1.0	68.1
<b>Inkwanca</b>	100	93.2	30.4	82.4	6.8	81.2
<b>Lukhanji</b>	88.2	94.5	46.4	80.3	3.2	73.7
<b>Intsika Yethu</b>	72.3	98.7	0.2	11.9	0.0	77.6
<b>Emalahleni</b>	44.9	98.7	9.0	17.9	0.0	94.2
<b>Engcobo</b>	81.6	97.7	48.5	44.6	1.3	50.7
<b>Sakhisizwe</b>	71.6	95.0	55.3	61.6	6.6	39.5

**TABLE 9: Household Access to Basic Services and Perceptions of Safety (Source: RSS, 2006)**

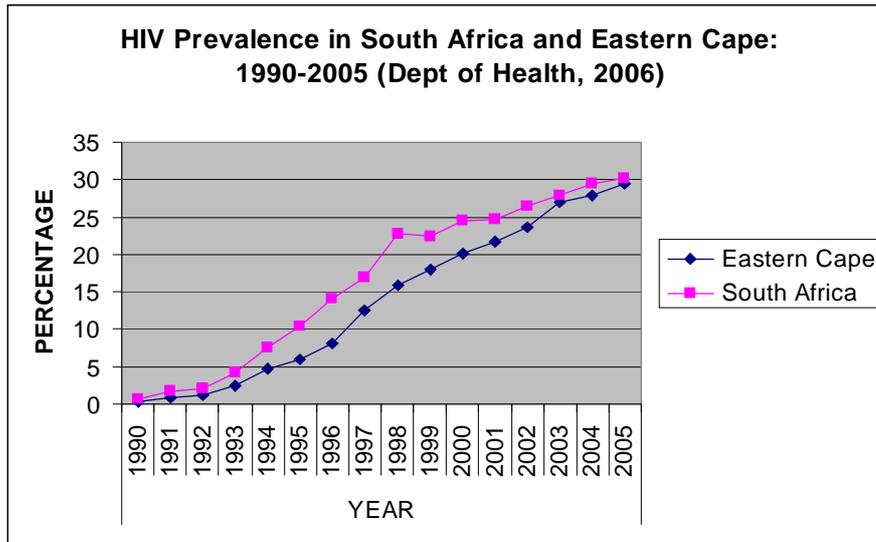
### **3.5.5 Child Health**

The CHDM falls approximately into Health Region B, which has a below 5-years mortality rate of 54 (deaths per 1000 live births), and relative to the other four Health Regions it falls mid-way and is lower than the national average of 59. The immunization coverage in Region B is 59% and is below the national average of 63%. Prevalence of Diarrhoea in B is second highest in the Province at 15%. This may indicate poor provision of clean water combined with unhygienic water sources since numerous villages in the CHDM still have to benefit from the rollout of clean water infrastructure initiated by the

democratically elected government since 1996. According to RSS conducted by the Fort Hare Institute for Socio-Economic Research commissioned by the Office of the Premier in 2006, local communities in the former homeland areas of Intsika Yethu, Engcobo, Sakhisizwe and Emalahleni, continue to face the greatest backlogs as far as access to water is concerned. The Census 2001 and the RSS in 2006 reported that the rollout had not yet significantly impacted on backlogs within these areas.

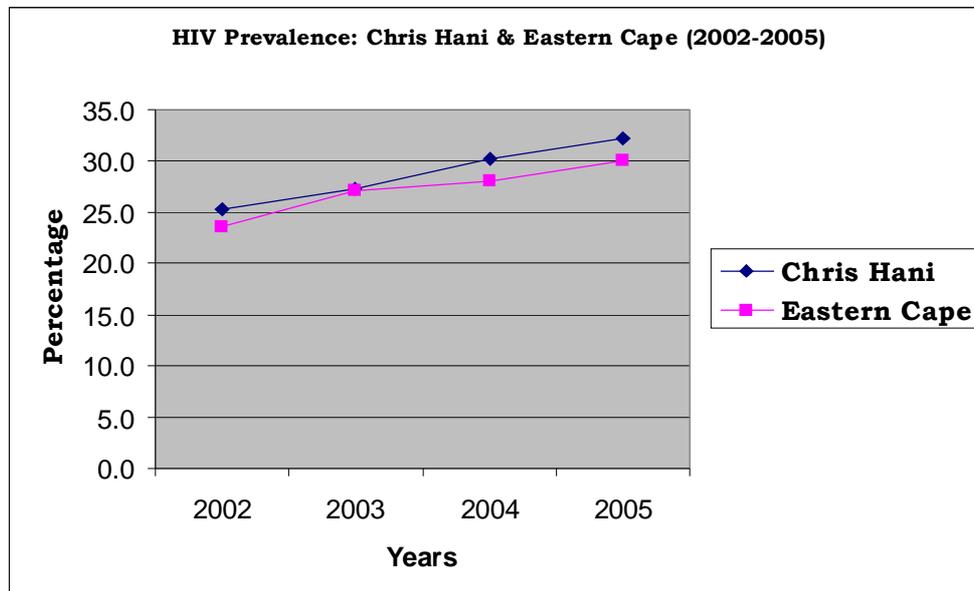
### **3.5.6 HIV & AIDS Impact on Health**

According to the Antenatal Survey conducted by the Department of Health in 2004, CHDM had an HIV & AIDS prevalence rate of 30.2% in 2004, an increase from 25.3% in 2002. This was slightly above the average for the Eastern Cape. No data and statistics were available on HIV & AIDS at local municipality level. However, for the province as a whole, women were found to have higher HIV prevalence levels than men with the African population having a higher risk of infection. The pandemic was found to be growing fastest among youth between the ages 15 – 25 years and poverty-driven transactional sex being a major driving force especially among women who were the most economically compromised group (Department of Health Antenatal Survey, 2004; Medical Research Council, 2003). The Human Sciences Research Council (HSRC) household survey of 2003 found that HIV prevalence was generally higher in urban informal and formal settlements than in farm and traditional authority settlements. Furthermore, the survey showed an increasing HIV prevalence with increasing education up to Grade 12 among learners. Although 72.3% of learners affirmed receiving HIV education, 54% admitted to having more than one sexual partner and only 28.8% reported using condoms during sexual intercourse. The survey reported that attraction and retention of qualified health care personnel, more particularly in the rural areas, was posing a major challenge for adequate prevention, treatment and care within the public health system while at another level, the HIV epidemic was undermining the benefits of the primary health care rollout by the Health Department as well as complicating Tuberculosis control and prevention in the Province (RSS, 2006). **Figures 5 and 6** below compare the steady escalation of HIV prevalence in the Eastern Cape and the Chris Hani District with the national statistics from antenatal surveys over a period of fifteen years, from 1990 – 2005 (Department of Health, 2006).



**FIGURE 5: Eastern Cape and SA HIV Prevalence: 1990-2005 (Dept of Health, 2006)**

HIV and AIDS epidemic has a major impact on economic growth and development in the CHDM (RSS, 2006). According to the antenatal survey conducted by the Department of Health in 2005, CHDM had a prevalence rate of 30.2 percent in 2004, an escalation from 25.3 percent in 2002 (**Figure 8**). No data was found on HIV and AIDS specific to local municipal areas; hence the statistics were extrapolated from the district municipal data.



**FIGURE 6: Eastern Cape and CHDM HIV & AIDS Prevalence (RSS, 2006)**

### **3.6 MILLENNIUM DEVELOPMENT GOALS: A COMPARATIVE DISCOURSE**

This section is a brief comparative analysis of the Chris Hani District Municipality socio-economic profile vis-à-vis the international outlook on issues of poverty and underdevelopment with the intent of viewing the social development indicators discussed in Section 2.5.3 above within a global context; hence, the comparison would form the basis of a gap analysis variant and a benchmark against which the performance of socio-economic improvement programmes implemented by the democratically elected government in the foregoing decade in the targeted area and other regions of the country could be measured. The Millennium Development Goals, which have come to constitute the principal global scorecard for economic development and improvement of health indicators in specific areas, were reaffirmed by the United Nations World Summit in September 2005 in the 2000 Millennium Declaration with recognition of the need for ambitious national development strategies backed by increased international support (World Bank Group, 2006). According to the World Bank Group, eight Millennium Development Goals to be monitored by the development community as part of a new international development strategy with the target date of 2015 were identified as the following:

#### **3.6.1 Millennium Development Goal 1: Reducing Poverty and Hunger**

Extreme poverty in developing countries fell from 28 percent in 1990 to 19 percent in 2002. Over the same period the number of people in developing countries grew by 20 percent, to more than 5 billion, leaving 1 billion people in extreme poverty. Should the economic growth rates in these countries be sustained, global poverty will fall to 20 percent by 2015. Using projections, the WBG estimated that in excess of 600 million people will still be trapped in poverty in 2015, most of them in Sub-Saharan Africa and South Asia where poor health and lack of education deprive people of productive employment; environmental resources have been depleted or destroyed; and corruption, conflict, and maladministration waste public resources and discourage private investment, flight of capital and emigration of skilled personnel to more lucrative job markets. According to the poverty statistics provided by the WBG, 44 percent of the population in Sub-Saharan Africa were living on less than 1 US dollar in 2002, which was the highest compared to South Asia at 31.2 percent and the rest of the world with much lower levels of poverty. The poverty statistics provided by the WBG on Sub-Saharan Africa compared well with the CHDM statistics of 69.8 percent even if an adjustment constant had to be factored in to compensate for different methodologies in the determination of the statistics by the two sources.

### **3.6.2 Millennium Development Goal 2: Educating All Children**

The second Millennium Development Goal called for universal primary education in all countries by 2015. Education was regarded as the first priority in view of its role as the foundation of all society and globally competitive economies. It is the basis for reducing poverty and inequality, improving health, enabling the use of new technologies, and creating and spreading knowledge. Sub-Saharan Africa had the lowest statistics of children completing in the world with a rate of 59.0 percent in 2000, while South Asia had the second lowest completion rate at 79.0 percent in the same year. The percentage quoted by the WBG for Sub-Saharan Africa was much higher than those of the CHDM which stood at 38 percent in 2000.

### **3.6.3 Millennium Development Goal 3: Empowering Women**

The third Millennium Development Goal targeted women due to the observation that where a country educated its girls, its mortality rates and fertility rates usually decline, and this was complimented by an improvement in the health and education prospects of the next generation. The WBG also made a point that unequal treatment of women by the state, their communities and family, in the market, puts them at a disadvantage throughout their lives and stifle the development prospects of their societies. Illiterate and poorly educated mothers were less able to bring up their progeny. Low education levels and responsibilities for household work prevented women from finding productive employment or participating in public decision-making. With respect to the improvement of enrollments of female children, obstacles that prevented parents from enrolling young girls at school were mainly of a cultural nature and practice would have to be overcome. In this instance, the WBG statistics for children enrolled at primary and secondary school in Sub-Saharan Africa expressed as a ratio of girls to boys were 80.0 percent in 2000, which was much higher compared to the CHDM statistics of 68.0 percent for all children in primary and secondary education in the same year. The statistics for Sub-Saharan Africa were the lowest in the world followed by South Asia at slightly more than 81.0 percent.

### **3.6.4 Millennium Development Goal 4: Saving Children**

According to WBG, every year almost 11 million children in developing countries still die before the age of five. Most die from causes that are readily preventable in rich countries such as acute respiratory infections, diarrhea, measles and malaria. Progress has been particularly slow in Sub-Saharan Africa, where civil disturbances and the HIV & AIDS epidemic have been accountable for the escalation of infant and child mortality over and above the causes stated above. Sub-Saharan Africa under-five

mortality rate were approximately 170 per 1000 in 2000. South Asia statistics were about 100 per 1000 while the CHDM statistics were 59 per 1000 in the same period.

### **3.6.5 Millennium Development Goal 5: Caring for Mothers**

More than 500,000 women die each year in childbirth, most of them in developing countries. According to WBG, the reason why maternal mortality was such a compelling problem was due to fact that it strikes young women experiencing a natural function of life. They die because they are poor, malnourished and weakened by disease as well as being exposed to multiple pregnancies. They also die due to lack of access to trained health care workers, life-saving medicines and modern health facilities. Sub-Saharan Africa, yet again, had the worst statistics with a total fertility rate of approximately 5 births per woman and a maternal mortality ratio of 921 deaths per 100,000 live births in 2000. South Asia had the second highest figures in the same period with just under 4 births per woman and a mortality ration of 564 deaths per 100,000 live births. No statistics were available for the CHDM.

### **3.6.6 Millennium Development Goal 6: Combating Disease**

Epidemic diseases exact huge toll in human destitution and rate as one of the major contributing factors in lost opportunities for development. In Africa, poverty, armed conflict and natural disasters largely contribute to the spread of disease and are worsened by them. The spread of HIV/AIDS in Africa has reversed decades of improvements in life expectancy and left millions of children orphaned. It is also draining the supply of teachers thus eroding the quality of education.

300 – 500 million people are infected with malaria each year in Africa, leading to more than 1 million deaths. Nearly all the cases and more than 95 percent of the deaths occur in Sub-Saharan Africa with most deaths being among children below the age of five.

Tuberculosis kills approximately 2 million people per annum, mostly those between 15-45 years old. According to the WBG findings, the disease is spreading more rapidly because of the emergence of drug-resistant strains of tuberculosis, the spread of HIV/AIDS, which reduces resistance to tuberculosis, a situation that is aggravated by the migrations of whole populations across frontiers in search of better livelihoods, thus acting as vectors for these diseases. Worldwide, 40 million people have been reported to be living with HIV/AIDS and almost 5 million new infections occurred in 2005. Although the adult infection rate has stabilized in Sub-Saharan Africa and other developing regions, the epidemic has not been halted and the statistics reflect that the epidemic has attained a state of

equilibrium with the death rate being equal to the rate of new infections (UNAIDS/WHO, 2005). According to UNAIDS/WHO statistics, the majority of people living with AIDS are in Sub-Saharan Africa (6.9% in 2005). Tuberculosis, which is often associated with HIV infections, was reported to have an incidence of approximately 360 per 100,000 people in 2004, up from 160 in 1990. South Asia was a distant second with about 175 per 100,000 in 2004, an incidence that was slightly lower than for 1990 (World Bank staff estimates, 2005). In South Africa, the HIV infection rate in 2004 was estimated to be at 28 percent in a population of 47 million people, which implied that 33 percent of the world's population of people living with AIDS was residing in South Africa. In the same period, the statistics of the CHDM rate of infection was higher than the national figures at 30.2 percent.

### **3.6.7 Millennium Development Goal 7: Using Resources Wisely**

The seventh Millennium Development Goal addresses one of the most critical issues in the developing world, that of Biodiversity Conservation. An emphasis is made that sustainable development can be ensured only by protecting the natural environment and using its resources wisely. Poor people, often dependent on environmental resources for their livelihood, are the most affected by environmental degradation and natural disasters (fires, storms, earthquakes) whose effects are worsened by environmental mismanagement.

Most countries have adopted principles of sustainable development and agreed to international accords on protecting the environment. The WBG makes the point that good intentions without implementation are not enough. Around the world land is being degraded. Forests are being lost. Fisheries are being overused. Plant and animal species are becoming extinct, and carbon dioxide emissions are driving changes in global climate. Rich countries are major consumers of products and services from the environment. Thus rich and poor countries alike have a stake in using environmental resources wisely. Water and sanitation are basic services that are needed by all human beings. In 2002, 64 percent of the population in Sub-Saharan Africa did not have access to improved sanitation facilities, while 42 percent did not have access to safe and clean water sources. In terms numbers, 300 million people in Sub-Saharan Africa lacked access to clean and safe water sources while 450 million lacked adequate sanitation services. South Asia has made excellent progress in providing clean water, but progress has been slow in providing proper sanitation.

In the CHDM, local communities in the former Transkei homeland areas of Intsika Yethu, Engcobo, Sakhisizwe and Emalahleni continue to face the greatest backlogs as far as access to water and sanitation are concerned. Census 2001 and RSS in 2006 both show that no significant impact on backlogs have been made on provision of clean water and proper sanitation. The CHDM Integrated Development Plan 2006 – 2011 has presented a backlog of 42 percent for clean water provision and 51 percent for proper sanitation. These statistics are comparable to those published by the WBG for Sub-Saharan Africa. The issue of Biodiversity Conservation is dealt with in detail in a later section.

### **3.6.8 Millennium Development Goal 8: Working Together (Partnerships)**

The eighth and final goal complements the other seven goals. The WBG notes that in partnership, wealthy countries work with developing countries to create an environment in which rapid, sustainable development is possible. According to the WBG, important steps towards global partnership were taken at international meetings in 2001 in Doha, which launched a new “development round” of trade negotiations, and in 2002 at the International Conference on Financing for Development in Monterrey, Mexico, where high-income and developing countries reached consensus on mutual responsibilities for achieving the Millennium Developing Goals. The consensus calls for developing to improve governance and policies aimed at increasing economic growth and reducing poverty and for high-income countries to provide more and better aid and greater access to their markets.

MDG 8 is also reminder that the development challenges differ for large countries and small countries and those developing countries need access to new technologies to increase productivity and improve people’s lives. According to the WBG, Aid plays an important role in development although this is debatable in so far as some of leading Africa’s political economists are concerned since they argue that Aid from rich countries usually has conditions attached and thus has been to the disadvantage of recipient countries as a consequence of the inequalities between the rich countries on the one hand and the developing countries on the other (Ake, 1996; Maloka, 2002). As far as the WBG is concerned, Aid plays an important role in development, especially in low-income countries. The extremely poor countries of Sub-Saharan Africa and Asia still need substantial increases in Aid to reach their development potential; although no detail is given as to the utilization of the Aid. Countries in all regions borrow from multilateral institutions, such as the World Bank, but some are repaying more than they borrow. In addition to Aid, developing countries meet part of their financing needs through private capital flows. Rapidly growing economies need and attract large flows of direct and portfolio

investment, which have been particularly important in the growth of East Asia and Pacific countries. Export demand can be an important source of growth, and trade surpluses can also provide substantial foreign exchange earnings. According to the WBG, remittances from people living and working abroad are a growing source of income for households in some developing countries. The issue of partnerships is discussed at length in the Discussion section.

### **3.7 LIVELIHOODS IN THE CHRIS HANI DISTRICT MUNICIPALITY**

The documented socio-economic surveys undertaken independently by the Eastern Cape Socio-Economic Coordinating Council (ECSECC, 2001), Statistics South Africa (Census, 2001) and the Rapid Services Survey (Fort Hare Institute For Socio-Economic Research, 2006) all illustrate that the Eastern Cape is economically depressed as a result of past policies and practices. The Chris Hani District Municipality, in particular, the surveys show that it has an almost non-existent industrial economy with a high dependency on primary economic activities. The former homeland system imbalances are particularly pronounced as all the areas that were under the jurisdiction of the former Transkei homeland remain grossly underdeveloped with its populace heavily reliant on the urban centres of the former Republic of South Africa for income generation opportunities.

According to the surveys, the CHDM economy is undulating between stagnation and a state of decline which is attributed to several issues, which are:

- ❖ High levels of unemployment within the urban areas of the District resulting in migrations of skilled people out of the area to the larger urban centres within the Eastern Cape and other areas of South Africa.
- ❖ A decline in the manufacturing sector which, historically, was artificially sustained by the designs of the Apartheid policies which enabled the development of industrial areas such as Ezibeleni on the outskirts of Queenstown and Sada, outside Whittlesea. The infrastructure in these areas is lying in ruins from disuse.
- ❖ A gradual decline in the world prices of minerals affecting primary producers such as South Africa over the last decade leading to a shrinking mining sector and resulting in a significant reduction in the number of jobs within the sector (Eastern Cape Provincial Government, 2006/07). A large proportion of the Chris Hani District population has been historically dependent on this income like most of the other rural areas of the Eastern Cape as has been outlined in Chapter 1.

- ❖ The decline and lack of investment in the commercial farming sector, which has always been a significant role-player in the District's economy has also had a devastating impact on the livelihoods of many communities as the shedding of jobs has continued unabatedly. The decline in the commercial agriculture sector has been attributed to a wide spectrum of externally determined factors such as:
  - ❖ The glut in the wool market in the late 1980's and early 90's resulting in the depression of prices;
  - ❖ A series of major droughts affecting the country;
  - ❖ Increasing mechanization as the established commercial farmers attempted to lower operating overheads by shedding jobs;
  - ❖ A rapid decline in prices of local agricultural produce competing against imports;
  - ❖ Destructive veld fires; and
  - ❖ An escalation in stock theft probably driven by increasing poverty.
- ❖ Emerging black farmers have also been subject to these factors, however, the added pressure of overstocking and soil erosion in tandem with dilapidated infrastructure (dipping tanks, etc) have served to whittle away their profit margins and chances of economic success.
- ❖ A reduction in previous provincial agricultural budgets in the District meant that many programmes previously offered have been cut back thereby minimizing their access to information and agricultural services.
- ❖ A majority of emerging farmers lack agricultural and business skills to ensure business success.
- ❖ Poor roads infrastructure has also largely contributed in preventing development of the economy in many parts of the District.
- ❖ The lack of linkages between various projects, which, in conjunction with a lack of a clear and concise marketing strategy for the majority of emerging farmers in the whole region and minimal access to financial services and markets has resulted in the failure of many projects which should have been economically viable.

### **3.8 POVERTY REDUCTION: A CASE FOR INDIGENOUS KNOWLEDGE SYSTEMS**

On the basis of the socio-economic outlook of the Eastern Cape with specific reference to its rural communities and the challenges of poverty and underdevelopment confronting these communities, the problem statement and the strategic objectives of this study were formulated. In the high level overview of these socio-economic conditions, probable sustainable solutions to these challenges were

tentatively identified to be located within the domain of the rural communities themselves in the form of natural resources and the indigenous knowledge base of the communities that was an integral component of their social milieu. From this premise, a concept underpinned by the innovative utilization of the natural resources through a hybrid process that could be derived from an integration of Natural Sciences and the Indigenous Knowledge Systems, was proposed. The challenge for such a proposal, given the dominance of traditional Western research methodology over the indigenous research practices in academia, is whether the firmly entrenched Anglo-American research methodologies might not influence the overwhelmingly rural African experience and paradigm in the domain of knowledge since academic researchers are mainly trained in Western academic institutions and would, therefore, be unable to bridge the divide. This challenge notwithstanding, this study, being cognisant of this compelling fact, accepted the challenge and moved from the premise that the research could be regarded as one of the pioneering efforts to integrate Indigenous Knowledge Systems with the traditional Western knowledge research methodologies. In the editorial of *Indilinga*, the African Journal of Indigenous Knowledge Systems, the editor remarked that the critical perspectives in African indigenous research have indicated that when conducting research in indigenous communities in African villages, researchers were confronted with particular methodological problems given each particular situation. The specificity of the methodological questions lies in the fact that, in many communities, Africa's thoughts, belief, traditional and religious practices, history and experience of the people are not expressed in written form. This reality makes the researcher rely mainly on the conversations (qualitative interviews) and not limit him/herself to document analysis (*INDILINGA: African Journal of Indigenous Knowledge Systems Editorial*, 2003).

The contribution of Indigenous Knowledge Systems towards rural poverty reduction in the African rural setting has been widely accorded recognition by a number of researchers. In a study on the usage of indigenous plant material among small-scale farmers in the Niger State, Nigeria, chemical pesticides used to control food crop pests were observed to cause serious crop losses and destroyed some of the useful organisms found in the soil ecosystems through poisoning. The chemical pesticides were substituted with pesticides derived from indigenous plant materials with none of the deleterious effects of chemical pesticides on ecosystems (Gana, 2003). In a research study in Ethiopia, indigenous medicinal plants were established to play an important role in primary health care as in many African countries in which there was a continued reliance on traditional medicine found to be partly due to economic circumstances, which placed modern health facilities, services and pharmaceuticals out of

reach of the majority of the population (Fassil, 2005). The role of indigenous medicine was briefly discussed in Chapter 1, thus corroborating much of the literature written on the subject by various researchers in numerous African countries including South Africa (Ngubane, 1977; Singer, 1977; Tsey, 1997; Cocks & Dold, 2000; Cocks & Moller, 2002; Posey, 2002; Botha et al., 2004; Gari, 2005). In the Eastern Cape, scientific research on indigenous medicinal plants has been conducted by several researchers although this body of knowledge is yet to find practical application towards the fulfillment of strategic goals in the transformation of rural community livelihoods for the better (Mayekiso, 2006; Coopoosamy, 2007).

In several publications, the role of Indigenous Knowledge in contributing towards rural economic development in underdeveloped societies has been highlighted. In these publications, the researchers have expressed skepticism with regards to the neglect of the role of indigenous knowledge in scientific research and its importance in rural development and improvement of rural livelihoods. These researchers made some observations to the fact that at a certain stage indigenous practices were once ignored being regarded as primitive and non-scientific in Western research establishments that displayed a superiority complex when it came to Indigenous Knowledge Systems practices. The arguments put forward by these researchers are a complimentary role of indigenous agricultural practices and the integration thereof with modern scientific methodologies. This school of thought is a radical departure from the conventional attitudes of Western academic research community as the role of indigenous practices in contributing towards poverty reduction and underdevelopment, more especially in African rural communities (Chambers, 1983; 1997; Scoones & Thompson, 1994). The fact that Indigenous Knowledge Systems can play a complimentary role when combined with modern scientific practices has a profound significance for poverty reduction and the turnaround of the deteriorating status of health in rural communities both in terms of effectiveness and affordability. Taking into consideration the issues of effectiveness and affordability, the combined usage of Indigenous Knowledge Systems and natural sciences is proposed precisely for the two issues. The emphasis was to go beyond this integration in commercial agricultural production and enter into other terrains such as primary health care, nutrition and others with a role to play in the reduction of poverty and improvement of rural livelihoods. In recognition of the role of the two knowledge systems, this study makes a case for their integration for effective transformation of, not only the economies of poor rural communities, but the economy of the entire Province that is currently dependent on the Automobile Assembling Industry that is situated in the two coastal metropolitan centres as stated in

Chapter 1. In making a case for this integration, the approach adopted in this study was action research as stated in the research design and methodology section. The following chapters are reports on unique and standalone case studies that were conducted at different periods to demonstrate the feasibility of each of the areas of research in this study as outlined in Chapter 1 in the discussion on the strategic objectives of this study. The next chapter presents a model that was developed to integrate the various facets of the study.

### **3.9 CONCLUSION**

Income and employment figures for the Chris Hani District remain extremely depressed as shown earlier on due to the issues that have been presented by the surveys quoted above. A strategy for the economic development of the Chris Hani District Municipality would have to take into consideration the analysis of the surveys in order to make inroads into the ravages of poverty and underdevelopment. The District, as shown in the comparative analysis in section 3.6, is extremely underdeveloped even by Southern African standards, which are the lowest in the world. It would be fair to conclude that if a showcase strategy for rural development were to succeed in this region, it would have more than an even probability to have positive outcomes in other any region with similar socio-economic dimensions.

It is important to note that the success of a community-based development strategy would largely be dependent upon the buy-in of the targeted community; hence it was critical for the research group to have an intimate knowledge and understanding of the cultural norms, values and practices of the populace including their psychographics. These intangible aspects were found to invariably underpin the decision-making processes and perceptions of the communities. Although much research has been undertaken towards an in-depth understanding of the socio-economic profile of the Eastern Cape rural landscape and the Chris Hani District, the author could not find any evidence of viable rural development programmes flowing from these previous undertakings. The status quo of the region, therefore, presented an ideal opportunity for this study to implement intervention strategies based on applications of Indigenous Knowledge Systems in the areas of health and nutrition on a platform of commercial agriculture. In interactions with rural communities in the progress of this study, the indigenous knowledge of the community members on issues of agriculture was found to be an important base on which technical expertise could be built for the future sustainability of the proposed enterprises. This chapter has served to highlight the serious challenges of poverty and

underdevelopment confronting the rural communities of the Eastern Cape Province with specific reference to the Chris Hani District. A brief sojourn into a comparative analysis of the CHDM development indicators with international trends was undertaken to acquire a contextual perspective of the prevailing socio-economic conditions in this region with a view to formulate a framework for interventionist rural development strategies. It was, therefore, against the socio-economic profile of the Eastern Cape and its districts as discussed in Chapters 1 and 3 that this study set out to develop a strategic framework for the development of the proposed intervention strategies and the implementation thereof. The study has been structured using the case study approach; hence, Chapters 5 – 8 are case studies that were designed and implemented to investigate the potential economic and nutritional value of certain medicinal plant species, essential oil-producing plants and indigenous food crops as well as the role of natural sciences in realizing such value. Chapter 4 discusses the role, potential and actual, of health and natural sciences, medicinal plant species and nutrition integrated with Indigenous Knowledge Systems in improving rural livelihoods; Chapters 5 – 8 present case studies on agricultural enterprise development and the critical role of partnerships as a driving force in the improvement of health and rural economic development in selected rural communities.

## **SECTION B**

# **INDIGENOUS MEDICINAL PLANTS, HEALTH AND COMMERCIALIZATION**

## **CHAPTER 4: MEDICINAL PLANTS, RURAL LIVELIHOODS AND THE COMMERCIALIZATION MODEL**

### **4.1 INTRODUCTION**

Chapter 4 discusses the problem statement, the strategic objectives of the study, the research design and methodology. The discussion then moves on to introduce the concept model designed for rural enterprise development, health and nutrition initiatives. The model attempts to integrate the objective of the study through the model as well as integrating the subsequent case studies conducted to demonstrate the feasibility of the proposed solutions to the challenges formulated in the problem statement.

### **4.2 PROBLEM STATEMENT**

Some valuable research work with the objective of acquiring a better understanding of the role and value of natural resources in the livelihoods of rural communities in order to improve the socio-economic conditions of impoverished rural communities in the Eastern Cape has been undertaken by various researchers such as Kepe and others (Kepe, 1997a; 1997b; 1999; 2001a; 2001b; 2002; Kepe et al., 2000; Kepe et al., 1998; Kepe et al., 2001; Kepe & Scoones, 1999). Notwithstanding this extensive research work, a number of challenges in the economic development of poor rural communities that constitute the rationale behind the undertaking of the research for this thesis have been identified:

- ❖ Not much has been done to translate the findings thereof into policy formulation and implementable programmes for the economic development of the poor rural communities;
- ❖ Much still has to be done in terms of utilizing academic research for the purpose of addressing the socio-economic conditions that are the determinants of poverty and underdevelopment of rural communities;
- ❖ Since the establishment of a democratic dispensation in South Africa, no strategic planning by government for the advancement of socio-economic development of rural communities incorporating the utilization of Indigenous Knowledge Systems has been undertaken despite its importance as reflected in the field research programmes as stated in the first bullet point above.
- ❖ Agricultural development programmes for rural economic development such as: The Green Revolution; Siyazondla; Massive Food Program, the resuscitation of existing irrigation schemes and others, formulated and implemented by the Department of Agriculture, Eastern Cape

Government (Policy Speech, Member of the Executive Council (MEC) for the Department of Agriculture, Eastern Cape, 2007/2008) have yet to demonstrated success towards a widespread alleviation of poverty and addressing food scarcity in rural communities;

- ❖ Poverty levels in the Eastern Cape have been steadily escalating over the last ten years, from, approximately, 54% in 1996 to 65% in 2005 (ECSECC, 2007);
- ❖ Except in few rural communities, as stated in the Policy Speech of the MEC for the Department of Agriculture, Eastern Cape quoted in bullet point 4 above no sustainable socio-economic development programmes implemented by any stakeholders in the rural areas of the Province have been visible;
- ❖ The worsening socio-economic conditions of poverty and underdevelopment in all the seven districts of the Eastern Cape are cause for serious concern (ECSECC, 2007);
- ❖ Strategies of employment creation and the development of Small, Micro and Medium Enterprises in rural areas have largely remained rhetorical, being confined to political speeches of politicians on public platforms (Eastern Cape Government, 2007).
- ❖ Human Resource Development remains a challenge with the Human Development Index (HDI) having slightly improved, from 0.48 in 1996 to 0.52 in 2005 (ECSECC, 2007).

In integrating the bullet points above, the problem statement for the Eastern Cape, therefore, is that the challenge for the Provincial Government and all the stakeholders in its society is not so much its politics but the socio-economic and health conditions of its overwhelmingly rural population. The Province still remains very poor despite efforts directed at economic and human developments. One of the conclusions reached by this study, under the circumstances, is that the socio-economic and health policies need to be revisited. More specifically, the point made by this study is based on the assumption that the people of the Province are not brought in into the process of policy formulation and as such, policies made hardly speak to their needs. Furthermore, another more subtle point is in relation to health: it is suggested that the Indigenous Knowledge Systems that are an integral component of the people, in particular the rural communities, are not accorded much attention by policy makers in dealing with the health and nutritional aspects of the people. More has to be done, the thesis argues, especially in harnessing biomedical practice with Indigenous Knowledge Systems. The thesis also suggests that the treatment of HIV/AIDS, which is a real threat to the population, as illustrated by social surveys conducted (ECSECC, 2001), requires a concerted effort to integrate biomedical and indigenous medicine and food supplements. It is, therefore, in this context that this thesis has been

conceptualized. The fact that the percentage of people living in poverty has escalated by 11 points over a period of just less than ten years, as stated in bullet point 5 above, seems to corroborate the basic assumptions made in this study that policies and strategies implemented by government and other relevant stakeholders have not really made any fundamental impact on the transformation process of people's livelihoods; hence it could have been a case of more of the same over the years with more financial resources being channelled into dysfunctional policies and economic development programmes.

### **4.3 RESEARCH OBJECTIVES**

Flowing from the challenges posed in the problem statement in Section 1.2 above, what then should be the strategic objectives of a study of this nature in addressing these challenges? The objectives had, of necessity, to be formulated in a manner that would directly address the problem statement in its totality. From the objectives of the study, as stated below, the research work done, in the form of the case studies reported in the next couple of chapters was designed to address the challenges as presented in Section 1.2 above:

- ❖ On the basis of the substantial research work conducted in earlier field studies as stated in Section 1.2 above, to elucidate the role and value of the natural resources endowment in rural communities, the process of strategic planning and policy formulation for the purpose of harnessing the natural resources value towards the development of sustainable rural economic development programmes had to be conducted in partnerships with the affected communities and other relevant stakeholders involved in these processes;
- ❖ The development of a model to address the socio-economic determinants of poverty and underdevelopment in rural communities through an integration of Natural Sciences and Indigenous Knowledge Systems;
- ❖ To conduct an action research programme with the major purpose of rural enterprise development on a basis of Agriculture for the optimum utilization of natural resources towards the establishment of sustainable rural economies;
- ❖ To revolutionize and transform the Primary Health Care System in rural communities through an integration of Traditional Medicine and the existing National Health Care System in order to create an effective and affordable hybrid Primary Health Care System;

- ❖ To assist government in initiating agricultural development programmes by developing a consultative process through the formation of strategic partnerships between the various stakeholders in rural development and the rural communities, which had to be engaged as equal partners with a say in all aspects of planning and utilization of their natural resources for the improvement of their livelihoods;
- ❖ To contribute towards the reduction of poverty through human resource development and the integration of rural economies into the mainstream economy both at a local and national level;
- ❖ To engage and partner with government in all its spheres to transform the Public Service into an accountable Public Service cadreship that has the relevant technical and managerial skills base as well as being responsive and customer-oriented to the developmental needs of rural communities;
- ❖ To assist government in integrating the various government departments and other agencies to create synergy and absolute focus on the transformation agenda of the Provincial economy;
- ❖ To be a catalyst in the establishment of a vibrant manufacturing industrial sector on a platform of agricultural production in order to diversify the Provincial economy such that it would be less dependent on a single industry that is located in the two metropolitan centres of the Province and government as a major source of employment;
- ❖ To develop effective strategies for sustainable employment creation in rural communities through the establishment of viable Small, Micro and Medium Enterprises;

This chapter has briefly introduced the aspects of rural poverty and underdevelopment in the Eastern Cape rural communities and discussed the historical origins and manifestations thereof. Flowing from the introduction, the challenges confronting the rural communities were put into a contextual perspective. This analytical overview enabled the process of formulating the problem statement and the strategic objectives of undertaking this action research study. The main aim of the study then was focused towards the feasibility of developing a model framework that would integrate the applications of natural science practices and indigenous knowledge practices in a novel way and the testing of the functionality of such a model. This study, therefore, took into account observable social dynamics and indicators of poverty and underdevelopment and their causal relationships, the historical trends as well as the extent of their impact on the rural communities which were utilized as the subjects of this study. An evaluation of past and present attempts by government departments and agencies to design and implement rural development programmes was performed through desktop research and discussions

with community members. The fact that poverty and underdevelopment indicator surveys clearly demonstrated a decline in livelihood standards (ECSECC, 2007) was a compelling reason to make the basic assumption that the government initiatives had not had much success in transforming rural livelihoods in communities; hence, this study was an evaluation of these initiatives against the proposed development model.

## **4.5 RESEARCH DESIGN**

### **4.5.1 Introduction**

The process of selecting a research design for this study flowed from the nature of the socio-economic aspects of the poor rural communities selected as the subject beneficiaries of this research programme. The problem statement as discussed in Section 4.2 of the current chapter was formulated on the basis of the nature of the socio-economic variables discussed in the introductory section of Chapter 1. The strategic objectives discussed in Section 4.3 were formulated in such a manner that they were closely aligned and reflected the socio-economic challenges presented in the problem statement. A high level literature overview on poverty and underdevelopment and the comprehensively documented socio-economic, geographic and demographic profiles of the districts of the Eastern Cape were the determinants utilized in defining the nature of this study. In the light of the existing statistical data and information from accredited and reputable sources on the social indicators and the natural resource profile presented in Chapter 3 laid the foundation for the fundamental objective and strategic direction of the study. Hence, the most appropriate research design for the study was identified to be a hybridization of the empirical research design and participatory action research. The rationale for this choice was the fact that the research concept of the study was highly compatible and most responsive to empirical type questions as described and elaborated on by Babbie & Mouton (2001) as against the non-empirical type questions. Over and above this observation, and taken to its logical conclusion, it would seem that this research, given a wider scope, had the potential to serve the three most common and useful purposes in social science research and development studies, these being, Exploration, Description and Explanation (Babbie & Mouton, 2001).

### **4.5.2 Methodology**

There is a tendency for the principles of partnerships and active participation in research to be viewed within the context of the framework of participatory research, a mode of research which seeks to improve the quality of livelihoods of those who participate in the research through being involved in a

process that utilizes their knowledge to find solutions to existing problems. According to Elden & Chisholm (1993), given the fact that action research has always been conceptualized as the use of a scientific approach to study social problems together with the people who experience them, some researchers are taken aback by an insistence on adding the term “participatory” to “action research” since from their perspective, action research is impossible without participation (Greenwood et al. 1993). According to these researchers, the use of the term “participatory” is, therefore, deemed unnecessary as the assumption has always been that participation or collaboration was fundamental to the idea of action research. Elden & Chisholm (1993) go further to state that, not only does Participatory Action Research (PAR) imply even greater participation and collaboration than classical action research does by defining participation through according co-researcher status to the participants. Participation is understood in the sense of co-managing the research process and co-generating problem solutions and new knowledge. A sojourn, into literature reveals that there are various forms of participatory research (Maxwell, 1992; Collins, 1998; Babbie and Mouton, 2001). However, as noted by Minkler and Wallerstein (Minkler and Wallerstein, 2003), there are fundamental principles that apply to all. The six principles as noted by these authors have been applied to this research study, and these are:

1. Participation and co-operation of small farmers who were community members and other stakeholders involved in the resuscitation of the local irrigation scheme.
2. Identification of the research problem by the communities.
3. Collective learning and action by all.
4. Research methods that are appropriate to the communities.
5. An empowering process for the participants through ownership of the jointly developed strategies.
6. Enhancement and building of local capacity with a special emphasis on youth and women for sustainability long after the research is complete.

Quantitative and qualitative methodologies were utilized throughout the study to ensure the validity of the outcomes. Questions and statements designed for the questionnaires were executed through adopting discussion and narrative formats to avoid leading the participants to respond in a particular manner that would reflect what they thought the researcher desired to hear. The uniqueness of the methodology of this study is the fact that development programmes and business enterprises were

being set up simultaneously as the research programme was unfolding. This was critical in testing the validity of the basic assumptions as well as the responses of the participants.

In all the field work conducted towards fulfilling the objectives of the study, all the communities in which research was carried out, members of the community were involved as participants. The protocol observed throughout the research period was a stepwise approach in which the leadership of the target community was first approached by the author of this thesis, the supervisor and at times, other members of the research group to which the author be. The work reported in this thesis was conducted in partnership with community members in the target communities and with the assistance of other research group members who have been acknowledged accordingly. The nature of the research work was action research since ideas and proposed concepts had to find their expression in action. Although the work was the implementation of a premeditated concept, the execution took into consideration the material conditions on the ground and adjusted accordingly as the programme was unfolding. The methodology was, therefore participative action research as the ultimate objective of the research was situated in an implicitly political arena since the status of poverty and underdevelopment has a direct implication for the political environment of the Province and the country as a whole. In this instance the aim of the research was the establishment of a sustainable rural community that would be self-sustaining long after the research was gone, hence, both the epistemology and the methodology had to be of both a liberatory and developmental nature.

#### **4.5.3 Choice of Study**

In reviews and discussions at all levels of society in the Eastern Cape, the issues of deepening levels of poverty and extreme underdevelopment are dominant topics and underpin the very existence of the Provincial society. The state departments, its agencies and all other spheres of the Provincial society had been grappling with these issues since the dawn of a new political dispensation in South Africa and after almost fifteen years, the socio-economic conditions in the rural areas of the Province were taking a turn for the worse; hence, it became an issue that all members and organizations of society had to combine resources to generate long-term solutions. Working in Applied Sciences and their role in aspects of Rural Development, biodiversity conservation, health, poverty and underdevelopment, the direction taken by this type of research seemed to a logical step under the prevailing circumstances.

#### **4.5.4 Choice of Areas**

The old irrigation schemes were selected due to the existence of the irrigation of the necessary infrastructure for the initiation of rural development programmes. These irrigation schemes had collapsed towards the end of the rule of the old order and despite numerous attempts by the incumbent order; the schemes were not showing any signs of developing towards full sustainability. Their revival became a challenge that was worth taking up at an academic level. The areas in Chris Hani and Amathole were some of the poorest communities of the Province and required immediate attention, hence their selection as ideal communities for this study. The communities in these areas demonstrated a high level of enthusiasm, co-operation and organization that was encouraging to a researcher and rural development activists. If any strategy could work in these communities, it would be less of a challenge to roll out the development programme into any other area of the Province and beyond.

#### **4.6 A MODEL FOR RURAL DEVELOPMENT: A CONCEPTUAL FRAMEWORK**

This section discusses the conceptual framework that forms the basis of this study. This study was initiated in the middle of 2003 and is a continuation of earlier research studies on the usage and pharmacological properties of indigenous medicinal plant species conducted by Magwa and his group of post-graduate research students based in the Department of Botany at the University of Fort Hare, Alice in the Eastern Cape Province of South Africa. Through research studies on indigenous medicinal plants and their pharmacological properties and biological activities, the Fort Hare group compiled a comprehensive database of some indigenous medicinal plants common to Southern Africa (Magwa & Gundidza, 2003; an unpublished report). Flowing from this information and knowledge database, the Magwa group designed and developed nutritional supplements for people with compromised immune systems due to HIV/AIDS infection rendering them vulnerable to opportunistic infections. Prescribing nutritional supplements extracted and manufactured from indigenous medicinal plants in the management of HIV/AIDS and other degenerative diseases and medical conditions in numerous HIV/AIDS sufferers, interesting results demonstrating a remarkably high rate of success in the reversal of the state of morbidity and an improvement in the quality of life, were obtained. It is important to emphatically state that medicinal plants-derived products are categorized as nutritional supplements instead of pharmaceutical products as is the case for synthetic Allopathic medicines while also pointing out that no claims were made to the effect that these medicinal plant preparations can cure HIV/AIDS. Any claims could only be made on the basis of scientific validation and clinical trial outcomes, aspects that were not within the scope of this thesis. On the basis of these results, a concept model for a

comprehensive programme to address all the social indicators contributing to poverty, declining health status and underdevelopment was developed.

The selected communities used as sites for the research were located in the rural communities of Amathole and Chris Hani District Municipalities in order to design an enterprise model for sustainable rural development through agricultural commercialization. The first community in the Chris Hani District was in the Qamata Traditional Authority in Intsika Yethu Local Municipality and was selected, primarily, on the basis of its location in an area with an existing irrigation infrastructure in the Qamata Irrigation Scheme established during the reign of the former Transkei Homeland. The land on which the Qamata Irrigation Scheme is based was expropriated from the local communities by the former Transkei Homeland regime to make way for the construction of the irrigation scheme. With the advent of the new political dispensation in South Africa, the land ownership reverted to the communities who had neither the resources nor the technical skills to utilize it for subsistence or commercial agricultural farming. The second site was in the Lady Frere area at Emalahleni Local Municipality that is also located in the Chris Hani District. The village communities in the second site had no irrigation infrastructure and had organized themselves into a legally registered cooperative that had been proactively soliciting seed capital for commercial agricultural development and the establishment of a wellness programme. Other smaller sites in the Chris Hani District were in Engcobo Local Municipality. The major site in the Amathole District was at Mqukwane in the Amahlathi Local Municipality, an area around the small rural town of Keiskammahoek and other smaller sites elsewhere in the District such as Ilitha, Alice and Adelaide.

#### ***4.7 MEDICINAL PLANTS: A MODEL FOR COMMERCIALIZATION***

##### **4.7.1 Concept Origins**

As stated in the literature review, although much work has been done in researching the Ethnopharmacology and the potential economic role of indigenous medicinal plant species in addressing the burden of poverty and underdevelopment, especially in rural communities, and turning around the rural economies of South Africa, not much was found in literature by the way of applications towards the realization of these potential roles and use-value. From the onset, this study was conceptualized in pursuance of these strategic goals as outlined in defining the terms of reference for the study in the introductory section in Chapter 1. For some years prior to the concept development

of this research study, the author had been involved in research programmes that, in the main, were investigating various aspects with regards to indigenous medicinal plant species found in the natural habitats around the Eastern Cape Province. These aspects could, generally, be classified under three major domains, according to the objectives of the research project and more fundamentally, the rationale for undertaking such a research project. The domains were:

- ❖ Ethnopharmacology research for the identification and testing of the pharmacological activities of various plant compounds using biotechnology techniques;
- ❖ Clinical studies to establish or affirm the healing properties of medicinal plants extracts in the management of various medical conditions as well as innovations aimed at developing new medicinal plant products to address a broader spectrum of illnesses;
- ❖ Research to investigate the feasibility of establishing commercial enterprises in partnerships with rural communities based on the usage of medicinal plants as part of rural development. The major issues of concern in this area revolved around the unrestricted and destructive harvesting of some medicinal plant species such as the *Pelargonium* species by the rural village communities and the long-term implications of these activities on the environmental and biodiversity conservation as well as the debilitating effects of poverty on the communities;

Other research initiatives were either adjuncts or a combination of these three major categories; hence this research study could be classified as falling under domain three above.

The primary concern that inspired the development of the concept for this research project was the rapid spread of the HIV/AIDS pandemic against the backdrop of extremely depressed socio-economic conditions as a direct consequence of the escalating levels of poverty, mostly in rural communities. Having taken into consideration the South African Government's response to the HIV / AIDS pandemic, the pertinent issue was whether the response was adequate and what other strategies could be developed to arrest its spread while simultaneously addressing the concomitant socio-economic challenges confronting poor communities in rural localities of the country who had been rendered the most vulnerable section of the South African society to infection by the virus as a result of the depressed socio-economic environment in which these communities find themselves. As a point of departure, the rationale for undertaking this study had to be clearly elucidated, not only for the purpose of convincing the prospective research funding for the study, but also as a way of crystallizing the

underlying concepts in the mind of the researcher in this study; hence, the questions that were formulated in the conceptualization of the research and the desired outcomes, before the commencement of the project, were as follows:

- ❖ How can poverty be defined from the perspective of the rural communities in the Eastern Cape in so far as it impacts on health and nutrition?
- ❖ What is the feasibility of exploring and designing intervention strategies to these challenges within the scope of rural communities themselves to ensure sustainability and permanence of such solutions? The ideal scenario in this instance was the creation of an enabling environment whereby the solutions and responsive strategies are generated from within the communities rather than importing them since this would negate the very purpose of this exercise.
- ❖ Are meaningful partnerships between rural communities and other stakeholders in the areas of health and nutrition feasible without imposing on the communities?
- ❖ How can health and nutrition be defined and addressed from the perspective of rural communities such that issues of culture, paradigm, mindset and the understanding of rural people are encapsulated?
- ❖ What is the potential role of natural resources and Indigenous Knowledge Systems of the rural people in addressing poverty and underdevelopment in so far as they impact on health and nutrition?
- ❖ At a conceptual level, is it possible to shift the mindset of rural communities from subsistence farming towards commercial farming thus enabling them to realize the power of their collective knowledge and experiences in achieving self-sufficiency and economic independence?
- ❖ Is it feasible to develop the 'optimum solution' utilizing natural resources with a view to long-term sustainability of rural communities given the deeply entrenched causes and effects of poverty and underdevelopment?
- ❖ What would the implications of the macro-economic policy of South Africa be on sustainable development largely informed by environmental factors?

In attempts to systematically address these questions and the challenges posed by the spread of the HIV/AIDS pandemic, a concept was formulated. At a strategic level, a conscious decision was adopted to the effect that the proposed concept implementation had to simultaneously address both the depressed socio-economic environment in the target rural communities and the rampant spread of the

HIV / AIDS pandemic in these communities in a manner that would be sustainable for the beneficiaries and all the stakeholders involved.

#### **4.7.2 Poverty and HIV/AIDS**

According to Statistics SA (2005), the Eastern Cape is home to 14.4% of the total population of South Africa, and is the third most populous province. HIV/AIDS continues to pose a major challenge for South Africa and more specifically, the Eastern Cape, which is rated as the poorest province in the country. As discussed in Chapter 3, the Eastern Cape has experienced a steady escalation in HIV rate of infections over the period, 1990 - 2002, a situation concern that has led to multi-sectoral initiatives by the Eastern Cape Provincial Government, civil society institutions and the business community in the Province (Eastern Cape Government, 2006). According to the World Bank (2006), developing countries are confronted with major challenges in terms of human resources, infrastructure and budgets in expanding and sustaining HIV/AIDS management effectively despite the relatively lower prices of Anti-Retro-Viral medication on offer by the pharmaceutical companies. Furthermore, the HIV/AIDS pandemic factor has only served to exacerbate an already complex equation that is constituted by poverty, underdevelopment, a high rate of unemployment, the generally poor health status prevailing in the majority of rural communities and a generally low level of access to basic social services and an adequate and well-balanced nutrition.

Apart from the monumental legacy of social inequalities inherited from the apartheid past in contemporary South Africa, the HIV/AIDS pandemic has become the singularly most important socio-economic and political factor that has made a fundamental impression on all levels of South African society as a result of its long-term impact on the economy of the country due to its devastating effect on the country's population affecting, mainly, the most sexually and economically active age groups (Department of Health, 2002). Apart from the ravages of the apartheid system on the South African society, the HIV/AIDS pandemic has, perhaps, become the most topical issue in the post-1994 South Africa. As illustrated by the HIV prevalence profile of South Africa and the Eastern Cape from 1990 to 2002 in **Figure 5**, the pandemic has been steadily escalating over the last two decades, a phenomenon that could be attributed to a multiplicity of socio-economic factors that have created a favourable environment for its propagation and spread, especially in the poverty-stricken and underdeveloped rural communities (Eastern Cape Government, 2006). The socio-economic factors referred to are the following:

- ❖ Poverty;
- ❖ Inadequate nutrition;
- ❖ Vulnerable immune systems;
- ❖ Low literacy levels;
- ❖ High rate of unemployment;
- ❖ Low income levels;
- ❖ Anachronistic cultural beliefs and practices;
- ❖ Limited state health care resources;
- ❖ Disjuncture in South Africa's HIV/AIDS research coordination;
- ❖ Attitudes, social tendencies and cross-community interactions;

In the case of South Africa, high risk practices such as sexual encounters with more than one partner and unprotected sex, especially among the youth as discussed in Chapter 3, could be attributed to a combination of cultural attitudes and social behavioural tendencies, and in tandem with high rates of cross-frontier population migrations in Southern Africa, all these human activities effectively act in concert as vectors for an amplified spread of the HIV/AIDS pandemic (Department of Health, 2000; 2004; World Bank, 2006).

Any other determinants of the incidence of HIV/AIDS, besides the ten enumerated above, were regarded as either a corollary or a product of the above albeit at varying levels. The pandemic constitutes a real impediment to human development and economic growth in Sub-Saharan Africa since no cure seems to be imminent; hence the basic assumption adopted within the context of this study was to the extent that HIV/AIDS prevalence was a complex social phenomenon that could not be regarded as a plague that could be simply countered with a treatment strategy largely informed by the rollout of a drug intervention programme, this, notwithstanding the onerous budgetary constraint on the part of government to support such a programme. Moreover, the infection pattern of the HIV/AIDS pandemic has been analogous to that of a hostile alien invader strategy that would study the social environment and subsequently attacks at any vulnerable locus where the social factors stated above manifest themselves optimally (Department of Health, 2000; 2004; World Bank, 2006). It is also a well-established fact in viral pathogenic studies that viruses have short RNA genomic sequences, an attribute that enhances the probability and thus, the frequency of genetic mutations thus making it that much more challenging to develop antibodies against these simple genetic antigens as a result of this

instability of the structural integrity that is a common denominator to most of these simple genetic entities. As a matter of fact, an intact Human Immune Virus particle has never been isolated since it spontaneously disintegrates once isolated from situ. In a nutshell, the basic assumption was that for any counteroffensive social plan to be effective against this scourge, the social determinants of poverty and underdevelopment in poor rural communities would have to be taken into account in their totality. The most critical social indicator was perceived to be a lack of access to adequate nutrition for infected people in the mostly poor rural communities used as research sites and was identified as the most serious challenge in the execution of an effective intervention strategy against HIV/AIDS; hence a sustainable nutrition programme was critical to the turnaround strategy in the fight against the pandemic (Department of Health, 2004; Hlanze et al., 2005).

It is perhaps a compelling truth that must be conceded that at this stage of human development at a global level, no African country, including South Africa, has resources at its disposal that can sustain an expanded ARV drug rollout programme combined with a comprehensive food security programme in the long term given the fact that most of the African economies are highly indebted and trade in an highly unstable global economy and a conflict-ridden environment with an extremely narrow revenue base as result of poorly developed human resources and a high unemployment rate (Ake, 1996; Devereux, 2001 (ed.) Devereux & Maxwell, 2001; Bond, 2001; Mills, 2002). The guidelines to the rollout of Anti-Retroviral drugs by the Department of Health stipulate that the treatment is to be administered only when the CD4 count level is below 200 (Department of Health, 2004). In the event, at this stage, HIV-infected people experience the onset of morbidity symptoms and become highly susceptible to opportunistic infections due to compromised immune systems. The cornerstone of any strategic intervention against the pandemic, therefore, according to the concept, would have to be implemented before the onset of the morbidity stage where the majority of the total universe of people living with HIV infections is found (World Bank, 2006).

The challenge as stated in the above section is the fact that adequate nutrition that is central to an effective HIV/AIDS management programme was not accessible to the majority of rural people infected with the virus as a result of poverty and lack of income. The inaccessibility of a well-balanced diet to most rural communities is an inherent weakness of most of the current drug intervention programmes including the government programme for HIV/AIDS. The observation made in communication with most of the infected people in the course of the study was that the escalation in the

rate of mortality in HIV/AIDS infections could be directly attributed to inadequate nutrition for people on ARV treatment. As long as people with HIV/AIDS related conditions had no access to the Recommended Daily Allowance (RDA) of nutrients to equip the body with a strong immune system, the war against the pandemic would remain an exercise in futility. Under the circumstances, the question that is begging to be asked is; how sustainable is any HIV/AIDS management regimen without adequate nutrition? The issue here is whether the South African Government or any other government on the African Continent can guarantee the provision of requisite food security for the rural poor people living with AIDS. The discussion on the issues raised in this section set the foundation for the development of a concept for a social intervention strategy in endeavours to address these challenges.

#### **4.7.3 The Concept Description**

It must be stated that the development of the concept proposed in this study was a lengthy and drawn-out process which borrowed some of its fundamental ideas from various institutional intervention strategies that had been proposed before (Gari, 2005; World Bank, 2006) while also taking into account the social determinants of poverty and underdevelopment that have been a subject of discussion (Gari, 2005; Hlanze et al., 2005). The concept proposal motivates for a social plan that adopts a multi-disciplinary approach based on the development of agricultural enterprises in partnership with target rural communities with a capacity to engage in the production and processing of grain and vegetable crops for local markets in the initial period and later expand to the cultivation of high value cash crops such as medicinal and essential oil producing plants. In the process, the rural community beneficiaries would have readily available food for consumption, thus improving the chances of success and the recovery rate of patients in the fight against HIV/AIDS since nutrition is the first line therapy, in combination with a change in lifestyles, which would delay the onset of morbidity and the eventual mortality. The concept has as its basis the opportunity for a combination of the natural resources of the Province consisting of land, crops, indigenous medicinal plants, water and the indigenous knowledge systems coupled with the total involvement of mainly the rural communities in fighting the epidemic and turning around the rural economies. The initiative, based on a platform of commercial agriculture and driven by scientific and social research and development programmes in partnership with academic institutions and state agricultural research institutions would require the involvement of the various state departments, parastatals and private sector companies if it is to succeed. The primary component of the concept is the production of nutrient supplements manufactured from medicinal plants,

indigenous crops and vegetables. The production levels should be economies-of-scale for the sustainable growth of the rural economies. The strategic objective of the concept was the modeling of a commercial value-chain of revenue-generating activities that would flow from the initiative thus presenting employment and entrepreneurship opportunities for the participating rural community members. The supply chain formed from the commercial production, marketing and consumption of these medicinal plant nutrient supplements was designed to form the basis for the development of industries that are community-based across the rural countryside of the Province. The commercialization involved the cultivation, harvesting, conservation and primary processing of the medicinal plant products by community-based enterprises in which community groups and individual entrepreneurs would be stakeholders through partnerships with private sector entities with the latter providing technical expertise and business management skills as well as sourcing finance for the start-up enterprises. The final processing, packaging, warehousing and distribution facilities were to be established in sites that had been identified as the idle industrial infrastructure situated in areas such as Butterworth, Dimbaza, Ezibeleni and other similar sites across the Province of the Eastern Cape as well as developing the infrastructure next to the community areas. The commercial agricultural production of food outlined above would not only produce for markets but would also satisfy the dietary requirements of the communities, targeting mainly, the most vulnerable community groups such as unemployed women who are heads of poor households and single parents, a common feature throughout South Africa; the disabled; youth and people living with HIV/AIDS and any other disadvantaged group that belongs to this category. At another level, capacity enhancement through basic skills training in commercial production and business management would be provided for the community members involved in the programme, especially the youth for the purpose of preparing them for future leadership and management roles; hence, study grants would also be organized for further youth training in the relevant technical, commercial and business management spheres at institutions of higher learning for the development of a pool of expertise for the future enterprises. In this latter area, the author was in collaboration with the office of the Vice-Chancellor of the University of the Witwatersrand to recruit deserving high school graduates from, mainly, the poor community schools who would be awarded the Vice-Chancellor's scholarships to take up studies in these technical areas. The first group of such students got placement into the University at the beginning of the year, 2007. A similar arrangement was in the process of being negotiated with the Vice-Chancellor of the Walter Sisulu University and had more than an even chance to be accepted and approved. Social facilitation programmes were ongoing to transform the mindset of dependency and subsistence farming

to commercial agricultural production in the targeted rural communities. The programme would also be structured to offer training to students at post-graduate level to develop a crop of committed future scientists and scholars with an inclination towards rural economic development activism. **Figure 7** below illustrates the proposed value-chain model:

1. The primary phase of the model focuses on the biodiversity conservation of the economically important plant species and the environment through the establishment of nurseries to cultivate the selected species in controlled growth conditions that would simulate their natural habitats to test the viability of the species to the domestication programme. This would involve the testing of the active metabolites from plant extracts to monitor any changes in their yields and stereochemistry while also conducting gene hybridization studies through the applications of genetic engineering and recombinant DNA techniques, plant tissue culture and the mapping of the plant genome in an attempt to develop hybrid species with optimum yields as well as being resistant and tolerant to adverse climatic conditions. This phase would be undertaken to guarantee the survival of the species and the integrity of the environment.
2. The secondary phase would be the initiation of large-scale agricultural cultivation programmes to prepare for the production of raw materials in the case of manufacturing of medicinal plant products and nutrient supplements and the extraction of essential oils. The cultivation would also produce enough plant material to supply medicinal plant traders in the marketplace.
3. The tertiary phase is the primary extraction processing of plant material to supply the manufacturing facilities of value-added products to supply the health care, perfume, aromatherapy industries and others with semi-processed products for the manufacture of the end-product ready for use by end consumers.
4. The fourth step is the packaging of the products for warehousing and distribution.
5. The fifth step is the warehousing and distribution of goods to manufacturing and retail centres in local and export markets.



**FIGURE 7: Value-Chain Model: Commercialization of Medicinal Plant Products and Essential Oils**

Except for the Cultivation and Conservation phase, all the phases in the Model are revenue-generating streams that would present further opportunities in secondary support industries such as the production of packaging material for the goods produced in the manufacturing section and the distribution and cartage of the end product to markets, apart from the supply of raw plant material produced in the cultivation programme. These are other lines of business opportunities for community-based enterprises. The philosophical underpinning of the concept was to turn around what is regarded to be an adverse situation into a positive scenario through a community-based strategy that would counter the HIV/AIDS pandemic while simultaneously improving the rural village economies into sustainable enterprises that offer employment and entrepreneurship opportunities for the communities. Some of the profit would be used for the purpose of improving rural livelihoods and the infrastructure and for the development of other industries such as eco-tourism and the production of cultural artifacts for the tourism and export markets.

The core of the Model illustrated some of the possible beneficiation processes for the rural communities. The Model was designed to accommodate the development of agricultural enterprises and generate employment opportunities in all the revenue generating streams identified. In the long-term, conducting clinical trials on the medicinal plant products was one of the imperatives of the programme as well as the scientific validation of the these products, which would involve the

identification of the active metabolites in plant extracts, levels of toxicity, efficacy and the shelf-life stability in storage. The aspect of the clinical trials for the medicinal plant products would have to be undertaken some time in the distant future due to the fact that the current environment in South Africa was proving to be hostile to the development of Traditional Medicine, probably as a result of the influence of the Pharmaceutical Industry which might regard this development as a future threat to the ARV and other allopathic medicines market share.

The strategic objectives of the proposed Value-Chain Model was to:

- ❖ Build a powerful counteroffensive strategy against the HIV/AIDS pandemic and the associated conditions.
- ❖ Alleviate poverty in the short-term with a long-term view to completely eradicate this indicator in the rural communities of the Eastern Cape and the other provinces;
- ❖ Stimulate rural economic growth through a properly planned and sustainable exploitation of the Province's natural plant species and other resources without damaging the natural environment and depleting the natural plant species resources;
- ❖ Educate and build capacity in rural communities through relevant training, social awareness programmes using effective communication programmes and user-friendly manuals that would be easy to understand by the rural communities;
- ❖ Integrate Indigenous Knowledge Systems with scientific research and Biotechnology for the effective containment of the HIV/AIDS factor;
- ❖ Generate revenue and build research capacity of, more specifically, the Historically Disadvantaged Tertiary Institutions of the Province such as the Universities of Fort Hare and Walter Sisulu without overlooking collaboration with other institutions of higher learning;
- ❖ Build a culture of excellence at these institutions through community-oriented research aimed at enriching rural livelihoods in the main while keeping abreast of the latest developments and trends of popular culture in the area of rural development and other related fields, worldwide;

A Critical Success Factor of the Model identified was continuing Research and Development in the specific areas of Tissue Culture and the fields of Biotechnology as illustrated in Figure 28 in Chapter 7. These areas were found to be ideal for providing training and development of future researchers in Ethnobotany, Ethnopharmacology, Geneticists and other related disciplines through offering post-graduate research programmes and post-Doctoral research fellowships.

#### **4.7.4 Concept Rationale**

Before embarking on a metaphorical journey, which, in essence is a detailed account of the research programme of this study, it is critically important to elaborate more on the concept rationale and the thought processes that went into the design of the study.

The research initiative dealt with in this study was undertaken with the major objective of mainstreaming the commercialization of Indigenous Medicinal Knowledge Systems (IMKS) in partnership with rural communities and other critical stakeholders as part of a broader effort to develop intervention strategies for rural development in the Eastern Cape Province. The proposed strategy was based on the concept of unlocking local natural resources and human potential to ensure sustainability and self-reliance, in particular, among the rural communities. In the long term, the vision was to establish a supply chain of vegetables, high value cash crops, natural medicinal products and nutrient supplements for both consumption and commercial purposes thus creating the material conditions for a sustainable rural development programme. The medicinal plants, on the basis of Indigenous Knowledge Systems contained in the collective memory of rural communities, presented a multiplicity of opportunities anchored on an edifice of a vision for a future dynamic industry of African natural medicinal products and nutrient supplements and realized in the implementation of Public-Private-Partnerships with the rural communities, state entities and entrepreneurs from the Historically Disadvantaged Communities.

The ultimate objective of the proposed strategy was to integrate the various sites of the proposed value-chain from the utilization of the land belonging to rural communities, which in all the rural areas of the Eastern Cape is currently lying fallow. Envisaged in the process, were economies of scale cultivation programmes through to the establishment of an infrastructure for warehousing, packaging and processing of primary agricultural produce into value-added goods intended for local markets in the Province and exports to national and global markets. Hence, opportunities for rural development through commercialization in several areas have been identified as business opportunities:

- ❖ Commercial Agriculture as opposed to Subsistence Farming;
- ❖ Biodiversity and Environmental Conservation;

- ❖ Manufacturing through integration of Indigenous Knowledge Systems and Biotechnological Applications in the areas of medicinal plants and food production as well as artifact production centres based in rural villages;
- ❖ Health & Wellness Programme;
- ❖ Training and Skills Capacity Enhancement Programme;
- ❖ Research & Development for academic training programmes and continuous product development for medical and industrial applications;
- ❖ Eco-tourism;

#### **4.7.5 Critical Success Factors**

The next phase was to identify and develop the Critical Success Factors that would be the superordinate imperatives in driving the project towards the achievement of the set objectives and to ensure that the strategic direction and focus were maintained. The Critical Success Factors developed were the following:

- ❖ Building of strategic Public – Private – Partnerships between the targeted rural communities, the District and Local Municipalities, donor funding organizations, institutions of higher learning and supportive Private Sector entities;
- ❖ Social Facilitation Programmes were to be in place well in advance to engage and prepare the targeted communities through their organizations before the commencement of the study and to mobilize them with the assistance of local authorities to introduce change management for the future social development programme;
- ❖ Identification of the members of the targeted communities who desired to be part of the programme and to assist them in setting up rural commercial entities (co-operatives and individual existing and prospective entrepreneurs);
- ❖ A buy-in and taking of ownership of the process of the development of strategies by the rural community entities as equal partners;
- ❖ Enhancement of capacity among the rural community entities, especially the youth, through technical skills and business management development programmes for the sustainability of the commercial programme after other stakeholders external to the communities have left;
- ❖ Research & Development of plant medicinal product offerings for local and export markets;

- ❖ Implementation of clinical trials and the scientific validation of medicinal products and acquisition of official approval and registration from the South African medicines regulatory authorities in the long-term although this was not within the scope of this study;
- ❖ Recognition, enhancement and protection of proprietary rights of Indigenous Knowledge of communities and its utilization as a foundation on which to build the planned commercial enterprises;

#### **4.7.6 Configuration of the Research Programme**

The conceptualization of this study was based on the foundations of earlier Ethnopharmacology research and practical applications of medicinal plants product therapy initiated by Magwa and co-researchers (Magwa et al., 2006; Mhinana et al., 2007; Lupuwana & Magwa, 2007, unpublished) primarily, although not exclusively, in the management of HIV/AIDS related medical conditions and other pathologies, mainly, among the indigenous African population from the Eastern Cape urban and rural communities who exclusively use Traditional Medicine treatment due to the fact that they were either indigent and thus could not afford the consultation fees charged by General Practitioners or preferred Traditional Medicine as an alternative to Western medicine. In the course of their ethnopharmacological research studies, Magwa and co-researchers (2006) had been developing medicinal plant products for the management of a variety of degenerative medical conditions and diseases. From the onset of the administration of treatment in most HIV/AIDS management cases, most “patients” were observed to display morbidity symptoms such as: loss of weight; weakness of joints having difficulty in walking unaided; complaints of unbearable muscular pains; and at times displaying festering sores and other dermatological conditions; fungal thrush and bacterial infections in the mouth parts; with the majority having extremely low CD<sub>4</sub> counts. In clinical history investigations, from the responses elicited from these cases, it was established that most of them sought Traditional Medicine as a last resort for a variety of reasons. Some of the reasons were: the inaccessibility of ARV treatment at public health care centres; low tolerance to ARV treatment because of debilitating side effects; and also as a preventative measure to arrest the deterioration of the immune system to a CD<sub>4</sub> count of below 200. A high recovery rate of patients on the herbal medicine regimen was observed as demonstrated by a reversal of the morbidity state through a remarkable dissipation of all of the clinical symptoms reported above as well as a corresponding increase in the CD<sub>4</sub> counts to a level beyond 500 over a period of 4 – 6 months. Similarly promising were the outcomes in the management of patients presenting with other non-HIV/AIDS-related medical conditions such as those classified under the

coronary heart diseases category like hypertension, diabetes mellitus, stroke and angina pectoris and a wide spectrum of other categories of degenerative medical conditions. These pre-clinical trial results were also in preparation for the eventual stage of conducting clinical trials to enable the much sought after official registration of these medicinal entities by the Medicines Control Council that would be obtained after the scientific validation process and the screening for toxicity, efficacy, safety and cross-reactivity.

The significance of the observed reversal of the morbidity state and an increase in the CD<sub>4</sub> count displayed by patients on the HIV/AIDS management treatment stimulated discussions centering around the feasibility of mainstream commercialization of this intellectual property aimed at initiating the establishment of a herbal medicine industry based on the manufacturing of natural medicinal plant products and nutrient supplements for local and export markets. Furthermore, an additional motivating factor that reinforced the rationale for developing the concept as outlined earlier were market trends of the medicinal plants industry that had been showing a remarkably high year-on-year growth of the global market in both unit volumes and monetary value terms; from US\$ 500 million to US\$ 60 billion over a 24-year period from 1980 to 2004, an impressive growth by any standards, at 11900 % over this period, translating to an average growth of 496 % year-on-year (Srivastava et al., 1996; WHO, 2006). In 2004 the South African National Department of Health published the “National Antiretroviral Treatment Guidelines” which stipulated that one of the medical criteria for putting patients on Antiretroviral Treatment (ART) should be a CD<sub>4</sub> count of less than 200. The argument put forward in this study pertains to the interventions made in the period between the infection stage and the fourth and final stage at which the CD<sub>4</sub> count of infected individuals has sharply decreased to a level below the 200 mark. The argument posed a further question around patient compliance and the sustainability of ARV treatment without the inclusion of a comprehensive diet regimen as an essential component of the treatment; hence, the conclusion reached after deliberations was to the extent that in the medium to long-term, the treatment costs would be non-sustainable to both the public health care system subsidized by the state and the majority of infected people in South Africa who are mostly indigent and live in a state of extreme poverty and underdevelopment. Under the circumstances, this study proposed a masterplan for a sustainable intervention strategy that sought to address these shortcomings in the state ARV rollout programme. From these deliberations, the issue for the study was, ‘how should the research programme be configured to achieve the set goals as outlined above, that is, in so far as medicinal plant management therapy was concerned?’ It should be noted that the role of medicinal

plant management in medical conditions and diseases was not exclusively aimed solely at just resolving issues exclusively around HIV/AIDS-associated indications but was designed to be an all-embracing and complete wellness programme with a holistic approach that also included psycho-social considerations as well as the socio-economic conditions of mostly, the rural poverty-stricken communities who were the most vulnerable group to the HIV/AIDS pandemic and other diseases and medical conditions in general as a function of poverty.

#### **4.7.7 Elements of the Model**

In defining the elements of the proposed strategy, a number of considerations had to be taken into account. The first consideration was the methodology of dealing with the issues around the establishment of Traditional Medicine as an acceptable and officially approved complementary medicine in the Primary Health Care System and as an alternative to Western Medicine in specific areas of medical care in view of its well established role as first-line treatment in the enhancement of the personal well-being and prominent positioning in the psychographics and cultural milieu of the majority of South Africans (Hutchings, 1989; Cocks, 1997; Cocks & Dold, 2000; Cocks & Moller, 2002). In the long-term, the official recognition and registration of medicinal plant products was an imperative to the success of the commercialization process required for these natural medicinal derivatives in order to make any significant contribution towards the improvement of livelihoods and the economy of the rural communities of the Eastern Cape Province and also, most importantly, to avoid opportunistic tendencies and spurious claims made by some individuals in the area of Traditional Medicinal practice on what some of the medicinal plant preparations could achieve in terms of efficacy in disease management. The point here was to protect the general public from unconfirmed claims of efficacy and non-toxicity thus endangering the lives of millions of people through unscrupulous practices. In a nutshell, therefore, the state had a duty to regulate the practice and introduction of entities in Traditional Medicine in the same manner that it was doing in Western Medical practice. A major challenge to this aspect identified during the course of this study and stated earlier on was the widespread ignorance in and lack of recognition of Traditional Medicine by the overwhelming majority of Western-trained health care professionals and medical experts in South Africa. This was a cause for concern since the mindset in the Healthcare Industry in South Africa is largely informed by an understanding that the, mostly Western-trained Medical and Healthcare fraternity who happen to be the officially and internationally recognized 'gatekeepers' to drugs and medicinal entities prescribed in the National Health Care System implying that these professionals are in control of the approval processes

of medicines used; hence, as long as the non-recognition of Traditional Medicine remained, the proposed strategy would not have the desired outcomes as per the strategic objectives set out for this study. The second challenge was a general lack of documented scientific and clinical evidence on the part of medicinal plant products validating the triplet attributes of safety, efficacy and non-toxicity in humans that constitute the cornerstone of ethics in the regulation of medicines since, in most cases, no clinical trials to verify these attributes had been reported in literature. The reliance and faith that most African people of indigenous extraction placed on Traditional Medicine was based on ‘experiential evidence’ or what Hutchings (1989) terms ‘heritage of experience’ through oral transmission of knowledge on Traditional Medicine from generation to generation while the other dimension to the high dependence of the African population on Traditional Medicine could be partly attributed to traditional beliefs and the poor service of the Western-oriented National Health Care System in the rural areas (Liengme, 1983; Hutchings, 1989; Cocks & Dold, 2000; Van Wyk, 2002; Light et al., 2005; McGaw et al., 2005; Kiringe, 2006).

The basic premise of departure in the concept development stage of this study was to the effect that if Traditional Medicine was to acquire official approval for standard usage in the South African National Health Care System and recognition by the Western-trained medical and scientific community as being equally effective as Western medicine in certain categories of medical conditions and ailments, it had to undergo the standard rigorous validation processes that Western allopathic medicines are subjected to as a prerequisite to official registration and approval by the Medicines Control Council, the South African drugs and medicines regulating authority. In discussion sessions held with traditional healers, it was established that most of them had serious reservations and were skeptical about the validation process and its intentions since they were of the opinion that Traditional Medicine had, in most cases, been used for centuries and thus had a proven track record and required no validation. Other concerns on the part of traditional practitioners were around the question of intellectual property rights and patents. Most harboured fears to the extent that the knowledge would be appropriated by unscrupulous Western-trained experts whose primary objective was to enrich themselves at the expense of the owners of the intellectual property. Some of the practitioners expressed fears based on the cultural aspects of the acquisition of the knowledge which, they claimed, was bestowed on them by spiritual ancestors; hence their healing powers would be taken away from them should they divulge it to other parties (informal discussion with a traditional healer). Some researchers of Traditional Medicine in Africa noted the ironical situation that Traditional Medicine, which had been shunned, stigmatized,

disregarded and its use in the past discouraged because of its primitiveness and other illegitimate superstitious beliefs and practices by the Western and international institutions, was now being actively promoted by the same institutions as a dominant player in the Primary Health Care Systems in developing countries (Tsey, 1997; WHO, 2002; Kiringe, 2006).

In the planning phase of the research programme, a thematic approach towards the realization of the strategic objectives aimed at the commercialization process of medicinal plant products was adopted to achieve focus and avoid the dilution of the various elements of the strategy and also to make it easier to follow up on issues as well as the identification of problems that became obstacles to the progress of the research programme. The thematic approach highlighted two areas that required attention and these were:

- ❖ Introducing the concept to the relevant authorities.
- ❖ Health campaigns in targeted communities.

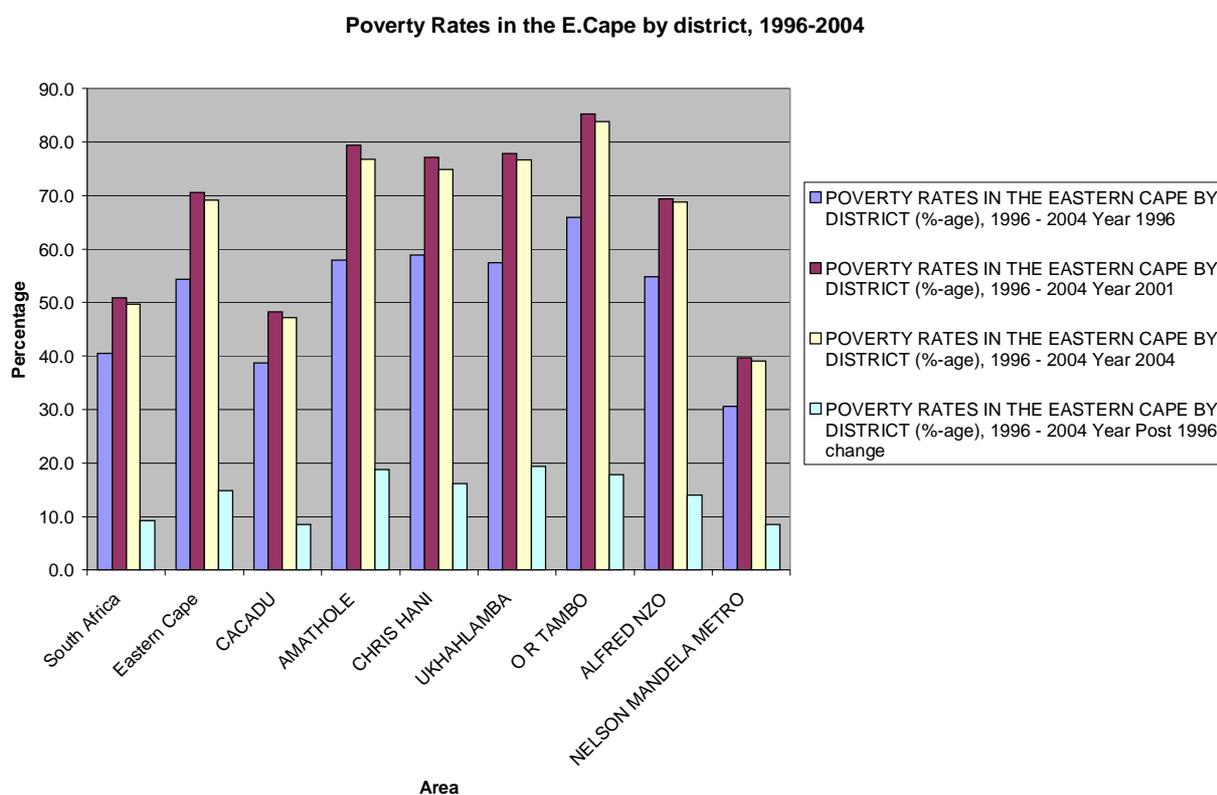
Having mapped out the Critical Path Analysis of the study according to the themes outlined above, the stage was set to initiate the research programme. It must be stated that the execution of the themes was an integrated process that did not necessarily follow any particular sequential order.

#### **4.7.8 Presentation of the Concept to the Relevant Authorities**

As discussed in the fore-going sections, the strategic design of the study and the social determinants of poverty and underdevelopment that it sought to address required a multi-disciplinary approach. At one level, the strategic objectives of the research were aimed at the socio-economic transformation of rural communities through the design of the appropriate rural development strategies in an endeavour to achieve this goal; hence, the methodologies to this end were more inclined to be premised on socio-economic theories and praxis. At another level, the selected platform to launch and conduct the research study was to be located in the domain of health, wellness and nutrition with respect to rural livelihoods. The challenge at this stage would be the acceptance of the validity of the pre-clinical trial results and observations collated from the clinical reports of the patients most of whom were under the management treatment of medicinal plant products as described in the previous section. The issue was whether the research study programme was more of a health issue than that of an economic persuasion or a combination of both. Under the circumstances, the concept was presented to the relevant university authorities to acquire institutional support for the programme before engaging external potential stakeholders. The major objective for engaging the officialdom of the institution and state departments

had to do with issues of funding for the research programme as well as assistance and support for protocol designs of future clinical trials and the allocation of health centres as sites for the execution of such trials at a later stage since the subject of clinical trials was not within the scope of this research study. The scope of the study went as far as the development of strategies as a prelude to the undertaking of clinical trials. Much earlier on, a strategic collaborative effort had been initiated with the then University of Transkei (it has since been renamed Walter Sisulu University following a merger between Border Technicon, Eastern Cape Technicon and the University of Transkei) for the purpose of the future utilization of the expertise in the area of health located in its Faculty of Health Sciences and the facilities of the surrounding healthcare centres. The ultimate objective of the strategic alliance between the two institutions was to, at a later stage, establish a Section 21 (non-profit making) autonomous public health research facility that gave recognition to Indigenous Knowledge Systems practices that would be accountable to a Board of Trustees appointed by the two institutions and the Eastern Cape Provincial departments of Health and Economic Affairs, Environment and Tourism and Agriculture. Following several briefing sessions with the Vice-Chancellors of the two universities, a Memorandum of Understanding (MOU) for future collaboration was signed by the two heads. In further discussions with the University of Fort Hare, recommendations were issued to register a trading entity with a mandate to pursue the commercialization process for the manufacturing of the indigenous medicinal plant products and nutrient supplements and to form partnerships with potential stakeholders in the private sector who were willing to invest in the enterprise. A commercial trading entity was duly registered through a reputable consulting and accounting firm with the members of the research group as well as a representative of the University Foundation as its directors and shareholders. To achieve the stage of the signing of the MOU by the heads of the two institutions was not without its challenges. To grant approval for a novel research programme of this nature in view of a lack of recognizable publications validating the authenticity of efficacy and safety of medicinal plant products was not going to be an easy decision to take on the part of the institutions. A concern always existed throughout the period of the study that any scientific claims made about the healing properties of medicinal plant entities from the research that could, at a later stage, prove to have no scientific basis would have serious repercussions for the integrity of any future research from the institutions and their reputation. In the event, therefore, it took longer than expected to acquire a signed MOU and approval for collaboration in this research. Shortly, after the signing of the MOU, the University of Transkei was incorporated in a merger as reported above; hence the agreement became null and void thus necessitating the negotiations to be started all over again with the emergent Walter Sisulu University.

Having secured the institutional support for the research programme from the university authorities, the next step was to approach the state departments to solicit material assistance and partnerships in view of what was perceived to be a critical intervention programme considering the grim situation of high levels of poverty and unemployment that had been consistently escalating, year-on-year, in all the rural communities of the Province as illustrated in **Figure 8**. Overall, from 1996, just two years after the first democratic elections in South Africa, to 2004, poverty had taken a turn for the worse in all the districts of the Eastern Cape showing a dramatic increase of almost 15%, especially within rural communities with the areas of the former homeland of Transkei being the worse off (Eastern Cape Budget Statement 1: 2007/2008).



**FIGURE 8: Poverty Rates in the Eastern Cape by district, 1996-2004 (Stats SA, 2004)**

From an assessment of the nature and design of the programme, the Eastern Cape Department of Health was selected as the most appropriate department to approach since the discourse of the study was premised on issues pertaining to health, wellness and nutrition. In the first of a series of

engagements with the Provincial Department of Health, the research group delegation presented the concept and the preliminary clinical findings obtained from the management of ‘patients’ presenting with HIV/AIDS-associated indications to the Member of the Executive Council and political head of the Department who demonstrated a high level of enthusiasm and interest towards the results presented and a preparedness to follow up on the engagement through arranging meetings between the research delegation and the senior management of the Department to take the process forward. Subsequent meetings with the senior management of the Department of Health soon highlighted the enormous challenges confronting practitioners and researchers in the fields of Traditional Medicine and Ethnopharmacology when dealing with a South African technocratic class with inclinations towards Western paradigms and outlook in the sphere of health and wellness; a product of Western-oriented knowledge-based institutions that produce layers of intractable technocrats with serious shortcomings and knowledge gaps in the domain of African Indigenous Knowledge Systems and its praxis by the overwhelming majority of black South Africans. From the comments and questions in all the discussion sessions held with these senior managers, most of which were perceived, by the research group delegation, to be shrouded in thinly-veiled hostility, these professionals seemed, in the opinion of the delegation, to have a predilection to view Traditional Medicine with deep suspicion and prejudice as well as holding it in contempt. In debriefing sessions held afterwards, the interpretation and conclusion reached by the research group delegation on the seemingly hostile reception of the ideas presented was to the effect that the senior management of the Department of Health seemed to demonstrate, in terms of professional outlook and response, a set of attitudes that could have been inherited in their most basic form and whose origins could be traced back to the metaphorical rubric of the dominant colonial and apartheid paradigms of yesteryear as alluded to earlier on, in discussions on the marginalization of Indigenous Medicine by the former colonial, and later on, by the apartheid apparatchiks. This seems to be a common phenomenon and psyche in the emergent African professional and technocratic classes as portrayed in the writings of several African academics on the psychological impact of colonization and protracted dominance of the West in post-colonial African societies, serving to highlight the mammoth task of transformation that African academia has to go through before it can make a paradigm shift to one that will reflect the needs and aspirations of the overwhelmingly rural poor of the African continent (Ngugi wa Thiong’o, 1981; Fanon, 1986; Freire, 1970; Memmi, 2003). The situation discussed above was viewed with great concern since the sustainable implementation of any social intervention strategies meant to eradicate poverty and transform rural livelihoods through the broadening of the capacity of the economy to generate

sustainable employment and entrepreneurial opportunities depended on a buy-in and involvement by state agencies and departments largely managed by these professionals. The anticipated response from a group of officials who regarded themselves as intellectuals was that of enquiring minds, full of comments on how to move forward with a research project that posed such challenges and how their organization could assist in the elucidation of these seemingly unanswerable questions. Although the discourse in this paragraph could be misconstrued as a diaethnic group, the intention was to raise the level of awareness on the most intractable challenge to transformation towards a new African paradigm with promises for the future of the African Continent; hence, it has to be managed in the process of introducing a new direction in the thought processes at the academic level. Given the observed situation discussed above and after a series of meetings, it was not entirely unexpected that the engagements with the Department of Health would not achieve the desired outcomes; instead, the delegation was required to back up the proposed concept with scientifically proven studies within a South African context by a group of officials who were supposedly in charge of medical research to unravel the devastating impact of poverty and underdevelopment on health in poor rural communities. The senior management of the Health Department was not prepared to accept documentary evidence of research studies that had been conducted elsewhere other than South Africa, nor would they be drawn into discussions about collaboration with the universities in carrying out any type of research that had anything to do with Traditional Medicine. They were specific about which laboratories and institutions they recognized as being credible. They demanded documentation of clinical trial results of South African origin where the efficacy, safety and non-toxicity of the entities presented had been established. The documentation of the challenges encountered in the course of this research was found to be a necessity if only to caution future undertakings of a similar nature to be better prepared such that contingency measures can be put in place for such eventualities. The negative attitude of the state officials towards Traditional Medicine added another dimension to an already complex nature of the unfolding research on the applications of Indigenous Knowledge Systems in the field of health and had the potential of fundamentally undermining the strategic objectives of the research programme; hence, it had to be factored into the planning and execution of the study as discussed in the last chapter of this thesis on constraints and recommendations.

The next organization to be approached was the South African Medical Research Council (MRC), a state agency that falls under the jurisdiction of the South African National Department of Health that is delegated with a mandate to conduct innovative research in medicine and biotechnology to improve the

general status of health of the South African population as well as keeping abreast with international developments in medical research. In its transformation agenda in the post-1994 period, the MRC established a new research unit that was tasked with the responsibility of initiating and encouraging research and development on Indigenous Medicine. In the process of establishing a collaborative effort with the MRC, the organization was found to have developed ethics and research protocols for conducting clinical trials on Traditional Medicine and also had a mandate to support individual, group and institutional initiatives on research and development of Traditional Medicine through conducting clinical trials and scientific validation tests on efficacy, safety and toxicity of such entities. The MRC had developed comprehensive guidelines on the beneficiation process for the owners of the intellectual property should these entities be ultimately launched into markets. In discussions with the President of the organization, agreements and resolutions on collaboration were taken to the effect that, in time, the author would prepare and submit the relevant information on the medicinal products developed to the MRC for trials and validation tests. While the negotiations with the MRC were in progress, a new Vice-Chancellor for the fledgling Walter Sisulu University had been appointed; hence, discussions with the management of the newly formed university commenced. Meanwhile, the management was in the process of formulating a comprehensive strategic direction for the new institution, and in the words of the new Vice-Chancellor, to give it a strong content on rural development. To highlight the prioritization of rural development in the strategic intent of the new institution, the Centre for Rural Development (CRD), inherited from the former University of Transkei, was being expanded with resources to assume a leading role in the orchestration of the future strategic development of the new institution. The institutional arrangements between the Fort Hare-based research group of the author and the new Walter Sisulu University CRD were to be structured in such a manner that they would be able to collaborate on areas of mutual interest while maintaining their autonomy. The joint team of the two units would thus have the flexibility and advantage of utilizing the full spectrum of expertise from the various disciplines of the Walter Sisulu University departments.

#### **4.7.9 Health Campaign in Targeted Rural Communities**

Campaigns on rural development and anti-HIV/AIDS/Wellness in the community of Maya, a sprawling village that constitutes settlements in and around the Qamata Irrigation Scheme in the Intsika Yethu Local Municipality, which is one of the eight local municipalities of the Chris Hani District Municipality, had started three years earlier induced by concerns around, specifically, observable social indicators of poverty such as starvation, destitution, a high death rate of young people from HIV/AIDS-

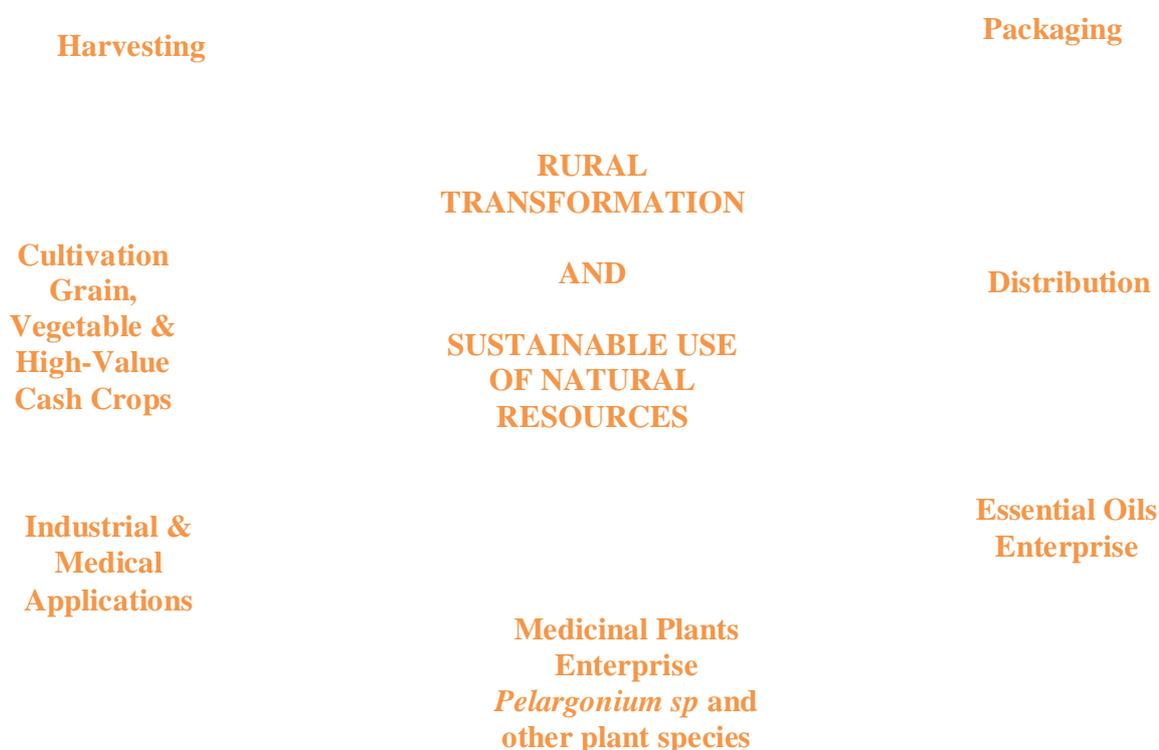
related illnesses, increasing incidents of petty crime and teenage pregnancies of school-going females in communities that were formerly regarded as crime incident-free zones. The reasons for selecting this area to initiate a health food production campaign was due to the existing relationship between members of the author's research group and the community; a high unemployment rate, especially among the youth, as well as the existing irrigation infrastructure. The first initiative was the cultivation of maize in 35 hectares of the land belonging to the community farmers utilizing funds solicited from the brewing company, South African Breweries (PTY) LTD. The farmers provided labour for cultivation, weed control and security to safeguard the investment. The author's research group brought technical expertise for commercial agricultural cultivation to the sourcing of grain markets for the harvest. The maize initiative, which was a success in terms of testing the possible levels of cooperation between the community and the author, became one of the inspirational factors that held prospects for future engagements with the Maya community and others in the shaping of the ideas that resulted in the development of the concept proposal for this study. Following the Maya community engagement, preparations were initiated to launch a campaign to formalize relationships with various rural communities as the first phase in a series of activities to introduce, primarily, an anti-HIV/AIDS/Wellness campaign and to form long-term partnerships between the author's research group and community farmers as a way of establishing agricultural enterprises through capacity enhancement of the community members involved, building on their indigenous farming knowledge for the commercial production of food and vegetable crops for identified markets, as a premise of departure. The commercial farming initiative is discussed in Chapter 5. The section below discusses the proposed integration of Traditional Medicine into the national Primary Health Care System.

#### ***4.8 INTEGRATION OF CASE STUDIES IN THE COMMERCIALIZATION MODEL***

The feasibility of the commercialization model proposed in this chapter was tested through designing and implementing rural development programmes in the form of case studies starting from Section 4.9 below where an integrated approach to Primary Health Care and HIV/AIDS and Disease Management are discussed. Other case studies are reported in Chapters 5 – 8. The case studies were standalone and, therefore, independent from one another, although all revolved around the strategic objectives as formulated in Section 4.3. At the centre of the feasibility programme were the core objectives of rural transformation and sustainable development. Radiating from this core were case study programmes in support of the transformation process and sustainable rural development. The themes of the case study programmes were: **Case Study 1:** Transformation of the Primary Health Care System through an

integration of Indigenous Knowledge Systems in the form of Traditional Medicine and Allopathic Medicine (**Health & Wellness**); **Case Study 2:** Agricultural Commercialization in Food Production using economies of scale (**Nutrition & Agricultural Enterprise Development**); **Case Study 3:** Agricultural Enterprise Development in Grain Crop Production of Sorghum and Wheat (**Nutrition & Indigenous Crop Production**); **Case Study 4:** Medicinal Plants Commercialization: Pelargonium Case Study (**Medicinal Enterprise Development for Industrial Consumption & Biodiversity Conservation**); **Case Study 5:** Rural Development: Commercialization of Essential Oils (**Rural Enterprise Development through High-Value Cash Crop Production for Industrial Consumption**). Figure 9 below maps out the integrated process model envisaged in support of the core objectives of rural transformation and sustainable development that form the foundation of case studies.

**Food & High-Value Cash Crops  
(Medicinal Plants & Other Non-Food  
Crops)  
Biotechnological Processing Plants**



**FIGURE 9: Envisioned Scenario of the Supply Chain in the Production and Processing of Natural Products for Rural Transformation and Sustainable Development**

## **4.9 INTEGRATION OF TRADITIONAL MEDICINE INTO THE NATIONAL PRIMARY HEALTH CARE SYSTEM**

### **4.9.1 Introduction**

The establishment of a comprehensive National Health care System in South Africa to service the health care needs of all South Africans without discrimination has been one of the highest priorities on the political agenda of the new government since it came into power in 1994 (Department of Health, 1994). As was the case for all public service facilities in South Africa prior to 1994, the public health care system for the majority of black South Africans was either poor or non-existent, especially for those living in the rural areas. In 1996, the national Ministry of Health published a White Paper signaling the beginning of a radical transformation of the National Health System that was aimed at the complete overhaul of the health services in the country (Department of Health, 1996). In the restructuring of the health sector, the White Paper listed four major objectives to be achieved over a ten year- period, viz.:

- ❖ To unify the fragmented health services at all levels into a comprehensive and integrated National Health System (NHS);
- ❖ to reduce disparities and inequities in health service delivery and increase access to improved and integrated services, based on primary health care principles-;
- ❖ to give priority to maternal, child and women's health (MCWH); and
- ❖ To mobilize all partners, including the private sector, NGOs and communities in support of an integrated NHS.

Most pertinent to this study was the first objective above that stipulated the unification of the fragmented health services into a comprehensive NHS, thus for the first time, including Traditional Medicine into the integration process as one of the officially recognized health practices in South Africa. The official acceptance of Traditional Medicine was taken a step further through the promulgation of the Traditional Health Practitioners Act of 2004 (Government Gazette, 2005) whose aims were:

- ❖ To establish the Interim Traditional Health Practitioners Council of South Africa;
- ❖ To provide for a regulatory framework to ensure the efficacy, safety and quality of traditional health care services;

- ❖ To provide for the management and control over the registration, training and conduct of practitioners, students and specified categories in the traditional health practitioners profession;
- ❖ To provide for matters connected therewith;

#### **4.9.2 Complete Wellness Approach**

The outbreak and rapid spread of the HIV/AIDS pandemic in South Africa over the last 26 years factored in yet another coefficient to the health care equation resulting in a more complex dynamic that exerted a serious strain on the already severely resource challenged status of the National Health Care System. This situation has evolved against the backdrop of rampant poverty and widespread chronic food insecurity as well as persistent threats of famine with profound consequences for the rural population of the country (Devereux & Maxwell, 2001). As the incumbent order endeavours towards the building of a new South African National Health Care System, one of its priorities has been to provide increased access to health care services to all South Africans, including those living in rural areas. As part of a major thrust of this study towards the development of sustainable rural development strategies, a long-term strategic framework for the introduction and integration of Traditional Medicine into the Primary Health Care System was designed in the process of engaging the targeted rural areas. This section and those below present a description and terms of reference of the proposed **‘Complete Wellness Centres and Continuum of Care Approach’** from the collaboration efforts of the author of this thesis and a clinician who is in private practice. The collaborative work was developed, mainly, from a strategic intervention in the management of HIV/AIDS and other degenerative medical conditions. The concept introduced a holistic approach to health care with the ultimate intention of establishing the concept of what was termed **‘The Complete Wellness Centres’** that sought to integrate the full spectrum of healthcare and wellness services. According to the ‘Complete Wellness Centre’ approach, the execution plan of a comprehensive treatment, care and support for HIV and AIDS patients in South Africa had to be viewed and understood as a dynamic process. In perspective, it had to be viewed as a long-term strategic and over-arching framework that sought to provide guidance for the successful implementation of a holistic health care approach that is all-inclusive and well coordinated to support the realization of a shared vision and strategic thrust to all programmes aimed at HIV and AIDS prevention, treatment, care and support in all the social strata of South African communities. One of the Critical Success Factors (CSF) of the plan was the harmonization of all the components through their integration into any HIV/AIDS programmes along the continuum of a new

Health Care Framework. According to the **Complete Wellness Centre Approach**, a philosophy and commitment to Preventative Care was the most cost effective approach to the delivery of health care services. The battle against disease, its cost and debilitating effect, is never won on the treatment side of care, but rather on the prevention side. It was, therefore, imperative that the prevention of HIV and AIDS should be regarded as a thread that interconnects all aspects of treatment, care and support service as illustrated in **Figure 10** below. The author wishes to acknowledge the tireless efforts of Dr. Lungisa Nojoko in the development of the Complete Wellness Centre Model discussed in this section.

#### **4.9.3 Primary, Secondary and Tertiary Prevention**

Prevention strategies are the cornerstone of the Disease and HIV/AIDS Management Plan and entail social mobilization and health promotion. It was important to note that this component should cover both the HIV-negative and HIV-positive populations. At the primary end of the prevention programme component is the HIV-negative segment, which had be targeted with interventions to maintain the HIV-negative(ABC) status while at the intermediate end is the HIV-positive component, at stages WHO (World Health Organization) I,WHO II, and maybe III, before the transition to the fully blown AIDS status that should be targeted with similar programmes whose scope should be extended to include lifestyles, behaviour modification, nutritional support and administration of scientifically validated Traditional and Complementary Medicines to support compromised immune systems, delay disease progression and allow adequate preparation of individuals, communities, and institutions in all sectors towards a harmonised approach for effective management of ART in the event of progression to WHO IV stage or CD4 counts of either less than 200 or between 250-350 in special circumstances. At the extreme end was the prevention of the onset of Opportunistic Infections (OIs) including cancers like Kaposi Sarcoma (KS) through sustained implementation of effective ARV treatment programmes. Knowing ones status through Voluntary Counselling and Testing (VCT), awareness and education about the cause and socio-economic effects of the pandemic, the modes of transmission and the spread of infection to others was the key to the sub-programmes in primary prevention. If, as stated by WHO and other researchers, that more than 80% of the population in underdeveloped countries consults traditional healers and uses complementary and alternative medicines (Liengme, 1983; Hutchings, 1989; Cocks & Dold, 2000; Van Wyk, 2002; Light et al., 2005; McGaw et al., 2005; Kiringe, 2006), then all the role players at the primary point of contact with the patients had to be mobilised and informed about the vision of the Comprehensive Operational HIV and AIDS Management Plan to create a shared commitment, collaboration and tight coordination of efforts and all the activities that

are streamlined and unified to strengthen the Primary Health Care Systems(PHC) towards the realization of a common vision for all. The comprehensive model developed is as shown in **Figure 10**.

#### **4.9.4 Traditional and Complementary Medicine Development: *Issues and Challenges***

The future development of Traditional Medicine in contemporary South Africa poses a number of challenges, a situation that is a direct legacy of marginalization and erosion of Indigenous Knowledge Systems over the centuries by the intrusion of external forces. As stated in the previous section, in the post-1994 period, the newly elected government embarked on a transformation process of the National Health System that, among other things, sought to integrate Traditional Medicine into the Primary Health Care Programme thus signalling a new era in the discipline of medical practice in South Africa (Department of Health, 1996; Government Gazette, 2005). However, it soon became apparent that practical applications of the transformation process towards the realization of this goal would not be that simple. Challenges in the development of Traditional Medicine revolved around issues of policy and requirements for official registration of medicinal products and approval for prescription as listed below:

<b>COMPONENTS OF THE COMPREHENSIVE HIV &amp; AIDS MANAGEMENT PLAN</b>				
			<b>PALLIATIVE CARE</b>	
			<b>HOME BASED CARE</b>	
			<b>ANTIRETROVIRALS</b>	
	<b>PMTCT</b>		<b>TRADITIONAL MEDICINE &amp; NUTRITION</b>	
	<b>PEP</b>		<b>OIs AND RELATED SERVICES</b> Diagnosis, treatment, and preventive therapies	
	<b>PSYCHOSOCIAL &amp; Individual</b>	<b>&amp; SPIRITUAL SUPPORT &amp; Family Care providers, bereavement. Orphans</b>		
	<b>VCT</b>			
<b>STI-MANAGEMENT</b>	<i>Behaviour/lifestyle</i>	<b>PREVENTION</b> Change Communication, Education	Universal	<b>Precautions</b>
<b>HEALTHY</b>	<b>EXPOSED</b>	<b>PEOPLE LIVING WITH HIV/AIDS</b>		<b>TERMINAL</b>

**FIGURE 10: Components of a Comprehensive HIV & AIDS Management Plan**

- ❖ Lack of a policy defining the role of Traditional Medicine and Complementary Medicine in Primary Health Care (PHC);
- ❖ Lack of the necessary legal and regulatory mechanism for promoting good practice and assurance of authenticity of Traditional and Complementary Medicine;
- ❖ Unauthenticated safety, efficacy and quality of Traditional Medicine;
- ❖ Questionable sustainability, access and rational use of Traditional Medicine;

To address these challenges, a process flow for the production, validation and registration of Traditional Medicine was developed as shown in **Figures 11 and 12**.

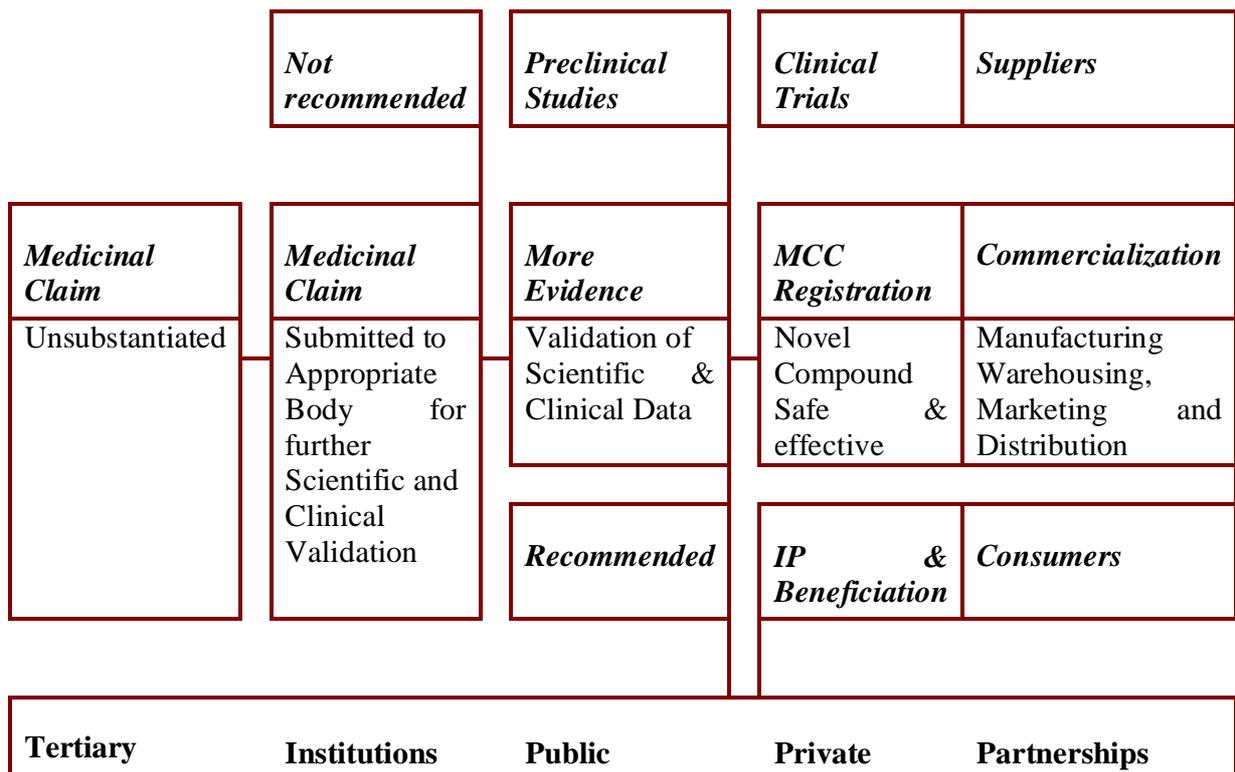
#### **4.9.5 Development of the Complete Wellness Concept**

The ‘Complete Wellness Centre’ concept was developed in collaboration with Pro-Health, a health care service provider that is based in Port Elizabeth with branches in all the major urban centres of the country. Established in the 1990’s, Pro-Health is a fully Integrated Clinical Research, Scientific Technology, Health & Economic Development Company as shown in the diagram in **Figure 13**. The uniqueness of the Complete Wellness Concept lies in the fact that it still remains the only initiative of its kind in South Africa that has incorporated the dimension of economic development in its approach to wellness management of its patient population through partnerships with rural business development entities. This business configuration is aligned to the Pro-Health philosophy of a holistic approach to wellness described above and is based on the sustainable economic development of poor communities in South Africa as a premise of departure that is key to the improvement of health and wellness of the South African patient population, especially those living with AIDS.

PRODUCT DEVELOPMENT FRAMEWORK						
PRODUCT	Preclinical Studies					
	Safety	Efficacy	Signal Transduction	Finger Printing	Intellectual Property & Beneficiation	Medicines Control Council
	In vitro studies In vivo studies	Bioassays	Antiviral Antifungal Cardio protect			Registration
	Clinical Studies/Trials					
	WHO	Good Practice	Clinical			
PRODUCTION	*GMP	**GAP	GMP	R & D		
	Preproduction	Raw Materials	Manufacturing/ Production	Marketing and Distribution	Post Market Surveillance	
	Formulation Packaging Branding Stability/Shelf	Herbaria Nurseries Farms Cultivation Propagation	Contract Manf. Setting up GMP Plant/Factory		Pharmaco- Vigilance	

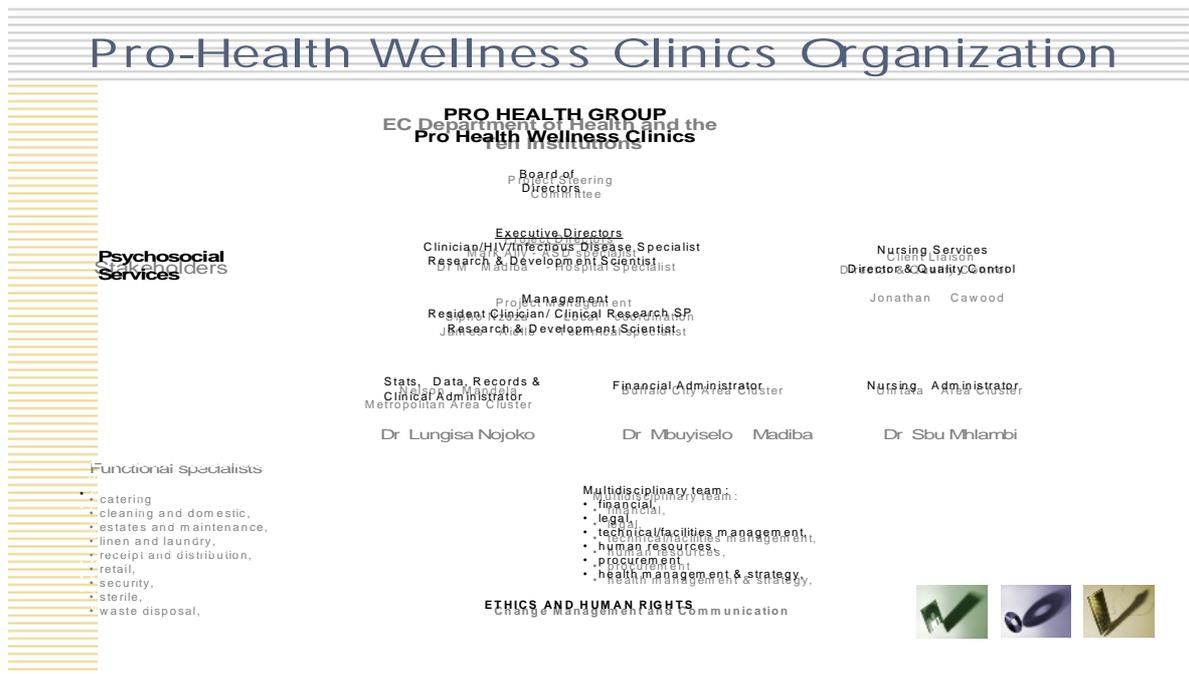
**FIGURE 11: Recommended Process Flow in the Production of Traditional Medicine**

\*GMP= Good Manufacturing Practice; \*\*GAP=Good Agricultural Practice



**FIGURE 12: Process Flow: Commercialization and Endorsement of Traditional Medicine**

The Wellness Model and its derivatives depicted in **Figures 10, 11 and 12** were developed in support of the integrated holistic approach and the complementary utilization of Allopathic and Traditional Medicine as well as the disease and the HIV/AIDS management plan as described in the section below. The author worked with Pro-Health in the implementation of pre-clinical trials through conducting clinical investigations on patients put on the Traditional Medicine treatment regime while also complementing the treatment with Allopathic Medicine as well as monitoring the progress and compiling the clinical history of patients on both types of Medicine.



**FIGURE 13: Pro-Health Wellness Clinics Organization (Nojoko, 2006)**

#### 4.9.6 Traditional Medicine Product Administration and Dosing Guidelines in HIV/AIDS Management Plan

Having developed a framework for the introduction and integration of Traditional Medicine into the Primary Health Care Programme as illustrated in **Figures 10** and **11**, the next step was the development of guidelines for the administration and dosing of Traditional Medicinal products in an HIV/AIDS management plan. The development of admission criteria for the management plan was a collaborative effort of the author with an expert clinician and a homeopath who authored the recommendations listed below:

- ❖ Diagnosed as being HIV-positive in a formally recognized VCT centre;
- ❖ Screened for Opportunistic Infection and clinically stabilized;
- ❖ Determination of HIV infection stage according to WHO guidelines;
- ❖ Registered in a Comprehensive Wellness Centre (Continuum of Health Care Clinic);
- ❖ Clinical admission criteria are:
  - ❖ Adults (above 13 years of age);
  - ❖ WHO stage I, II and III with a CD4 count of above 350;
- ❖ In good health status with baseline bloods, cured or at least stabilized for opportunistic infections

- ❖ Patients are informed and understand the implications of Traditional / Complementary Medicine therapy
- ❖ Confidentiality of HIV status is shared with the caregiver
- ❖ Good adherence and access to Pharmacovigilance System for Monitoring and Evaluation on efficacy, safety and ongoing follow up;

#### **4.9.7 The Social Dimension of Health Care Management in Rural Communities**

The practical implications of executing the proposed health care management strategies described in the last two sections above and the integration of Traditional Medicine into the Primary Health Care programme at the time of engagement with the targeted rural communities was not without its challenges and complexities. At the time of engaging the communities for the purpose of conducting this study, the prevailing socio-economic conditions of extreme poverty (refer to **Figure 8** above) and the poor status of the health care infrastructure in these rural communities presented complex challenges with respect to the initiation of the proposed health care management strategies. More essentially, the initiation of the disease management in the communities marked the first phase of the feasibility study following the development of the concept model for rural development proposing the use of natural resources, health and nutrition as vehicles for the implementation of the strategies on a platform of commercial agriculture. Fundamentally, the strategic goal of this initiative was to address the social dimensions of poverty and degenerative disease management through the development of a sustainable local economy; hence, the proposed strategy had two distinct components, viz., degenerative disease management using an integrated model as described in the sections above; and the establishment of sustainable agricultural enterprises through public-private partnerships with the communities. The next section below gives an account of the initiation of the study in the selected rural communities with specific reference to interventions in HIV/AIDS and disease management. The second phase, discussed in the next chapter, is the establishment of agricultural enterprises towards the development of sustainable rural communities.

#### **4.9.8 The Disease Management Plan**

The Disease Management Plan was a response to the health crisis prevailing in all the rural communities targeted due to the spread of the HIV/AIDS pandemic and other diseases such as Tuberculosis against the background of poor or almost non-existent health facilities in the rural communities selected. In view of these conditions, a swift response was deemed necessary while the

proposed long-term strategies were still at the planning phase. The Disease Management Plan had three components as listed below:

- ❖ Education of communities on the management of HIV/AIDS and other common degenerative diseases;
- ❖ The role and type of nutrition as a preventative measure in health care and the use thereof to delay the onset of opportunistic infections in HIV-positive people;
- ❖ The complementary use of Traditional and Allopathic Medicine in cases of disease management;

The educational sessions held within communities primarily targeted secondary and high school students who had been established to be the most vulnerable group to HIV infection in communities (ECSECC, 2001). Sessions were also held in community health centres where a group of patients presenting with HIV/AIDS-related illnesses could be found at any one time. Traditional Medicine was introduced to these groups, particularly to those HIV-positive individuals who were at WHO stages I, II and III. The programme objective design was as mapped below:

- ❖ The aim of the plan was to target individuals presenting, primarily, with medical conditions associated with compromised immune systems resulting in susceptibility to opportunistic diseases and infections. People presenting with other degenerative ailments were not necessarily excluded from the programme
- ❖ From medical reports and health population surveys conducted, the majority of People Living with AIDS (PLWA) registered a CD<sub>4</sub> count of more than 200 (Stats SA, 2001; Department of Health Antenatal Survey, 2002). The target groups identified for ART rollout by the Department of Health are those who registered a CD<sub>4</sub> count of below 200. This, therefore, meant that most of the PLWA were not under any health management programme. This programme was designed, in the main, for this latter group, the rationale being the delay of the progression of the HIV infection status to the fully-blown AIDS stage (WHO stage IV) marked by the onset of morbidity as a result of opportunistic infections;
- ❖ The concept of the disease management was underscored by the centrality of nutrition and the use of natural immune boosters in the total universe of PLWA, especially in rural communities;
- ❖ The ultimate objective of the programme was to cultivate an ethos of self-reliance in community members rather than expectations of wholesale external intervention which, in most cases, would not be forthcoming.

- ❖ The strategic intervention was intended to create a heightened awareness on health and wellness issues as well as initiating viable agricultural food production for both sustenance and commercial enterprises in the long-term;
- ❖ The programme endeavours would be to build long-term (minimum of 10 years) strategic partnerships between communities and relevant stakeholders such as state departments, municipalities, public entities, traditional leadership, community stakeholders' organizations, research institutes/institutions of higher learning, and private sector organizations on the forum created to ensure sustainability long after the programme has moved on;
- ❖ The programme, reliant on the level of success, would solicit material assistance from the relevant institutions (departmental research units, universities, Medical Research Council, etc) to set up full-scale clinical trials and scientific validation to affirm the efficacy, safety, quality and shelf-life stability of the Traditional Medicine products before MCC registration and approvals. Nevertheless, clinical trials were beyond the scope of this study and would be motivated as a follow-up phase to this study.

#### **4.10 METHODOLOGY**

##### **4.10.1 Programme Background and Implementation**

A case for a full-scale intervention strategy to stem the spread of the HIV/AIDS pandemic in the Eastern Cape has been established (Department of Health, 2002; RSS, 2006). The last two decades of the Twentieth Century have seen an intensification of research in South Africa in the quest for management solutions to the HIV/AIDS pandemic (Department of Health, 2000; 2004; Dorrington et al., 2006). The major focus of the research on the epidemiology and management of HIV/AIDS in this study has been on nutrition in tandem with a treatment regimen prepared from natural medicinal plant species using biotechnological techniques and applications complemented by the Allopathic Anti-Retroviral Treatment (ART) from the government rollout programme. Nutrient natural plant derivative supplements constituted the core of the recommended diet for healthy HIV-positive people with the aim of maintaining strong immune systems thus delaying the onset of WHO stage IV and for those who were at an advanced HIV infection stage characterized by CD4 counts of less than 200 and characteristically presenting with opportunistic infections and medical conditions associated with depleted or compromised immune systems. HIV /AIDS patients in all the areas listed were placed on the Disease Management Plan as discussed in the sections above.

It must be stated upfront that the HIV/AIDS intervention management plan and outcomes were acknowledged as pre-clinical trial studies; hence the clinical observations and claims made still had to be tested empirically in trials with appropriately designed protocols. Be that as it may, the clinical findings made on patients on the management plan demonstrated a remarkable improvement in the quality of life, a gain in the body weight, a reversal of the morbidity state, curing of opportunistic infections and an increase in CD4 counts over a period of time. A critical component of the management plan was the training of care givers who were either family members or volunteers on home-based care and elementary principles of counseling for the victims of HIV/AIDS. The campaign to institute the disease management plan in these communities has been underscored by the encouragement of the communities to cultivate their own grain and vegetable crops. Calls for public-private-partnerships in the agricultural endeavours have been made to district municipalities and the targeted communities. The health campaign was conducted in the district municipalities of Amathole and Chris Hani that were sites to some of the most poverty-stricken communities in the Eastern Cape. For the purpose of piloting the health management programme, three sites were identified although through the demand for the programme from other communities who got to know about its implementation the pilot phase ended up being deployed in six sites. The determinants to the limitation and scope of implementation were both human and financial resources.

#### **4.10.2 Activities and Scope of the Research Programme**

The operational plan proposed formed the Pilot Phase of the programme. Although three areas were targeted at the concept stage, the pressure and demand from communities to participate was such that six localities were ultimately targeted. The areas are the following:

##### **1. Amathole District Municipality**

- ❖ Adelaide, Nxuba LM
- ❖ ILitha, Buffalo City LM

##### **2. Chris Hani District Municipality**

- ❖ All Saints, Engcobo LM
- ❖ eGoso, Engcobo LM
- ❖ Qamata, Ntsikayethu LM
- ❖ Vaalbank, Malahleni, LM

The programme activities were:

**Phase 1: Awareness & Education**

**Phase 2: Nutrition & Medication (Herbal Medicine)**

The demographic profiles and poverty statistics of the two districts (Stats SA, 2004) were as shown in **Table 10** below:

<i>DISTRICT MUNICIPALITY</i>	<i>POPULATION SIZE</i>	<i>PERSONS LIVING IN POVERTY</i>	<i>%AGE OF PERSONS LIVING IN POVERTY</i>	<i>HUMAN DEVELOPMENT INDEX</i>	<i>%AGE OF HOUSEHOLDS WITH INCOME OF LESS THAN R6 000.00</i>	<i>UNEMPLOYMENT RATE (%)</i>
<b>Amathole</b>	1 881 307	1 444 844	76.8	0.48	52.0	62.0
<b>Chris Hani</b>	911 890	683 006	74.9	0.48	62.0	58.0
<b>TOTAL/AVG.</b>	2 793 197	2 127 850	76.1	0.48	57.0	60.0

**TABLE 10: Poverty Statistics in Amathole & Chris Hani Districts (Stats SA, 2004)**

**1. Amathole District Municipality:**

a) **Adelaide** is in the Nxuba Local Municipality. The Nxuba Local Municipality has the least population in the Amathole DM at 1, 5%. The churches and the municipality were the coordinators. In Phase 1, the programme reach was 500 participants.

b) **ILitha** is in Ward 42 of Buffalo City Municipality. Other areas in the same Ward are: Berlin; Blaney; Hanover and Peulton. The community leaders, teachers, and community activists were the active coordinators. In Phase 1, the programme reach was 500 participants.

**2. Chris Hani District Municipality:**

a) **All Saints** is in Ward 11 in the Engcobo Local Municipality. Other villages in the same ward are: Gadini; Masonwabe; Mxesibe; Sidadeni; Nkole; Khalinyanga; Sixholosini; Newtown; Zola and 50% of the town, Engcobo. The Municipality and an HIV/AIDS non-governmental organization were the coordinators. In Phase 1, the programme reach was 700 participants.

b) **EGoso** is in Ward 4 in the Engcobo Local Municipality. Other villages in the same ward are: Deberha; Goso; Ngqaba; Ngxebe; Ngqayi; Mazizini; Gotyibeni; Ludala; Mageza. The Municipality and an HIV/AIDS non-governmental organization were the coordinators. In Phase 1, the programme reach was 800 participants.

c) **Qamata** is in Ward 4 in the Entsikayethu Local Municipality. The church and the local community leaders were the coordinators. In Phase 1, the programme reach was 500 participants.

d) **Lady Frere** is in Wards 8, 9 and 10 in the Emalahleni Local Municipality, consisting of the following clusters: Buffelsdoring; Jojo; Mateyise; Tsembeyi; Upper Vaalbank; Lower Vaalbank. The community-based co-operative, Khuthalani, was the major driver of the programme. In Phase 1, the number of participants on the programme was 1 500.

## **4.11 RESULTS AND DISCUSSION**

### **4.11.1 Phase 1: Awareness and Education**

The awareness and education sessions held elicited some interesting responses and questions about the HIV/AIDS Management Plan from participants in all the areas covered. In almost all the areas, the concerns were, invariably, about the poor status of the health centres, which were highly understaffed and in most cases, had no medication in their dispensaries. Patients who were supposed to be on ART were referred to the larger health centres such as Frontier Hospital in Queenstown; All Saints Hospital outside Engcobo town; Aliwal North Hospital in Aliwal North. These facilities were far from most of the participating communities as they were located in the main urban centres of the local municipalities. This was a cause for concern in all rural communities since referrals meant that they had to travel long distances in situations where public transport was extremely under-serviced over and above a poorly maintained rural roads infrastructure network. The high rate of unemployment in all communities was found to be a major factor rendering most families helpless with no money to pay for transport and to purchase food and medication. During the engagement with the communities, it was also established that some HIV/AIDS patients had ultimately succumbed as a result of the inaccessibility of proper medication, lack of adequate nutrition and being shunned and isolated by family members and the community at large due to the stigma associated with the disease; hence most sufferers preferred not to disclose their HIV status. 95% of the HIV/AIDS cases on ART were reported to have defaulted on the treatment by the Home-Based Care volunteers as a result of a lack of access to adequate nutrition since the treatment was harsh on the human body when taken without having had a meal.

<i>DISTRICT MUNICIPALITY</i>	<i>LOCAL MUNICIPALITY</i>	<i>AREA LOCATION</i>	<i>/ WARDS</i>	<i>NUMBER OF PARTICIPANTS</i>
<b>Amathole</b>	Nxuba	Adelaide	4	500
	Buffalo City	Ilitha	42	500
<b>Chris Hani</b>	Engcobo	All Saints	11	700
	Engcobo	eGoso	4	800
	Entsikayethu	Qamata	4	500
	Emalahleni	Lady Frere	8, 9 &10	1 500
<b>TOTAL</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>4 500</b>

**TABLE 11: Statistics of Participants Reached by the HIV/AIDS Education Programme**

The awareness on HIV/AIDS was found to be 100% in all the sites although some misconceptions still existed based on how individuals got to be infected by the virus. In some of the schools, students believed that using the same toilet seats with infected individuals would result in infection. Although awareness on HIV/AIDS was high, a change of behaviour was not found to be commensurate with the high level of awareness, especially among the school-going teenagers. Prevention through use of condoms was not always practiced.

<i>LOCAL MUNICIPALITY</i>	<i>POPULATION SIZE</i>	<i>PERSONS LIVING IN POVERTY</i>	<i>%AGE OF PERSONS LIVING IN POVERTY</i>	<i>HUMAN DEVELOPMENT INDEX</i>	<i>%AGE OF HOUSEHOLDS WITH INCOME OF LESS THAN R6 000.00 P.A.</i>	<i>UNEMPLOYMENT RATE (%)</i>
<b>Buffalo City</b>	<b>682 287</b>	<b>434 916</b>	<b>64.0</b>	<b>0.59</b>	<b>37.0</b>	<b>49.0</b>
<b>Nxuba</b>	<b>24 801</b>	<b>20 022</b>	<b>81.0</b>	<b>0.48</b>	<b>55.0</b>	<b>55.0</b>
<b>Engcobo</b>	<b>149 659</b>	<b>137 459</b>	<b>92.0</b>	<b>0.41</b>	<b>69.0</b>	<b>80.0</b>
<b>Ntsikayethu</b>	<b>207 500</b>	<b>134 554</b>	<b>65.0</b>	<b>0.45</b>	<b>70.0</b>	<b>69.0</b>
<b>Malahleni</b>	<b>125 308</b>	<b>151 232</b>	<b>75.0</b>	<b>0.48</b>	<b>67.0</b>	<b>50.0</b>
<b>TOTAL/AVG.</b>	<b>1 189 555</b>	<b>878 183</b>	<b>75.4</b>	<b>0.48</b>	<b>59.6</b>	<b>60.6</b>

**TABLE 12: Poverty Statistics of Local Municipalities reached by the Study: (Stats SA, 2004)**

The attitudes of the younger people towards the risk of getting infected was too casual with most believing that it could not happen to them. Sexual encounters with more than one partner were found to

be the norm in most student communities and this could probably explain the high rate of infection in this group as shown by the official statistics (Stats, SA, 2004). The most worrisome factor, established in questions and interviews during the Education and Awareness Phase, in the HIV/AIDS management equation in South Africa is the confidentiality clause around HIV-infection status disclosure. The policy of Voluntary Counseling and Testing (VCT) rendering it optional for people to be tested for HIV status was found to be posing a major challenge in combating the pandemic since in most cases people preferred not to know their HIV status because of the stigma associated with being HIV-positive as well as regarding the HIV-positive status as a death sentence because there is no cure for the virus. It did seem paradoxical for the HIV status of an individual to be regarded as a private matter, protected by legal rights, and the disclosure to be discretionary when the pandemic was decimating the most economically important groups of the population, the very same groups on which the country is dependent for its survival and continuity. As discussed earlier on, the stigma surrounding the HIV-positive status and the pariah status of infected people in most communities was found to be a major obstacle to disclosure; hence most HIV-positive people preferred not to disclose their status for fear of being isolated. Non-disclosure, therefore, in to the opinion of the author of this thesis, is the single most important factor driving the rapid spread of the pandemic and will remain as the greatest obstacle to winning the war against the epidemic.

#### **4.11.2 Phase 2: Nutrition and Traditional Medicine Therapy**

The second phase of nutrition and Traditional Medicine therapy was initiated in all the areas although a low-key strategy had to be adopted due to the confidentiality clause and the understandable reluctance of most the HIV-positive individuals to divulge their status in public. It must be emphasized that the primary target groups of the therapy in this study were WHO stages I, II and III although stage VI cases were not excluded. The most frequently asked question by audience members in all the sessions held was about the compatibility of Traditional Medicine with ART and whether Traditional Medicine was a cure. HIV-positive people on ART were keen to know whether they could discontinue their treatment and substitute it with Traditional Medicine since some found it difficult to comply with the treatment as a result of side effects. The secretiveness around the HIV infection status made it difficult to openly discuss the results of the therapy except in general terms since most of the HIV-positive participants who participated on the management plan were adamant about confidentiality. Affordability of the therapy was a cause for concern to most people who, in most cases, were unemployed and had no alternative sources of income. From a total universe of 4, 500 people who

attended the awareness and education workshops, 675 opted to be put onto the Traditional Medicine therapy. Of the 675 admitted into the management plan, fifteen percent dropped out after the first round of being put onto the medication leaving a total of 574. The conditions of the therapy stipulated a change in lifestyle for effectiveness from the participants such as non-smoking, non-consumption of alcoholic beverages and practicing unprotected sex, healthy eating and regular exercise. Of the 488 participants remaining on the HIV/AIDS management programme, ten percent died having been admitted onto the programme at an advanced stage of morbidity with CD4 counts of less than 20, were overwhelmed by multiple opportunistic infections. The remaining ninety percent experienced a change with an improvement in the quality of life as a result of the reversal in the state of morbidity, a positively progressive cure of opportunistic infections, weight gain and a full regain of the use of all limbs and are still on the management programme. Nutrition is discussed in Chapter 5 with the initiatives in commercial agriculture.

<i>MONTH</i>	<i>NUMBER OF PARTICIPANTS</i>	<i>NUMBER OF DROPOUTS</i>	<i>PERCENTAGE DROPOUT</i>	<i>NUMBER OF DEATHS</i>	<i>PERCENTAGE OF DEATHS</i>
1	675	101	15	-	-
2	574	86	15	-	-
3	488	-	-	488	10
4	439	-	-	-	-
5	439	-	-	-	-
6	439	-	-	-	-

**TABLE 13: Statistics of Participants in the HIV/AIDS Management Plan**

#### **4.12 CONCLUSION**

In Chapter 2, literature on the historical and current perspectives of Traditional Medicine and its role as first line therapy and self-medication for the majority of South Africans of indigenous extraction was reviewed. More significantly, the most commonly used indigenous medicinal plant species in the commercial trade were discussed as well as the potential prospects in the fields of Ethnopharmacology and Ethnobotany in so far as the economic development of the rural communities was concerned. The elusive cure for the HIV/AIDS pandemic that is devastating, mainly, the populations of the countries in Sub-Saharan Africa being reportedly having the highest number of HIV-infected people in the world (World Bank, 2006). Internationally, the growing trends in self-medication have kindled a renewed

interest in medicines derived from natural medicinal plant species (WHO, 1980; 2004). This new trend has also been reportedly driven by the non-affordability of Allopathic drugs for the overwhelming majority of the poor people of the underdeveloped countries in Africa, Asia and Latin America and the inaccessibility of high quality modern health care systems (WHO, 1978; Short & Tsey, 1992; World Bank Group, 2000; 2006). In the last two decades, Traditional Medicine has been actively promoted by the World Health Organization and other international agencies throughout the underdeveloped countries (WHO, 1978; Leslie, 1980; Jingfeng, 1987; Launs, 1989; Freeman & Motsei, 1992; Chavanduka, 1994; Tsey, 1997; Quansah, 2005).

A profound understanding of poverty and underdevelopment and the impact on rural livelihoods thereof, from the point of view of the rural communities, was found to be a prerequisite for any intervention strategy to be effectively implemented in any of the rural communities targeted. Other social factors requiring to be understood about these rural communities were their societal norms, cultural practices, human behaviour and mindsets. In this chapter, several groundbreaking concepts on health issues were proposed with the objective of developing strategies for rural development from a premise of health, nutrition and Indigenous Knowledge Systems. An integration of Traditional Medicinal practices derived from Indigenous Knowledge Systems and Western medicine and biotechnology was proposed, developed and utilized with a considerable level of success in pre-clinical trials with patients presenting with HIV/AIDS-associated illnesses and other degenerative diseases. The most critical aspect observed in the course of this study was the high level of co-operation and participation of the rural communities in the Disease Management Plan and Wellness Programme designed to improve the status of health in these communities. Public-Private-Partnerships were critical to the implementation of strategies if they were to be sustainable in the long-term. Although the emphasis of the study was the development of strategies, it was viewed as being absolutely important that the feasibility of executing the strategies should be determined in a practical manner; hence the study went further to initiate the implementation process. This was what differentiated this study from earlier studies that did much to elucidate the salient feature of poverty and underdevelopment in rural communities. The concept of sustainable rural villages has, more than ever, become the overriding priority in the face of the HIV/AIDS pandemic and the severe limitations for African governments in carrying the burden of paying for the resultant socio-economic needs of their devastated populations in view of the indebtedness of most of the poor countries to the international finance establishments and the perpetual and vicious cycle of uneven and combined development of capitalism exacerbated by

trade liberalization and the grossly unequal terms of trade between the highly developed and the underdeveloped countries within the framework of globalization. In a survey on public services conducted by the Rapid Services Survey of the Fort Hare Institute For Socio-economic Research commissioned by the Office of the Premier, Eastern Cape (RSS, 2006), local communities in the Chris Hani District reported a fairly high level of access to clinics, but the issues for the rural communities were around the poor quality of services offered in the health centres. The distribution of health workers at the health facilities was biased in favour of the larger centres with figures of 2.7 nurses per 100 000 people when compared to the national average of 12 nurses per 100 000 people. HIV/AIDS had a major impact on growth and development in Chris Hani with a prevalence rate of 30.2%, up from 25.3% in 2002. No data on HIV/AIDS statistics specific to the local municipality areas was available. From the statistics provided, women had a higher prevalence of HIV than men with the pandemic escalating the fastest among youth between the ages of 15 – 25 years (Department of Health, 2004). In a survey on South African youth risk behaviour by the Department of Health and the Medical Research Council in 2002, 72.3% of scholars in the Province reported that they had received HIV education, however, 54% had two or more sleeping partners and only 28.8% reported using condoms during sexual intercourse, thus confirming the findings of the awareness and education reported above (Medical Research Council, Department of Health, 2003). Enormous challenges would, indeed, have to be overcome in transforming the high levels of HIV awareness, particularly among the youth, to behavioural changes. In conclusion, there was a sense in which, the lackadaisical attitude among the youth towards the high risk of HIV infection seemed to be driven by a sense of hopelessness and despair about the future as a direct result of the depressing environment of abject poverty and a high unemployment rate with no reliable sources of income in most rural households. Most participants in the education and awareness sessions expressed a concern that the government, generally, seemed to neglect their areas. All participants interviewed displayed a general attitude of hopelessness in the future of their communities. The most worrisome factor to most respondents was the high rate of unemployment. Most of the youth in the local schools did not have any future career plans as they had no access to information about career opportunities after graduating from high school. The environment in these rural communities was generally depressing and was pervaded by an atmosphere of animosity and resignation to a fate of perpetual helplessness that was found to be common in most communities that have been living under conditions of extreme poverty and underdevelopment for extended periods.

## **SECTION C**

# **AGRICULTURE, NUTRITION AND RURAL ENTERPRISE DEVELOPMENT: *CASE STUDIES***

## **CHAPTER 5: AGRICULTURE: *RURAL ENTERPRISE DEVELOPMENT***

### **5.1 INTRODUCTION**

This chapter discusses the historical background and perspectives on Agriculture in South Africa, its significance and potential role in the development of strategies for rural development and goes beyond theoretical dispositions towards the feasibility of providing practical solutions to address the socio-economic challenges of poverty and underdevelopment in the rural communities of the Eastern Cape Province. As stated in the conclusion of Chapter 2, much work has been undertaken in researching various issues on rural poverty and the potential and actual resource value dynamics and contribution of the economically important natural flora, land, water, the climatic environment and the Indigenous Knowledge Systems in improving the livelihoods of the rural poor of South Africa (Beinart, 1992; Manona, 1998; Webber et al., 1999; Kepe & Scoones, 1999; Bonti-Ankomah & Fox, 2000; Cocks & Dold, 2000; Kepe, 2002; ECSECC, 2002; Global Insights, 2002; Light et al., 2005; Sparg et al., 2005; Eastern Cape Government, 2006). A search for publications and other sources of literature records on the applications and implementation of the numerous theoretical contributions and proposals on rural development and related fields in South Africa by various researchers did not yield much. Studies on the analysis of the potential and actual role of the contribution of Agriculture to South Africa's economy have been widely published by numerous researchers in the field; hence, some of the key research findings have revealed that the direct contribution of the Agricultural Sector to South Africa's Gross Domestic Product (GDP), employment and exports has been declining quite significantly over a period of five decades (Marcus, 1989; Faux, 1991; World Bank, 1994; Mather, 1998; Statistics SA, 2005).

One of the major objectives for the undertaking of this study, as discussed in Chapter 1, was an attempt to initiate the development of intervention strategies for socio-economic transformation in targeted rural areas on the foundation of partnerships with rural community farmers' organizations, local government economic development structures and private sector stakeholders based on agricultural enterprise initiatives. The most critical and fundamental issue for this study was the enhancement of the capacity of the rural producers in the areas of technical skills for commercial production, business and financial management training and the integration of Indigenous Knowledge of these rural farmers with modern farming practices. Capacity enhancement, decision-making and the involvement of the rural communities, especially the youth and women, in strategic planning and

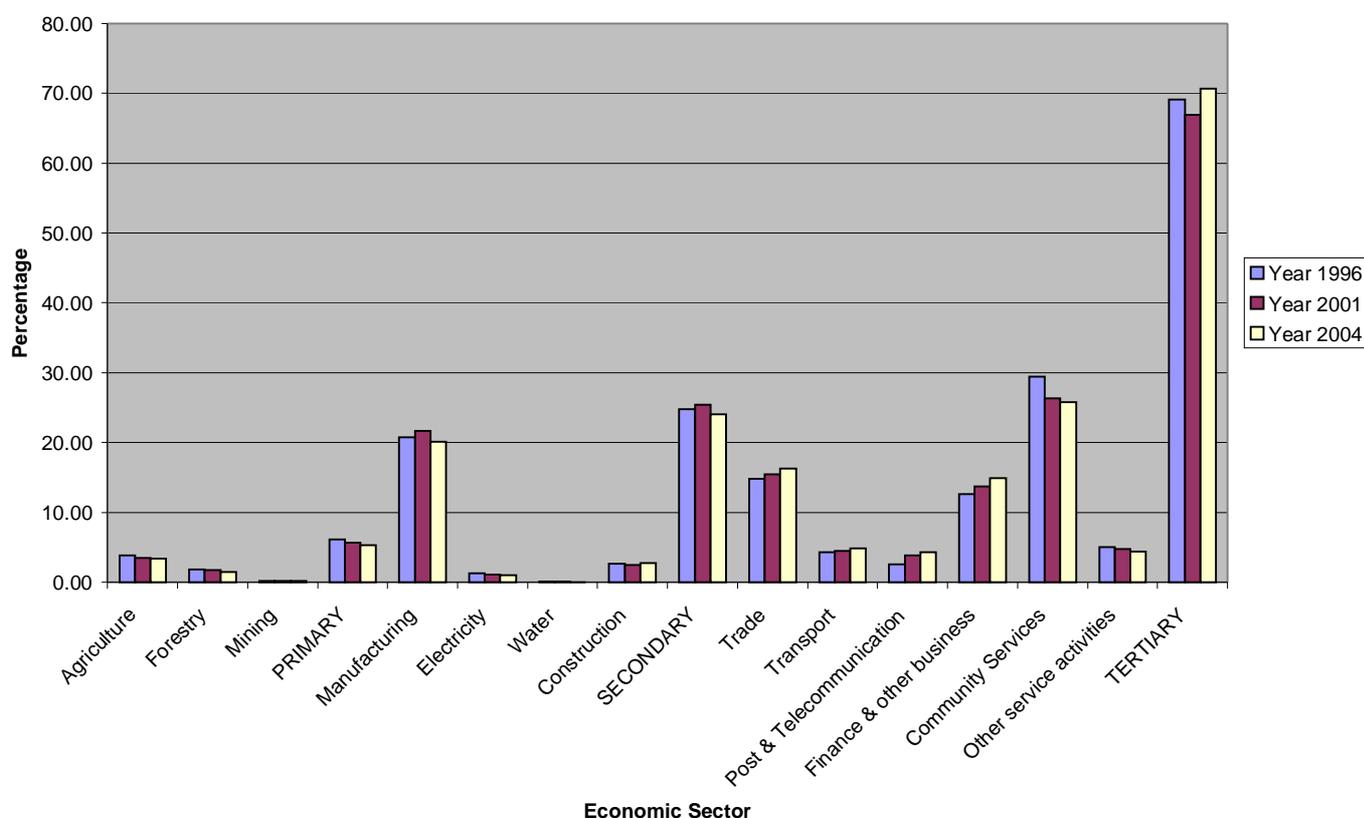
resource management were regarded as the mainstay of the rural development programme for its sustainability in the long-term. The rationale for the emphasis on youth was for the purpose of continuity and succession while women were a focal point due to the fact that most rural households were headed by women combined with the fact that they were found to be the most consistent group when it came to establishing and implementing such initiatives. The strategic goal for the establishment of potentially sustainable and profitable agricultural enterprises in rural communities was premised on a scenario contribution of agricultural production enterprise and the associated sub-sector of eco-tourism to the improvement of rural livelihoods through entrepreneurship development and support programmes, employment creation and poverty eradication. Although the primary objective of this study was an improvement in access to nutrition, health and wellness standards in rural communities, there was a general level of consensus and perception among all the rural development stakeholders, including the community farmers and activists, to the extent that poverty and underdevelopment were the fundamental determinants of the status of these social indicators. The concept of a holistic and integrated approach towards disease and HIV/AIDS management that is argued and motivated in the study flowed from a premise that was informed by a basic assumption to the effect that a positive and healthy frame of mind was essential to overcoming diseases since the human body immune system was known to be adversely affected by stress and depression; hence, the easing of the deleterious conditions of stress and depression, normally associated with an indigent state, would enhance the unraveling of most of the intricate complexities that resulted in the onset of the morbidity state and ultimately, lead to early mortality, from diseases, that could have been delayed. In a nutshell, the basic assumption was that economic development, employment creation and poverty alleviation were Critical Success Factors in the battle against the HIV/AIDS pandemic and most degenerative diseases commonly occurring in poor and underdeveloped communities.

## **5.2 THE STRUCTURE AND PERFORMANCE OF THE EASTERN CAPE ECONOMY**

This section takes a brief look at the current status and contribution of the Agricultural Sector in the Eastern Cape in comparison with other sectors of the economy. A strategic intervention such as the one proposed by this study had to be situated within the context of the total economy of the Province for the purposes of leveraging and synergy with other stakeholders in the Agricultural Sector as well as with other economic sectors in the Demand-Supply Chain.

According to Statistics SA (2004), although the Eastern Cape was home to an estimated 15% of the South African population in 2004, its contribution to the national economy was about 7%, well below its share of the population. Unlike most of the eight provinces of the country, the economy of the Eastern Cape lacks an anchor-sector such as what mining is for some of the other provinces. In view of the fact that over 60% of the population in the Province dwells in rural areas, then the 6% contribution of the Agricultural Sector to the total gross geographical product (GGP) is indicative of the fundamental structural imbalances in the economy (Stats SA).

**GVA per Sector in E. Cape 1996-2004 (Stats SA, 2004)**



**FIGURE 14: Gross Value Added per Sector in the Eastern Cape: 1996 – 2004 (Stats SA, 2004)**

The Province is heavily reliant on general government services for employment and income for most of the working population as illustrated in the graph in **Figure 14**. Although the gross value added (GVA), which is a measure of the value added by each producer and sector in the Demand-Supply Chain, by the Province increased in absolute terms between 1996 and 2004, the contribution of the Eastern Cape to the national economy consistently declined over this period (Stats SA, 2004). In 1996,

the GVA of the Province amounted to R54, 1 billion or 6,8% of the national economy. In 2004, the Province's GVA increased to R62,6 billion or 6,5% of the national economy, a decline of 0,3% points between 1996 and 2004. Both the primary and secondary sectors of the economy in the Province showed a decline in the GVA over the same period. Of the 13 key sectors, only four, viz. trade, transport, post and telecommunications and finance, showed consistent contributions to the GVA over this period, with finance posting the highest growth in value added at 2,3%. The contribution of the manufacturing sector to the GVA declined from 20,7% in 1996 to 20,2% in 2004. Over the same period, the contribution of community services also declined from 29,5% to 25,8%. By 2004, the Province was progressively becoming dependent on a few sectors thus becoming economically vulnerable in the process. The manufacturing sector, which is the second largest sector of the Provincial economy, is concentrated in a few large enterprises, particularly, the Automobile Assembling Industry. Although the Province accounted for almost 25% of all value added in the country's forestry sector between 1996 and 2004, the sector contributed less than 2% to the Province's GVA (Stats SA, 2004). Overall, the economic outlook of the Province was not inspiring to any efforts aimed at employment creation and poverty eradication. Fundamental intervention strategies at a micro-level were required if the situation had to be turned around. Although the status of the Agricultural Sector is not a promising one, this sector still remains singularly the one with the highest potential to influence the transformation of the Provincial economy, a factor that can be attributed to its historical role and significance in the evolution of the Eastern Cape as a geo-political entity, particularly to the rural communities (Roux, 1948; Le Cordeur, 1981; Peires, 1981; 1989). Indeed, the reminiscence encountered in some of the elderly members of the rural communities about the 'times of plenty' that used to prevail in the distant past when there was adequate land for cultivation and animal husbandry for all households and a robust agricultural productivity signified the deeply entrenched sentimental value that the land has in the collective consciousness of the rural communities engaged in the course of this study. What went wrong? Why was the land lying fallow? What were the chances that the times of plenty could be brought back? These were some of the questions that were posed to the community leadership and tenants during the course of the study. The next section deals with the interactions with the communities in charting a way forward to find solutions to the challenges of poverty and the deteriorating health situation among communities, mostly due to the ravages of the HIV/AIDS pandemic and other degenerative diseases commonly associated with poverty. Questionnaires designed for group interviews with community respondents were implemented with the aim of:

- ❖ Acquiring an understanding of the background and the evolution of the socio-economic environment of the communities from their perspective;
- ❖ Engaging the community farmers in the development of rural development intervention strategies as equal partners in searching for such solutions;
- ❖ Introducing social facilitation programmes to prepare and transform the community mindset to commercial farming rather than subsistence farming;
- ❖ Forming community-private-public partnerships in the enterprise initiatives proposed;
- ❖ Enhancing the capacity of the community farmers through skills development programmes for the sustainability of the proposed enterprises long after the study has been completed.

However, from the onset, it became apparent that there would be no easy solutions to these challenges since the degeneration of the socio-economic conditions in these communities had prevailed for such a long period without any intervention. The group interview records are reported in the Annexure. The high expectations of the rural communities on the economic transformation of their livelihoods at the dawn of the newly established democratic order in South Africa in the post-1994 era had not materialized; instead, the situation had gone from bad to worse, with poverty levels escalating from 58.9% in 1996 to 74.9% in 2004 in the Chris Hani District as shown in **Figure 8**. This was despite the reported growth of the South African economy between the years 2000 and 2004 in the official government reports (Department of Finance, 2005).

### **5.3 ESTABLISHMENT OF AN AGRICULTURAL MANAGEMENT ENTITY**

In the course of engaging various potential stakeholders, particularly those in the finance sector, it became necessary, as part of the broader strategy, to develop a partnership model to drive the commercialization process. To this end, a legal commercial entity was registered by the research group in order to form business partnerships for the purpose of trading and managing the planned enterprises along business principles. A further motivation for the registration of the entity was due to the fact that it soon became impossible to apply for any financial resources either in the form of subsidy grants or loan-funding to finance production outputs in partnership with communities in the name of the research institution to which the researchers belonged or in the name of community co-operatives as standalone entities because of the risks and uncertainties involved in commercial farming. Thus the entity, Isivuno Sase-Africa (PTY) LTD was established in partnership with young entrepreneurs with expertise in Agriculture to drive the commercialization process. The study acknowledges the proprietary rights of

Isivuno to most of the information used in the course of this study and particularly in the engagement with communities for the purpose of commercialization as well as the rights of the community entities, Opengo and Vukuzenzele Agricultural Co-operatives of Qamata and later on in the study, the Khuthalani Agricultural Co-operative of Tsembeyi/Vaalbank, from whom the study sought permission prior to the research startup to use their names and the information provided in the interviews for writing up this thesis.

Prior to the commencement of the research, a meeting was held with the executive committees of the two Qamata co-operatives, firstly, to acquire the background and history of previous efforts to make their sections of the irrigation scheme to be productive, secondly, to introduce the research programme and thirdly, to negotiate the formation of partnerships with the community farmers to initiate agricultural enterprises as per the objectives of the rural development strategy proposed. Investigations undertaken during the preparatory phase led the research group to the conclusion that the requirements for undertaking the commercialization process would be a management entity as a vehicle in partnership with expertise in the agricultural disciplines, business management, financial management and strategic marketing coupled with a comprehensive understanding of the relevant industries and entrepreneurship qualities as well as being in touch with the cultures and sub-cultures of the target rural communities. The group assembled was also driven by a passion for academic research and rural development; hence the formation of Isivuno by individuals who had a diversity of the requisite expertise. The Isivuno members were bound by a common value proposition that was underscored by a philosophy that says; “if the business strategy adopted is appropriate and user-friendly to the rural communities and markets then success would follow as well as the exciting prospects of overcoming the formidable challenges associated with the establishment of the proposed venture”. The members of Isivuno solicited assistance from the Queenstown branch of the state entity, Small Enterprise Development Agency (SEDA), established for the purpose of assisting startup enterprises in setting up operations, especially in the manufacturing sector, to facilitate the registration of agricultural co-operatives for the two groups of farmers, one from small community farmers in Section 2, Dam 5, subsequently registered as Opengo Agricultural Co-operative and the other from Section 3, Dam 14, which came to be known as Vukuzenzele Agricultural Co-operative. The report on interviews held with the farmers’ groups is attached in the Annexure.

## **5.4 METHODOLOGY: AGRICULTURAL PROGRAMME IMPLEMENTATION**

### **5.4.1 Introduction**

For the purpose of this study, the major research sites selected were located in the Chris Hani District Municipality. The first site was in the Qamata area in Intsika Yethu Local Municipality in the neighbourhood of the Qamata Irrigation Scheme while the second one was in the Tsembeyi-Vaalbank area located in Emalahleni Local Municipality. In the Chris Hani District Municipality, Agriculture is the second largest employer, providing an average of 20.8% of all employment opportunities; but the remuneration scales for the agricultural workforce are reported to be the lowest compared to those of other economic sectors, a typical situation in the sector throughout the country since the use of unskilled labour is, to a large extent, still the norm in the predominantly white-owned commercial farms in the Province (ECSECC, 2002; Stats SA, 2001). The CHDM contributes 6.5% to the gross geographical value added in the Eastern Cape (ECSECC, 2002). Apart from the Community Service (Public Sector), which is the largest employer at 40.5%, the largest contributions to the district economy come from Agriculture and the related sub-sectors of forestry and hunting and account for up to 30% of the district outputs; followed by Services, 12%; Tourism, 5%; and Manufacturing, 4%. The total district gross domestic product (GDP) for 2005 was estimated at ZAR5.3billion (Eastern Cape Government, 2006/07). CHDM contains four river systems, viz., the Great Fish, Kei and Mbashe Rivers draining to the South and the Orange River tributaries draining to the North. As illustrated in the map in **Figure 3** in Chapter 3, the rainfall varies from 200-300mm in the west to 700-800mm in the east of the District. Livestock production is the predominant farming activity and Queenstown is the hub for cattle trade in the District (ECSECC, 2002). Several small to large irrigation schemes, the main target sites for this research study, provide opportunities for high value horticultural production as discussed in the next section below. The CHDM agricultural sector is characterized by a dichotomy dividing the ‘mainstream economy’ commercial agriculture that is historically white-dominated and the ‘peripheral economy’ subsistence farming, mostly in the areas of the former homelands that has, for all practical purposes, disappeared and exists but in name only. The information on the economy of the Chris Hani region was acquired from the ECSECC District Profile (ECSECC, 2002) and the Local Economic Development (LED) Unit of the Chris Hani Municipality. A debatable point, where this study differs with the Municipality, is in the ‘official’ terminology describing the two categories of the District’s economy as the ‘first economy’ and the ‘second economy’ instead of the ‘formal sector’ and the ‘informal sector’ of the economy, respectively. The argument of the study is that these two categories

are integral components of the same economy with the bulk of the black population being unemployed and is mainly confined to the informal sector which purchases and sells value-added consumer goods that are manufactured in the mainstream or formal sector thus rendering the informal sector or 'second economy' an adjunct and a distribution channel of the former. This state of affairs is characteristic of the global dynamics of uneven and combined development of the economies of the developed and underdeveloped countries, the North and the South and the rich and the poor countries (World Bank, 2006). This unequal relationship between the two sectors poses a formidable challenge to rural economic development as was experienced in the course of the study. In attempts to market the agricultural production from rural community enterprise, the negative reception and skeptical responses from some of the major buyers of fresh agricultural produce in the Province made it quite tempting to reach a conclusion that the growth and profitability of the established agricultural sector was, probably, based on the continued under-performance or non-existence of productivity in the rural communal lands thus relegating these rural communities into perpetual consumers with no stake and beneficitation in profitable commercial agricultural production. It was with this understanding on the challenges to rural economic development that the commercialization process of agricultural production in the rural communities was initiated by the research group of this study. The experiences of the community, their intimate knowledge of their environment in the form of indigenous knowledge practices in subsistence farming over centuries, played a key role in overcoming some of the challenges encountered in the translation from subsistence to commercial farming. Without this community knowledge of the terrain and the environmental climate, the commercial production operations would not have achieved the required results.

The CHDM is a net importer of processed food despite its significant levels of agricultural output, with the bulk of the outputs being exported to major urban centres of Bloemfontein, Durban and East London for processing thus rendering the emergent local farmers generally being disadvantaged since they are at the primary end of the agricultural Demand-Supply Chain (CHDM, 2006). Interactions with agricultural producers revealed that the prices of primary agricultural products with no value added were determined by economic forces that were not under the control of the producers; hence, the extreme fluctuations in supply and demand resulting in a high level of uncertainty and anxiety among the producers since, products had, at times, to be sold at less than the cost of production.

### 5.4.2 Qamata Research Site

The three major sites selected in the initial period were in the Chris Hani District as stated in Chapter 1. One of the greatest challenges encountered by the researchers in this study was the prevalence of a relatively high level of internecine conflict among some of the community members and groups in two of the three selected sites, to the extent that work in one of them had to be discontinued at an early stage, during the introductory phase of the study into the communities, as it was threatening to derail the research programme. The first site in the Chris Hani District was in the Qamata Traditional Authority in Intsika Yethu Local Municipality and was selected, primarily, due to its location around the old irrigation scheme established in the period of the former Transkei Homeland and also due to the fact that some of the members of the research group in the study originally came from the same area; hence there were pre-existing relationships with some of the communities. These relationships became quite useful in the management of the partnerships with the communities because of a deeper understanding of the culture and origins of some of the prevailing conflicts and inter-family feuds that are common in poor rural communities, from experience. The land on which the Qamata Irrigation Scheme is situated was expropriated from the local communities by the regime of the former Transkei Homeland to make way for the construction of the irrigation infrastructure, a situation that had long been a source of ongoing simmering tensions and animosity that were suppressed by force by the ruling clique of the Matanzima brothers and thus remained hidden, only to come out into the open during the social uprisings of the 80's that were a prelude to the 1994 elections (interview with local farmers). The Qamata Irrigation Scheme has 4500 hectares of arable land under irrigation. The area is constituted by 10 villages with a total number of 2152 households with an average number of 5.9 people per household thus translating into an estimated population of 12,697. The area has an unemployment rate of approximately 80%, a Human Development Index of 0.45 and a poverty level that is estimated at 79% (ECSECC, 2002). The villages are as listed in **Table 14**. The data was compiled for the purpose of registering agricultural co-operatives for the farmers. With the establishment of a new political dispensation in South Africa after 1994, the land reverted to the original household owners - this being an initiative of the Land Restitution Programme implemented by the Department of Land Affairs as part of the agrarian reforms to redress past injustices - who had neither the financial resources nor the technical skills to utilize the asset for either subsistence or commercial farming.

The status of underutilization of the Qamata Irrigation Scheme was a window that offered a view of the extent to which arable lands within the rural communities in the Chris Hani Region were underutilized.

<i><b>VILLAGE</b></i>	<i><b>NUMBER OF HOUSEHOLDS</b></i>
Emkhukwini	120
Maya	296
Mgqanga	74
Ntlakwefolo	306
Ntlonze	139
Ntshingeni	41
Sikhoba	634
Qamata Basin	118
Woodhouse	213
Zwelitsha	211
<b>Total Number of Households in Qamata</b>	<b>2152</b>

**TABLE 14: Qamata Villages and Number of Households (determined by the Study)**

According to the Rapid Services Survey of 2006 conducted by the Fort Hare Institute for Socio-Economic Research commissioned by the Office of the Premier of the Eastern Cape, although ~15,000 hectares of land are under irrigation in the Chris Hani District, the four main irrigation schemes, Lubisi, Ncora, Qamata and Shiloh, remained underutilized. Dry cropping is only feasible in small parts of the District, according to the survey, thus underscoring the important role that the schemes could play in local economic development. The issue of gross underutilization of the land in the rural areas of the Chris Hani District and other districts of the Eastern Cape merely reflected an economy that was held in bondage by the policies and practices of the past. Quite clearly, the democratization process, ushered in through the watershed granting of universal suffrage to all South Africans in 1994, had not affected the Apartheid era socio-economic base nor had it made any inroads towards the transformation of the

corresponding property relations. Instead, the plight of the poverty-stricken rural communities had been steadily worsening since 1996 as illustrated in **Figure 8**. The Chris Hani District, in particular, has an almost non-existent industrial manufacturing sector and a high dependence on primary economic activities (RSS, 2006). The economy is further encumbered with chronic imbalances and a consistently increasing gini coefficient that signifies the ever widening gap between the rich, mostly white, and the poor, mostly black, segments of the District's population (Chris Hani District Profile, 2006). The legacy of the homeland system that ensured that the areas of the former homelands remained underdeveloped with its population becoming more reliant on the urban centres of the former Republic of South Africa for income generating opportunities still prevailed (RSS, 2006). Emergent farmers in the communities had an additional pressure of overstocking and soil erosion in tandem with the damaged communal farming infrastructure further decreasing the chances of economic success. Reductions in the Provincial budgets for Agriculture in the preceding years meant that numerous programmes originally intended to assist rural communities had to be discontinued thereby decreasing access to information and services. Furthermore, the majority of these farmers lacked agricultural and business skills to run successful enterprises (CHDM, 2006). It was against this background that the study was initiated within the communities of the Qamata Irrigation Scheme.

Having engaged the Qamata groups of community farmers, Isivuno Sase-Africa Management entity (hereafter referred to as Isivuno) facilitated the registration of agricultural co-operatives for the two farmers' associations. Subsequently, a Memorandum of Understanding between each of the two co-operatives and Isivuno was drawn up detailing the terms of agreement and responsibilities of each entity and Isivuno in the respective joint ventures. To this effect, a briefing proposal document outlining the rationale, the strategic objectives and business plans of the two Joint Ventures was drawn up by the entities with the assistance of SEDA. The Qamata Irrigation Scheme business proposal is attached in the Annexure Section. The purpose of the briefing document was to provide background information and motivate for loan and grant funding. The purpose of the loan was to finance capital assets, overheads and enterprise production operation costs for the Joint Venture initiative in Qamata sections 2 and 3. The two sections are not part of the neighbouring Gcaleka Trust which was at loggerheads with the Department of Agriculture at the time of establishing the Qamata research site. The Joint Ventures had been negotiated and agreed upon by the respective co-operatives, namely, Opengo and Vukuzenzele Agricultural Co-operatives.

### **5.4.3 Concept, Vision and Objectives**

The major strategic objective of the Joint Venture (Community-Public-Private-Partnerships) with the two farmers' co-operatives was to promote commercial farming and the effective use of the land asset that has an irrigation infrastructure. This land is owned by rural community farmers and was previously operated by various companies appointed by the former Transkei government on a management contract basis, according to the Qamata farmers. The unfortunate effect of this arrangement was a lack of skills transfer and economic empowerment of the locals by the companies in question. This only became apparent with the transfer of the land to the original owners and the withdrawal of the defunct Transkei Cooperative (TRACOR) without proper interim management arrangements that would take into account the capacity and skills of the land owners. Since the withdrawal of TRACOR, the farmers have been operating at less than 10% capacity and mainly producing for subsistence purposes.

The involvement of Isivuno as a private agricultural management company in the Joint Venture was to achieve the following:

- ❖ Provide management capacity to run the sections along commercial lines;
- ❖ Provide the relevant skills, expertise and entrepreneurship support systems;
- ❖ Reclaim the market share that the Qamata agricultural produce used to have in local markets;
- ❖ Enhance local farming capacity and transfer of skills to the land owners and project participants;
- ❖ Mobilize financial, marketing and human resources to promote the success, transformation and viability of the programme;
- ❖ Plan the operations and finances to ensure sustainability;
- ❖ Build the asset base to promote productivity and efficiency of the programme.

Amongst the key performance areas that Isivuno had to implement, was change management as a management tool to transform the mindset of the land owners from subsistence to commercial farming through promoting the use of land as a single resource base in order to achieve economies of scale.

### **5.4.4 Environmental Analysis and Social Facilitation**

Social facilitation was established to be a key element in the process of engaging the communities. It involved prior discussions with the targeted communities to set the scene for future engagements. Fundamentally, the research group had to clearly understand the needs and the culture of the communities and to define the nature and level of the relationship sought between the two parties. This

phase was necessary so as to give the communities an opportunity to express their needs and to define their perceptions about the proposed intervention and how they wanted the relationship to be structured. Rural communities were found to be suspicious of outsiders who came into the community with 'noble' intentions only to discover at a later stage that these parties were interested in exploiting the community resources and assets without any benefits for the community as was the case in all previous instances, according to the communities. Communities had to be involved as equal partners in formulating strategies, plans and their implementation if the planned programme was to achieve the desired outcomes and sustainability in the long-term. Relationships with the rural communities had to be closely managed with transparency and consultation being the critical elements of the management strategy. Constant conflict and the inability to work as a team on the part of some of the community farmers in Qamata were some of the impediments encountered by the research group. The management of inter-personal relationships took up a considerable amount of time and effort and became a major determinant to the successful implementation of the programme. In the environmental survey undertaken by the research study in the preliminary phase, it was established that a mindset of dependence among community members as well as a lack of confidence in their capabilities were major stumbling blocks to the process of transformation. A paradigm shift in the community farmers from subsistence farming to commercial production was an essential requirement for transformation.

The facilitation process revolved around the analysis of the social dynamics of the community as well as the farming system to identify the challenges and opportunities presented by the prevailing socio-economic circumstances so as to address the needs of the land owners and resolve existing internal tensions and conflicts that might be impediments to future development initiatives. Among the social aspects established to be perennial manifestations in the community were high levels of poverty, inability of the households to operate their small pieces of land in a consistent manner coupled with the inability to engage the market and poor cash generation cycle to sustain production. In a nutshell, this could be regarded as production that was not informed by a commercial motive and was exacerbated by a lack of entrepreneurial inclinations, a situation that could be attributed to a dependence and survivalist mode resulting from decades of neglect and underdevelopment. A comprehensive awareness campaign was conducted with the aim of addressing the aspects identified above and to secure the buy-in of the community farmers in commercial farming as well as the Joint Venture (JV) concept. Fundamental to the success of the JV concept was the synergy of the combined resources of the partners to achieve common objectives at minimal cost with optimum results. A continuous process of

consultation and intensive business and financial management training as well as technical skills transfer was the mainstay of the programme with women and youth in the community being the main target groups.

#### **5.4.5 Business Plan of Key Enterprises**

A detailed business plan presenting the Joint Venture concept, principles, objectives, management structure, corporate governance principles, and production related mentoring, marketing plan and the key enterprises was prepared and submitted to financial services institutions for consideration. The Business Plan is attached in the Annexure Section. The key enterprises in the production plan are:

- ❖ Dry maize
- ❖ Dry beans
- ❖ Dry peas and
- ❖ Vegetables
- ❖ Lucerne
- ❖ Carrots
- ❖ Soya beans

The vegetable crops were prioritized as key enterprises in the first year following the consolidation of marketing negotiations and agreements with prospective buyers. The grain crops and beans had secured a vibrant market in the form of a processing plant based in East London. Markets for the products were secured in advance with prospective customers to ensure that the required volumes would be produced according to the scale of the Demand-Supply Chain. Several food chain retail stores responded with letters of commitment to enter into a contractual obligation to purchase subject to compliance with the relevant customer quality specifications. Through the marketing channels established, the crops quality standards stipulated by the prospective buyers were included in the production plans. To achieve the requisite quality specifications, Isivuno negotiated agronomic support services from Yara-Kynoch (Pty) Ltd, a seed and fertilizer supplier with a long pedigree in the Agricultural Sector. This was packaged as part of the marketing support based on the purchasing of fertilizers and seedlings from the Company. The production of vegetable crops with high profit margins such as cabbage, potatoes and beetroot was planned for implementation in the second year of operations. This was part of a risk management strategy developed to limit the production capacity in the event of unforeseeable circumstances as well

as streamlining management to minimize potential logistical problems that are typical of newly developed management systems. Experimental nurseries of indigenous medicinal plant species acquired from their natural habitats in the Eastern Cape were established to test the viability of the species under controlled cultivation conditions and domestication.

#### **5.4.6 Production Plan**

The JV partners took a resolution to launch the production operations through embarking on simple crops cultivation in order to maximize the probability of success that would also serve to boost the morale of the community farmers. Key support services institutions were identified and invited to participate as key strategic partners. These key role players included input suppliers, production specialist, buyers, relevant government departments and the relevant municipalities. The Chris Hani District Municipality was central to the mobilization of local resources while availing funds, prior to the large-scale cultivation, for the beetroot pilot project which was critical in testing market response. The testing of market responses was in anticipation of potential political risks and conflicts that could retard the progress and the viability of the entire production programme. The facilitation process was initiated to address the potential threat of political interference through an awareness campaign and social mobilization. Parallel to the facilitation process in the communities, the JV management team commenced with negotiations to establish an anchor market that would ensure that the bulk of the produce had an established market before going to production. Over and above the agreement with the East London based grain processing plant, one of the leading food chain retail stores in South Africa made a commitment to enter into a contractual agreement to purchase the produce through its procurement business unit. Similar agreements were reached with the East London Fresh Produce Market with which the Joint Venture had working arrangements through the Border Farmers Marketing Agents. The JV was also aware of the probability of price variations based on the demand-supply factors that governed the different marketing channels, a situation that warranted the close monitoring of price fluctuations and other relevant costs that could potentially nullify the profitability of the enterprises.

#### **5.4.7 Market Survey**

All the stakeholders of the JV were aware of the power of the large national retailers within the food industry Demand-Supply Chain; hence, in order to effectively penetrate the markets, these retailers had to be brought on board as strategic partners. The food industry in South Africa is characterized by the

direct dealing of fresh vegetables producers with the retailers (personal communication). The major role players in this regard included Pick and Pay, Shoprite, Spar, Fruit and Vegetable City, Woolworths and other locally and regionally based wholesalers such as Boxer and Ngumbela. The National Fresh Produce Markets located in the big cities of the country also played an important role in opening marketing channels for the producers located closer to these markets. The diverse food industry marketing channels consisting of the food processing industry, public and private hospitals, local and neighbouring community markets, the Government Schools Nutrition Programme, tertiary institutions, Correctional Services facilities and the hospitality industry were all critical in providing alternative marketing channels. It was essential for the JV to undertake a survey of the local market and its distribution channels to acquire reliable market intelligence that would inform the development of the most appropriate market segmentation and integrated strategy. The broader business and marketing strategies were dependent on the available opportunities in the marketplace in combination with the objectives of the producers and their ability to negotiate contracts with strategic role players in the fast moving consumer goods environment (FMCG). The bargaining power, the strategic positioning of the business, political leverage, pricing and transportation costs largely determined the profitability of the market segments or target customers.

In the analysis of the market survey findings on the historical background of the business environment of the Eastern Cape Province, with respect to the Agricultural Sector, a number of interesting developments to which the profitability of the fresh vegetable market could be attributed have been taking place. These developments were changes in agricultural utilization of the land which involved switching from crop cultivation to game farming by a number of established white commercial farmers. With South Africa having returned into the international fold after 1994, these farmers had identified a niche` market for game hunting and eco-tourism. The two latter activities were highly profitable as a result of a high demand from tourists from North America and Western Europe coupled with low overheads since wild game does not require any maintenance. The fact that the pricing in this market was based on the US dollar and the Euro currencies which had a favorable exchange rate with respect to the South African Rand was an additional advantage for the game resort owners. Furthermore, the lucrative prices of food crops could also be attributed to the fact that the Eastern Cape does not produce enough food to satisfy the needs of the population in the Province; hence it has to import a greater portion of its food requirements from other provinces of the country (Department of Agriculture, 2006). This implied, therefore, that if the JV could secure higher quantities of vegetable and grain crop

supply orders from food retailers, the listed food crops could become critical volume and profit drivers due to these market dynamics.

#### **5.4.8 Production Capacity**

The focus of production capacity in an industry is about the availability of technical skills and business expertise to manage the entire supply chain in production planning to ensure acceptable consumer quality products. This production capacity was sourced from well qualified service providers through linkages to after-sales-service and marketing-based support from the consumable goods suppliers. The letters of support and commitment from these service providers are attached in the Annexure. The production plans were designed in such a manner that crop rotation would be implemented to avoid micro-nutrient depletion of the soil as well as a staggered crop production throughout the year, cultivating crops that were best suited to the changing seasons for optimal utilization of the asset base to maximize profitability and to circumvent out-of-season unemployment and a drop in revenue generation.

#### **5.4.9 Training and Mentoring**

Mentoring was designed on the basis of the critical need areas of the enterprise as well as the areas where the core management team and the workforce had shortcomings. Training was specifically designed in accordance with the skills needs analysis and development regulations as stipulated by the Department of Labour with the primary objective of improving productivity using local labour to achieve the strategic goal of long-term sustainability of the enterprises. At a more strategic level, high level performing students in the subjects of natural sciences and mathematics from local secondary and high schools were motivated and encouraged to further their studies in technical disciplines such as Agricultural Sciences, Engineering and Commerce at tertiary level in order to create a pool of expertise for the future. To this end, the research group approached provincial institutions of higher learning to offer scholarships to such students with the University of the Witwatersrand having taken a proactive step towards this direction. It could be stated that much work still had to be done towards the establishment of more integrated collaboration between stakeholders of rural development such as the institutions of higher learning, secondary schools in rural areas, government departments, local government and the Agricultural Sector community in the development of skills for the future in this area. There were no visible efforts by the local universities in actively going out to communicate with schools in rural areas to promote their career programmes, especially in the Agricultural disciplines,

although one of these universities had a faculty of Agricultural Sciences. At the time of writing up this thesis, Isivuno was in the process of setting up a training unit to develop training manuals in agricultural production operations and assembling a mentorship team in collaboration with agricultural consumer goods suppliers and the community farmers who had valuable experience and information based on Indigenous Knowledge Systems in farming production that was quite useful as a foundation for the development of modern technical skills in commercial agriculture.

#### **5.4.10 Risk Management and Mitigation**

Among the issues identified as constraints to sustainable commercial farming in Qamata were the following:

- ❖ Lack of a profit motive;
- ❖ Lack of key features of commercial farming;
- ❖ Atomized use of land that is contrary to lines of organized farming as a prerequisite in the establishment of economies of scale;
- ❖ Unavailability of the appropriate business, technical and managerial skills;
- ❖ Lack of marketing capacity in tandem with non-compliance of quality product standards stipulated by buyers;
- ❖ Inaccessibility of finance and sustainable cash generation cycle;
- ❖ Lack of techniques for large-scale agricultural production and the low capability required for the introduction of state-of-the-art technology to improve productivity;
- ❖ Lack of co-operative farming for the creation of economies of scale required to reduce input costs through marginal utilities and to hedge the risks normally associated with the vicissitudes of agricultural production.

Isivuno, therefore, developed a set of comprehensive plans that would adequately address some of these constraints and limitations. Internal weaknesses in Isivuno itself were acknowledged and compensated for through the outsourcing of infrastructure improvements and development, mentorship, support and designing of training programmes and manuals. The spectrum and characteristics of production aspects placed an emphasis on the requirements for a capable and strategically focused management system; hence, the assembling of a select team of specialist expertise that constituted Isivuno management team. The Isivuno corporate profile is attached in the Annexure. The Isivuno Management Team had a wide variety of expertise in the disciplines of Agricultural Economics;

Agronomy; Brand Marketing Management; Business Management; Corporate Strategy; Developmental Economics; Environmental Sciences; Homeopathy; Plant Biochemistry; Plant Virology; Product Research & Development; Project Management and Strategic Marketing. Most of the Isivuno Management Team members were entrepreneurs in their own right and were running their own companies, specifically in most of the fields enumerated above.

In addition to the general and operations management of the business initiative, risk management played a vital role in promoting the success of the Joint Venture. The range of issues categorized in the risk management plan included: financial risk; human resources related risks such as interpersonal and group conflicts; marketing risk; political instability and production risk at the local level and the potential risk of failure over a time period. All these priority risks required close monitoring and scenario planning coupled with the acknowledgement of their potential impact on the emergent enterprises if not properly managed.

#### **5.4.11 Finance**

From the inception period of the community enterprise and the establishment of the Joint Venture, the acquisition of financial resources proved to be a challenge and thus became a severely limiting factor. The commercial banks, state development agencies and other rural activist non-governmental organizations were found to be extremely conservative in approving funding for the venture. The common concern in all these institutions was whether this initiative would take off such that they could realize a return on such an investment. The fundamental consideration here was the highly risky nature of agricultural business that was, to a large extent, entirely dependent on the fluctuating climatic conditions and the high exposure and susceptibility to plant diseases and pests. Other concerns to this regard were conflicts that were a common feature in most poor rural communities being generated by the depressing social dynamics as alluded to earlier on. The primary purpose for securing seed capital was to ensure that finance to fund business operations, assets and overheads was available at the right time and at the right price. This was achieved through a combination of grant funds from state development agencies and debt financing. As part of the joint venture agreement, Isivuno was allocated the responsibility of acquiring finance for the venture. This went a long way in avoiding the complex processes of evaluating the credit rating of more than one hundred co-operative members. The risk management plan in this regard was the ability of the Joint Venture to supplement debt finance with grant funding which was provided on the basis of broad based participation of the land owners.

Furthermore, the JV was designed in a manner that was well thought through and was based on sound and prudent business principles.

Rural poverty and food insecurity are some of the greatest challenges confronting Sub-Saharan Africa, including South Africa, especially in view of the fact that the majority of the South African population is predominantly rural (Bond, 2001; 2002; Devereux & Maxwell (Eds), 2001; Mills, 2002; Bolton, 2007). All eight of the World Development Goals discussed in Chapter 2, apply to rural communities in the Eastern Cape and more specifically, to the Chris Hani District as was illustrated in the comparative analysis in Chapter 2. The Provincial Growth and Development Plans (PGDP) of the Eastern Cape are actually based on the World Development Goals (Eastern Cape Provincial Government, 2004). Despite the emphasis and prioritization of poverty eradication, job creation and a commitment to support Local Economic Development on the part of the Eastern Cape Government, on the ground, anchor economic development programmes aimed at achieving these lofty goals in the rural areas of the Chris Hani District have not been significant. Although the Eastern Cape Government departments of Agriculture and Economic Development and Environmental Affairs have initiated the revival of the irrigation schemes in the Chris Hani District, these efforts are still to demonstrate effectiveness (Department of Agriculture, 2006; Department of Economic Development and Environmental Affairs, 2004). Attempts at acquisition of seed capital from financial institutions in the private sector, ABSA and Standard Bank and state development agencies, ECDC, Land Bank, Industrial Development Corporation (IDC) Thina Sinakho (funds provided by the European Union via the Provincial Treasury) and Uvimba Finance, by the JV to initiate the agricultural enterprise proved to be a challenge. The major areas of risk highlighted by the financial institutions approached for loans and subsidy grants were:

- ❖ The low viability of rural community projects as business ventures as a result of lack of skills to manage commercial agricultural production on the part of rural communities;
- ❖ The political instability and conflict reigning in most rural communities, especially in those living around the irrigation schemes like Ncorha, Qamata and Shiloh, on the outskirts of Whittlesea, were a cause for concern for commercial banks, the state development agencies and government;
- ❖ In the past 5 years to the present, the Provincial Department of Agriculture has committed significantly large sums of money for the revival of these schemes but had not achieved the required results;

- ❖ The ownership of land in rural communities is communal and thus cannot be used as collateral in securing loans;
- ❖ The fluctuations in weather conditions rendering agricultural enterprises high risk investment portfolios;
- ❖ The instability of market prices for agricultural products resulting in extreme difficulties to forecast and determine return on investment based on future projections.

Isivuno had opted to approach Uvimba Finance, a Provincial agricultural development financial institution of the Department of Agriculture, Eastern Cape that provides micro-finance to small agricultural enterprises in the Eastern Cape to discuss the feasibility of a strategic partnership with Isivuno. An agreement between Uvimba Finance and Isivuno was reached whereby the influence of the former would be leveraged to build strategic partnerships with other business interests who could potentially meet the financial requirements of rural development programmes to reduce financial risk exposure through provision of grant finance. The role of Isivuno in the strategic partnership was to provide Uvimba with the requisite expertise in designing implementation strategies, mentoring monitoring and evaluation as well as the direct management of field operations to ensure the long-term sustainability and profitability of the commercial agricultural initiatives. Unfortunately, when the agreement concluded between the two parties had to be implemented, Uvimba suddenly lost interest and discontinued all forms of contact with Isivuno; hence, this initiative was held in abeyance for an indefinite period.

Another source of funds that was approached by Isivuno was the Thina Sinako Local Competitiveness Fund, a grant funding committed by the European Union towards rural development and administered by the Eastern Cape Provincial Treasury in partnership with the Eastern Cape Development Corporation. In a Key Stakeholder Workshop held on the 21<sup>st</sup> August 2006, the EU Fund delegates displayed a high level of interest in Isivuno concept and business plans. Isivuno applied for grant funding from the EU Fund although the deadline for the submission of proposals was not met; hence, the Fund would be approached in the next window period. In essence, Isivuno had adopted a strategy that sought to combine several funders in a manner that would effectively reduced the risk exposure of each funding institution in an attempt to meet the diverse needs of the startup enterprises. In analyzing products offered by various commercial banks as well as their social investment portfolios, the ABSA Bank was found to be a strategy fit to the JV plans and circumstances, particularly with the anticipated

turnaround time in making loans available to catch the planting season of the planned grain and vegetable crops. This timing was a critical determinant to the successful implementation of the JV production plans. In this initial period of implementation, ABSA showed great reluctance to commit any funding towards the programme in view of the reasons listed above. At the time of the write-up of this thesis, other donor finance organizations approached were: the Eastern Cape Development Corporation (ECDC); the Industrial Development Corporation (IDC) and the Independent Development Trust (IDT); and the Department of Economic Development and Environmental Affairs (DEDEA). Responses from these organizations were expected by Isivuno any time before the end of the summer planting season.

## **5.5 RESULTS AND DISCUSSION**

### ***5.5.1 Qamata: Rural Enterprise Development***

For more than a decade since the demise of Apartheid and the subsequent establishment of a democratic dispensation in South Africa, the rural communities in the country are still leading a precarious existence under the persisting socio-economic conditions of grinding poverty, the deepening crisis of underdevelopment and a consistently escalating rate of unemployment as a result of the legacy of neglect and arrested development. The Joint Venture concept as a strategic intervention in the resuscitation of the Qamata Irrigation Scheme was well thought through and adopted as the most appropriate strategy with a high probability of success and sustainability. In the case of this study, unlike the previous interactions of the community with companies who came in to utilize the land without tangible benefits for the community, the rural communities were engaged in equal partnerships to take control of their fate. The opportunity presented by the current intervention programme was intended to enable the community farmers to make decisions on issues concerning their livelihoods in the current and future phase instead of being relegated into a source of labour on their land to further the aims of self-serving organizations which sought to profiteer at their expense to the long-term detriment of the communities. The partnership's long-term goal was the establishment of a sustainable and developmental environment long after the intervention programme had expired. The business model designed by Isivuno for rural development was a social strategy that was underpinned by the concept of a sustainable and self-reliant rural village with the ultimate objective of making a radical paradigm shift, away from the dependence on state social grants and any other handouts to a state of self-sustenance. The introduction of commercial agricultural production in Qamata had a long-term

vision of instituting forward integration by adding value to primary products through setting up processing and packaging facilities in the vicinity of the fields as the next phase of the enterprise development. In this phase, the future plan was to expand the production scale to serve local and export markets. This initiative was coupled with the engagement of youth in the communities through offering training and funding for scholarships for the development of future technical and management expertise. The long-term strategic goal, dependent on the successful outcomes of the Qamata Joint Venture, was to roll out the programme at a later stage to rural communities under similar socio-economic conditions in the Eastern Cape and other provinces of South Africa. The first pilot undertaken in the interim was to test the markets with the production of beetroot on twenty hectares of land in Section 2. The production was entirely financed through monthly contributions from the members of Isivuno since at this initial stage all funding organizations approached were quite reluctant to invest in the programme for reasons stated in the last section above. The aim of taking a risk to finance this pilot production on the part of Isivuno members was to showcase the venture to all potential stakeholders that it was a worthwhile investment opportunity and furthermore, Isivuno was prepared to take the risk on behalf of the JV as well as demonstrating the expertise and capabilities of the group in managing an enterprise in what was regarded as a highly risky environment. The beetroot harvest was sold to an established food chain wholesaler with outlets in several centres of the Eastern Cape Province. The pilot exercise was a success in a number of ways with the most rewarding aspect being the elevation of the morale of the small farmers of Section 2. The success of the pilot could also be attributed to the vast indigenous knowledge of the community farmers who did not require extensive training prior to the cultivation of the crop. Once the seedlings were planted, the farmers carefully nurtured and tended the cultivation through consistently clearing the weeds and regulating the irrigation as per the pre-planned schedule to achieve a high crop yield under the supervision of the Chairperson of the Farmers' Co-operative. The next phase was the up-scaling of the production plan to include the scheduled crops as stated above depending on the acquisition of seed capital applied for as discussed in the last section above.

The concept of a strategic intervention programme of food crop production dealt with in this study has been proposed by researchers from other countries. A similar programme was proposed by Gari` (2005) as part of a strategy for integrating indigenous knowledge into multi-sectoral AIDS projects organized by the World Bank. In presenting Agro-biodiversity strategies to combat food insecurity and HIV/AIDS impact in rural Africa, Gari` proposed a self-contained model with various resource

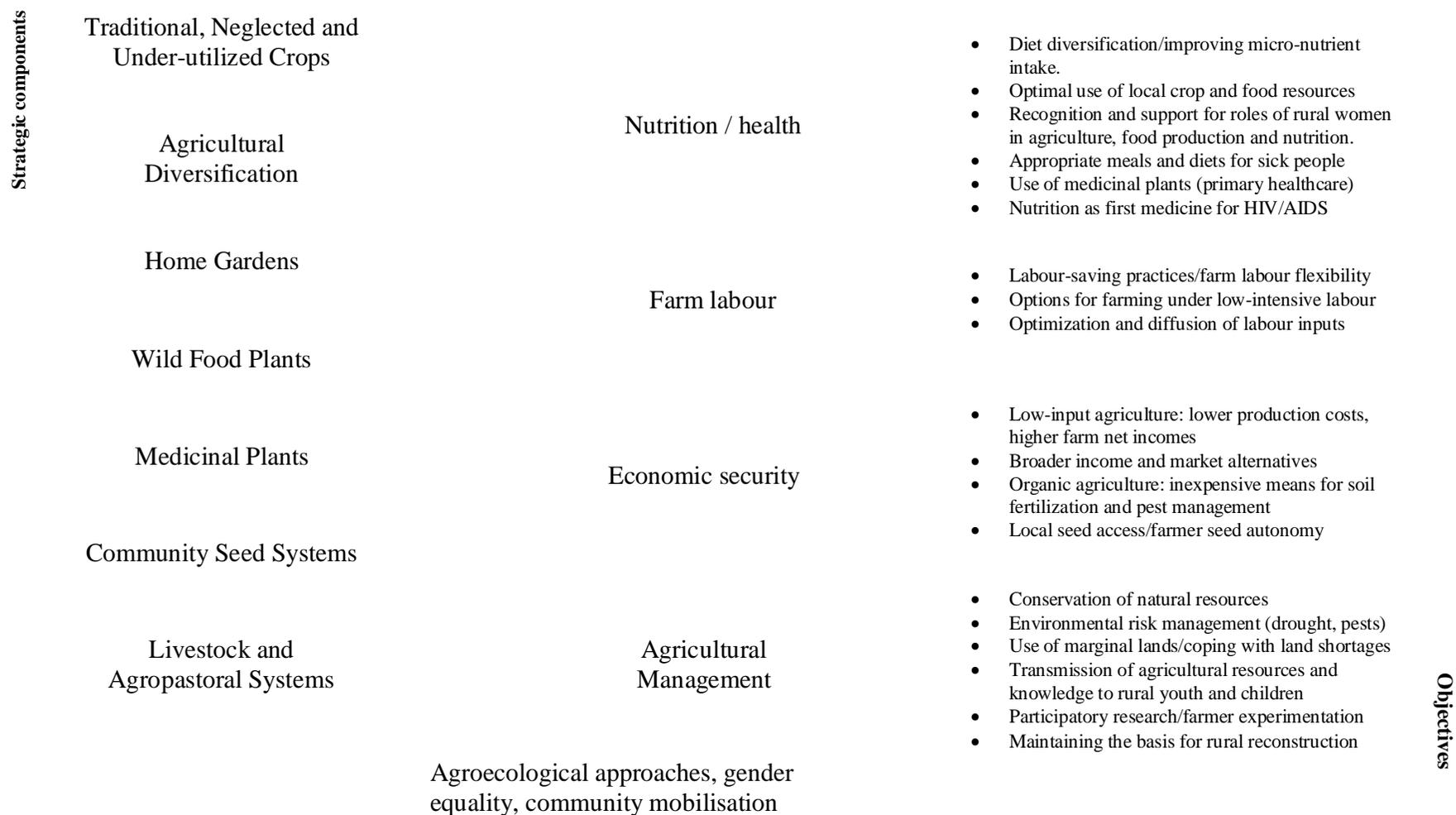
components all of which were within the reach of communities' thus facilitating ease of implementation. The model he proposed was aimed at using food as the first line of medication in the fight against the HIV/AIDS in rural communities. The components of the agro-biodiversity strategy had the following components: traditional, neglected and under-utilized crops; agricultural diversification; home gardens; wild food plants; medicinal plants and community seed systems. The most important feature of the strategy proposed by Gari` in his model was the fact that the raw materials used would be established through the indigenous knowledge systems and resources of those it intended to serve (Gari`, 2005). The aim of the strategy was a reorientation of rural development strategies towards optimizing the use of locally available skills and resources. Gari` concluded that such a strategy implemented would have a significant impact on food security, health and livelihoods of rural communities and could assist in mitigating the impacts and crises such as the HIV/AIDS pandemic. The approach would boost agricultural development in ways that are ecologically and socially sound while simultaneously being more practical and promising in terms of the chances for success. The proposed model by Gari` is shown in **Figure 15**.

#### **5.5.4 Ncorha: *Challenges of Rural Development***

The challenges confronting poor rural communities and other stakeholders in rural development are enormous. Most of the impediments to rural development encountered in all the targeted rural settings throughout the duration of this study were at the level of human resources and interpersonal relations. The Ncora Case Study was found to be an extreme case that epitomized the typical nature of conflict situations and lack of co-operation among rural communities both at a personal and organizational level. Although this research site was discontinued at an early stage, an account of the Ncora experiences has been deemed necessary as part of the report by this study on the nature of the challenges that had to be addressed before the implementation of the rural development programme in all the communities targeted albeit at varying levels. The purpose of the report is to raise the level of awareness in all rural development stakeholders on the typical challenges that could be encountered by any future academic research efforts such as this study, state agency intervention programme or private capital investment interests in working with rural communities such that strategies and implementation plans could be designed on an informed basis. The Ncora Irrigation Scheme is located in Intsika Yethu Local Municipality some forty kilometres to the north-east of the rural town of Cofimvaba in the Chris Hani District. The Scheme has 5,000 hectares of land under irrigation, most of which is highly underutilized. The Scheme land is surrounded by 14 villages with an estimated population of 15,000

with the same poverty indicators prevalent in Qamata. Ncora was established by the regime of the former Transkei homeland in the early 70's in the same manner as the Qamata Irrigation Scheme, through the expropriation of families from their lands. According to the Management of the Scheme, the Scheme was fairly productive at around 90 - 95% of its maximum capacity until the mid-80s.

## Agro-biodiversity Strategies to combat food insecurity and HIV/AIDS impact in Africa (J. Gari` 2005)



**Objectives**

**FIGURE 15: Agro-biodiversity Strategies**

*Source: Josep A. Gari` / SDWP / FAO (2003)*

Post 1990, the productivity levels of the Scheme dropped dramatically to below 10% as the local communities became affected by the changing political environment in South Africa brought about by the anti-apartheid social upheavals of the 80s that were prevalent throughout the length and breadth of the country. The infrastructure on the Scheme rapidly deteriorated due to non-utilization and was found to be in an advanced state of decay with dilapidated buildings and rusting agricultural equipment strewn all over the premises as observed on numerous visits to the Scheme by the members of the research team.

In the period of engaging the Scheme Management by the author of this study, the Chris Hani District Municipality in conjunction with the Eastern Cape Department of Agriculture and the Scheme Management had set up a committee to facilitate the revival of the Scheme. The committee, chaired by the executive Mayor of the Chris Hani District Municipality, was constituted by the Scheme Management, representatives from the provincial and national sector departments, the traditional authorities of the area and the local ward councilors. As a member of this committee, representing the Department of Public Works, the author of this thesis was able to acquire firsthand information on the challenges and issues of the Ncora Irrigation Scheme revival initiative. The first observation made was a lack of participation and contributions to the discussions by the majority of the members of the Scheme Management. In private conversations and interviews with some of members of the Scheme Management, it was established that these local community representatives were quiet in meetings due to the high level of sophistication of the discussions which, in most instances, were dominated by managers from the government departments most of who were highly educated; hence most of the Scheme Management members felt grossly inadequate and out of depth as a result of a lack of capacity to handle discussions on management concepts and ideas at the level used in meetings combined with a low-level of formal education and training. Worse still, discussions were, most of the time, conducted in the English language to accommodate a few non-Xhosa-speaking departmental representatives to the detriment of the locals who had a limited understanding of the language as well as being intimidated by the “boardroom” culture and language in which most of the senior state officials representing government departments were familiar with. Other negative aspects observed about these meetings were high levels of non-punctuality and poor attendance in combination with a high frequency of changing of committee representatives on the part of government departments resulting in discontinuity of discussions and resolutions taken in earlier meetings. In most instances, meetings would be

cancelled at the last moment without notification, a situation that, over a period of time, became intolerable for those committee members who had to travel from afar to attend the meetings. Over and above the challenges and the situation described above, was the unresolved aspect of land ownership on the Scheme among the communities from the surrounding villages. Unlike the Qamata Irrigation Scheme in which the land was apportioned and handed over to the original owners, the Ncora Irrigation Scheme was transferred to a Trust set up by the Eastern Cape Provincial Government to hold it in custody on behalf of all the surrounding Ncora village communities. This institutional arrangement became a source of the simmering tensions and conflicts that were prevailing at the time of engaging the Scheme community by the research group. The Ncora community was demanding the return of the Scheme land to its original owners. A faction from some of the communities was challenging the legitimacy of the Scheme Trust as custodians of the Scheme questioning the manner in which the entity had acquired such a mandate. The conflict reached the height of its career as some of the community groups and individuals resorted to violence and destruction of the Scheme property through arson and theft of movable assets. The local authorities and the Department of Agriculture seemed bereft of ideas to resolve the situation and break the impasse. In interviews with some of the locals, the officialdom of the Eastern Cape Government was perceived by some members of the communities to be imposing their rural development agenda on the local communities without proper consultation and involvement in management planning and decision-making about the future of the Scheme property. According to one of the traditional leaders from the area, the Scheme had always been mired in controversies and low-key conflict that would sometimes erupt into open violence as far back as 1990.

At another level, the source of some of the tensions and the conflict in these rural communities was the status of dual authority of the Traditional Leadership structures and the Local Government community structures occupied by elected representatives. The traditional leadership, which had not been abolished by the new South African State, had been fighting vigorously to regain their diminishing status in the new society, a status that had been gradually eroding, since the colonial period and later on, by the Apartheid South African State that relegated this institution to an inferior status through being subjected to accountability to the district magistrates (Peires, 1989). In a representative democracy ruled by elected bodies in the post-1994 period, it was difficult to envisage what role the traditional authorities' institution belonging to an ancient and obsolete system would play. Nevertheless, under the Mandela Administration, who is also a traditional leader by birth, the traditional leadership throughout

South Africa had been entrenching its position since 1994, a situation that was accommodated by the new constitution. Hence, the coexistence of the dual local authorities systems in the rural communities was causing confusion that became a source of tensions, according to the local people. With due consideration to the conflict-ridden environment in the Ncora Irrigation Scheme area as outlined above, a resolution was taken by the research group to discontinue its activities in the area for an indefinite period.

For the author and other rural development stakeholders, a number of lessons were to be learnt from the Ncora experience. The challenges of reviving the Scheme posed a number of questions to which there were no easy answers. In research audits conducted by the research group and other researchers before them on the likely obstacles and threats to the development potential of a number of rural communities around the Eastern Cape, conflicts and tensions were found to be a common denominator (Beinart, 1992; Ntsebeza, 2001; Kepe, 2002). These conflicts manifested themselves in various forms depending on the social circumstances surrounding each case, the issues at stake and the perceptions of the rural communities. As an example, in researching land tenure and agrarian reforms in some of the areas that were under the jurisdiction of the former Transkei homeland, Beinart (1992) makes a case to the effect that land reforms and changes that affected the communities' way of life and land tenure, rural communities were bound to offer resistance, quoting the example of the Amadiba community in coastal Mbizana who were antagonistic to large development projects as well as removals and rehabilitation in another area without mutual consent between the government and the communities in question. Beinart (1992) states that: "they (rural communities) are anxious to maintain their accustomed way of life and, in particular, do not want to be resettled or lose land". In a review of the implications for further development of sugar plantation in the Eastern Coastal region of Kwa-Zulu Natal, the ownership of land in terms of communal tenure as well as the fear of losing it was a major issue to the rural community (Institute for Management and Development Studies 1986:16). In the former Transkei homeland, from 1945 onwards, the state started the resettlement process of rural communities known as 'betterment planning', which, according to the state planners, was meant to combat the breakdown of natural resources and to contribute towards agricultural development although no mention was made of consultations with the communities prior to the move. The end result was the relocation of whole villages that were scattered all over the landscape into concentrated settlements to make way for grazing fields which were subsequently fenced by the authorities. The

resettlement created serious tensions as the rural communities resisted the process on account of their sentimental attachment to the ancestral lands and an unwillingness to be separated from the family graves, an aspect that has a deeply rooted cultural religious significance to the majority of traditional African societies and underpins their very existence because of ancestor-worship (McAllister, 1992). Ntsebeza (2001) has documented the controversial role of traditional authorities in rural development in the Tshezi area situated near to Coffee Bay on the Transkei Wild Coast where a rural development programme based on the communal property association failed as a result of being undermined by the local chief thus generating tensions. In his research at Mkambati on the Transkei Wild Coast, Kepe (2002) reported the antagonism in this community created by the unilateral manner in which the authorities imposed restrictions on the harvesting and usage of natural forest resources by the community without any consultation. These examples of research studies conducted by the various researchers quoted above illustrate that causes of resistance by rural communities invariably revolve around issues that pertain to loss of access to their natural resources and threats to land tenure. Although an in-depth research study would have to be undertaken in the case of the Ncora Irrigation Scheme to acquire a better understanding of the nature of the conflicts and the corresponding causalities, from discussions held with some of the members of the Scheme Management, it would appear that the perennial problems besetting the Scheme originated from issues of agrarian reforms and land ownership that had not been resolved under the current political dispensation and dated back to an earlier period of the Transkei homeland.

In conclusion, the Ncora Irrigation Scheme case was a learning curve for the research group of this study; the conflict-ridden environment in communities associated with the Scheme was viewed by the research group as being symptomatic of the basic socio-economic manifestations of poverty and underdevelopment in combination with the alienation of rural communities from the land. Thus, frustrations, animosity and a sense of helplessness among the rural communities who had lost hope of ever improving their livelihoods at any time in the future were about an instinctive response towards the set of conditions that they found themselves in. In all the communities engaged, conflicts were found to be pervasive and social facilitation processes had to be instituted to manage inter-personal relationships in order to implement the programme. The conflicts and in-fighting required a high level of transparency on the part of strategic interventions due to suspicions and the underlying fears and sensitivity of communities to be manipulated. Although it was not easy to discuss the root causes of the

conflicts with the participating communities, to a large extent, these were found to be subliminal effects of poverty and underdevelopment on the part of the communities. Once these sub-cultures, which are collectively a function of the social property relations, were understood, it would be that much easier to manage them since the management thereof was a major determinant to the success or failure of the programme. The Ncora Irrigation Scheme, with just less than 6,000 hectares of land under irrigation, is considered to be one of the largest irrigation schemes in the Southern Hemisphere and would have been an ideal site for the proposed commercial enterprise. The conflicts and disputes encountered on this site served to underscore the importance of social facilitation and the management of relationships at a fundamental level if rural development strategies were to be functional in rural communities that have been marginalized and neglected for such a lengthy period as is the case in a transitional society like South Africa. The fact that these communities were suppressed and had no say in civic matters concerning their livelihoods in the earlier period under Apartheid South Africa and could now, in the current political dispensation, feel free to raise disputes and question decisions made on their behalf without any consultation was regarded to be a step in the right direction although it could be delaying the implementation of developmental programmes. Indeed, these were some of the lessons to be learnt about the social dynamics of a transitional society such as South Africa and the social advocacy for the transformation of rural communities by rural development activists, state technocrats and other relevant stakeholders.

#### **5.5.5 Vaalbank Research Site: A Vision of Rural Development**

The Vaalbank-Tsembeyi area in Emalahleni Local Municipality was established as a research site as a result of an invitation of Isivuno Sase-Africa by the Khuthalani Agricultural Cooperative that was established through an initiative by community rural development activists from the area. At the time of engaging the Vaalbank site, the Khuthalani Cooperative was already operational having been registered in 2003 with a membership of 800 community members. This research site is situated in the South African temperate grassland geographical region in the interior of the Chris Hani District Municipality. The area is well-endowed with rivers and water springs that originate from the lower Stormberg Mountain Range that is at the foot of the Drakensberg Escarpment and has a typical African grassland climate that is characterized by extremely cold winters and hot summer seasons. The region is quite mountainous, and despite being characterized by frequent droughts, rivers and other water sources have never been known to dry up, according to the natives of the area. Vaalbank is in Wards 8,

9 and 10 of Emalahleni Local Municipality and consists of the areas: Buffelsdoring; Jojo; Mateyise; Tsembeyi; Upper Vaalbank; Lower Vaalbank with approximately 6000 households and an estimated total population of 35,000 (Khuthalani Cooperative, personal communication with the members of the Executive Committee). The area is vast, with approximately 85,000 hectares of arable land that is grossly underutilized from an agricultural perspective. The rural communities in the area were found to be depressingly poor as well as having the highest backlog in the installation of tap water in the district despite the numerous water sources available. The area also has the lowest access to health centres with only 45% of the population having access (RSS, 2006). According to RSS (2006), 60% of the households in Emalahleni subsist on an income of less than R1500 per month and an unemployment rate of 73.3% with 44% of households having access to the state social grants. Another critical issue about the area was the absence of an electricity sub-station that could supply the necessary power once an irrigation infrastructure was installed. Unlike the Qamata research site, which already had an irrigation infrastructure in place, the Vaalbank rural development research programme was a Greenfield's project initiated from a zero base by the author. The socio-economic status of the Vaalbank communities was, therefore, a typical rural South African setting characterized by extreme poverty, a lack of access to skilled human resources, information and finance to fund development programmes with all being exacerbated by lack of technical and business management expertise and to initiate agricultural enterprise programmes. The Khuthalani community was observed to be highly motivated, led by a strong and visionary leadership, having appointed an executive committee of committed community activists, some of who were in the teaching profession, employed in the local schools. The Khuthalani Executive Committee, having spent a considerable amount of time on planning the strategic direction of the Co-operative, over and above their regular employment responsibilities, had independently drawn up a programme of action with a priority list of seven areas of operation as listed below:

- ❖ Fencing of an initial 360 hectares of land for crop production;
- ❖ Irrigation system infrastructure installation;
- ❖ Training and capacity enhancement of community members in Commercial Agriculture;
- ❖ Acquisition of seed capital to purchase agricultural equipment and funding for farming operations;
- ❖ Establishment of a packaging warehouse and processing facility;
- ❖ Setting up a marketing unit to negotiate contracts with buyers of fresh farm produce;
- ❖ Establishment of a team of community health workers for an anti-HIV/AIDS campaign.

Some of the activities listed above were already in progress by the time the research group came into this community. Khuthalani had approached the Development Bank of Southern Africa (DBSA) to request for grant funds to finance infrastructure development of the farming land. DBSA made available an initial amount of R1 million for the fencing and irrigation infrastructure of 360 hectares and committed to further assistance for subsequent activities subject to the success of the first and pilot phase. Despite the high levels of poverty in the area, no visible rural development programmes or advice centres by state and municipal agencies were visible to assist the communities in setting up sustainable development programmes. This observation on the part of the author was corroborated by the Executive Committee members of Khuthalani who expressed a sense of neglect of their area by the local authorities.

The initial phase of the intervention plan by the author was a collaborative effort with Kuthalani on the HIV/AIDS Management Programme, which was already in progress at the time the author interfaced with the community. The activities of the anti-HIV/AIDS campaign, as reported in Chapter 3, were conducted by a team of youth working under the stewardship of the General-Secretary of Khuthalani. The team members were volunteer health workers who looked after HIV/AIDS affected community members under a Home-Based Care (HBC) Programme which entailed monitoring that patients were taking medication at the stipulated times as well as providing spiritual support through counseling the patients and their family members. The team also taught the family and the patient about the disease and the kind of moral support and care required from the family that would serve to avoid the patients from being isolated as a result of the stigma associated with HIV/AIDS infection. Public health services in the Vaalbank area, in particular an HIV/AIDS management programme, did not offer much to these communities. It must be emphasized that the government had gone a long way in addressing health services infrastructure backlogs in most of the previously neglected black residential areas since coming into power in 1994, but the accumulation of the infrastructure backlogs throughout the country over decades and the severely limited resources at the disposal of the government posed monumental challenges that were not going to be overcome in the short term. Moreover, the outbreak and the spread of the HIV/AIDS pandemic in South Africa, over and above the infrastructure backlogs, had factored in yet another complication in the already seriously overstretched national Public Health System, a situation that merely served to bring into sharp focus the fragile nature of service delivery in the South African public service, with the rural areas of the country being the worse off. The challenge for South

Africa was to transform a Public Service that was initially set up to service four million whites and now had to service a population of close to fifty million. Since 1996, the state had constructed several health centres in the Vaalbank area to improve service delivery in the area of Primary Health Care and to reduce the workload of public hospitals in the neighbouring towns of Lady Frere, Queenstown and Dordrecht as well as easing the cost of traveling to these centres for the rural communities. But the reality of the situation on the ground, according to the Vaalbank communities, was that the new health centres were poorly equipped to provide Primary Health Care since most of the time the dispensaries of these centres had no medical supplies and from the period these centres began to operate, they started with a high shortage of patient care staff, a situation that has persisted to the present. Furthermore, the legacy of a non-integrated Health Care System that ignored the role of Traditional Medicine in Primary Health Care in the livelihoods of the majority of South Africans in favour of the official public health system that is dominated by the Western-inclined health system was taking its toll on service delivery in the area of health, especially among the poorest sections of the country's population who could least afford the cost of the private health services of which the Vaalbank-Tsembeyi Community was but one example.

In his analysis on the Integrated Health Care System in the 21<sup>st</sup> Century, Quansah (2005) expresses the point that the policy of adopting modern (Western) medical systems as the official medical system used to meet the health needs in most underdeveloped countries has resulted in a net loss rather than a gain both health-wise and economically. Countries spend more on health but are unable to meet the health needs of the majority of their people. Quansah's analysis notes that the cost of adopting modern medical systems, economically, is beyond the reach of, mostly, the developing countries (Quansah, 2005). The reason underlying this situation, according to this researcher, is the fact that the services provided through these systems only manage to reach the few who can afford them. The majority of poor rural communities cannot afford the services provided by the system due to the high cost of pharmaceutical products as well as the treatment regimen. Quansah further argues that non-affordability leads to non-accessibility ultimately resulting in non-availability and non-effectiveness since an effective and efficient system must be able to deliver at most times in all circumstances and at all levels.

The analysis by Quansah (2005) on the non-effectiveness of modern medical systems adopted by most developing countries with a high expenditure on health that did not reflect an improvement in service delivery seemed to apply in the case of the Eastern Cape Health Department. The health budget in the Province has been projected to average around 25% in the Medium Term Expenditure Framework Period (MTEFP) 2006 - 2010, making it the second highest allocation after Education as shown in the budget allocation figures in **Table 15** and its graph in **Figure 16** (Eastern Cape Budget Statements I, 2007/08). Despite this high level of expenditure, the public health services in the Eastern Cape remain ineffective.

The next phase in Vaalbank was to lay the groundwork for the installation of a pilot irrigation system infrastructure utilizing the funds acquired by Khuthalani from the Development Bank of Southern Africa. The irrigation infrastructure development phase, the most critical component in the rural development strategy for commercial agriculture, required engineering services to implement. A group of engineers with expertise in dam construction and irrigation systems development were contracted to initiate the project by Khuthalani with the assistance of Isivuno. Henceforth, the engineering team entered into an agreement with Isivuno for a partnership in all future engagements with other rural communities in the area of infrastructure development. The engineers were also responsible for the submission of applications for dam construction to the relevant authorities as well as conducting an environmental impact assessment as per the requirements of the Department of Environmental Affairs and Tourism. Once the preliminary activities were completed, a process similar to the Qamata Irrigation Scheme business programme would be initiated. Meanwhile, gasoline-powered water pumps were to be procured for the irrigation of small plots in an attempt to meet the requirements of nutrition for the community households with the main focus on supplying families with the most needs, especially those with HIV/AIDS affected individuals. In the combat against the pandemic, nutrition was used as frontline in disease management.

#### **5.5.6 Keiskammahoek: A Greenfield Programme**

Keiskammahoek is a small rural town that is situated some forty kilometers to the West of King Williamstown, in the shadow of the Amathole Mountains and is in Amahlathi Local Municipality, which is one of the eight local municipality that constitute the Amathole District Municipality of the Eastern Cape. The Keiskammahoek Research Site is located in eMaZizini Traditional Authority, ten

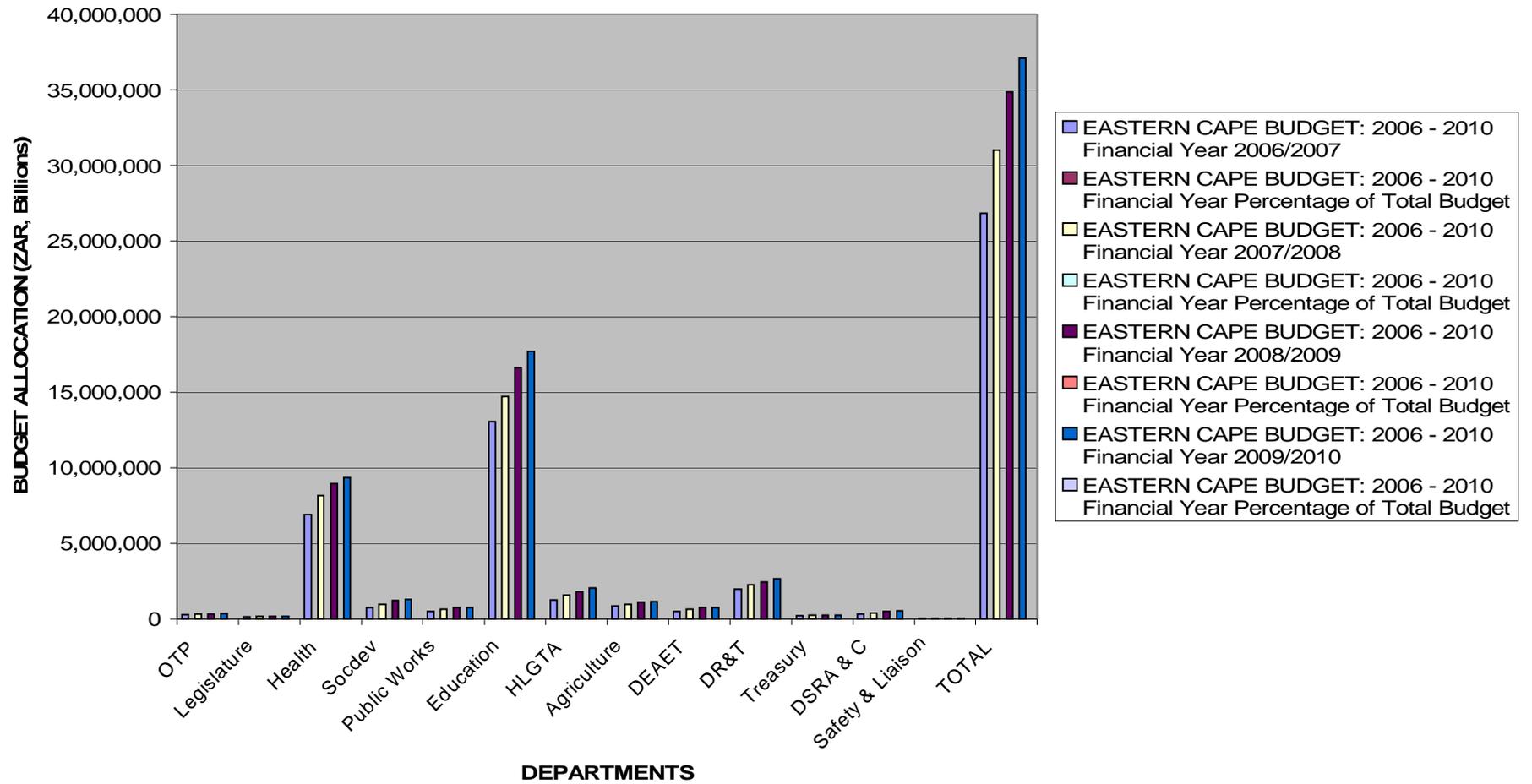
kilometres from Keiskammahoek. The area lies in a rain belt and is famous for its mountainous forests, clean water and fertile soil making it an ideal site for agricultural development. Due to its favourable climatic conditions, it is a natural habitat to a wide variety of indigenous plant species as well as being suitable for the cultivation of most food crops.

**EASTERN CAPE BUDGET ALLOCATION: 2006-2010 (ZAR, Billions)**

DEPARTMENT	FINANCIAL YEAR							
	2006/2007	Percent age of Total Budget	2007/2008	Percenta ge of Total Budget	2008/2009	Percent age of Total Budget	2009/2010	Percentage of Total Budget
<i>OTP</i>	297,038	1.11	311,812	1.01	332,345	0.95	347,372	0.94
<i>Legislature</i>	129,039	0.48	154,525	0.50	169,839	0.49	183,354	0.49
<i>Health</i>	6,892,701	25.69	8,142,743	26.26	8,952,791	25.67	9,356,327	25.23
<i>Social Dev.</i>	762,772	2.84	951,735	3.07	1,228,925	3.52	1,284,227	3.46
<i>Public Works</i>	514,272	1.92	617,973	1.99	727,448	2.09	760,184	2.05
<i>Education</i>	13,065,022	48.70	14,726,061	47.49	16,616,075	47.64	17,680,951	47.68
<i>HLGTA</i>	1,250,606	4.66	1,574,138	5.08	1,808,127	5.18	2,063,745	5.57
<i>Agriculture</i>	869,670	3.24	989,282	3.19	1,105,115	3.17	1,156,935	3.12
<i>DEAET</i>	519,091	1.93	620,973	2.00	728,602	2.09	764,739	2.06
<i>DR &amp; T</i>	1,983,795	7.39	2,239,065	7.22	2,446,218	7.01	2,663,696	7.18
<i>Treasury</i>	196,762	0.73	243,859	0.79	246,849	0.71	253,037	0.68
<i>DSRAC</i>	321,991	1.20	406,011	1.31	478,979	1.37	530,516	1.43
<i>Safety &amp; Liaison</i>	24,365	0.09	30,634	0.10	36,728	0.11	38,381	0.10
<b>TOTAL</b>	<b>26,827,124</b>	<b>100.00</b>	<b>31,008,811</b>	<b>100.00</b>	<b>34,878,041</b>	<b>100.00</b>	<b>37,083,464</b>	<b>100.00</b>

**TABLE 15: Eastern Cape Budget Allocation: 2006-2010 (Source: Eastern Cape Budget Statements I, 2007/08)**

### Eastern Cape Budget Allocation: 2006-2010



**FIGURE 16: Eastern Cape Budget Allocation: 2006-2010 (ZAR: Billions)**

*Source: Eastern Cape Budget Statements I,*

2007/08

Like most rural areas of the Eastern Cape, the Amahlathi Local Municipality population is extremely poor and underdeveloped despite the endowment of a wealth of natural resources that remain largely underutilized. In discussions with a community leader from one of the rural community village clusters constituted by the three villages of, Mqukwane, Nqolonqolo and Nothenga, the research group was invited to interact with the community on the rural development potential of the area and to explore the possibility of establishing commercial agricultural programmes. Following these initial discussions, the Departments of Agriculture and Economic Affairs, Environment and Tourism were approached to present and assist in the registration of an agricultural community co-operative. An introductory workshop was held with the community at one of the three villages of the cluster jointly facilitated by the representatives of the two departments and the research group on the co-operative concept and the registration thereof, the potential opportunities available to the community as well as a comprehensive presentation on issues of governance and management of the co-operative by its members. Having held the information session, the community was subsequently given an opportunity to hold meetings on their own to establish a co-operative and to elect an executive committee that would manage its affairs. A month from the time the first workshop was held, the community reverted to the research group and the two departments to facilitate the registration process. The community had compiled a name list of community members interested in forming a co-operative and elected an executive committee. The documentation was finalized and ready for submission to the Companies and Intellectual Property Registration Office (CIPRO), an arm of the Department of Trade and Industry that is responsible for the official registration and granting of approval to companies and co-operatives to trade. In the period before the completion of the registration process, more educational workshops were held to train the executive committee on the responsibilities of managing a co-operative and the development of the strategic planning process that had to be undertaken before the compilation of a business plan for its operations and trading activities. The entire planning process involved the executive committee of the co-operative as part of their training and the transfer of skills to enable them to plan independently and to own the strategy and operations flowing from the strategic planning process. Having gone through the processes discussed above, the community was in a state of readiness to commence to the next phase, which was to form a Joint Venture partnership with Isivuno in preparation for the development and subsequent submission of the business plan to the financial institutions, Uvimba Finance, the Eastern Cape Development Corporation, the Development Bank of Southern Africa and any other development agency that would be interested in financing the initiative. The plan was to initiate a pilot

production programme on a relatively small scale and expand the operations over time, thus adopting a gradualist approach as a way of minimizing exposure to the risks that are normally associated with the rapid up-scaling of the production scope in most start-up businesses, especially in the Agricultural Sector of grain and vegetable crop production that is notorious for its frequent price fluctuations rendering it a highly unpredictable business venture. Furthermore, as stated earlier, the agricultural production of food crops is extremely reactive to the market Demand-Supply Curve vicissitudes as well as being highly sensitive to variations in climatic conditions and most crops are prone to diseases; hence, its classification as a high risk investment by financial institutions.

### **5.6 INSTITUTIONAL ARRANGEMENTS AND MANAGEMENT**

This section is a discussion on the institutional arrangements and the management structures in the Public-Private Partnerships formed between the community co-operatives and Isivuno to manage the agricultural enterprises at the research sites. The first phase was to develop an equitable institutional model that would be acceptable to the members of the co-operatives and Isivuno team. The model had to ensure fairness to all the parties who had entered into an agreement with Isivuno while also ensuring an appropriate allocation of tasks and responsibilities that would be in line with the capacity of each of the partners in all the Joint Venture arrangements. Isivuno was tasked with the responsibility of:

- ❖ Social facilitation to prepare the communities involved for a paradigm shift from subsistence to commercial farming. This was accorded a high priority status, as stated earlier, since a change in the mindset of rural communities was essential to the success of the enterprise programmes;
- ❖ Taking a leading role in the strategic planning process required for the development of the business plans for the enterprises while ensuring that the co-operatives' members were equal partners since the community participants had an intimate understanding of the environment and the prevailing sub-cultures in communities in their areas by virtue of their Indigenous Knowledge as a community collective, a critical foundation on which new knowledge would be built;
- ❖ Acquisition of capital for the startup enterprises from potential donor funding institutions and state development agencies;
- ❖ Securing markets for the products well in advance in order to base production targets on the actual market demand;

- ❖ Authoring of training manuals and holding training sessions on business and finance management for the executive committee members and the requisite technical skills in commercial farming for the production workforces of the various co-operatives;
- ❖ Development of entrepreneurship among community members who were keen to set up their own businesses through taking advantage of the enterprise requirements such as farming equipment and tractors for the field production activities and trucks for the distribution of products to markets. These items would be rented out to the enterprises as part of the overall strategy to create self-sustaining village communities instead of getting them from outsiders;
- ❖ Appointment of management teams to run the field operations at the various sites;
- ❖ Interfacing with external stakeholders who had an interest in contributing towards the building of the community enterprises and improving rural community livelihoods;
- ❖ Identification and negotiation with experts for the installation of the required infrastructure.

The community co-operatives were assigned the responsibility of:

- ❖ Making land available for farming as per the requirements of the enterprises;
- ❖ Recruiting a workforce for the farming operations;
- ❖ Ensuring that communities were kept abreast of all the developments in the enterprises to manage expectations and minimize potential conflict situations;
- ❖ Ensuring the safety and security of the assets of the Joint Ventures for the viability of the enterprises.

Institutional arrangements as enshrined in the agreements between Isivuno and the community co-operatives to regulate the activities of the Joint Ventures are diagrammatically represented as shown in the model in **Figure 17**.

Community Co-operative

Isivuno SaseAfrika (PTY) LTD

Joint Venture  
50:50

Board of Trustees (BOT)  
Consisting of representatives from both parties  
with independent Chairperson and reputable  
individuals to protect community interests

Operations Management Team  
Selected by the BOT to manage the day-  
to-day operations

**FIGURE 17: Institutional Arrangements and Management Structure of the Joint Venture**

**5.7 CONCLUSION**

In conclusion, food insecurity and the impact of the HIV/AIDS pandemic and Tuberculosis throughout Sub-Saharan Africa are a priority concern for rural development (Gari, 2002). As stated by the World Bank and the Sustainable Development Department of the United Nations, Food and Agricultural Organization in the development of the Millennium Development Goals, millions of rural populations on the Sub-Continent suffer from chronic poverty, socio-economic marginalization, food insecurity and the devastating impact of the HIV/AIDS epidemic and more recently, the outbreak of the Extremely Drug-resistant (XDR) strains of Tuberculosis with the HIV-infected people being the most susceptible to its infection (United Nations, 2000; World Bank Group, 2006). A combination of these social factors has resulted in a rural development crisis, which requires integrated and cross-sectoral responses (Premier's State of the Province address in the opening of the Eastern Cape Legislature, 2006). With regards to HIV/AIDS, the primary challenge for the Agricultural Sector is to mitigate the cumulative impact of the pandemic on the agricultural systems that sustain the food security and livelihoods of the rural poor throughout Sub-Saharan Africa (United Nations, 2000; Gari, 2005; World Bank Group, 2006). According to these international institutions, in poor households AIDS causes severe labour and

economic constraints that disrupt agricultural activities, aggravates food insecurity, and undermines the prospects for rural economic development. Chronic poverty and food insecurity crisis of African rural households deepen whilst the local capacity to overcome such crises gradually weakens as the pandemic affects, mostly, the youth and the adult rural workforce, the two groups who are at the height of their reproductive life-cycle (United Nations, 2000; World Bank Group, 2006).

The majority of South Africa's population resides in the former homelands and while revenue from urban sources and government's social grants might be the mainstay of the rural economy in most of these regions, the multiple and diverse livelihood base of rural households is not widely recognized (Shackleton et al., 2001). In this chapter, the research group engaged the rural communities targeted by this research to reinforce the role of Agriculture in an attempt to develop and implement intervention strategies for rural development aimed at improving the rural economy and the livelihoods of the communities. The rural agricultural enterprise programme model designed by the research group was largely intended to showcase the potential of Agriculture as a first line of defense in the war against chronic poverty, food crises and the ravages of the HIV/AIDS pandemic. The ultimate goal of the research programme was, through close contact and interaction with rural communities, the evolution of strategies for sustainable rural development that sought to involve these rural communities as equal partners and the creation of a thriving and self-sufficient rural economy that could be rolled out and replicated in other rural environments under conditions similar to those prevailing at the target research sites. The nature of the model design of the rural development strategies was to ensure the participation of the communities in planning the development strategies and their implementation on an equal partnership basis for the sustainability of the enterprises long after the research group had moved on and left the communities to independently manage the enterprise operations and their future development. All the strategic and business plans, the marketing campaign and the execution thereof were intended to inspire confidence in all the participating stakeholders to the effect that, with an appropriate business and governance model, it was possible to develop rural community enterprises into a worthwhile investment that could transform the economic outlook for the better, not only in the rural areas, but in the Eastern Cape Province as a whole to circumvent the potential catastrophic implications of entire communities being decimated by the HIV/AIDS pandemic and the worrisome sporadic occurrences of social unrest that had begun to bubble beneath the veneer of the much lauded peaceful transition of South Africa into a model democracy. However, over the thirteen years of the

new dispensation the levels of poverty and the unemployment rate had worsened as affirmed by the Provincial Government (Eastern Cape Government Budget Statement I, 2007/08) as shown in **Figure 16** above. The major thrust of the rural economic development initiatives reported by this research has been to occupy the developmental space provided by the democratically elected government driven by an understanding that all sectors of the South African civil society, more especially the academic community, have a role to play in the socio-economic transformation of the rural communities through poverty alleviation programmes and the mitigation of underdevelopment by utilizing natural resources with which the Eastern Cape is richly endowed thus enabling rural communities to confront the challenges of poverty and underdevelopment.

Although the Eastern Cape has a wealth of natural resources and human talent, in the thirteen years of democracy, the overwhelming majority of the rural population is still wallowing in escalating poverty, unemployment rate and underdevelopment despite the efforts and the idealistic intentions of the government to turn the situation around. The Provincial Government has been unable to improve rural livelihood conditions although considerable resources have been allocated to revive the irrigation schemes in the Province. The issue here is that rural communities do not have access to the necessary skills and financial resources to unlock the intrinsic value of the natural resources at their disposal. As discussed in this chapter, the enterprise model developed by the research group whereby Community-Public-Private Partnerships are proposed as strategic vehicles for rural economic development, the probability of success was significantly improved as was noted in the pilot production of beetroot by Isivuno in partnership with the Opengo Agricultural Co-operative in the Qamata Irrigation Scheme community. The greatest challenge encountered by the Joint Venture partnerships was the acquisition of seed capital to finance the startup of the enterprise development. However, most stakeholders conceded that Agriculture was paramount to rural economic development in a province such as the Eastern Cape that is largely rural. The proposed business model of partnerships was even more critical for enterprise development as a result of low skills capacity in rural communities. The case studies clearly demonstrated the value of such partnerships and the high risk of failure in cases where the partnership model was not utilized as was the case in the case study reported in Chapter 6.

## **CHAPTER 6: AGRICULTURAL ENTERPRISE DEVELOPMENT: CASE STUDY OF LUBISI SORGHUM-WHEAT INITIATIVE**

### **6.1 INTRODUCTION**

South Africa, in support of its recommitment to Agenda 21 principles and the World Summit on Sustainable Development (WSSD) outcomes, the Eastern Cape Provincial Government entrusted the Provincial Department of Economic Development and Environmental Affairs (DEDEA) with the coordination of the Provincial support agenda to this end. DEDEA facilitated this process through its commercial arm, the Eastern Cape Provincial Government Development Agency, the Eastern Cape Development Corporation (ECDC) in consultation with SD-WSSD related sectoral departments and institutions. The business plan presented below, developed as a collective effort by the author for the Lubisi Sorghum-Wheat Agricultural Initiative (crop rotation of sorghum with wheat), was endorsed by the Provincial Department of Agriculture as one of the projects that would support the Eastern Cape Provincial commitment to Sustainable Development-WSSD processes in the Agricultural Sector. This was in line with the fulfilling of aspirations towards the realization of the Agricultural Sector targets as indicated in the Johannesburg Plan of Implementation (see box below), a plan that originated from the second World Summit on Sustainable Development held in Johannesburg, South Africa from 26 August - 4 September 2002 (United Nations, 2002).

#### **Box 1: Implementation Plan Adopted by the WSSD (JHB, 26 August - 4 September 2002)**

**Paragraph 40(a) urges action at all levels to achieve the Millennium Declaration and World Food Summit targets to halve global hunger by 2015, in combination with measures that address poverty. Specific recommendations support, *inter alia*, integrated land management and water utilization plans; sustainable and efficient use of land and other natural resources including the reinforcement of national research, agricultural extension services and farmer organizations; enhancement of women participation in sustainable agriculture and food security; guaranteeing well-defined and enforceable land and water use rights and promotion of legal security of tenure; increasing public sector finance for sustainable agriculture; enhancement of access to existing markets and the development of new markets for value-added agricultural products; and support for traditional and indigenous agricultural systems (United Nations, 2002).**

## **6.2 STRATEGIC SUPPORTIVE FRAMEWORK**

The Lubisi Sorghum-Wheat Agricultural Initiative was in line with supporting the following government initiatives:

- ❖ Agriculture Sector Sustainable Development- WSSD Plan of Implementation targets;
- ❖ The Provincial Growth and Development Plan (sectoral cross-cutting sustainable development functions);
- ❖ The Provincial, Regional and Local Agricultural Development Plan;
- ❖ The Integrated Development Plan (District and Local Municipalities);
- ❖ The National Development Framework related to these processes including NEPAD focus on Agricultural Development.

The Strategic Supportive Framework, in its totality, was based, therefore, on the Agenda 21 Principles of the WSSD: Earth Summit on Sustainable Development. A brief detour to Agenda 21; Agenda 21 is a global plan of action that underpins the Framework of the Millennium Development Goals for 2015. The plan was adopted at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in 1992, also familiarly known as the Rio Earth Summit (United Nations, 1992). It is a comprehensive plan of action adopted globally, nationally and at a local level by organizations of the United Nations System, governments and major civil society groups in every area in which the human species impacts on the environment. Agenda 21, the Rio Declaration on Environment and Development and the Statement of Principles for the Sustainable Management of Forests were adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, 3 to 14 June 1992. The Commission on Sustainable Development (CSD) was created in December 1992 to ensure effective follow-up of UNCED, to monitor and report on implementation of the agreements at the local, national, regional and international levels. It was agreed that a five year review of Earth Summit progress would be made in 1997 by the United Nations General Assembly meeting in a special session. The full implementation of Agenda 21, the Programme for Further Implementation of Agenda 21 and the Commitments to the Rio Principles, were strongly reaffirmed at the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa from 26 August to 4 September 2002 (United Nations, 1992; Sitarz, 1994). The emphasis of the Agenda 21 Principles is on the proper management of the Earth's natural resources coupled with the socio-economic development of poverty-

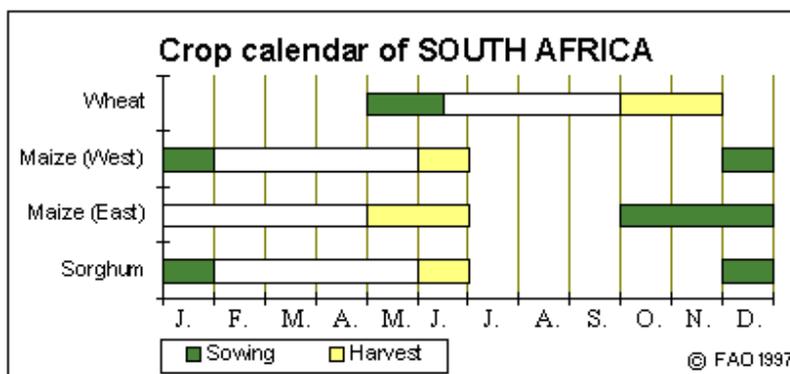
stricken populations who depend on these resources for a livelihood (United Nations, 1992). The Lubisi Sorghum Initiative was, therefore, a swift response to address the socio-economic factors, mainly as a solution to conserve biodiversity which was invariably affected negatively by poor communities' struggle for survival as a result of limited options other than exploiting the environmental resources to which they have access.

## **6.3 METHODOLOGY**

### **6.3.1 Introduction**

The Lubisi Sorghum-Wheat Agricultural Initiative was a government initiative that sought to invest, in the short to medium term, in the agricultural production of sorghum rotated with wheat using the 1000ha dry arable land of the Ndonga areas of Upper Ndonga and Lower Seplan at Emalahleni and Intsika Yethu Local Municipalities and at Guba and Maqwathini Tribal Authorities in the start-up phase followed by a rollout to other areas in due course. This initiative was intended to improve rural community livelihoods through the stimulation of commercial agriculture in the poverty-stricken areas. The long-term objective was to expand, replicate and align the production model (wet area cultivar), in a wet area taking advantage of the irrigation scheme infrastructural potential of the Lubisi Dam. Primarily linked to this process, was the integration of the Sorghum Initiative with other Lubisi development initiatives facilitated by the Council for Scientific Information and Research (CSIR). The objective was to implement a three-year production cycle, which involved growing, harvesting, distribution and processing of the product/s from the cultivation site. Community Indigenous Knowledge System applications on sorghum (and wheat) production in the Ndonga area was in line with a study commissioned by the Provincial Department of Agriculture confirming the area to be one of the potential small grain crop production areas (Department of Agriculture, 2003). Sorghum is a drought resistant, indigenous African staple food crop with commercial farming and local market potential in the areas of Chris Hani, Ukhahlamba, OR Tambo, Alfred Nzo and Amathole Districts. A market expansion potential to other provinces of South Africa was identified. In so far as the export markets were concerned, the Indicative International Market potential included Argentina, Australia and other SADC countries such as Botswana. The Initiative, primarily, focussed on domestic markets while simultaneously exploring export market potential and the stipulated crop specifications to be adopted. A Public Private Partnership (CPPP) was established through setting up a community cooperative structure around the 1000ha tract of communal land. The partnership formed was between

community farmers (women farmers were specifically targeted), government agencies, local authorities and traditional leaders. For long-term sustainability, the plan was the application of crop rotation practice through the production of sorghum during summer, wheat during winter and an encouragement of livestock improvement plan (animal feed would be a spin-off from the crop production process). Livestock farming had been previously indicated on the agro-ecological zoning of the area (ECSECC, 2002). A Crop Rotation Cycle over a period of twelve months was drawn up as illustrated in **Figure 27**. The diagram, which is an illustration of the Crop Production Cycle proposed for the Initiative over a period of one calendar year, can also be represented as shown below clearly demonstrates the livestock feed component of the Sorghum Initiative as a strong potential revenue stream that could elevate the percentage margins with minimal additional inputs. It must be noted that Isivuno SaseAfrika was not involved in this initiative. The Lubisi Agricultural Initiative was a wholly state-driven programme although the author prepared this document.



**FIGURE 18: Crop Production Cycle: Sorghum-Wheat Key Products** (*Magwa et al., 2005*)

❖ **Sorghum Grain ↔ Stalk -Bales ↔ Bags Sorghum ↔ Sprout Sorghum (iNkoduso) ↔ Animal Feed**

❖ **Wheat Grain ↔ Bag Wheat ↔ Bread Flour ↔ Cake Flour ↔ Animal Feed.**

These key products would be used to stimulate interest in livestock improvements plans (animal feed).

Secondary economic spin-offs from the grain crop production would be:

- ❖ Property Development for commercial farming;
- ❖ Provision of technical equipment and agricultural implements;
- ❖ Grain storage and processing facilities;
- ❖ Animal Feed production;
- ❖ Packaging and marketing of products;
- ❖ Transportation of products to markets;

The underlying concept of the Initiative was an Integrated Approach of: Sorghum - Wheat crop rotation and a livestock feed spin-off expressed as:

“A replicable Public-Private-Partnership (CPPP) model based on the integrated principles of sustainable development using available arable land and Indigenous Knowledge practices of rural communities, designed to address community livelihoods through the promotion of benefits of commercial agricultural production in tandem with the provision of opportunities for inter-linkages with other agro-processing and manufacturing enterprises in the Chris Hani District (local area of Ndonga - Lower Seplan) as part of a regional growth and development strategy that is a logical expression of the commitment of the Eastern Cape Provincial Government towards Sustainable Development and Agenda 21 Principles in the Agricultural Sector (and related sectors). The strategic goals of the Lubisi Sorghum-Wheat Agricultural Initiative were:

- ❖ To form strategic partnerships between relevant stakeholders and communities towards poverty eradication and job creation opportunities (improve livelihoods and promote commercial farming) that would benefit the communities of the Ndonga and Lower Seplan areas;
- ❖ To strive towards the production of high demand quality products all the year-round through the implementation of crop rotation practices (sorghum in summer and wheat in winter);
- ❖ To encourage forward integration of the supply chain through the introduction of facilities for the agro-processing of grains into value-added products;
- ❖ To develop a structured enterprise model of community co-operatives to ensure sustainability and the development of entrepreneurship through structured business support, business skills transfer and accessing of financial resources.

An environmental survey and internal analysis were conducted utilizing one of most commonly used tools of the strategy toolkits, the **SWOT Analysis**, to acquire an in-depth perspective of the capacity and shortcomings of the productive forces within the control of the Sorghum Initiative as well as the prevailing environmental factors that were potential driving and restraining forces to the Initiative over which there was no control as shown below.

## Strength-Weaknesses / Opportunities-Threat Analysis

<b>Internal Analysis</b>	<p><b>Strengths:</b></p> <ul style="list-style-type: none"> <li>• The owners of the Initiative (Communities and key role players) have a vision, and the ability to implement the Sorghum Initiative Programme.</li> <li>• Commitment and dedication on the part of communities and key role players was positive towards the advancement of this initiative.</li> <li>• Willingness to take calculated risks with the understanding that those risks could be converted into wealth creation and sustainable job opportunities in the long term.</li> <li>• Internal policy that favours the empowerment of the communities through their involvement in ownership, decision-making and implementation of the initiative is in itself, strength.</li> </ul>	<p><b>Weaknesses:</b></p> <ul style="list-style-type: none"> <li>• Lack of seed capital and the necessary equipment for the initial production remains a challenge and a major obstacle to most community-based business initiatives as rural communities are “viewed” as a risk “factor”; however this would be eliminated by the commitment and participation of the key role players with requisite expertise coupled with a recommendation of revolving credit facility for the establishment.</li> <li>• Scarce human resource skills in communities to sustain efforts in commercial agricultural production and farming.</li> <li>• No culture of commercial production in communities.</li> <li>• Suspect work ethic in most communities as a result of long years of unemployment.</li> </ul>
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<b>External Analysis</b>	<p><b>Opportunities:</b></p> <ul style="list-style-type: none"> <li>• The initiative will enjoy support from government programmes (capacity and skills development) that favour historically disadvantaged communities.</li> <li>• Availability of adequate arable land with favourable climatic conditions for production is a potential opportunity.</li> <li>• A sound and ongoing relationship with key role players is another opportunity.</li> <li>• Products as staple food in the area would address issues of livelihoods and poverty eradication. Potential availability of market opportunities in the industry in both domestic and foreign markets would see the Sorghum Initiative achieve its short and medium term goals of addressing livelihoods and stimulation of commercial farming in the area.</li> </ul>	<p><b>Threats:</b></p> <ul style="list-style-type: none"> <li>• Major threats to farmers at this stage are theft and robbery although these are isolated incidents.</li> <li>• Inaccessibility of markets to black commercial farming communities and white monopoly of commercial farming supply chain.</li> <li>• Competition from established commercial producers of sorghum.</li> <li>• International price vicissitude due to uncertainties created by instability of world trade and unequal trading caused by farming subsidization in USA and Europe.</li> <li>• Natural disasters (Acts of God) are also threats that are beyond human control.</li> <li>• Pests and new crop diseases that cannot be anticipated pose a real threat to farming.</li> </ul>
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### 6.3.2 Critical Success Factors

Critical Success Factors for the effective implementation of the operational plans for commercial crop production were conceptualized as outlined below:

#### 6.3.2.1 Social Cohesion and Community Support

The Initiative enjoyed support within the target community and key role players including the Public and Private Sectors, Traditional Leadership and civil society and was perceived as an opportunity that would make a fundamental contribution towards greater social cohesion through ensuring the participation of community members in its establishment, more specifically, given the fact that most members of these communities were unemployed and indigent.

### **6.3.2.2 Access to Land**

Sufficient communal land estimated to be 1000ha was available and was dedicated to the Initiative for production purposes to achieve economies of scale and a critical mass that would go beyond the threshold required for the profitability of the enterprise. Involved landowning community members who later became members of the community co-operative, pledged their support and commitment to avail the land for the Initiative. A representative Task Team of all stakeholders participating in the Initiative was established to facilitate this critical aspect.

### **6.3.2.3 Integrated Environmental Management Practices**

Environmental friendly inputs and technologies to be utilized in the production process were selected in combination with labour-intensive production processes that would ensure large-scale employment opportunities without compromising production efficiency, customer-specific product quality and profit-margins. The dichotomy of biodiversity conservation principle imperatives and the intensive community requirements for sustainable economic development called for innovative environmental management strategies that would integrate these two seemingly polarized programmes; hence the need for integrated environmental management practices to achieve a counter-balance between them.

### **6.3.2.4 Agricultural Equipment and Implements**

The need for suitable agricultural equipment and implements was critical. A major consideration was a well-managed maintenance plan of the machinery acquired through the cultivation of strategic relationships with the service providers who were suppliers of the machinery.

### **6.3.2.5 Establishment of a Structured Empowerment Programme**

Although community farmers have, historically, been cultivating sorghum and wheat, a structured business development and financial support programme were a prerequisite and were attained through the establishment of a cooperative entity in order to sustain the operations of the Initiative as planned. Support required for the Initiative included technical support with respect to all the farming requirements (related to the Initiative) and enterprise management. An appropriately structured financial package to support the Initiative was crucial since it had to be aligned to the investment risk management. The financial support package was also designed to create the material and objective conditions for a culture of owning the responsibility for loan payment and therefore, assist

communities in undergoing a paradigm shift from the concept of state grants to self-reliance without creating an unwarranted exposure to a non-sustainable debt burden; hence, in the event, a revolving credit plan was recommended in support of the transformation process towards genuine and meaningful empowerment and sustainability.

### **6.3.2.6 Product Quality Assurance**

The Sorghum Initiative products had to comply with product/s and industry generic quality standards including ISO 2001 standards for market competitiveness. Service providers and suppliers of agricultural material inputs such as seeds, fertilizers, pesticides and herbicides committed to provide the appropriate training to ensure that international standards were adhered to in the production process from soil preparation through to harvesting, storage and distribution of the produce to customer markets.

## **6.4 LOCATION AND BRIEF SOCIO-ECONOMIC PROFILE OF THE SITE**

### **6.4.1 Project Location**

The Lubisi Sorghum-Wheat Agricultural Initiative targeted the Ndonga area with the initial phase to be implemented in upper Ndonga and Lower Seplan, covering a total of 1000ha of arable lands in Emalahleni and Intsika Yethu Local Municipalities including the Guba and Maqwathini Tribal Authorities, all located in the Chris Hani District Municipality.

### **6.4.2 A Socio-Economic Profile of the Ndonga Area**

#### **6.4.2.1 Brief Programme Rationale Overview**

The Eastern Cape Province is one of the poorest regions in the country. Unemployment, lack of resources and technical skills has resulted in a food crisis that is unprecedented in the history of the region. This proposal is part of a broader strategy to address these issues. Poverty, the production plans of the Initiative, malnutrition; destitution, pestilence, economic underdevelopment and a high illiteracy rate are just some of the issues that sought to be addressed by the Initiative. The communities lack the capital funding and the necessary equipment.

### 6.4.2.2 Population Size

At the time of the start-up operation, Emalahleni was a home to approximately 25528 households with a population estimate of 125 308. INtsika Yethu had approximately 44161 households with a total population of 207770 people.

### 6.4.2.3 Gender Distribution

54.7% of the population in Emalahleni Local Municipal area was female while in iNtsika Yethu Local Municipality area gender distribution is similar, with women being in the majority at 55%.

### 6.4.2.4 Age Distribution at Emalahleni and Instika Yethu

Emalahleni and Intsika Yethu population age distribution is shown in **Table 16**:

Age Range	Emalahleni		Intsika Yethu	
<b>0-4</b>	<b>14600</b>	<b>12</b>	<b>27080</b>	<b>13</b>
<b>5-19</b>	<b>58163</b>	<b>47</b>	<b>95906</b>	<b>46</b>
<b>20-29</b>	<b>14344</b>	<b>11</b>	<b>20840</b>	<b>10</b>
<b>30-49</b>	<b>17198</b>	<b>14</b>	<b>28888</b>	<b>14</b>
<b>50-64</b>	<b>9928</b>	<b>8</b>	<b>17703</b>	<b>9</b>
<b>Over 65</b>	<b>9219</b>	<b>7</b>	<b>15519</b>	<b>7</b>
<b>Age Unknown</b>	<b>1599</b>	<b>1</b>	<b>1431</b>	<b>1</b>
<b>Total</b>	<b>125051</b>		<b>207367</b>	

**TABLE 16: Emalahleni & Intsika Yethu Population Age Distribution: Census SA 2001**

### 6.4.2.5 Brief Economic Profile of Emalahleni and Intsika Yethu Local Municipalities

According to a survey conducted by RSS (2006), Emalahleni Local Municipality has extremely high levels of poverty with approximately 75% of the population having no steady source of income while it is estimated that in Intsika Yethu Local Municipality 76% of the population is reported to be living in poverty. This high level of poverty has resulted in a heavy dependence on state grants such as child support, disability and old age grants. The disposable income of individual households in the area is very low with only about 5.75 % employment levels in Emalahleni and 4.49 % in the case of Intsika

Yethu. In Intsika Yethu, the majority of the people are employed in the Social Services Sector followed by the Farming Sector. Similar statistics prevail in the Emalahleni area with lesser participation in commercial farming (RSS, 2006).

### **6.4.3 Land Tenure**

Consistent with the strategic objectives of rural community empowerment, the operational and implementation activities of the Initiative were planned to utilize communal land that is under the jurisdiction of traditional leadership of the area who had, over a period, demonstrated a commitment to the local economic development of their communities. A consensus among the participating stakeholders was reached to allow the communities to utilize the land according to the Common Law practice that adjudicates the communal land tenure system under Traditional Authority. Flowing from the consensus, an agreement between the chiefs and the community members who were prospective users as well as the established land-users was signed. Communities and key role players also agreed on a cooperative structure as a management option for the planned enterprise. This was in line with the Department of Agriculture inputs on suitable legal entities. An Interim Steering Committee with representation from the community and key stakeholders was set up to facilitate the process of establishing the enterprise. Social facilitation to manage the change within the communities was initiated in anticipation of social challenges that, historically, normally arise when the basis of the pre-existing socio-economic conditions in such communities is in the process of being disestablished by a new set of economic circumstances (Roux, 1948; Alexander, 1979; Peires, 1989).

### **6.4.4 Suitability of the Site for the Initiative**

Community indigenous knowledge systems on sorghum and wheat production in the Ndonga area were in line with the study commissioned by the Regional Department of Agriculture confirming the area to be, traditionally, a potential small grain area. Soil tests were conducted by the Regional Department of Agriculture. Sorghum and Wheat Fora (Associates of Grain South Africa) affirmed the area to be a traditional small grain production area through the soil tests. Also acknowledged was the historical market shift from sorghum to maize consumption by indigenous African communities consciously or otherwise through the pressure of market forces coupled with the marginalization of indigenous grain crops and vegetables with little or no involvement of the local farming communities. Meaningful participation in farming and land ownership by the historically disadvantaged farmers and influence on decision-making of production of the traditional products was encouraged.

#### 6.4.5 Accessibility and Infrastructure Requirements

The Ndonga and Lower Seplan areas are easily accessible, being 70 km to the North of Queenstown, which is on the N6 National Road to Johannesburg, Durban and East London (airports and harbours) as well as a railway link that passes through Queenstown, connecting East London and Johannesburg. The road network also interconnects Chris Hani, Ukhahlamba, OR Tambo, Alfred Nzo and Amathole district areas of jurisdiction, these being areas that form part of the targeted geographic market. Commitment and support for improvements and maintenance of access roads to the Initiative were requested from the Provincial and District authorities who were also key role players and instrumental in the establishment of the Initiative. Water, sanitation, electrification and fencing included part of the infrastructure requirements and support requested from the local authorities.

### 6.5 PRODUCTION PLAN METHODOLOGY

#### 6.5.1 Production Potential

The most reliable method of production forecasting was to use long-term yield data from the local producers for each grain crop. This reflected the inherent yield of the specific environment as well as the effect of agronomic practices such as fertilization, soil cultivation, plant density, weed control, pest control and managerial skills of the producer.

#### 6.5.2 Brief Crop Profile

<b>Sorghum</b>	<b>Wheat</b>
Sorghum belongs to the grass family, <i>Gramineae</i> . Its roots can be divided into primary and secondary roots. The leaves (fewer than those of maize) are typically green, grass-like and flat and not as broad as maize leaves. The stem is solid and dry, or succulent and sweet. The inflorescence of sorghum is compact panicle.	Wheat is also a member of the grass family; however it is a C3- photosynthetic species whose growth morphology and physiology is favoured by winter photoperiodic climatic conditions.

### 6.5.3 Soil Requirements

Sorghum	Wheat
<p>Sorghum is mainly grown on low potential soils with high clay contents (and soils with clay content between 10 % and 30 %), which is usually not suitable for maize production. It is more tolerant to alkaline salts than other grain crops and can be successfully cultivated on soils with a pH between 5.5 and 8.5. Soil depth is important because it provides space in which water can be stored and plant roots can develop. The effective soil depth is natural depth to which roots can develop without any hindrance, and is 2 m for sorghum. During the technical preparation stage a detailed soil analysis was conducted to establish (scientifically) the extent of these properties and also for the purposes of determining which pesticides to use.</p>	<p>Wheat soil requirements has the same characteristics soil patterns and PH ranges which are detailed in sorghum and as well as in the case of maize production conditions.</p>

### 6.5.4 Drought Tolerance

Sorghum	Wheat
<p>Sorghum's ability to tolerate drought better than most grain crops can be attributed to the following:</p> <ul style="list-style-type: none"> <li>❖ Small leaf area, which limits transpiration.</li> <li>❖ An effective transpiration ratio of 1:310 compared to 1:400 for maize.</li> <li>❖ Corky leaves covered with waxy layer, which protects desiccation and cells that are resistant to plasmolysis.</li> <li>❖ Stomata close rapidly to limit water loss. During very dry conditions sorghum remains in dormant state and resume growth as conditions improve.</li> </ul>	<p>Wheat is a common crop which is characterized by several cultivars which are either suitable for irrigation or dry land farming. The dry - land cultivars are well known for drought tolerance in the dry ecological habitats.</p>

### 6.5.5 Climatic Conditions Suitability

<b>Sorghum</b>	<b>Wheat</b>
<p>Sorghum is a warm-weather crop, which requires high temperatures for good germination and growth. The minimum temperature for germination varies from 7 to 10 ° C. At a temperature of 15 ° C, 80 % of seeds germinate within 10 to 12 days. Sorghum is a short-day plant, which means that the plant requires short days (long nights) before productive stage. The optimum photoperiod, which will induce flower formation, is between 10 and 11 hours.</p> <p>In South Africa Sorghum is produced on a wide range of soils, and under fluctuating rainfall conditions of approximately 400 mm (drier areas) to about 800 mm (wetter areas). Although sorghum is drought resistant it consumes large amounts of water if available and has a critical period regarding water usage. According to maps supplied by the Department of Environmental Affairs, the rainfall pattern of the area is between 379 and 725mm.</p>	<p>The feasibility records and the climatic conditions are winter conditions as opposed to sorghum and maize climatic condition requirements.</p>

### 6.5.6 Tillage

This is the foundation of any crop production system and is also the most expensive practice in the production of sorghum and wheat. Scientifically, tillage is referred to as ‘soil structure management’ because structure is the basic determinant of planting conditions, germination, air and water movement as well as erosion by wind and rain.

### 6.5.7 Planting

The combination of the first spring rains around the month of September, distribution of the seasonal rainfall, soil temperature, frost-free period and the cultivar to be planted, determine the planting of sorghum. Sorghum is normally planted with maize planters. Adaptations were effected through the utilization of appropriate planter plates and gear ratios to obtain the desired plant population. Since the seed is smaller than that of maize, it is planted shallower; a planting depth of 25 mm is satisfactory

with sufficient soil water while under drier conditions the seeds should be planted deeper although it should be no more than 50 mm. Wide rows are recommended for low rainfall areas and on soils with poor water holding capacity. Depending on the long-term rainfall, soil type (potential) and factors already mentioned, sorghum is planted in 0.91m, 1.5m or 0.3m rows. The planting practices for wheat are similar to those of maize except that for wheat the spreading/scattering method is the preferred option.

### **6.5.8 Cultivar Choice**

Climatic conditions influence the growth and yield of cultivars. The production plan should indicate towards the end of each season which cultivars are to be planted in the subsequent season. Cultivars, if correctly planned, can have a profound effect on risk reduction and comprise an important element in the total production programme.

### **6.5.9 Fertilization**

Research on the fertilization requirements of sorghum has received relatively little attention to date. The depletion of essential soil nutrients by the sorghum crop (grain alone) corresponds with amounts applicable to maize. This implies that the response of sorghum to fertilizers will, to a considerable extent, be similar to that of maize. Fertilizer guidelines for sorghum are adapted from the maize guidelines. The Agricultural Research Council (ARC) has guidelines on wheat production, and dependent on the areas under cultivation and the soil nutrient status, appropriate fertilizers can be administered.

### **6.5.10 Weed, Pest and Disease Management**

Weed control during the first 6 – 8 weeks after planting is crucial as weeds compete vigorously with crops for nutrients and water during this period. An integrated approach is needed for effective weed management. This process includes physical methods such as hand labour or implements or fire if weed stands are dense; cultural practices of ploughing during winter or in early spring; biological method such as insects feeding on weed or weed-specific diseases and chemical methods like liquids, granules, or grasses applied to kill germinating or growing weeds. Very few of the insect species found in sorghum can be regarded as pests; in fact the majority of insects found in sorghum fields are enemies of sorghum pests. An integrated pest management approach is always the best and is preferred for its flexibility whereby other methods can be incorporated.

### 6.5.11 Harvesting

The diagram in **Figure 19** serves to illustrate the production flow from harvest to final product.



**FIGURE 19: Production flow of Sorghum and Wheat from Harvest to Value-added Products**

Milestones	Year One				Year Two				Year Three			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Feasibility study												
Tendering for fencing, Tendering for operations												
Training												
Fencing												
Social Facilitation												
Establishment of a cooperative enterprise												
Organizational Development												
Acquisition of resources Production inputs												
Technical preparation Levelling												
Ripping												
Disking												
Planting and fertilizer spreading												
Spraying												
Cultivation												
Harvesting												
Quality management												
Packaging												
Storage												
Distribution												
Processing												
Facilitation of horizontal processes												

**TABLE 17: Sorghum Initiative Project Plan with Milestones and Key Activities**

### **6.5.12 Enterprise Project Plan**

In planning for the establishment of the Sorghum Initiative, a project plan with a Critical Path Analysis, milestones and key activities was drawn up to provide the basis and guidelines for resource mobilization, efficiency and cost-effectiveness. The Project Plan is as illustrated in **Table 17**.

## **6.6 MARKETING PLAN**

### **6.6.1 Domestic Market Overview**

#### **6.6.1.1 Sorghum**

Sorghum has four grades in the local markets, namely: Class GM, Class GL, and Class GH and Class Other Sorghum. Sorghum is mainly produced in the Free State (51 %), Mpumalanga (29 %) and Limpopo (10 %) with the balance produced by the other six provinces. Sorghum is an indigenous African staple food crop with the potential to address rural livelihoods and the promotion of commercial farming in rural communities. In South Africa, there is a Sorghum Forum that is constituted by all the participating stakeholders in the Sorghum Industry Supply Chain, viz., producers, traders, processors, labour, consumers and the Agricultural Research Council. The Forum meets on a regular basis to discuss various issues pertaining to the Sorghum Industry. Marketing of sorghum is conducted on the basis of free market principles under the relatively new Marketing Law (Act 47 of 1996).

With regards to commercial farming, the Sorghum Trust, an associate of Grain SA, is responsible for the provision of logistical and technical support to emerging sorghum producers. The Trust has identified the member countries of the Southern African Development Community (SADC) Region, especially Botswana, as a potential market for the products of the Lubisi Sorghum Initiative. Key to the process is the accessibility of these potential markets through a well maintained roads and transport infrastructure. In order to provide guidelines and specifications on the market potential and penetration, the Sorghum Trust has shown an interest in supporting the Sorghum Initiative through conducting technical studies in the feasibility study phase (refer to **Table 17** above: Sorghum Initiative Milestone and Key Activities).

### 6.6.1.2 Wheat

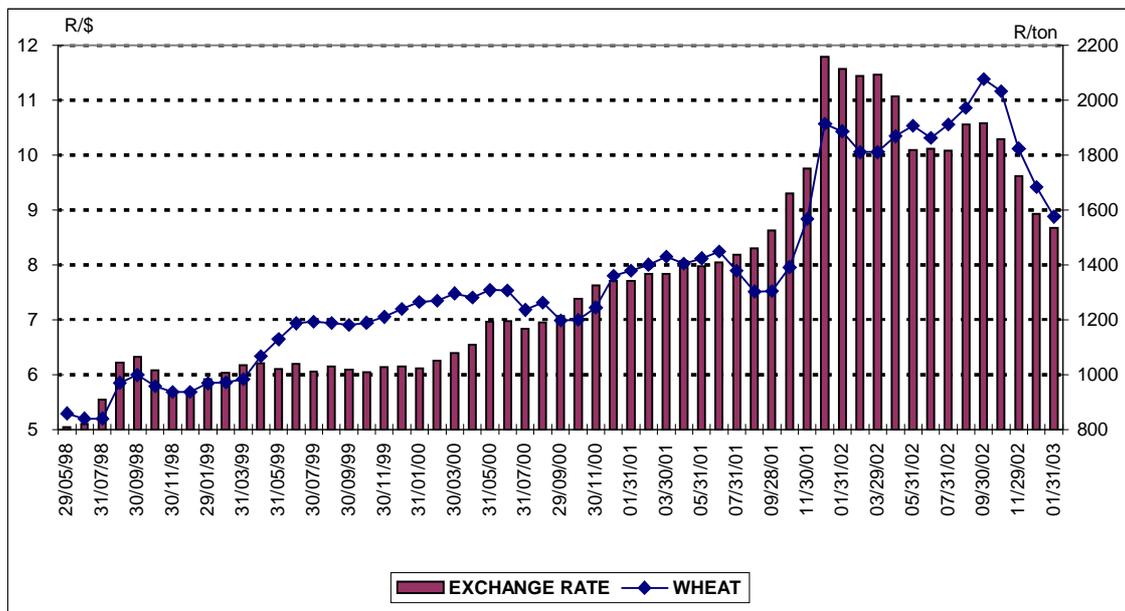
An equally enthusiastic interest as was demonstrated by the Sorghum Forum for sorghum prevailed with regards to wheat production from the Wheat Association of South Africa, indicating a considerable market potential for wheat and an interest in providing logistical and technical support including potential market entry during the feasibility study phase of the Initiative. The National Agricultural Marketing Council (NAMC) information indicates that local consumption of wheat has been fairly constant at around 2.3 – 2.5 million tons per annum, with volumes increasing slightly above 2% year-on-year, perhaps reflecting the rate of population growth in the country over the last five years. South Africa is the main source of wheat for the SADC region, more especially in times of shortage. The price of wheat on the domestic market is determined by several interactive factors including the international price of wheat, the exchange rate, local production, local consumption and stock levels both domestically and internationally. These factors determine whether the price will be closer to import parity, which is the price of imported wheat or export parity, which is the price of exported wheat with the former being higher than the latter. According to NAMC, South Africa is, in most seasons, a net importer of wheat indicating that wheat prices are usually closer to import parity on the domestic market. In the international grain markets, South Africa is classified as a wheat importing country. This reflects a potential opportunity for the Lubisi Sorghum-Wheat Agricultural Initiative as a potential local producer that can contribute towards the domestic market production margins in order to offset the need for South Africa to import wheat.

The graph in **Figure 20** below (Agrimark Trends, 1998 – 2003) shows that there is a significant correlation between the domestic price of wheat as listed on the Commodities Exchange and the strength of the South African Rand against the US Dollar. In recent years, a stronger Rand coupled with cheaper imports, has resulted in a significant drop in the price of wheat on the domestic market. **Figure 21** below (Agrimark Trends, 1998 – 2003) illustrates that the price of wheat is higher than the exchange rate (opportunity) while also noting the importance of the processing phase. The graph in **Figure 21** indicates that the processed product has added value than selling grains directly without value addition in the form of processing. The price of wheat, as listed by the South African Food Exchange (SAFEX), is correlated to the retail price of white and brown bread. It is a fact that bread prices follow a similar trend suggesting that bread prices are closely correlated to the domestic price of wheat. Lower domestic wheat prices in season, as reflected in the graph in **Figure 21**, and lower priced

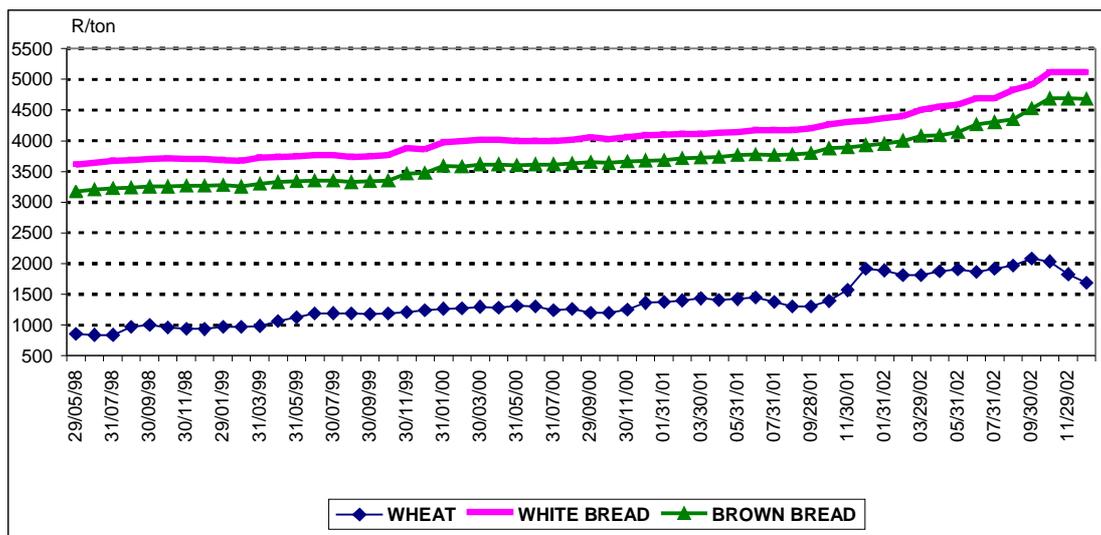
imports should potentially lead to lower bread prices in the next couple of years as processors reduce the expensive wheat stocks they bought when wheat prices were high.

### 6.6.2 Target Markets

The marketing focus of the Sorghum Agricultural Enterprise Initiative was, primarily, on the domestic market while simultaneously exploring the opportunity of entering international markets based on international trading requirements and the Demand-Supply trends. As indicated above, the local markets targeted in the Eastern Cape were, Chris Hani, Ukhahlamba, OR Tambo, Alfred Nzo and Amathole districts, with a view to expand into other markets at a later stage. The Sorghum and Wheat Trusts confirmed this market potential indicating the significance of technical studies in the feasibility study phase.



**FIGURE 20: Exchange Rate vs. Wheat Price. (Source: Agrimark Trends, 2003)**



**FIGURE 21: Wheat Price versus White and Brown Bread Prices: Source: Agrimark Trends, 2003**

### 6.6.3 Potential Markets: Sorghum and Wheat (Grains and Processed Products)

#### 6.6.3.1 Informal Trading

Informal trading was forecasted to be a key contributor to the sales in the first year of operation. Interviews conducted with local aspiring entrepreneurs indicated that a significant market potential existed for both sorghum and wheat. From market intelligence sources such as NAMC and Grain SA, it was established that the informal trading prices of sorghum and wheat ranged between R200.00 and R250.00 per 50kg bag. However, product forecasts were not based on this data since it was not market related but only indicative of the impact of informal trading on product pricing.

#### 6.6.3.2 Millers

Supply Chain contracts with buyers were to be negotiated by the newly formed Community Agricultural Co-operative. Critical to the local product marketing support was to ensure product quality, pricing, payment method, distribution logistics and the proximity of the target market segments. Market entry was to be finalised with the assistance of Sorghum and Wheat Trust (Grain SA) and the relevant key role players linked to the marketing strategy. Market related prices as reflected below were based on price quotations obtained from the companies: Border Seed CC and Kessel's Cash and Carry based in East London in the Eastern Cape. Specific price quotations for sorghum and wheat furnished by these suppliers were: sorghum grain @ R8208.00 per hectare; wheat

grain @ R1650.00 per hectare; sorghum sprout @ R45.00 per 8kg; livestock feed @R10.00 per bale; and flour @ R48.00 per 12.5kg.

### **6.6.3.3 Retailers and Wholesalers**

An aggressive and competitive marketing strategy had to be designed in order to make inroads in this market segment due to the high level of competition between suppliers, most of who were well established and enjoyed strong relationships with most of the formal traders over a long period. Moreover, most of the formal traders were reluctant to enter into supply contractual agreements with a fledgling enterprise such as the Lubisi Sorghum-Wheat Agricultural Initiative with no track record coupled with the risky nature of agricultural crop production. However, interviews held with local wholesalers and retailers confirmed the high demand for these products.

### **6.6.3.4 Market Potential**

#### **a) Agreements and Contracts**

The Community Agricultural Co-operative had the responsibility of negotiating and acquiring contracts to supply the products to the targeted customer base while ensuring compliance with the statutory trading requirements as well as linking these aspects to the marketing strategy of the Initiative. **Box 2** below lists the minimum terms that would form the basis for the contract negotiations with buyers in the marketplace.

#### **Box 2: Basis of Contract Negotiations with Buyers**

- ❖ **2,000 tons of sorghum grain to be supplied on a monthly basis;**
- ❖ **24,000 tons per annum;**
- ❖ **Class GH sorghum variety Grade 1 (75% of the requirements);**
- ❖ **Class GM sorghum variety Grade 1 (25% of the requirements);**
- ❖ **A storage facility at Isithebe Malt Plant, Mandini with a capacity of storing 17,000 tons would be utilized;**
- ❖ **Customer-specific product quality and market related pricing structure;**

## **b) Advertising and Promotional Campaign**

A vibrant advertising and promotional campaign was designed to support the strategic marketing plan with recommendations to use the following promotional and advertising items over a twelve-month period:

- ❖ **Signage**: Billboards next to the major routes from the Ndonga and Lower Seplan would be erected to attract potential customers from surrounding communities.
- ❖ **Publications**: Adverts would be placed in periodical Agricultural publications to create awareness in the farming communities of the Eastern Cape Province.
- ❖ **Brochures and Flyers**: Brochure and flyers would serve to create and heighten awareness of the local communities on the products of the Initiative through the distribution of these items in public gatherings, public transport ranks and events on an ongoing basis.
- ❖ **Agricultural Trade Shows**: The Initiative's community would be encouraged to participate in regional and national agricultural events and road shows through setting up stands with promotional material.
- ❖ **Electronic and Experiential Media**: Advertising slots on the electronic media (mainly, Umhlobo Wenene: the Xhosa Radio Station) would be purchased choosing programmes during which most of the members of the targeted customer segment would be tuning in. Experiential (face-to-face) marketing in public areas, such as bus and taxi ranks and popular shopping areas, would be used targeting, mostly, rural communities on specific days such as state grants pay points and others.
- ❖ **In-store Promotions and Merchandising**: Shop floor promotions would be staged targeting wholesalers and retail stores of agricultural products using point-of-sale material, shelf space and category management. The Advertising and Promotional Campaign presented an opportunity to build the products of the Initiative into strong recognizable brands in the long-term; hence, the products were to be assigned easy-to-recall names in combination with a powerful mnemonic as a pay-off line that would create a top-of-the-mind awareness and a strong association with the new products in customer memories long after the message has been heard. A thematic approach in the execution of the promotional campaign was recommended.

### c) Pricing and Sales

A competitive pricing structure that would optimize sales volumes without compromising profit margins was recommended after taking into consideration market indicators such as:

- ❖ The size of the market for each product in monetary value terms and stock-keeping-unit (sku) volumes, year-on-year;
- ❖ The percentage growth rate of the market for each product in units and value, year-on-year;
- ❖ The market share and growth rate of competitor products, especially the market leaders;
- ❖ The pricing strategies of competitor products and brands;

## 6.6.4 International Market Overview

### 6.6.4.1 Introduction

Although international markets were considered with a keen interest in the planning phase of the marketing plan, they were regarded as a secondary phase to be explored at a later stage while the immediate focus was to establish a firm base in domestic and SADC markets. Grain SA and other key role players such as the Department of Trade and Industry, the Provincial Department of Agriculture and the Department of Economic Development and Environment Affairs were committed to assist the management of the Initiative in conducting market surveys on imports and exports of grain crops in the SADC Region relative to the global markets. Critical to this process was to ensure the state of readiness of the Initiative in entering and establishing a presence in international markets with respect to aspects of trade expectations, cultural mindsets, international market standards and the maintenance of such standards.

### 6.6.4.2 Sorghum

**Table 18** illustrates the supply and demand figures of the most important countries in terms of production and consumption of sorghum. The information on market trends of agricultural products reflected in this section was obtained from Agrimark Trends (AMT), a South African company that collects market data and information on agricultural products. Although the data provided was not recent, it could still provide relevant market trends and indicators on agricultural production due to the characteristically stable nature of growth in the Demand-Supply Chain of agricultural products. According to AMT (2002), Sub-Saharan Africa was not expected to export any sorghum in year 2004 but was forecasted to import 143 tonnes over and above the 16 773 tonnes it had produced. Argentina and Australia do not import any sorghum but were expected to export between 571 and 648 tonnes of

sorghum in the same year. **Table 18** below shows that, Japan and Mexico presented an opportunity for sorghum exports subject to satisfying the requisite export standards since there is no local production of sorghum and were expected to import 1973 and 4528 tonnes, respectively, in 2004.

NORTH AFRICA & MIDDLE EAST									
Crop Year	Area harvest	Yield	Production	Imports	Exports	Total cons	Food use	Feed use	Ending stock
2000	780	1.731	1,350	200	-	1,550	360	1,190	53
2001	780	1.731	1,350	200	-	1,550	363	1,190	53
2002	803	1.776	1,427	190	-	1,616	353	1,262	57
2003	801	1.788	1,432	190	-	1,622	352	1,270	57
2004	808	1.805	1,458	190	-	1,647	347	1,299	57
2005	807	1.823	1,470	192	-	1,662	347	1,315	58
2006	810	1.838	1,489	190	-	1,678	341	1,337	58
2007	812	1.852	1,503	192	-	1,694	340	1,354	59
2008	818	1.868	1,528	194	-	1,721	340	1,381	60
2009	823	1.883	1,549	195	-	1,743	339	1,404	60
2010	830	1.899	1,575	192	-	1,767	334	1,433	61
2011	832	1.913	1,592	193	-	1,784	329	1,455	62
SUB-SAHARAN AFRICA WEST/ RSA									
Crop year	Area harvest	Yield	Production	Imports	Exports	Total Cons.	Food use	Feed use	Ending stock
2000	20,430	0.799	16,320	110	10	16,430	15,976	443	305
2001	20,580	0.796	16,386	70	-	16,456	16,438	460	305
2002	20,536	0.811	16,650	138	-	16,790	16,355	435	324
2003	20,526	0.817	16,773	143	-	16,914	16,478	436	326
2004	20,402	0.824	16,806	149	-	16,954	16,516	438	327
2005	20,367	0.830	16,911	153	-	17,062	16,623	439	329
2006	20,279	0.837	16,973	157	-	17,129	16,688	441	330
2007	20,221	0.844	17,060	163	-	17,220	16,778	443	332
2008	20,148	0.850	17,134	167	-	17,300	16,856	444	334
2009	20,083	0.857	17,214	171	-	17,384	16,939	445	335
2010	20,015	0.864	17,294	175	-	17,467	17,020	447	337
2011	19,945	0.871	17,371	181	-	17,550	17,102	449	338

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ARGENTINA									
Crop year	Area harvest	Yield	Production	Imports	Exports	Total cons	Food use	Feed use	Ending stock
2000	670	4.627	3,100	-	650	2,500	100	2,400	609
2001	650	4.615	3,000	-	500	2,500	96	2,400	609
2002	696	4.794	3,337	-	641	2,643	99	2,544	618
2003	663	4.851	3,216	-	571	2,671	98	2,574	592
2004	680	4.902	3,333	-	590	2,722	99	2,623	613
2005	686	4.948	3,392	-	627	2,766	99	2,667	622
2006	668	4.987	3,331	-	551	2,791	100	2,691	610
2007	672	5.025	3,375	-	549	2,821	100	2,722	616
2008	698	5.064	3,536	-	652	2,856	100	2,756	644
2009	674	5.100	3,435	-	571	2,886	100	2,786	623
2010	664	5.132	3,405	-	491	2,920	101	2,819	617
2011	665	5.157	3,430	-	477	2,950	102	2,848	620

AUSTRALIA									
Crop year	Area harvest	Yield	Production	Imports	Exports	Total cons	Food use	Feed use	Ending stock
2000	591	2.628	1,553	–	650	903	50	850	100
2001	750	2.667	2,000	–	650	1,350	49	1,300	100
2002	642	2.695	1,730	–	650	1,075	50	1,026	107
2003	637	2.713	1,727	–	648	1,078	49	1,030	107
2004	634	2.724	1,728	–	623	1,102	49	1,053	110
2005	633	2.741	1,735	–	622	1,113	49	1,063	111
2006	635	2.754	1,748	–	615	1,131	49	1,082	113
2007	621	2.779	1,727	–	603	1,124	49	1,075	112
2008	617	2.798	1,726	–	594	1,131	49	1,082	112
2009	600	2.823	1,693	–	568	1,126	49	1,077	111
2010	601	2.836	1,704	–	559	1,143	49	1,094	113
2011	596	2.855	1,701	–	552	1,148	49	1,099	114

CHINA									
Crop year	Area harvest	Yield	Production	Imports	Exports	Total cons	Food use	Feed use	Ending stock
2000	889	2.904	2,582	25	30	2,561	2,084	477	142
2001	940	2.872	2,700	–	30	2,600	2,066	300	212
2002	891	3.425	3,052	–	24	3,028	2,070	958	164
2003	858	3.450	2,960	–	26	2,939	2,070	869	159
2004	853	3.531	3,011	–	26	2,983	2,045	938	161
2005	866	3.880	3,102	–	27	3,070	2,030	1,040	166
2006	866	3.614	3,130	–	28	3,100	2,004	1,096	168
2007	854	3.655	3,123	–	28	3,095	1,965	1,130	167
2008	852	3.710	3,160	–	28	3,130	1,928	1,203	169
2009	864	3.768	3,219	–	28	3,188	1,880	1,307	172

2010	860	3.820	3,285	–	29	3,252	1,829	1,422	176
2011	860	3.873	3,330	–	29	3,298	1,773	1,525	178

JAPAN									
Crop year	Area harvest	Yield	Production	Imports	Exports	Total cons	Food use	Feed use	Ending stock
2000	–	–	–	2,000	–	2,100	–	2,100	252
2001	–	–	–	1,900	–	1,900	–	1,900	252
2002	–	–	–	2,018	–	2,008	–	2,008	241
2003	–	–	–	1,973	–	1,977	–	1,977	237
2004	–	–	–	1,966	–	1,967	–	1,967	236
2005	–	–	–	1,950	–	1,952	–	1,952	234
2006	–	–	–	1,938	–	1,940	–	1,940	233
2007	–	–	–	1,922	–	1,924	–	1,924	231
2008	–	–	–	1,913	–	1,914	–	1,914	230
2009	–	–	–	1,892	–	1,894	–	1,894	227
2010	–	–	–	1,889	–	1,890	–	1,890	227
2011	–	–	–	1,864	–	1,867	–	1,867	224

MEXICO									
Crop year	Area harvest	Yield	Production	Imports	Exports	Total cons	Food use	Feed use	Ending stock
2000	1,830	3.115	5,700	4,700	–	10,900	–	10,900	781
2001	1,930	3.212	6,200	4,500	–	10,700	–	10,700	781
2002	1,980	3.114	6,165	4,519	–	10,692	–	10,692	962
2003	1,948	3.114	6,067	4,528	–	10,603	–	10,603	954
2004	1,933	3.114	6,021	4,669	–	10,683	–	10,683	961
2005	1,912	3.114	5,954	4,739	–	10,692	–	10,692	962
2006	1,897	3.114	5,908	4,814	–	10,720	–	10,720	965
2007	1,883	3.114	5,864	4,942	–	10,799	–	10,799	972
2008	1,871	3.114	5,826	5,180	–	10,989	–	10,989	989
2009	1,859	3.114	5,790	5,221	–	11,009	–	11,009	991
2010	1,848	3.114	5,756	5,406	–	11,149	–	11,149	1,003
2011	1,837	3.114	5,720	5,529	–	11,241	–	11,241	1,012

TAIWAN									
Crop year	Area harvest	Yield	Production	Imports	Exports	Total cons	Food use	Feed use	Ending stock
2000	13	4.615	60	50	–	110	40	70	10
2001	13	4.615	60	60	–	120	40	80	10
2002	12	4.615	55	60	–	115	40	75	9
2003	11	4.615	53	60	–	113	41	72	9
2004	11	4.615	50	62	–	112	41	71	9
2005	10	4.615	48	66	–	114	41	73	9
2006	10	4.615	46	69	–	115	42	73	9
2007	10	4.615	44	72	–	116	42	74	9
2008	9	4.615	42	75	–	117	42	75	9
2009	9	4.615	40	77	–	117	42	75	9
2010	8	4.615	39	80	–	119	43	76	9
2011	8	4.615	37	82	–	119	43	76	9

**TABLE 18: Supply and Demand Figures of the most Importing Countries for Sorghum Production and Consumption (Source: Agrimark Trends, June 2002)**

### **6.6.4.3 Wheat**

The National Agriculture Marketing Council indicates that in the international grain markets, South Africa is classified as a wheat importing country. The world production of wheat varied between 572 and 583 million tons in the last eight years with the production in South Africa peaking at just a little more than 2 million tons, implying that SA produces less than a half percent of the total world wheat supplies and thus, South Africa is a price taker and is not in a position to influence the international market prices. The price of the most common wheat cultivar, the 'hard red winter wheat', is determined by the Chicago Board of Trade (CBOT) and other United States-based grain exchanges. The subsidization of Agricultural export production by the United States and the European Union, while simultaneously advocating trade liberalization through the abolition of trade tariffs across frontiers, has merely served to sharpen the gross inequalities and the highly uneven and combined economic development inherent in the free market system and the trading framework of a globalizing economy that is driven and underpinned by the profit motive and capitalist competition among the various regional Trade Blocs on the one hand, and competition between the individual member states that belong to these Trade Blocs, on the other hand. At the international level, the role of the World Trade Organization (WTO) is, supposedly, to harmonize and regulate global trade to ensure fairness and mutual benefit for all member states. Although the globalization of the world economy through integration and trade liberalization among the WTO member states have been heralded with much publicity and presented as agents of a viable solution to the challenges of world poverty and underdevelopment in, mainly, the underdeveloped countries as well as being ideal for an all-inclusive economic growth and development, the underdeveloped countries have yet to realize benefits from international trade liberalization, especially in agricultural exports (World Trade Organization, 2002). The impact of trade liberalization against the backdrop of a highly integrated global economy on agricultural import-export markets and economic development in underdeveloped countries is discussed at length in Chapter 8. It suffices to state that, the status of the wheat market in the SADC Region was perceived to be an opportunity for the Lubisi Sorghum-Wheat Agricultural Initiative.

## **6.7 DISCUSSION AND CONCLUSION**

Chapter 5 has presented and highlighted the multiplicity of agricultural enterprise development opportunities with high prospects to be agents for social transformation and improvement of rural livelihoods. At the time of the compilation of the report on the progress of the Lubisi Sorghum-Wheat Agricultural Initiative, the implementation of the first phase was well underway. The progress in the

establishment of the Initiative was to be monitored and evaluated on a quarterly basis. Although much work still has to be undertaken towards the translation of theories and hypotheses on rural economic development into a commercially viable reality, the Lubisi Sorghum-Wheat Agricultural Initiative, as a point of departure towards such development, served to demonstrate the plethora of opportunities available to improve the livelihoods of the poverty-stricken rural communities of the Eastern Cape if properly managed. This Case Study also crystallized the dire necessity for strategic partnerships and alliances in the form of Community-Public-Private-Partnerships as agents for rural economic development similar to all the other case studies reported in this thesis. Although rural community areas are endowed with a wealth of natural resources coupled with the valuable foundations of Indigenous Knowledge utilized in subsistence farming on the basis of which commercial farming and enterprise development could be built, the dearth of the requisite technical and business managerial expertise in the rural communities targeted posed a formidable challenge in driving the enterprise formation process forward. However, the cornerstone of the strategic concept, used in all the case studies reported prior to this study, of partnerships between the rural communities and a professional agricultural management entity such as Isivuno that was primarily set up to compensate for this lack of capacity, was expected to nullify these shortcomings. The aspect most frequently encountered in the course of engaging the rural communities was the mindset of dependence and a reluctance to take ownership of their development, perhaps as a result of the disempowering modus operandi of the apartheid order; hence, most of them were inclined to be wage earners and nothing more. This situation was proving to be one of the most formidable challenges confronting the research study in its endeavours towards enterprise development.

Social facilitation for change management proved to be the most valuable tool in preparing the target communities for the implementation of the proposed social intervention plan. A further challenge experienced in these engagements was a lack of response on the part of the provincial and national sector departments in availing resources to communities to establish rural economic development programmes of this nature. One of the underlying factors that could be attributed to this state of near paralysis on the part of the sector departmental officialdom was the fact that to most of these bureaucratic officials the customer service paradigm was anathema; hence, without any interventionist change management strategies to transform the Public Service towards customer focus, as per the requirements of the Batho-Pele (People First) Principles introduced by the democratically elected

government as guidelines for service delivery excellence, was an exercise in futility. Furthermore, the status described above was compounded by a general lack of managerial capacity at the most senior levels of the Eastern Cape Provincial Government departments. However, the author concluded that given enough time, combined with the collective efforts of all the relevant stakeholders with an interest and a commitment to rural economic development, the transformation process could be effective. As was observed during the course of this study, in discussions, most community members had little hope that the status quo would change in the foreseeable future. The positive aspect in the Case Study was the enthusiasm displayed by the rural community farmers around the Agricultural Sorghum-Wheat Initiative, which they perceived to be an opportunity to improve their livelihoods through owning both the concept and strategy of the Initiative.

On checking the progress of the Lubisi Initiative, three years from the time it was initiated, not much progress had been made. The management of the enterprise had been left, mostly in the hands of the local farmers who did not have the necessary business skills to successfully manage the startup enterprise. Nevertheless, the Initiative provided some valuable lessons for all the stakeholders involved about the necessity of engaging and developing technical, financial and business management skills including the marketing function of such an enterprise. The author was engaging the local farmers and the community leadership in discussions on attempts to salvage the initiative at the time of the submission of this thesis.

## **CHAPTER 7: MEDICINAL PLANT COMMERCIALIZATION: THE CASE OF THE PELARGONIUM SPECIES IN THE NKKONKOBÉ LOCAL MUNICIPALITY**

### **7.1 INTRODUCTION**

Herbaceous plant species are an important source of livelihoods for millions of people living in developing countries the world over, with an estimated 80% of the world's population being dependent on Traditional Medicine for primary health care (Arnold & Ruiz-Perez, 1996; Cunningham, 1997; Mander & Le Breton, 2006). It is also estimated that 25% of all prescribed Allopathic medicines contain some ingredient(s) derived from plant species (Mander & Le Breton, 2006). These estimations exclude herbaceous plant species that are a source of nutrition to many rural traditional populations in the developing countries. Sometimes termed as Non-Timber forest products, most of these plant species have come to be recognized as important income generators with their exploitation being promoted more than ever before (Peters, 1996; Lawes et al. (eds), 2004; Mander & Le Breton, 2006).

The medicinal plant market in Southern Africa consists of two generalized market systems:

- ❖ A primary informal market system focusing exclusively on traditional medicine and herbal remedies; and
- ❖ A more formal market system that includes herbal remedies, phytomedicinals, nutraceuticals and cosmeceuticals. (Cunningham, 1988; Leakey et al., 1996; Cocks & Dold, 2000a; Mander, 1998; 2004; Mander & Le Breton, 2006).

More critical, according to several researchers, is the fact that most of the plant material traded in Southern Africa is from wild-harvested plants (Cunningham, 1988; Hutchings, 1996; Mander, 1998; Cocks & Dold, 2000a; Mander & Le Breton, 2006). Cultivated plants represent an insignificant volume in the current trade (van Wyk, 2002; Williams, 2004; Cocks et al., 2004). However, it is estimated that approximately 80% of all naturally existing plants from which the material has been harvested will be extinct as a result of the harvesting practices while in some forests in South Africa, over 80% of the trees from which high value medicinal materials are harvested are already extinct (Mander, 1998, 2004; Mander & Le Breton, 2006). Relatively recent research initiatives in the field of marketing and commercialization of natural plant species have been conducted in KwaZulu-Natal (Cunningham, 1998; Mander, 1998) Gauteng (Dauskardt, 1990; Williams, 1996; Williams et al., 1997, 2000, 2001; Van Wyk et al., 1997) Eastern Cape (Cocks & Dold, 2000; Kepe, 2002) and Mpumalanga (Mander, 1997; Botha, 2001). All these authors have expressed serious concerns over the unregulated harvesting

of the economically valuable plant species and the damage it has done to the environment such as the denuding of whole forest plant populations and soil erosion.

Chapter 7 presents an account of a case study conducted on two *Pelargonium* plant species, one of the most economically important indigenous plant species found in the Eastern Cape, with a remarkable economic potential as a source of livelihood for rural communities living in the areas next to its natural habitat. The utilization of *Pelargonium* sp. presented an opportunity as a business case for commercialization in agricultural enterprise initiatives and also of equal importance, as a showcase for the management of biodiversity conservation coupled with innovations in policy development to effectively regulate and harmonize the exploitation of economically important indigenous plants species in a manner that seeks to ensure the continued existence of these plant species.

The Eastern Cape Province is richly endowed with a diversity of flora and fauna (Low & Rebelo, 1996). Given this remarkable bio-diversity, it is not surprising to find that approximately, as many as 3000 plant species are used as ornamental plants and complementary medicines, more than orthodox medicines found in the rest of the world (Mander, 2004; Williams, 2004; Cocks et al., 2004). Some of these indigenous plant species grow in abundance throughout the Eastern Cape reflecting its diverse climatic conditions that are suitable for a correspondingly diverse spectrum of natural flora as discussed in Chapter 2 (Low & Rebelo, 1996). As a result of a high demand, these plants are heavily harvested from their natural habitats without any restrictions and precautionary measures with regards to their conservation status. This extensive harvesting has, to a considerable extent, led to the extinction of most of the popular indigenous plant species and an advanced state of disturbance in many of the ecosystems' equilibria (Cunningham, 1988; van Wyk & Gericke, 1997; van Staden, 1999).

Due to an excessively high demand for the precious secondary metabolites found in the extracts of the two *Pelargonium* species, *P. reniforme* and *P. sidoides*, they have been heavily subjected to extensive over-harvesting over an extended period. The research group established that the main districts affected were Victoria East, the rural areas around Fort Beaufort, Alice, Grahamstown and Peddie, with the two former, situated in the Nkonkobe Local Municipality, being the sites where the status of the over-harvesting of the *Pelargonium* sp. was most advanced resulting in an extraordinarily high state of soil erosion and disturbance in the ecosystems. Three years prior to the study, several tons of plant material had reportedly been harvested to the detriment of the integrity of the biodiversity status with the

surrounding communities allegedly being enticed by dealers in the *Pelargonium* plant material with a relatively low income to harvest and sell wholesale *Pelargonium* plant population. Since the plant tubers of the *Pelargonium sp.*, which grow below the soil surface, are the target parts required by the dealers, the soil digging had left most of the grazing and farming land in the areas with huge gaping holes that have accelerated the environmental degradation into serious cases of soil erosion as well as posing a danger to the community livestock. At another level, *Pelargonium reniforme* and *P. sidoides* had become a steady source of income revenue for most of the communities in the affected rural areas resulting in a high rate of harvesting that far exceeding the rate of the reproduction of the species. The value of this plant species is equivalent to that of the protected *Cycads* plant species which is also found in the Peddie area. The conservation authorities have estimated that the smuggling and harvesting operations of *Cycads* in South Africa is a multi-million rand industry with one *Cycad* dealer being quoted to have reported that he had realized a profit of R1.6 million in 1997 alone in this illegal harvesting operation (personal communication with officials of the Department of Water Affairs and Forestry).

## 7.2 STUDY OBJECTIVES

The *Pelargonium* Case Study was undertaken by the author of this thesis flowing from the concerns around the status of the species as outlined in the section above. The study was an attempt to mitigate the threats posed by human activity to the *Pelargonium sp.*, which in itself was a function of the prevailing socio-economic conditions of poverty and underdevelopment within the rural communities in the areas. The design of the study was premised on the following issues of strategic and policy considerations:

- ❖ The extent to which the existing policies and legislative framework were adequate in biodiversity conservation with regards to the protection of economically important plant species such as the *Pelargonium sp.*;
- ❖ The status and current practices on the conservation of the *Pelargonium sp* adopting approaches and strategies for community - based educational programmes on biodiversity conservation;
- ❖ Sectoral and transversal approaches towards the conservation of *P. reniforme* and *P. sidoides*;
- ❖ Strategies for linking the conservation of the *Pelargonium sp.* with poverty alleviation, income generation and wealth creation towards an improvement of livelihoods of the rural communities;

- ❖ Collaborative efforts for an effective paradigm shift in lifestyles to achieve a socially-cum-ecologically sustainable development within the rural communities that are the natural custodians of the *Pelargonium sp*;
- ❖ Export/ import policy requirements of protected indigenous plants species and plant products into and out of South Africa in order to design a strategic framework based on the utilization and conservation of *Pelargonium sp*;
- ❖ Policy-based processes and the legal framework on the exporting of plants and plant products from South Africa.

## **7.3 METHODOLOGY**

### **7.3.1 Study Approach**

The Case Study entailed the gathering information from published reports and literature sources, as well as field intelligence and a distribution map of the *Pelargonium sp*. The field survey approach and questionnaires were designed on-site after reviewing information and inputs from the communities, nature conservation officials and the Nkonkobe Local Municipality officials. The objective of the field study was to determine the distribution range of *Pelargonium reniforme* and *P. sidoides* and to engage the rural communities involved in the harvesting to form part of the solution aimed at alleviating the resultant destruction to environmental biodiversity. As stated by some researchers on the derivative of natural resource value by rural communities, the affected communities who were custodians of the natural resources had to be, of necessity, part of the solution in the strategic utilization and biodiversity conservation of these valuable natural resources (Kepe, 2002; Smith, 2006).

### **7.3.2 Survey Methodology**

The field information was collected from a sample of sixteen villages through face-to-face interviews with village communities and government representatives. The interviews served to introduce the research activities to the village leadership and to acquire basic information on the village demographics, such as population statistics, poverty levels, unemployment rate, Human Development Index, gini coefficient and the control of *P. reniforme/ sidoides* harvesting as well as the numbers of households engaged in the harvesting of the plant species.

### **7.3.2.1 Village Mapping**

A small group of villagers, including elders and members of the village committee, were solicited to describe the village area in terms of its general boundaries, natural habitats and access to natural resources. Where possible, distances were indicated on the maps in terms of walking time. Meeting proceedings were meticulously recorded and an attendance register for all meetings were kept for reasons of referrals and continuity.

### **7.3.2.2 Focus Group Discussions**

Focus group discussions were held on several topics in each village, where applicable with a view to determine the status quo, future plans, conservation plans and the training of communities on harvesting procedures for the *Pelargonium sp.* and other natural plant species found in the neighbouring environment. The discussions were held with groups of 5 to 10 community members who were involved in the harvesting activities. Although a questionnaire was used, the discussions were allowed to deviate from the questionnaire, or to concentrate on a particular aspect as deemed appropriate under the circumstances. The purpose of these discussions was the collection of data of a generally applicable nature, for example; on seasonality, markets and prices, as well as collecting sufficient information to be able to make preliminary quantitative estimates of natural resource harvesting and associated economic values as reported in the sections below.

### **7.3.2.3 Key Informant Interviews and Discussions**

In addition to, and sometimes instead of, formal focus group discussions, informal discussions were held with members of the village. Key informant interviews were held with senior members of the communities, the nature conservation officers deployed in the areas and the executive project management team selected by a forum of all the stakeholders. Informal discussions were held on a variety of activities. These were usually initiated by soliciting local women, youth and men on the status of the illicit plant trade in order to establish, from their perspective, the extent to which the project was sustainable in the long term, given the destruction caused to the environment by their activities. The other purpose of these group discussions was to actually observe the activities as discussed above and to allow for information gathering on aspects that had not been anticipated in the formal surveys and to glean information on issues which some people are reluctant to disclose in group situations.

#### **7.3.2.4 Household Survey**

In order to quantify the contribution and value of *P. reniforme/ sidoides* to household livelihoods, household income surveys were carried out. These surveys included questions about the harvesting, the amount of income generated and the impact of this income in improving the quality of livelihoods in each household.

#### **7.3.3 An Overview of *Pelargonium reniforme* and *P. sidoides***

The *Pelargonium sp.* has a wide range of sub-species, most of which are grown as ornamental plants (Van der Walt, 1977). Members of the *Pelargonium sp.* genus including annual and perennial herbs to sub-shrub are well known for their aromatic scent. However, within the genus of the *Pelargonium sp.*, difficulties are always encountered in taxonomic classification as some species are closely similar and can only be distinguished during the flowering period. The two species, *P. reniforme* and *P. sidoides* are a typical example. These two species are closely similar and are in high demand in the pharmaceutical industry due to the pharmacological properties of their secondary metabolites (Van Wyk et al., 1997); hence the high rate of harvesting they are subjected to with minimum regard given to the deleterious impact that the over-harvesting practice has on the natural habitat of these species. The sections below outline a brief description of the two *Pelargonium* species with regards to their: morphology, distribution, life cycle, conservation status and pharmacological properties.

##### **7.3.3.1 Description of *Pelargonium reniforme***

###### **a) Morphology**

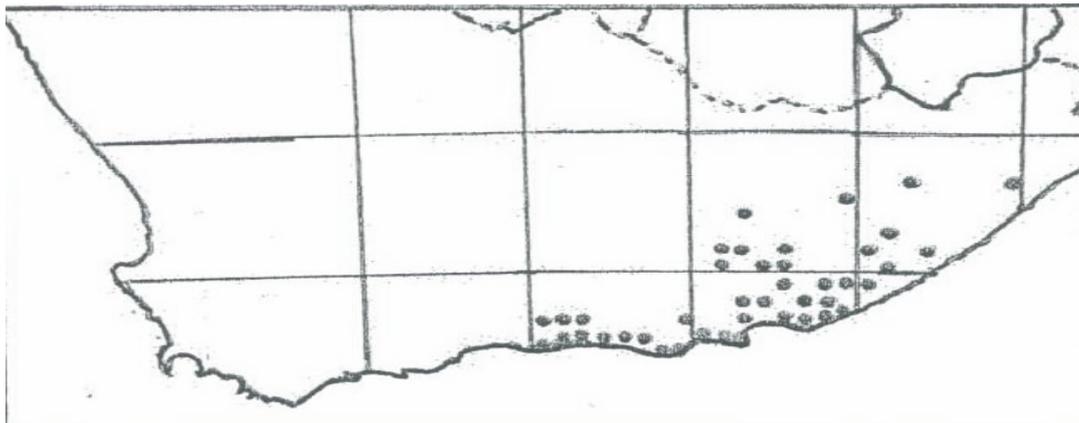
*Pelargonium reniforme* is a perennial plant characterized by an underground tuberous root. The plant can grow up to 1m, but is normally less than 40cm tall. It is characterized by a relatively short stem, which is covered by old stipules. The leaves are heart shape, a petiole which is about 70-250mm long with finely lobed margins which are usually 2-3cm in diameter. The plant can be seen as grey-green patches afar because of the presence of hair-like outgrowth on the leaves and their velvety texture. The flowers are borne on 3 or more flower umbel-like inflorescences. The colours of the flowers vary from pink to magenta with a dark spot and stripes. The two upper petals bear six to seven stamens. Under favourable conditions, the plant is believed to flower throughout the year (Van der Walt, 1977).



**FIGURE 22:** A *Pelargonium reniforme* Plant (Van der Walt, 1977)

### b) Distribution

*Pelargonium reniforme* has a wide distribution. The species, which is drought-resistant, occurs in the drier parts of the Western Cape to the semi-arid interior parts of the Eastern Cape where it is particularly common. It grows in rocky areas where soil texture varies from loam to sandy. Occasionally, the species is found among shrubs and trees and mostly in short grassland (Van der Walt, 1977).



**FIGURE 23:** Distribution map of *Pelargonium reniforme* (Van der Walt, 1977)

*Pelargonium reniforme* is widely distributed in the rural areas of Sheshegu, Gxedera, Doubledrift Game Reserve and the surrounding farms and also extends to Fort Beaufort, Peddie and Grahamstown. As a result of the predominance of these species within ward 4 of Nkonkobe district Municipality, which falls under the jurisdiction of the Imingcangathelo Traditional Authority, it was found that the communities from the following villages: Pumlani, Khayamnandi, Thembisa, Xolani, Gxwedera, Balurha, Mpozisa, Khwane, Tyityawa, Skolweni, Lower Sheshegu, Masakhane, Nomtayi, Nofingxane, Joe and Tukululu were able to give a description of the distribution of *P. reniforme* and *P. sidoides*. It

also appeared that *P. sidoides* is more common in these areas. The distribution map shows that the occurrence of these species is extended between the Eastern Cape, Free State, Lesotho and Southern and Western Gauteng (Van der Walt, 1977).

### 7.3.3.2 Description of *Pelargonium sidoides*

#### a) Morphology

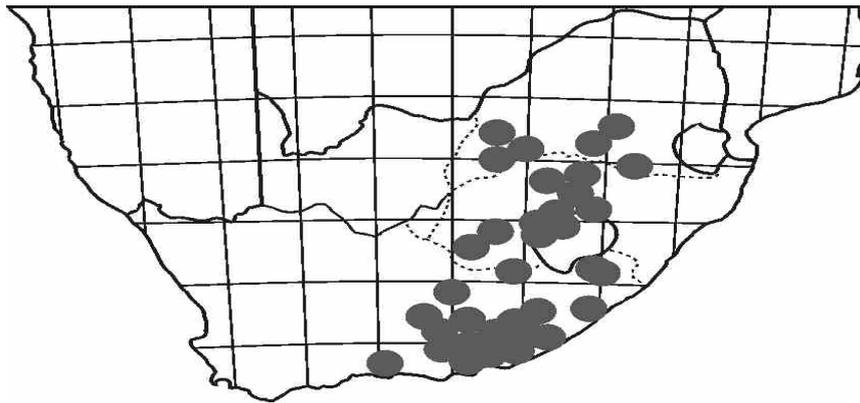
*P. sidoides* forms a rosette-like plant with crowded leaves. It is very similar to some forms of *P. reniforme*, but is easily distinguishable by its blackish, rather pink petals. The long-stalked leaves are mildly aromatic, heart-shaped and velvety. The distinctive dark, reddish-purple (almost black) flowers are perennial, although the most favourable period for its growth is from late spring to summer (Van der Walt, 1977).

#### b) Distribution

The species is widely distributed occurring throughout the Eastern Cape, Lesotho, Free State and Southern and South-West of Gauteng in South Africa. It usually grows in short grassland and sometimes with occasional shrubs and trees on stony soil varying from sand to clay-loam, shale or basalt. *P. sidoides* is found at altitude ranging from near sea level to 2300m in Lesotho. It is found in areas that receive rainfall in summer (November to March) varying from 200-800mm per annum (Van der Walt, 1977).



**FIGURE 24:** The characteristic flower of *Pelargonium sidoides* (Van der Walt, 1977)



**FIGURE 25:** Distribution map of *Pelargonium sidoides* (Van Wyk et al., 1997)

### 7.3.3.3 Life Cycle and Conservation Status of *P. reniforme* and *P. sidoides*

*P. reniforme* and *P. sidoides* are evergreen in cultivation, but probably die in their natural habitat during drought and winter periods. The flowering period is November to March depending on the environmental conditions and rainfall. However, the plant might be observed to flower throughout the year if water supply is abundant. The species experience moderate, rather than high summer temperatures and winter frost or even snow over much of its range. The species need less water during winter and in cultivation watering should be increased at the beginning of summer. Top dressing with a slow release fertilizer in spring improves growth and flowering in summer. In winter, dead leaves and old flowers stalks should be removed from the plant (Joffe, 2001).

The conservation status of most of the species in the Eastern Cape is remarkably poor. Most of these species are over-harvested in large quantities from their natural habitat due to a lack of monitoring and a conservation strategy that involves local communities by the conservation authorities. These plants are not given a chance to regenerate nor are they propagated after being harvested; hence, the existence of the species is rapidly approaching the danger zone.

### 7.3.3.4 Medicinal Plant Industry in South Africa

The medicinal plant industry in South Africa has experienced a considerable growth in the last couple of years (Mander, 2004; Williams, 2004; Cocks et al., 2004). The informal trade in medicinal plants and products in Southern Africa is dominated by between 400,000 and 500,000 Traditional Healers that dispense raw traditional medicines and herbal remedies to between 50 and 100 million consumers

(Mander & Le Breton, 2006). According to these authors, the volumes of plant material traded in the informal market are not easily quantifiable, but consumer surveys from South Africa suggest that between 35,000 and 70,000 tons of plant material are consumed per year, with a market value that ranges from ZAR0.525 to 1.05 billion while internationally, this market has been growing at a phenomenal average rate of 496% year-on-year over a period of 24 years, from ZAR3.5 billion in 1980 to ZAR420 billion in 2004 (World Health Organization, 2004). More than 1,000 species of medicinal plants are actively traded on the informal market in Southern Africa (Mander, 2004; Williams, 2004; Cocks et al., 2004). At the level of the individual species, the volumes traded can be large, e.g., it is estimated that 95 tons of the plant species, Wild Squill (*Scilla natalensis*) is traded annually in the Durban Herbal Market in South Africa alone (Hirschowitz & Castro, 2000; Mander, 2004; Mander & Le Breton, 2006). According to Mander & Le Breton (2006), in the absence of regulatory controls, product quality is variable while inadequate post-harvest storage and processing techniques often result in high levels of microbial contamination and significant stock losses. Invariably, large urban markets such as Cape Town, Durban and Johannesburg for trade in traditionally used medicinal plants and their products have developed significantly. This shift from subsistence use to commercial trade of medicinal plants has led to an increased intensity and frequency of medicinal plant harvesting from wild habitats around the country. However, the cultivation of indigenous medicinal plants in South Africa is minimal; hence, the issue of irregular and declining supplies of medicinal plant materials has resulted in a growing interest in medicinal plant farming (Mander & Le Breton, 2006). Consequently, certain popularly traded species have become over-exploited and are now rare or extinct in the wild (e.g. *Siphonochilus aethiopicus*, *Warburgia salutaris*). This has resulted in the forced use of alternative species and a geographical shift in the harvesting pressure to previously unexploited areas (Cocks et al., 2004; Mander & Le Breton, 2006).

#### **7.3.3.5 Medicinal Properties of *P. reniforme* and *P. sidoides***

The indigenous people of the Eastern Cape use the tuberous root of the two *Pelargonium sp.* as a remedy for diarrhea and dysentery, which may be attributed to the presence of highly astringent tannins (Bruneton, 1995). The activity of the medicine prepared from *P. reniforme* tubers may be partly due to the presence of umckalin and structurally related coumarins (Hutchings, 1996). The species are also used for liver complaints in sheep and cattle. The species' secondary metabolites are ingredients of a German medicinal remedy called "Umckaloabo", which is used mainly to treat bronchitis in children

and is also known to be used as an antibiotic and in the chemical schleimloesenden therapy (Van Wyk et al., 1997).

### **7.3.3.6 Chemistry and Pharmacology of *P. reniforme* and *P. sidoides***

According to Health Bells (<http://www.healthsbells.co.za/Umckaloabo.htm>), the biochemistry and pharmacology of *P. reniforme* and *P. sidoides* have the following properties:

The biotic ingredients of *Pelargonium sp.* are tri- and tetra-oxygenated coumarins and gallic acid methyl ester (polyphenols). *Pelargonium* oils contain various monoterpenoids such as (+) - isomenthone and are also widely used in the perfume industry (Dictionary of Natural Products on CD-ROM, release 4:2, 1996), various flavonoids, as well as significant levels of calcium and silica. *P. sidoides* contains two distinct coumarins, viz., umckalin and its 7-O-methyl ester, together with four other methoxycoumarins and three unique coumarin sulphates that are not found in *P. reniforme*. The highly oxygenated coumarins, fraxinol, isofraxetin and fraxidin, together with a unique trimethoxy coumarin are found in *P. reniforme*. Scopoletin and 6,7,8-trihydroxycoumarin are found in both species. Most of the coumarins found in these two *Pelargonium* species contain a methoxy function at the C7 position and an OH group at either the C6 or C8 positions, with these functional groups being responsible for their antibacterial activity. Gallic acid and its methyl ester that are present in large amounts in *P. sidoides* and its active extracts, were identified as the prominent immunomodulatory principle for this herbal medicine. Macrophage activation was confirmed by an in vitro study based on Leishmania parasites while further studies on the antibacterial performance of the various coumarins and gallic acid compounds found in *P. sidoides* and *P. reniforme* established that, with the exception of the ineffective (+)-catechin, all the potentially active compounds exhibited antibacterial activities with minimum inhibitory concentrations (MICs) of 200-1000 micrograms/ml (Phytother. Res. 2001 Mar; 15(2):122-6). These are the pharmacological properties that have provided a rational basis for the traditional use of Umckaloabo.

### **7.3.3.7 Medicinal Applications of *P. reniforme* and *P. sidoides***

Much earlier medical reports had already acknowledged the successful treatment of lung diseases like tuberculosis with *Pelargonium* plant extracts (Martindale, 1958; Watt & Breyer-Brandwijk, 1962; Smith, 1966). Extracts of the root tuber have been available in German pharmacies since 1983 without prescription and have found widespread usage against infections of the sinus, throat and respiratory

tract. Double-blind, placebo-controlled studies on patients with acute bronchitis confirmed that extracts of *P. sidoides* were effective in treating this ailment. Similar studies have also shown the effectiveness of *P. sidoides* extracts for treating tonsillopharyngitis in children in the age group 6-10 years while encouraging results have also been achieved with children who had not responded well to repeated treatment with antibiotics (Phytopharmaka VII, October 2001). The alcoholic extract of the root has been shown to have the following medicinal properties:

- ❖ **Anti-bacterial:** The Umckaloabo extract prevents bacteria from attaching to cells in the mucous membranes.
- ❖ **Antiviral effect:** Umckaloabo prevents viruses from attaching to the mucous membrane cells and stimulates the body's immune system in such a way that both bacteria and viruses are prevented from multiplying.
- ❖ **Expectorant:** The extract acts as an expectorant, allowing the body to expel contaminated mucous making conditions less suitable for the multiplication of the bacteria and viruses.

The these medicinal properties are believed to have the ability to attack acute infection and are effective in stabilizing the immune system in order to prevent a re-infection and the vicious cycle of infection through the shortening of the recovery phase while simultaneously breaking new infection. Due to its bacteriostatic and immune-modulating characteristics, Umckaloabo appears to be a good alternative to the conventional therapy of treating respiratory illnesses with antibiotics (Bruneton, 1995).

#### **7.3.3.8 Preparation and Dosage**

According to Hutchings (1996), infusions and decoctions of the fleshy tubers of *Pelargonium* are utilized as medicinal preparations by adults who are in the acute stage of infection, taking a dosage of 20 to 30 drops three times per day. Children of 6 to 12 years of age take 10 to 20 drops three times a day, while children below this age take 5 to 10 drops three times a day.

#### **7.3.3.9 Contra-Indications**

Plant extracts are contra-indicated in pregnant women and also if inclined to experience bleeding or in cases of liver and kidney malfunction.

### **7.3.3.10 Overview of the Supply of Medicinal Plants in South Africa**

The declining supplies of indigenous medicinal plants and the associated products could result in significant economic and welfare losses considering the large number of households who either consume or trade with indigenous medicinal plants. A decline in the availability of culturally significant and easily accessible natural plant species was found to be already having a negative impact in rural communities whose livelihoods are dependent on these natural resources as it was in the case of *Pelargonium* in the Nkonkobe rural areas. Over a long period, this situation has been further exacerbated by a complete breakdown in subsistence farming in most rural communities who have no alternative sources of income revenue as was established in the Nkonkobe Local Municipality. The loss of income-earning opportunities for people active in the primary end of the plant trade, such as the Nkonkobe communities, would consequentially represent a serious loss, especially to those who are downstream in the medicinal plant supply chain. A multiplier effect of the losses was predicted as potential income-generating opportunities associated with a growing local (Cunningham, 1988) and international demand (Lange, 1997) are not realized. Furthermore, intensive harvesting of wild stocks is a serious threat to biodiversity conservation in the region with more than 700 plant species classified as being overtraded in South Africa (Mander et al., 1997). As a result of the declining supplies of medicinal plants and the localized extinction of economically and culturally significant indigenous plant species which has occurred, some researchers have campaigned for the cultivation of indigenous medicinal plants for commercial purposes (Cunningham, 1988). However, there has been minimal response to Cunningham's recommendations and the end-result has, predictably been a steady escalation in market prices over the intervening years. As plant material supplies diminish and prices increase as a function of the Demand–Supply Chain, the corresponding potential opportunities for the cultivation of indigenous medicinal plant species for commercial purposes have increased substantially (Diederichs, 2006). Under the circumstances, the question that then arises is; “why have the higher prices fetched by the finished product in the open market not stimulated the cultivation of high value medicinal plants in South Africa?” The sections below attempt to briefly outline the reasons for this state of affairs.

## **7.4 RESEARCH METHODOLOGY**

### **6.4.1 Illegal Harvesting of *P. reniforme* and *P. sidoides* in the Nkonkobe Region**

The *Pelargonium* Case Study was undertaken, mainly, as a result of serious concerns around the impact that the method of harvesting of these plant species by the local communities had on the integrity of the soil in the land used for grazing around the rural areas of Alice and Fort Beaufort. Investigations conducted on the harvesting activity of the *Pelargonium* species by the communities of the villages, Sheshegu, Gxwedera in the Double Drift Game Reserve and the neighbouring farms extending to the Ngqushwa, Fort Beaufort and Grahamstown districts revealed that some farmers from the Grahamstown area were encouraging this illegal gathering of large quantities of the plant material (the harvesting of the species is restricted) through purchasing the harvest at a relatively low price from the locals, and the farmers, in turn, were supplying a Western Cape-based *Pelargonium* plant dealer who, then exported the raw plant material to the German Pharmaceutical Company, ISO-Arzneimittel based in the city of Ettlingen in Germany. This harvesting practice, on the part of the villagers, who were driven by extreme levels of poverty, left huge gaping holes in the ground resulting in heavy soil erosion that was seriously threatening the environment as well as endangering the existence of the species. It was established that the rate of harvesting of the *Pelargonium* species, which is a seasonal plant species, far exceeded the reproduction rate. This is an example of an activity that required an intervention that would regulate the exploitation of natural resources to safeguard the interests of the poor rural communities while simultaneously ensuring biodiversity conservation to prevent the extinction of an economically important natural plant species and the irreparable damage to the environment.



**FIGURE 26: Illegal Pelargonium Harvest for Selling to Farmers**



**FIGURE 27: Community Selling Illegal *Pelargonium* Harvest to Farmers**



**FIGURE 28: Soil Damaged by the Harvesting of *Pelargonium***

#### **7.4.2 Formulation of Guidelines for the Pelargonium Programme**

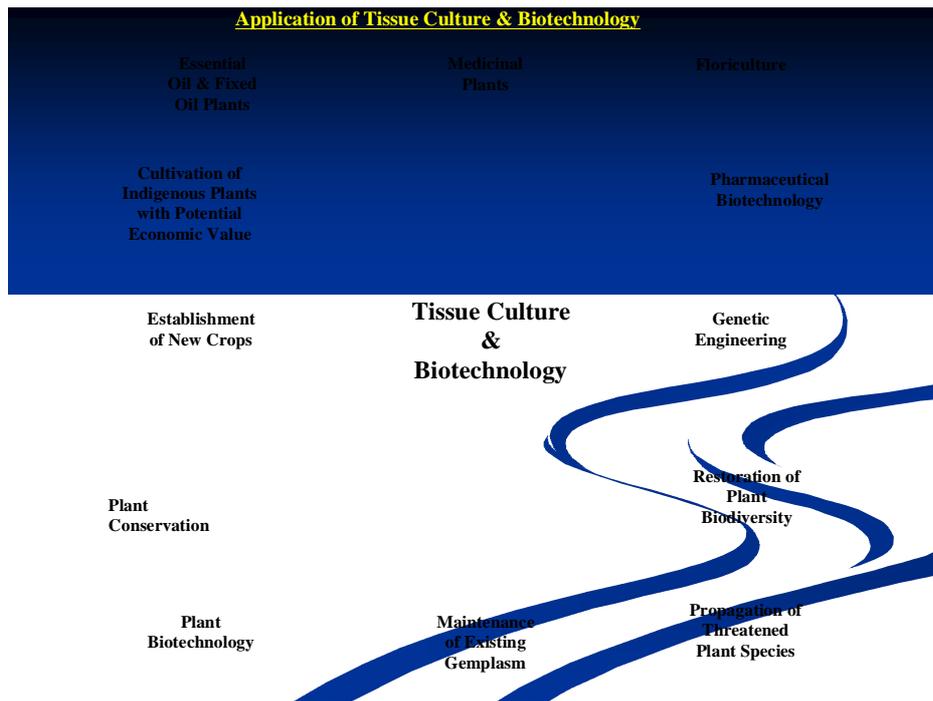
In attempts to avert this environmental destruction while simultaneously addressing rural economic development needs intended to improve the rural community livelihoods, the strategic interventions of this study culminated in a meeting convened by the community leadership, the author of this thesis and the Nkonkobe Local Municipality. As a way forward, the meeting drew up the guidelines for the Pelargonium Programme as listed below:

- ❖ Application for a single entity Access Permit from the Department of Water Affairs and Forestry;
- ❖ Organization of the management of team for harvesting *Pelargonium sp.*;
- ❖ Development of a constitution with guidelines to form a trading entity.
- ❖ Development of a model to deal with biodiversity conservation issues of *P. reniforme* and *P. sidoides* during harvesting;
- ❖ Domestication of *P. reniforme* and *P. sidoides* and development of fields as a measure towards sustainability and conservation;

The approach of the study by the author revolved around some of the issues that this thesis is attempting to address, namely;

- ❖ What strategies could be put in place for linking biodiversity conservation of economically important plant species such as *Pelargonium* with poverty alleviation, income generation and wealth creation for poor rural communities?
- ❖ What institutional arrangements were put in place for export/import requirements on plant material and plant products in South Africa?
- ❖ The development of a model which attempts to deal with the conservation issues of *P. reniforme* and *P. sidoides* during harvesting;
- ❖ The domestication of *P. reniforme* and *P. sidoides* and development of fields as a measure towards sustainability and conservation;
- ❖ The development of biotechnologically orientated methods using tissue culture propagation for commercial scale;
- ❖ The development of formulations for treatment and storage as well as packaging that would have an appeal to local and international markets;
- ❖ The optimization of yields and quality of appropriate chemical constituents in the bulbs;

The research concluded that certain aspects required an intervention from government and the relevant municipalities to address the deficiencies in the legislation regulating the harvesting of the plant species that could result in the non-sustainability of the *Pelargonium* Programme as a result of the violation of biodiversity conservation guidelines. The inputs of Plant Biochemistry and Biotechnology techniques were heavily relied upon to address the challenges of rural economic development and the environmental threat posed to biodiversity conservation. Proposed Biotechnology interventions to support the proposed recommendations were as shown in **Figure 29**.



**FIGURE 29: Biotechnology Processes in the Commercialization of *Pelargonium***

Fieldwork in the *Pelargonium* Case Study and other studies conducted have shown a very strong participation on the part of rural women in the harvesting of the *Pelargonium sp.*, mostly armed with spades with which the tuberous roots of the plants are deeply dug out of the soil right down to the end of the roots until the tuberous root stalk is unearthed and exposed and is subsequently broken off from the whole plant and retained while all the other parts of the plant are thrown away with dire consequences for the integrity of the soil as illustrated in **Figure 28**. In 2005, the fetching price for a kilogram of the raw plant tubers was anywhere between ZAR5.00 and ZAR18.00, according to the information obtained from interviews with the villagers involved in *Pelargonium* harvesting in the course of the Case Study. The plant material was subsequently sold to white commercial farmers, mostly from the farming areas around Grahamstown in the Makana Local Municipality, who in turn, apparently sold the harvest at almost five times the price paid to the harvesters to a *Pelargonium* plant material dealer from the Western Cape Province who exports the raw plant material consignment to the German pharmaceutical company, Iso-Arzneimittel GmbH & Co.Kg, in the city of Ettlingen, Germany, that manufactures Umckaloabo, the remedy that is used to treat bronchitis in children (Van Wyk, 1997). A nature conservation official (Quintus Hahndiek, personal communication), estimated that,

conservatively, twenty tons of the *Pelargonium* plant material in the Eastern Cape had been harvested over a period of just three years.

## **7.5 RESULTS AND DISCUSSION**

### **7.5.1 Pelargonium Programme Achievements**

Community members who opted for participation in the Pelargonium Programme made the following progress:

- ❖ A constitution with guidelines for the establishment of a community-based commercial entity was drawn up followed by the registration of an Agricultural Co-operative, Imingcangathelo Agricultural C-operative;
- ❖ The Agricultural Co-operative was granted a single access permit by the Department of Water Affairs & Forestry (DWAF) instead of issuing permits to individuals; hence, the community, in partnership with DWAF, the Nkonkobe Local Municipality and the Amathole District Municipality was able to monitor and control the harvesting activity of *Pelargonium*;
- ❖ A community task team assigned the responsibility of harvesting *Pelargonium* and acting as a liaison between the community and the Department of Water Affairs & Forestry and municipality authorities was established by the community;
- ❖ The author of this thesis designed a model for handling conservation aspects of the two *Pelargonium* species;
- ❖ Domestic cultivation plans for the *Pelargonium* species were developed in tandem with the preparation of the soil at the cultivation sites to ensure sustainable harvesting and biodiversity conservation of the ecosystems without compromising the commercial goals of community.

Apart from the initiatives outlined above, certain aspects of the *Pelargonium* project required an intervention from state departments and the relevant municipalities to address shortcomings that could result in non-sustainability and negation of biodiversity conservation regulations of the *Pelargonium* species.

### 7.5.2 Pelargonium Commercialization Process

The commercialization project of indigenous medicinal plants and products with established and potential market required the development of a model for the handling of genetic material and appropriate agronomic practices by the participating institutions of higher learning and agricultural research in collaboration with the rural communities. The process workflow recommended comprised the following phases:

- ❖ Collection and improvement of plant material in preparations for the cultivation programme;
- ❖ Conservation of genetic resources;
- ❖ Evaluation of Pilot phase of the programme;
- ❖ Registration of Patent Rights;
- ❖ Commercialization;
- ❖ Establishment of Market Links;
- ❖ Trademark development;

The planning of the commercialization process took the following aspects into consideration:

- ❖ The application of biotechnology techniques such as tissue culture propagation to establish nurseries in preparation for economies of scale;
- ❖ The development of an appropriate methodology for the treatment and storage of materials for local and export markets;
- ❖ Optimization of yields and the maintenance of consistent quality of the biochemical constituents of the active metabolites in the bulbs had to be guaranteed through the application of hybridization techniques;
- ❖ Capacity enhancement and skills development programmes in biodiversity conservation principles were developed for the target communities who were also trained on procedures of prudent harvesting of the plant species;
- ❖ The community took the joint responsibility for the prevention of theft and unauthorized appropriation thereof since the depletion of these resources would negatively impact on community livelihoods;
- ❖ Strategic partnerships were formalized for collaborative activity between rural communities and the relevant state agencies operating in the domains of health, medical research and agriculture, institutions of higher learning and Private Sector stakeholders such as pharmaceutical companies and role players in agribusiness;

- ❖ The state agencies had the role of establishing a legislative framework that would regulate and harmonize the commercialization process with regards to Indigenous Knowledge Systems applications, a process that was not fully in place in South Africa, thus making it that more difficult to trade in global markets;
- ❖ Development of an equitable benefit sharing system that accommodates all participating stakeholders, especially the rural communities who are the primary custodians and producers of these natural resources.

The implementation of the above measures, in the opinion of the author, would, at least, provide a minimum guarantee for the reduction of non-sustainable and indiscriminate removal of indigenous flora from its natural habitat as well as the prevention of illegal exporting of endangered species such as the *Pelargonium* species. The mass removal of economically important indigenous plant species, it was concluded, would only serve to enrich a few self-serving individuals and multinational companies to the detriment of the sustainability of the natural resources that could benefit the future generations of South Africa, especially in the Eastern Cape. Unlike species such as Cycads, which are strictly controlled, *P. reniforme* and *P. sidoides* are not officially classified as endangered species just as yet; hence they are not protected by any biodiversity conservation regulations. However, a proactive approach, such as a rapid response to protect these plant species, had to be taken since the demand for them remained high whilst the Eastern Cape nature conservation authorities were still waiting for the promulgation of new environmental protection legislation. Meanwhile, plant poaching and illegal bio-prospecting continued to have a free reign in exploiting these natural resources at will. To this regard, a functional model for the immediate protection and conservation of *P. reniforme* and *P. sidoides* was in the process of formulation while legislation on a comprehensive protection programme of indigenous flora was not yet in place. The section below discusses the legislative and policy framework development in South Africa pertaining to the conservation and sustainable use of forests and woodlands from the pre-1994 to the current period.

### **7.5.3 Legislative and Policy Framework**

#### **7.5.3.1 Environmental Legislation in South Africa: *An Overview***

The pre-1994 South African environmental legislation with either a direct or indirect bearing on environmental aspects was highly fragmented, with more than sixty acts (Willis, 2004). Among the environmental aspects addressed, are the conservation of natural resources such as fauna and flora,

prevention of pollution (air, water and noise pollution), proper planning and land use, environmental health, education and waste management. In the pre-1994 period, no policies were in place to regulate the management of biodiversity with respect to the conservation of natural resources and issues such as the control of environmental pollution while simultaneously addressing the developmental and economic requirements of rural communities. Legislation dealing with environmental protection was only adopted by means of the Environment Conservation Act 73 of 1989 (ECA). This was recognized as a major breakthrough as it allowed the Minister of Environmental Affairs to draw up a management policy to clearly define the aims and objectives of environmental conservation in South Africa. Due to a lack of comprehensive policy guidelines to regulate implementation, the full potential of the Act was never realized. This shortcoming was addressed by the means of a White Paper on Environmental Management Policies that was followed by the development of a comprehensive environmental management policy during the Consultative Management Process (CONNAPP). The most important feature of the White Paper on Environmental Policy was its emphasis on the promotion of co-operative governance to ensure that environmental rights as enshrined in the Constitution are protected and fulfilled (Willis, 2004).

Following the White Paper, environmental management was positioned within the framework of the new Constitution with the promulgation of the National Environmental Management Act (NEMA) 107 of 1998. NEMA employs a number of instruments, to promote, give effect to and monitor co-operative governance as envisaged in section 41(2) of the Constitution (RSA Constitution, 1996). It seeks to streamline environmental management while repealing all other previous Acts on environmental conservation, with the exception of the sections dealing with specific development projects, waste and pollution control management. While acknowledging the challenges of the constitutional allocation of powers, NEMA places a strong emphasis on co-operative governance. The Act seeks to address the defragmentation of performance of environmental functions by various government departments at all levels in order to promote and ensure integration and co-ordination with regards to the implementation of environmental policies. The statutory instruments for the promotion of such co-ordination are to be found in procedures for co-operative governance as referred to in chapter 3 of NEMA (Government Gazette, 1998).

### **7.5.3.2 International Perspectives on Environmental Policy**

South Africa as a responsible citizen of the international community is a signatory to a variety of international agreements and conventions. Conventions are an important source of legislation as a result of an increasing need for co-operation across international frontiers. An agreement must first be binding before it can be effective; hence, no country is bound by the terms of such an agreement before acceding to becoming a party to such an agreement. A few of the conventions applicable to the Eastern Cape Province are listed below with a short description:

- ❖ Convention on Biological Diversity - to effect international co-operation in the conservation of biological diversity and to promote sustainable use of living resources;
- ❖ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) – the protection of endangered species and the economic use of species, monitoring the status of species and control of illegal trade;
- ❖ World Heritage Convention – the protection of the world’s cultural and natural heritage;
- ❖ Protocol for the Protection of the Ozone Layer (Montreal Protocol) – aimed at ensuring measures to protect the ozone layer;
- ❖ Framework Convention on Climate Change (Kyoto Protocol) – addresses the threat of global climate change by urging governments to reduce sources of greenhouse gasses;
- ❖ Lusaka Agreement – aims at the co-operative enforcement operations directed at illegal trade in wild fauna and flora;
- ❖ Convention on Desertification – to combat desertification in those countries experiencing serious drought and/or desertification, particularly in Africa;
- ❖ Convention on Migratory Species of Wild Animals (Bonn Convention) – the conservation of animals (terrestrial animals, reptiles, marine species and birds) that migrate across borders. Special attention is paid to endangered species;
- ❖ Convention on Wetlands of international importance, especially the Water Fowl Habitat (Ramsar Convention) – to stem the loss, and to promote the wise use of all wetlands;

### **7.5.3.3 A National Perspective on Environmental Policy**

Environmental legislation in South Africa operates within a legislative framework based on the Constitution of South Africa (Willis, 2004). The competencies and various levels of government are spelled out and the environmental rights of all citizens are determined. The Constitution thus creates a

framework within which environmental management systems must be implemented. In terms of the Constitution, the legislative authority of the provincial sphere of government is vested in the provincial legislature, as set out in section 104 of the Provincial Act of 1996. The provincial legislative authority has among others, the power to adopt legislation in and for the province in terms of the following:

- ❖ Any matter within Functional Areas of Concurrent National and Provincial Legislative Competence as referred to Schedule 4 of the Constitution [Including matters such as the administration of indigenous forests, the environment and nature conservation (excluding national parks)].
- ❖ Any matter within the Functional Areas of Exclusive Provincial Legislative Competence as referred to in Schedule 5 of the Constitution (RSA, 1996) [Including matters such as provincial planning, roads, traffic and veterinary services (excluding regulation of the profession)].
- ❖ Part 5 of Schedule B also refers to functional Areas of local government that are included within the Exclusive Provincial Legislative Competence. (Including matters such as nuisance, noise pollution, refuse removal, refuse dumps and solid waste disposal).

## **7.6 DISCUSSION**

### **7.6.1 Recommended Principles on Interventions in Rural Communities**

#### ***Principle 1***

Rural communities living next to the natural habitats of indigenous flora and fauna are, normally, the custodians of these natural resources due to their lengthy association with them as well as a profound understanding of the ecosystems. Often they have made significant contributions to the maintenance of many of the earth's most fragile ecosystems, through their traditional sustainable resource use practices and culture-based respect for nature. Hence, harmony should prevail between the objectives of biodiversity conservation and the exploitation of the resources to sustain livelihoods within and around the borders of indigenous and other traditional communities. Moreover, they should be recognized as the rightful beneficiaries and equal partners in the development and implementation of conservation strategies that affect their lands, territories, waters, coastal seas, and other resources and, in particular, the establishment and management of protected areas.

#### ***Principle 2***

Full respect for the rights of indigenous and other traditional peoples to the traditional and sustainable use of their lands, territories, waters, coastal seas and other resources should be taken into account when formulating plans and programmes around the natural resources.

### ***Principle 3***

The principles of decentralization, participation, transparency and accountability should be taken into account in all matters pertaining to the mutual interests of protected areas and indigenous and other traditional peoples.

### ***Principle 4***

Indigenous and other traditional peoples should be able to share fully and equitably in the benefits associated with the conservation project, with due recognition to the rights of other legitimate stakeholders.

### **7.6.2 Conservation of *P. reniforme* and *P. sidoides***

An inclusive community conservation initiative is proposed to manage commercial demands so as to ensure they do not lead to over harvesting of the plant species from the wild. It is proposed that a structure composed of representatives from industry, government, academia, the community and environmental organizations be formed. The role of the structure will be to create a framework for discussion and action to conserve the medicinal plants by balancing biological and commercial needs and, in the long term, minimize the need for regulatory intervention. Within that framework, there may also be a need to provide public education on community interests and policies as these intersect with the conservation of plants. Other activities that can result from the structure include the following:

- ❖ Develop and launch a public education programme that will generate and share information regarding the species, its medicinal potential and properties, economic importance and conservation concerns;
- ❖ Promote appropriate conservation measures for the plant species;
- ❖ Promote sustainable production of products from the plant species;
- ❖ Encourage active participation by community members and important role players;
- ❖ Generate financial support for conservation projects of the plant species.

These species have been harvested by the communities on a regular basis without any permit from the Department of Nature Conservation and were sold to buyers from Grahamstown. Since this opportunity presented a source of livelihood to many members of the communities, there was a high level of competition in harvesting, to the detriment of these valuable plant species, since the rate of harvesting far exceeded the rate at which the species were able to regenerate themselves, either by vegetative

growth or by germination from the seeds. Stock farmers were frustrated as the digging process often left gaping holes in the ground which posed a threat to their livestock.

### **7.6.3 Sectoral and Cross-Sectoral Approaches in the Conservation of *P. reniforme* and *P. sidoides***

To achieve this objective, the state departments, in collaboration with the municipalities and affected communities were to abide by the following extracts from the Nature Conservation Act for the protection of threatened *P. reniforme* and *P. sidoides*:

- ❖ To comply with the norms and standards stipulated to ensure that the existing South African and foreign policies, plans and programmes which support the conservation and sustainable use of biological resources minimize adverse impact on biodiversity;
- ❖ To ensure the effective incorporation of national environmental policies and biodiversity conservation considerations into all plans and programmes in relation to business ventures;
- ❖ To ensure the full participation of all government departments and appropriate municipality components responsible for activities affecting biodiversity, or for activities concerning the conservation or use of biodiversity;
- ❖ To develop sector-specific plans between the nature conservation authorities, communities and municipalities whose demarcation under which *P. reniforme/ sidoides* fall and all other stakeholders who have to agree upon the guidelines to be developed. Such sector-specific plans must reflect the integration of biodiversity considerations into the relevant sectoral budgets;
- ❖ To adopt measures to allow for the full environmental, social and economic costs and benefits of conserving and using biodiversity sustainably to be reflected in markets and national indices of economic status.

### **7.6.4 Lifestyle Changes for Socially and Ecologically Sustainable Development**

A strategic planning process had to identify vital links between this component of plant biodiversity (*P. reniforme* and *P. sidoides*), environmental and human well-being, and the value addition to *P. reniforme* and *P. sidoides* product development which would sustain livelihoods and provide new options for socio-economic development. A productive planning process had to identify those activities and investments that most effectively strengthened these linkages. This strategic planning process had to also deal with the benefits of developing a conceptual framework relating to the wide array of

methods necessary to sustainably use, conserve, and restore these plant species at provincial, national and international levels. Several issues constituting a fundamental basis for the interaction and effectiveness of conservation and sustainable use measures had to be considered. These issues included the importance of:

- ❖ Integrating different types of approaches and techniques to ensure that the plant species are well-conserved whilst being sustainably used;
- ❖ Recognition that the conservation and sustainable use of *P. reniforme* and *P. sidoides* are heavily influenced by social, cultural, economic and political attitudes;
- ❖ Encouraging policy and institutional co-operation and co-ordination to achieve conservation goals and objectives;
- ❖ Developing an action plan that will involve organizations, both at public and private levels, that will take charge of implementing specific activities included in the strategy, where, by what means, and with what resources (people, institutions, facilities and funds), including identification of time phases for action;
- ❖ Implementing the activities should follow accordingly. Partners should take responsibility for particular elements of the plan and biodiversity planners should become “biodiversity implementers” in the key government departments, non-government organizations, communities, indigenous groups, business and industries involved in the utilization of *P. reniforme/ sidoides*;
- ❖ Monitoring and evaluation processes were recognized to be the key aspects of the Pelargonium Programme. There was a necessity for the establishment of indicators of success while determining which organization(s) would monitor which factors and methods to be employed. Monitoring had to track the status and the trends of the Programme in so far as biodiversity was concerned, including implementation of policies and laws, implementation of specific strategic actions and investments, as well as the development of the requisite capacity such as human resources, institutions, facilities and funding mechanisms;
- ❖ Reporting was vital. The type of reports required and those responsible for reporting had to be determined coupled with an agreement on format, content and timing of the delivery of such documents;

### **7.6.5 Export/ Import Regulations of Plants and Plant Products in South Africa**

All the stakeholders have to abide by the laws which govern the exporting and importing of plants or plant products. More detailed information can be obtained from the National Department of Agriculture and Land Affairs and the Department of Trade and Industry. However the following issues have to be taken into considerations:

- a. Plant specifications
- b. Export Control
- c. Procedures to follow when exporting plants and plant products out of South Africa
- d. International agreements and cooperation
- e. Maintaining environmental integrity
- f. Transboundary impacts

#### **a. Plant Specifications**

It is important that all the plant species with a potential for export markets to have adequate specifications in order to prevent any fraudulently acquired intellectual property rights and also to provide a convincing proof of the source of origin of the plant species.

#### **b. Export Control**

As an exporting country, South Africa has to comply with the import regulations of other countries by issuing phytosanitary certification for exported plant species. The National Plant Protection Organization (NPPO) of South Africa:

- ❖ Maintains a database on the import conditions and procedures of various countries and the occurrence of harmful organisms in South Africa;
- ❖ Renders advisory and identification services for pest and diseases;
- ❖ Conducts relevant laboratory tests as requested by the importing country; and
- ❖ Carries out field inspections.

#### **c. Procedures to follow when exporting plants and plant products out of South Africa**

Before export the exporter should find out what phytosanitary import conditions of the importing country apply to his/ her goods. The exporter may obtain the import conditions from the importer or his/ her agent in the importing country or from the National Plant Protection Organization (NPPO) of South Africa:

- ❖ The NPPO of SA liaises with the NPPO of the importing countries to establish phytosanitary export programmes;

- ❖ In conjunction with the NPPO of South Africa the exporter establishes whether or not he/ she complies with the import conditions of the importing country;
- ❖ The agent or importer in the importing country must apply for an import permit from the NPPO of the importing country;
- ❖ If the import conditions can be complied with, the exporter may proceed to apply for a phytosanitary certificate from the NPPO of South Africa;
- ❖ The exporter must present the goods to the NPPO of South Africa for evaluation and inspection;
- ❖ The NPPO of South Africa issues a phytosanitary certificate if the goods satisfy evaluation and inspection;
  
- ❖ The exporter must ensure that the goods are exported within 14 days of the final inspection;
- ❖ The exporter must ensure that the goods are accompanied by the original phytosanitary certificate;
- ❖ Plant inspectors of the NPPO of the importing country detain goods for evaluation and inspection;
- ❖ The importer must clear all documents with Customs of the importing country at the port of entry before the goods are released;

#### **d. International Agreement and Co-operation**

- ❖ To ensure that South Africa acts in accordance with the National Environmental Policy in dealing with international treaties and agreements and that environmental considerations are included in all international negotiations;
- ❖ To ensure adequate opportunity for consultation with all relevant interested and affected parties before negotiating, entering and implementing international agreements;
- ❖ To meet all requirements arising from international environmental agreements and obligations;
- ❖ To cooperate internationally on shared environmental concerns, giving priority to the Southern African Region;
- ❖ Develop mechanisms to deal effectively and in the national interest with international issues affecting the environment;

#### **e. Maintaining Environmental Integrity**

To ensure that foreign investment does not compromise the environmental integrity of South Africa, people's environmental rights, the principles and obligations established in this policy and national environmental norms and standards set in terms of this policy.

#### **f. Transboundary impacts**

- ❖ To adopt appropriate measures to prevent Transboundary environmental harm, incorporating the prevention of Transboundary movement of hazardous and toxic waste;
- ❖ To ensure that international trade does not lead to wasteful use of natural resources or interfere with their conservation or sustainable use;

#### **7.6.6 Co-operative Governance**

This is the most important aspect in the regulatory mechanisms which are stipulated by the legislative and executive authority of different spheres of government within a framework of co-operative governance which will address the following:

- ❖ The essential requirements for effective environmental governance;
- ❖ The powers and responsibilities of the lead agent;
- ❖ The coordination of functions;
- ❖ An integrated and comprehensive regulatory system;
- ❖ Regulatory mechanisms;
- ❖ Programmes for delivery;

This section sets out the implications for government of the general and specific clauses in the Constitution that have a bearing on environmental management. The Constitution further sets out principles of co-operative government and intergovernmental relations that govern the relations between all spheres of government and all organs of the state within these spheres. Among those important for environmental management are the obligations to preserve the peace and national unity of the Republic of South Africa; secure the well-being of its people; provide effective, transparent, accountable and coherent government; respect the powers, functions and institutional integrity of other spheres of government; inform, consult, assist and support other government agencies; co-ordinate actions and legislation; adhere to agreements; and avoid legal proceedings against other government agencies. An experience can be learned from a model that was adopted from the Case Study of *Sizamimpilo Association* (Mander, 2004). It can be adopted or adapted and also be applicable to the *P. reniforme* and *P. sidoides* scenario for the purpose of implementation of a sustainable programme for benefit-sharing of all stakeholders.

### **7.6.7 “The Case Study of Sizamimpilo Association”**

In order to address the growing need for natural forest areas to provide socio-economic benefits to surrounding communities, the new national legislation (National Forest Act No. 84 of 1998) directed the management of these areas towards a participatory approach. The "Commercial Products from the Wild Project" set the basis for a participatory forest management system in uMzimkhulu District by establishing a bark harvesters association, Sizamimpilo Harvesters Association, a regional association currently functioning in the Eastern Cape and KwaZulu-Natal (Mander, 2004). This association is a legal entity that can interact with the Department of Water Affairs and Forestry, which is responsible for the management of forests in the area. Several institutional options were considered before an Association was selected as the appropriate legal vehicle. The administrative requirements of Trusts and Co-operatives were found to be too onerous for the harvesters, most of whom only have basic literacy and educational backgrounds.

A core group of bark harvesters from the uMzimkhulu District, selling their products at the Durban Herb Market, were approached at the market end to help to solve the problem of uncontrolled bark harvesting. The harvesters were largely willing to participate in discussions around a solution. This was because the harvesters, mostly women living in the uMzimkhulu District, depend almost entirely on bark harvesting and trade to sustain their livelihoods. The harvesters were aware that their operations were illegal, and many had spent nights in prison for illegal harvesting, or had had harvested material confiscated. Given that the harvesters did not have access to other economic opportunities, they continued to struggle against this conflicting and risky system of earning a living. They were, therefore, open to any solution that would resolve this conflict and allow them to earn a living legally. The primary challenge faced by the core group of harvesters from the uMzimkhulu District was to recruit a critical mass of harvesters from the area to join in discussions, because an exercise in participatory sustainable resource utilization required that the majority of harvesters, traders and suppliers from the target district be involved in a joint natural resource management system.

In all meetings, state resource managers (Department of Water Affairs and Forestry - DWAF) were present to ensure open discussions on mutual problems, to shorten administrative procedures and to empower both groups to come to a common understanding of the problems involved. A first joint meeting was held at the Durban Herb Market to clarify the intentions and objectives. A second meeting

was held at the Nzimankulu forest to identify and discuss the problems in the forest, to discuss alternatives and better harvesting techniques, and to assist the harvesters to form an association through which an agreement could be negotiated with DWAF. Additional follow-up meetings were held, both at the market and in the forest, to maintain regular communication.

With the assistance of an external facilitator, a medicinal plant harvesters association, the Sizamimpilo Association, was eventually formalized and a constitution developed. The members of Sizamimpilo participated directly in drafting the constitution. The key components of the constitution, in terms of sustainable resource management, were i) to train, uplift, educate and develop its members with the objective of increasing their business skills and profits and to enhance their harvesting skills with the express purpose of protecting the environment and the long-term sustainability of targeted species of medicinal plants; and ii) that all members sign an agreement between themselves and the Association that binds them to a set of standards, rules, objectives or laws. The Association agreed on the following rules for sustainable resource utilization:

- ❖ Sustainable resource harvesting practices to be implemented in the forests should contribute to the recovery and conservation of the forests;
- ❖ Bark harvesters should be able to continue with harvesting the bark resources with improved operating conditions, reduced effort and costs, minimized resource harvesting impacts, and better opportunities for the development of viable, profitable small business;
- ❖ Rules for controlling resource harvesting must be simple, practical, and easy to manage, and cause minimal interference to effective harvesting;
- ❖ A constructive, collaborative relationship between DWAF (resource managers) and the Association (legal commercial bark harvesters) should facilitate: i) effective and sustainable bark harvesting; and ii) the elimination of undesirable, destructive, and illegal commercial bark harvesting from the forests.

On 30 May 2002, DWAF issued a General License under sections 7, 15 & 23 of National Forests Act [No. 84 of 1998] to the Sizamimpilo Association, for bark harvesting under the guidance of the management plan for natural forests in the uMzimkhulu District. The management plan provided guidelines for resource harvesting, planting for alternative resources, monitoring of resource use

impacts, and stipulated the arrangements between DWAF and the Association. Interestingly, harvesters from other districts have now joined the Association, and an allied Association has been established in Pietermaritzburg (Mander, 2004).

### **7.7 POLICY FRAMEWORK ON THE CONSERVATION AND SUSTAINABLE USE OF FORESTS AND WOODLANDS IN SOUTH AFRICA**

In the pre-1994 period, policy formulation in South Africa generally followed a blueprint approach, where policy was formulated by experts in the field (Allan & Fakir, undated). The post-1994 period saw the advent of democratization in South Africa, whereby policy formulation processes are founded on exhaustive public debate and participation using various forums before finalization into official policy (Foy et al., 1998). The democratically elected government has transformed the policy formulation process to be more transparent and participatory, in line with the promotion of a culture of democracy in contemporary South Africa. Policy development processes are varied in their mix, between the roles that public participation has played, compared with that played by the supply and incorporation of technical information (Pearl & Wilson, 1998). The policy development process in South Africa has largely followed an inclusive approach where a wide spectrum of stakeholders has been solicited to assist with the process (Willis, 2004). The generic policy formulation model is presented in **Figure 26** below (Foy & Willis, 1998). The natural woodlands and forests of South Africa differ significantly from each other in terms of their distribution, extent of use and composition (Scholes, 2004; Lawes et al., 2004). The differences are also reflected in the context of the policies and legislation that have influenced the current state of both biomes. South Africa's indigenous forests are a limited resource, covering only a small fraction of the country's land surface (0.3%, Department of Water Affairs and Forestry, 1997). Although indigenous forests were undoubtedly used by local inhabitants in pre-colonial times according to McCracken (2004), there is a school of thought that argues that their current distribution is a relatively true reflection of their bio-physical limits (Kruger et al., 1995). The argument by Kruger and co-researchers (1995) suggests that, even without human influence, the forests would not extend much beyond their current range, but rather that they have been restricted by other factors such as rainfall and fire. Indigenous woodlands, on the other hand, cover a vast area of South Africa, comprising a little less than one third of the country's surface (DWAF, 1997). Other studies have indicated that approximately 40% of South Africa's land could potentially be woodland, but only 23% remain unconverted (Thompson, 1999).



of the country, thus receiving much attention, protection and research focus, while woodlands have been treated as of lesser importance, being ignored, neglected, and in numerous instances, abused (van Wyk et al., 2004).

## **7.4 DISCUSSION AND CONCLUSION**

In conclusion, the case study of the two *Pelargonium sp.* was an attempt to highlight the salient features of demand versus supply of natural plant species of economic importance in so far as their management is concerned, taking into consideration the fact that rural communities should be an integral part of the solution in the planning process, management and prudent utilization of biodiversity to ensure the continued existence of these plant species while simultaneously availing the resources to rural communities as a source of livelihoods. On the part of government, resource planning strategies and biodiversity conservation management that ignores the ever worsening socio-economic conditions that rural communities find themselves would be counter-productive. As discussed in Chapter 2, rural communities have been neglected and marginalized from the mainstream economy as well as being alienated from the land, a situation that has been attributed, mainly, to a long historical process that has its origins in the wars of colonial land dispossession that started towards the end of the Eighteenth Century, followed by the forced removals of the apartheid era (Roux, 1948; Le Cordeur, 1981; Peires, 1981; 1989). The *Pelargonium Case Study* was part of a series of feasibility studies conducted in the course of this study. The study was designed to work towards the crafting of rural economic development strategies with the major objective of transforming the depressed socio-economic landscape of the rural communities whose situation had been further aggravated by the rapid spread of the HIV/AIDS pandemic, over and above their marginalization while South Africa was going through industrialization, a process that was driven by the discovery of diamonds, gold and much later, and other precious metals that were in high demand in world markets from the earlier decades of the 20<sup>th</sup> Century (Roux, 1948; Callinicos, 1980; 1987; Bozzoli & Delius (eds), 1990). Hence, the rural communities who, over the millennia, have always been regarded as the natural custodians of these resources were ultimately forced by the rapidly changing global economy that drew South Africa into its fold to be heavily reliant on these natural resources under the prevailing socio-economic circumstances of poverty and underdevelopment that became a common denominator in most rural communities of the Eastern Cape (Willis, 2004). The status of *Pelargonium* is a typical example of the situation described above.

The direct intervention of the Amathole District Municipality and the Nkonkobe Local Municipality to form partnerships with the rural communities and the author's research group in the *Pelargonium* Initiative improved the feasibility of the model of business partnerships to a level at which it had the potential of being the ideal collaboration strategy proposed in this study as a vehicle for the economic transformation of the rural Eastern Cape. According to Willis (2004), in general most of the new policies of South Africa take cognizance of the essential obligation which the country has to utilize its natural resources in furthering the aims and objectives of development of the overwhelmingly poor majority of the country. Be that as it may, the reality of the situation is that, in a number of cases, the demand for the resources far outweighs the supply as was the case for the *Pelargonium* species. The challenge, therefore, for decision-makers in biodiversity conservation and economic development such as scientists, managers and legislators alike would be to find creative solutions in which natural resource utilization is optimized while ensuring sustainability, a task often expressed as a cliché by politicians but rarely achieved in practice (Willis, 2004). Government would need to closely monitor and evaluate the land reform process, particularly addressing issues pertaining to resource tenure, in order to ensure that the impacts of this process on the sustainability of natural resources are positive. Above all, as concluded by several researchers on the economic use value of non-timber natural plant species that are on the endangered list of extinction, the inclusion of communities in whose areas these resources are found in the protection and usage planning thereof, is key in order to succeed (Kepe, 1997a; 1997b; Kepe et al., 1998; 1999; 2001a; 2001b; 2002; Kepe & Scoones, 1999; Kepe et al., 2000; Kepe et al., 2001). Willis (2004) further argues that the forests and woodlands of South Africa, as they are today, are largely an echo of past policies and legislation that have driven their management (or mismanagement). If the largely rural communal populations of South Africa can be ensured of security of tenure, the incentive for them to manage and use the natural resources wisely will become that more logical to them. The relatively recent return of South Africa into the global sphere has resulted in its inclusion as a role player of note in the quest for international action and policy formulation pertaining to the management of environmental issues (e.g. the Kyoto Protocol on global warming; nuclear proliferation and waste disposal). South Africa has, undoubtedly, made much progress with regard to development of new policies in many sectors of government, which include addressing the needs and aspirations of the majority of the country's society while simultaneously addressing pertinent environmental issues (Shackleton et al., 2001; Willis, 2004). The sustainability of forests and woodlands is sufficiently addressed in current policies, yet substantial areas of both biomes continue to

be transformed without any permission or control (Willis, 2004). Other researchers argue that this state of affairs will only change once the responsibility for the sustainability of these biomes is taken by all members of society rather than solely by government (Shackleton et al., 2001). Shackleton and co-researchers (2001) further state that the private sector and non-governmental organizations should position themselves to influence policy and act as ‘watchdogs’, holding government to task with regard to its legal obligations. This includes top-of-the-mind awareness of the public to the importance of these vegetation types, which will call for the mobilization of resources and stimulate action to apply policy, enforce legislation and work in concert as a people with a common destiny (Willis, 2004). In the event, South Africa would be well on its way to closely achieving some of the targets set in the Millennium Development Goals for 2014 (World Bank, 2006).

The development of the *Pelargonium* Enterprise was regarded as being quite significant by the author since it presented a window of opportunity as a high value cash crop that was in demand in global markets as a primary material for the production of an essential medicinal preparation. This is due to the fact that pharmaceutical products in the health industry are lucrative with high profit margins; hence, the establishment of such an enterprise has a potential of accelerating economic growth in the rural communities where this species flourishes. An additional advantage in so far as the two *Pelargonium* species are concerned was the fact that they grow well in specific ecosystems and thus, would not have much competition in the marketplace. Although food crops offered a fairly profitable return on investment, the long-term view was to gradually introduce high value cash crops in the community enterprises until a balance was achieved in terms of production ratios between these two crop types. The long-term strategy was to make inroads into lucrative niche` markets, hence the initiation of nurseries of essential oil-producing and medicinal plant species in the targeted rural communities. The Essential Oils Case Study reported in Chapter 7 was a point of departure towards the realization of this strategic intent.

## **CHAPTER 8: ESSENTIAL OILS: A CASE FOR PARTNERSHIPS WITH RURAL COMMUNITIES IN ENTERPRISE DEVELOPMENT**

### **8.1 INTRODUCTION**

According to the description from the Wikipedia, an essential oil is any concentrated, hydrophobic liquid containing volatile aromatic compounds from plants (Wikipedia Foundation, 2007). They are also known as volatile or ethereal oils, or simply as the “oil of” the plant from which they were extracted, such as *oil of clove*. According to this definition, the term **essential** indicates that that the oil has a distinctive scent (essence) of the plant, not that it is an especially important or fundamental substance. Essential oils do not, as a group, need to have any specific chemical properties in common, beyond conveying characteristic fragrances (Wikipedia Foundation, 2007).

Essential oils are extensively used in the perfumery and cosmetic industries as well as being used for flavouring food and drink and as a base for scenting incense and household cleaning products (Wikipedia Foundation, 2007). Various essential oils have been used for medicinal purposes at different periods in history with applications ranging from skin treatments to remedies for cancer based on the historical use of the oils rather than on scientifically proven efficacy (Kuriyama et al., 2005; Prabuseenivasan et al., 2006; Komiya et al., 2006). In more recent times, such claims have gradually been subjected to regulations in a number of countries. According to Wikipedia, the online encyclopedia, essential oils have wide applications in Alternative Medicine, sometimes termed as Complementary Medicine. Alternative Medicine has been defined as “any of the various systems of healing or treating disease not included in traditional medical curricula taught in the United States and Britain” (Merriam-Webster online, 2007). According to this definition, Alternative Medicine practices are often based on belief systems rather than modern scientific theory and may, therefore, incorporate spiritual, metaphysical, or religious inclinations, non-validated practices, non-Western medical traditions or newly developed approaches to healing. Alternative medical systems mostly practiced in the developing countries are: Aromatherapy, Ayuverdic, Chiropractic, Herbalism, Homeopathy, Naturopathy, Osteopathy, Traditional Chinese medicine and Unani (Astin, 1998; Eisenberg et al., 1998; Wetzal et al., 1998; Ernst, 2003; Barnes et al., 2004).

Aromatherapy is, perhaps, the most commonly practiced form of alternative medicine in which the healing effects are ascribed to the aromatic compounds in essential oils and other plant extracts

(Wikipedia Foundation, 2007). Many of the common essential oils have medicinal properties that have been applied in folklore medicine since ancient times and are still widely used today (Kuriyama et al., 2005; Prabuseenivasan et al., 2006; Komiya et al., 2006). Some opinion makers have rejected the classifications of alternative medicine and have argued for a classification of therapy based on the objectively verifiable criteria of the scientific method that is not based on the changing curricula of various medical schools or social sphere of usage (Angell & Kassirer, 1998; Fontanarosa & Lundberg, 1998; Dawkins, 2003). Nevertheless, in the last decade, numerous research studies on the medicinal and pharmacological properties of essential oils extracted from a wide spectrum of naturally existing and domesticated plant species have been undertaken and are still ongoing. In a review on the Essential Oils Industry in Canada, Alberta, the Alberta Agriculture, Food and Rural Development (1996) lists Aromatherapy as a significant niche` market that is gathering momentum in North America. Although the medicinal properties of essential oils were widely recognized through experiential usage over the millennia without any scientific validation, as stated earlier, in the recent past and the current period, pharmacological research has been carried out to investigate and affirm the properties as evinced by the volume of literature that has been published worldwide (Tan et al., 2002; Valant-Vetschera et al., 2003; Lima et al., 2005). A number of pharmacological studies have sought to verify claims of antimicrobial and antioxidant activity of various plant species essential oils extracts and the chemical composition of the active metabolites (Candan et al., 2003; de Paula et al., 2003; Uzel et al., 2004; Viljoen et al., 2005; Magwa et al., 2006; Figueroa et al., 2007; Mhinana et al., 2007) as well as traditional uses such as home remedy and Aromatherapy worldwide (Gali-Muhtasib et al., 2000; Karousou et al., 2007).

Although South Africa has been a relatively late entrant in most spheres of social activity due to its international isolation and hence, its pariah status that has been attributed to its apartheid laws and policies, over the last two decade, research in the areas of essential oils and the related fields of Ethnobotany and Ethnopharmacology has intensified to such an extent that, according to the Journal of Ethnopharmacology, in the period 1995 – 1999, South Africa contributed 56% of the total number of 40 papers submitted for publication to this journal by Africa as a continent; and in the period 2000 – 2004 its contribution was 55% of the total number of 76 papers submitted for publication by all the African countries (Light et al., 2005).

## **8.2 ESSENTIAL OILS INDUSTRY AND THE SOUTH AFRICAN CASE STUDY**

According to an information report by the State of Victoria Department of Primary Industries (2002), there are well over 160 recognized essential oil crops although most are not significant in terms of worldwide demand. The largest market share in terms of the world production of essential oils is held by the citrus, mint and lemon fragrance oils at 15 000 tons, 6 000 tons and 4 000 tons respectively. The citrus oils are all produced as by-products in the major citrus industries in the United States, Brazil and Mexico. According to the State of Victoria Department of Primary Industries (2002), the major producers of essential oils are Brazil, the People's Democratic Republic of China, Egypt, India, Mexico, Guatemala and Indonesia and with the exception of USA, all are underdeveloped countries with low cost and overwhelmingly rural economies. On the other hand, the major consumers of essential oils are the USA, Western Europe and Japan at 40%, 30% and 7% respectively. The top ten crops in terms of production, account for, approximately 80% of the total world market of essential oils with the rest of the 150 crops sharing the remaining 20%. In terms of monetary value, the total market, worldwide is worth US \$10 billion and is growing at 10% year-on-year driven by an expanding global economy, a significant rise in incomes and consumption of the burgeoning middle and professional classes in the underdeveloped countries in tandem with the rapid growth in international demand and preference for natural herbal medicine and healthier foodstuff in the leading economies of the world over the last twenty five years (United Nations International Trade Yearbook, 1999 & 2002; World Health Organization, 2004). The most significant determinants in the Demand – Supply Chain of essential oils are; the quality of the soil; water availability; the susceptibility of some of the essential oil plant species to a variety of plant diseases and pests and climatic conditions; hence, the quality of the metabolites in the essential oil crops is, therefore, largely determined by a combination of all of these factors (Department of Primary Industries, State of Victoria, 2002).

South Africa is not a significant player in the global market for essential oils, currently producing an estimated 2 100 to 2 900 tons per annum and has been increasing consistently over the last five years (Agricultural Research Council, 2004). This has largely been attributed to some active interventions in developing the essential oils market by local institutions such as, the South African Council for Scientific and Industrial Research (CSIR); the organization, Biosys; district and local municipalities' development agencies and institutions of higher learning. The development of a range of steam distillation technologies has assisted in producing consistently high quality essential oils. The South

African Department of Science and Technology (DST) has been sourcing and transferring essential oil extracting technologies to communities in the Western Cape, Mpumalanga and Limpopo provinces (Department of Sciences and Technology, 2005). It is expected that the export of essential oils from South Africa could easily treble within two years given the consistent demand for essential oils as reported above (Agricultural Research Council, 2005). The South African production of essential oils can be divided into two main categories, the first being the major bulk commodity oils, for which South Africa is already an acknowledged producer (Agricultural Research Council, 2004). These include orange, lemon, lime and eucalyptus oils. The second category consists of minor oils, involving smaller quantities of niche oils of less than 500 tons per annum. These include Geranium, Lavender, Chamomile, Rosemary, Jasmine, Basil, Melissa, Marjoram and Thyme. The focus of the production plan in this case study was only on the minor oils in what was regarded as a pilot phase of the project as these tend to be higher value crops where South African essential oil producers could establish niche expertise and markets. It is also important to report that from the research conducted by the management of the startup essential oils production company, Essential Amathole, the essential oils industry buyers approached were found to be extremely cautious in switching suppliers of essential oils due to the fact that all were locked into long term contracts with established suppliers who had been supplying them with consistently high quality products over the years and thus, were reluctant to take the risk of changing to new suppliers with no track record and guarantee of consistently high quality and supplies.

The presence of local essential oils producers was not regarded as a threat at this stage of the development and growth cycle of the essential oils local market. In fact it was deemed important that the local market should be in a position to significantly expand in order for South African suppliers to be able to consistently meet global expectations with regards to production volumes and consistently high quality. An equally significant factor taken into consideration was the fact that the expansion of the essential oils industry would also better facilitate the range of technical support services that would be necessary to develop the appropriate cultivation methods and the optimization of oil quality. The project formed part of an emerging cluster of essential oil producers in the country; hence, it was of critical importance for the success of this project to actively participate in the broader development of such a cluster. Apart from the critical success factors identified in the conceptualization phase of this business case, the implementation of the project was underpinned by the principles of Public-Private-

Community Partnerships that took rural communities into consideration as business partners in the rural development programmes and the stimulation of economic growth in the rural landscape of the Eastern Cape Province. The strategic alliances with rural communities on the part of Essential Amathole, was an attempt to assist the Province in its broader effort to meet the targets of the United Nation's Millennium Development Goals and the Eastern Cape Provincial Government's Provincial Growth and Development Plan in the period leading to 2014.

### **8.3 METHODOLOGY: *COMMUNITY-PRIVATE PARTNERSHIPS IN THE ESSENTIAL OILS INDUSTRY***

Essential Amathole (Pty) Ltd is a start-up Essential Oils Company based in the Amathole region of the Eastern Cape that was established on the basis of an innovative community – private partnership model as proposed in other case studies reported in Chapters 5 and 6 of this thesis. In its future plans, the business entity also included a medicinal plants component that would be expanded in the long term once the essential oils business was well established. The essential oils business is a technologically complex area; hence, its viability was consequentially dependent on sound relationships with technology partners that would ensure technology transfer and the sharing of local and international experience. In the initial phase, the essential oils business plan focused on the Tyhume, Keiskamma and Kat River valleys, and the areas surrounding Hogsback. This is a geographically and climatologically diverse area, with rainfall ranging from 500mm per annum in the drier valleys to over 1000mm per annum on the escarpment (Van Averbek, 1995; Low & Rebelo, 1996). The area largely falls within the former Ciskei homeland area, and is also characterized by high levels of poverty and unemployment. Essential Amathole identified a need for sustainable community development initiatives and empowerment based on viable agriculture and an equitable beneficiation for the rural communities.

For a number of reasons, essential oils, to be followed by medicinal plants at a later stage, were identified as preferred business initiatives, namely:

- ❖ The initiative presented an ideal opportunity for employment creation, particularly if organically grown and certified essential oils - selected as the best cultivation method to ensure high quality and the exclusion of chemical contamination - are to be produced;
- ❖ There is potential for the creation of better skilled and paid jobs that is linked to the processing and beneficiation of oils and plants;

- ❖ The distance from the targeted markets has been a major challenge for the previous agricultural and industrial initiatives in the area - essential oils and plant extracts are high value crops with a low volume product - and the transport costs to distant markets are comparatively insignificant;
- ❖ The produce, if stored suitable conditions, can be held for extended periods of time further mitigating the problem of market access;
- ❖ Since the crops are not edible or locally useful they are, therefore, not susceptible to theft;
- ❖ An essential oils and medicinal plants industry will require a relatively small area under crops; hence it will not compete with other forms of agricultural production in the area.

Several climatologically varied sites identified for the project were selected on the basis of their potential for development as nodes that would constitute part of a larger essential oils industry in the Amathole District. Seven sites were selected together with a range of essential oil-producing indigenous plant species identified for the cultivation trials planned to commence on each site towards the end of the year 2007. The sites were selected on the basis of the diverse agricultural conditions prevailing, with the availability of an irrigation infrastructure on four of the sites while the rest of the sites had the advantage of a high rainfall pattern thus making them potentially suitable for dry-land cultivation. The strategic objective of the plan was to establish the project (since the cultivation was at the feasibility stage to test the viability of plant growth) as a community-private partnership with structured equity arrangements designed to achieve empowerment objectives.

At inception, the Essential Amathole business plan factored in the geography, climate and the soil quality of the sites as a motivation for a business case for an Amathole essential oils enterprise development programme. Further development of the potential sites identified as future nodes of development into a fully fledged enterprise were to be based on the outcomes of the cultivation trials. Essential Amathole also identified indigenous plant species on the basis of their suitability for cultivation in the target areas as well as formulating various scenario plans for rolling out agricultural production. On the basis of the scenario planning, a financial plan was formulated indicating the financial resource requirements of the project as shown in the Business Plans Annexure. The financial plan was merely a forecast exercise based on assumptions since the data that would be generated from the trials would be crucial in the establishment of the various costs/benefit scenarios and profitability

parameters. The business plan would, therefore, be revised and updated once the data from the trial cultivation period was available.

#### **8.4 DESCRIPTION OF THE SITES SELECTED FOR CULTIVATION**

The project focus area has been the subject of extensive study by generations of academics and agriculturalists at the neighbouring University of Fort Hare; hence, the description of the area given below draws heavily upon their work (Van Averbek, 1995).

The Amathole Mountain Range of the Eastern Cape slopes from the east to the west, covering a distance of approximately, 100 km from the coast. Rising sharply from the Coastal Plateau to an altitude ranging between 1500 and 2000 m above sea level, the southern slopes of the mountain range appear as a green forested belt. The sharp increase in altitude causes an annual rainfall that is much higher than on the coastal plateau (Van Averbek, 1995; ECSECC, 2001).

The climate in the mountains is considerably cooler than on the coastal plateau with misty conditions prevailing almost all the year round. Snow falls regularly during winter, especially on the high peaks, although hardly ever lasting longer than a few days. The area is characterized by duplex soils that show an abrupt increase in clay content at the transition between top and subsoil and are inclined to be highly prone to erosion if mismanaged. In the valleys of the Keiskamma, Tyhume and Kat Rivers, conditions are drier than the surrounding landscape. In the valley bottoms, deep soils occur on old and young river terraces. In the days of the Ciskei government, these soils were used for the development of irrigation schemes (Department of Agriculture, 2006). The schemes include Keiskamma and Zanyokwe in the Keiskamma River Valley, HACOP and the citrus estates in the Kat River Valley, and several small projects along the Tyhume River to the North of Alice. All the schemes collapsed due to a lack of viability and poor management (Department of Agriculture, 2006).

The Keiskamma, Tyhume and Kat Rivers flow from the escarpment and are relatively steep and fast flowing. A rainfall of almost 1000 mm has been experienced in some of the areas in recent years. The average rainfall in the upper Tyhume Valley has been established to be 700-800 mm. Precipitation is not only highly variable from year to year but varies within relatively small distances in this area of complex topography. The high altitude provides for a relatively short growing season and is frequented by frost during winter months. June and July are generally the driest months of the year throughout the

Amathole Region. The annual rainfall in these months is 7% of the total rainfall compared to the estimated 70% in the months of October through to March. The number of days per annum with measurable rain normally ranges between 90 and 100 days (ECSECC, 2001).

The population in the Amathole region is largely rural with people's livelihoods in the area being mainly reliant on revenue from migration and state support and pensions; with 1, 8 million people, Amathole District is the most populous region in the Eastern Cape Province (RSS, 2006).

Cultivated land in Amathole is used mainly for the production of fodder crops for livestock, with Lucerne and maize being the most important. Maize is by far the most important crop. Gardens are used for a range of crops and vegetables. Small-scale crop production has been declining for several decades. Farmers have identified the poor quality of their cultivated soils, and the variability of the rainfall characterized by dry spells and occasional periods of excessive rain as the two important agro-ecological causes for this decline in agricultural production.

Once the essential oil project had been properly established, it was anticipated that the target area of the project could be expanded to other areas of the Eastern Cape, and in the long term, elsewhere in Southern Africa.

### **8.5 ESSENTIAL OILS INDUSTRY VIABILITY IN THE AMATHOLE REGION**

The economic viability of an essential oils business in the Amathole area, like any other crop growing enterprise, depends on a wide variety of inputs such as cost of irrigation, access to distillation facilities, area of land available, level of training required, access to plant material, sources of fuel etc. In developing the business plan, these issues were systematically addressed and tentative solutions recommended. Historically, the primary constraint to any agricultural industry in the Amathole area has been access to markets (Eastern Cape Development Corporation, 2007). Because of the high-value-low-volume nature of the essential oils products, the transport costs to markets as a ratio of the overall production cost are not significant. This implied, therefore, that this factor can be critical in enabling the industry to take off in the area, unlike bulk crops such as vegetable and grain crops that require dedicated transportation with substantial cost implications that affect profit margins.

Various combinations of factors favour the establishment of an essential oils business in the area. These include:

- ❖ The region has a diverse climate with a range of agricultural conditions that are conducive, thus allowing for a good selection of essential oil crops to be grown, and a diverse base of oils for supply to the market;
- ❖ The region has fair to good quality soils, reinforcing the diversity of growing conditions;
- ❖ A number of similar local essential oil initiatives forming an emerging cluster in the region have been established, allowing for pooling of support and technology services and sharing of experiences;
- ❖ There is an established market for essential oils in South Africa, with a number of wholesalers operating to pool output from small suppliers and interface with international market. South Africa has traditionally strong trade links with Europe which can be used in growing the local industry;
- ❖ The region has access to unique plant materials which could provide a later development of new products and new markets;
- ❖ Technology transfer to emerging initiatives is supported by a variety of government and private initiatives. There is a large amount of support for an essential oils industry from government agencies such as the Departments of Trade and Industry, and Science and Technology, the Eastern Cape Development Corporation, the Amathole District Council, the Council for Scientific and Industrial Research, and others;

The commercial production of essential oils is a highly intricate process; from the selection of the appropriate essential oil-producing plant species and the ideal location for their cultivation, through to tending and nurturing of the growing seedlings and, finally, the extraction of the oils. All the processes involved require a sound knowledge and expertise base in various areas in order to acquire a final product with the desired levels of quality and the yield per ton of plant material. Deducing from the essential oils market intelligence obtained by the author of this thesis during the feasibility study phase, it was established that the barriers of entry into the essential oils industry were relatively high in comparison with most agricultural sectors; hence, a thorough understanding of the essential oils industry coupled with well-grounded business and financial management skills was a prerequisite. In interactions with buyers, growers and manufacturers of essential oil-containing products, the outtake was that the essential oils industry mindset was largely informed by high quality standards and

consistency in the chemical composition of the active ingredients found in the essential oils from one batch to the next. These two attributes were the most important drivers of this industry due to the fact that the characteristics of consumer brands containing essential oils were largely defined by these oils since consumers associated their favourite brands with either a specific aroma or flavour. The conclusion by the research team about the quality-dependent industry mindset was corroborated by the Alberta Agricultural, Food and Rural Development Agency (1996) and the State of Victoria Department of Primary Industries (2002) in separate reviews on the essential oils industry in Australia and Canada, respectively. Another prohibitive factor with regards to the trade in essential oils, especially for new entrants, was the “incubation period”, which is the period between the startup phase of the cultivation trials and the selling of the first consignment which could be a number of years.

The Essential Oils Project brought together a number of local business people and development experts who were to ensure sustainable development of the project and its success as a viable business. The potential for the commercial exploitation of the diverse South African flora is significant. With regards to unique indigenous essential oils, South Africa has several species, which have obtained international acceptance. South African indigenous plant species which are being cultivated or harvested in the natural habitat for their essential oils include Buchu, Artemesia and Tagettes. Other uniquely South African offerings include Cape Chamomile, Cape May Oil and Cape Snow Bush. These and other products are largely exported to specialty buyers in the US and Europe (ARC, 2005).

## **8.6 METHODOLOGY: *BUSINESS PROCESSES IN ESSENTIAL OIL PRODUCTION***

The proposed Amathole essential oil business had four components. These are:

- ❖ Agricultural process of crop cultivation;
- ❖ Extraction of the oils or active ingredients from the plant materials;
- ❖ Beneficiation of the oils into value added products in the long term;
- ❖ Sales and marketing of products.

A large component of the business is agricultural. The key issue for the project was to achieve sufficient volumes of quality oils in order to achieve the necessary economies of scale. For this to be achieved sufficient land under cultivation was required and approximately 25 hectares per site was a minimum requirement for each site to be viable on its own and support a still at each location. The

proposed plan was to have 200 hectares under cultivation by the end of the planned 5-year expansion phase of the project.

The processing of plant material in essential oil extraction consisted of distillation (including hydro-distillation) and in some instances, desiccation. Although the technology associated with distillation is relatively simple, efficient distillation practices are required to ensure the best yields and quality of oils. It is essential to understand the manner in which the distillation process can affect the quality of oils produced, this is in order to improve processing thereby optimizing quality. For this reason the project had a strong emphasis on strategic partnerships with technical support agencies and the Departments of Botany and Chemistry at the local University of Fort Hare which had state-of-the-art technology as well as a highly experienced research and development team in the essential oils research field.

The marketing strategy of the project plan was to develop its crops and extraction processes in close consultation with target market buyers, especially the international flavour and fragrance houses. To this effect, a close collaboration with the international players and a corresponding level of technical sophistication were required. Other aspects found to be necessary for the establishment of a viable essential oils enterprise were strategic financial and technical partners such as the Council for Scientific and Industrial Research (CSIR), the Department of Economic Development and Environmental Affairs (DEDEA), Eastern Cape, the Department of Trade and Industry (DTI), ECDC and the Industrial Development Corporation (IDC) whose expertise and global perspective in numerous industries and markets, including those for essential oils, were critical in the design of the project while simultaneously providing logistical, technical and marketing support for fledgling organizations such as Essential Amathole.

In designing a sustainable and long-term corporate strategy for the establishment of Essential Amathole, several Critical Success Factors were identified as the following:

- ❖ Production levels had to be underscored by economies of scale in order to be sustainable;
- ❖ Strategic alliances with various stakeholders such as the rural communities, government agencies and departments, other essential oil producers, buyers, individuals and entities with the requisite technical expertise and Research and Development institutions were necessary;

- ❖ The marketing of consistently high quality products through an association with entities with highly specialized chemistry and organoleptic skills and experience was to be the basis for the existence of Essential Amathole;
- ❖ A strong social facilitation programme to build lasting and professional relationships with rural communities engaged in the project was the cornerstone of the success and viability of the future enterprise;
- ❖ An in-depth understanding of the essential oils markets at both the local and global level as well as the prevailing industry mindset was a prerequisite;

## **8.7 BUSINESS POTENTIAL IN ESSENTIAL OILS AND MEDICINAL PLANT CROPS**

### **8.7.1 Introduction**

As stated above, although there are well over 160 recognized essential oil crops, most of these oil-producing plant species are of minor importance in terms of global demand with the top ten crops accounting for about 80% of the total world market for essential oils in terms of volume (Department of Primary Industries, 2002). The main determinants of what essential oil plants to select for cultivation are:

- ❖ The soils and climate of the area,
- ❖ The ability to competently extract the oils to the right standard, and
- ❖ The nature and stability of the market for the particular oils.

A decision was reached to exclude bulk oils such as eucalyptus and citrus as the distance from market makes these comparatively less attractive. The list of crops that has been selected contains the mainstream crops with sufficient market knowledge and technical support available to see success in the short-term. Crops where prices for oil have been unstable or dropped recently, and where major new competitors are anticipated, were excluded. A medicinal plant, *Pelargonium sidoides*, was added as it grows well in the area with dry land cultivation and may be the most suitable crop for non-irrigated areas. There were also a few crops with oils that could be of interest to broaden the production base at a later stage.

### 8.7.2 Potential Essential Oil-Producing Crops

The potential essential oil-producing crops that were taken into consideration for production by Essential Amathole are as listed below.

*Geranium*

*Lavender*

*Roman Chamomile*

*German Chamomile*

*Lemon Balm (Melissa)*

*Spearmint*

*Peppermint*

*Rose oil (Rosa damascena)*

*Pelargonium sidoides*

These crops are briefly described below. More detailed business plan reflecting production costs and anticipated revenues per hectare are contained in the Annexure.

#### 8.7.2.1 Geranium (Pelargonium, rose-scented)

Geranium is widely cultivated in South Africa, and has been successfully grown in the slightly heavier soils of the Eastern Cape. A large rose geranium essential oil producing project has been established by an independent entrepreneur employing a workforce of 50 local residents on approximately, 30 hectares in the small rural town of Keiskammahoek in Amahlathi Local Municipality that constitutes one of the eight local municipalities of the Amathole District Municipality. The area has a closely similar climate and soil types to the upper Tyume River Valley. Rose geranium is an important raw material for the fragrances industry, with the oil being commonly used in perfumes, soaps and other personal care products.

*Pelargonium capitatum* is one of several species grown for its essential oil. The most sought-after cultivar produces the so-called “Bourbon Oil”. This is a hybrid between *P. capitatum* and *P. radens*, sometimes also referred to as *P. c.v. Rose*. The “Bourbon Oil” characteristics are not easy to maintain all the year round due to variable harvesting conditions.

The major markets for geranium oil are the US, France, Germany, Britain and Japan with a reported annual worldwide production that is in excess of 500 tons. Geranium oil fetches prices that range from US \$95/kg for conventional oil, to US \$150/kg for organically certified oil. In 2003, South Africa exported 3,912kg of geranium oil (Agriman et al., 2005, Department of Trade & Industry; Pico-Gro, 2007).

### **8.7.2.2 Lavender (*Lavandula sp.*)**

Lavender has been grown with moderate success using dry land cultivation in Hogsback, although many of the plants have been affected by mildew. It appears that a slightly drier climate such as in the upper Tyume would be better for the plants. In order to achieve profitability, it is essential to cultivate lavender organically (Pico-Gro, 2007).

The Lavender plant species has several cultivars that are derived from two main species, namely,

- ❖ *Lavandula angustifolia* or true lavender – this fetches the highest price on world markets, but has a lower yield per hectare;
- ❖ *Lavandula spika* or spike lavender – this species has higher margins but has a smaller market.

The optimum cultivars include “Mailette”, “Herchum Blue” and “No. 9”. The planned pilot cultivation targeted these two cultivars to determine which one would grow optimally in the area. Careful selection of the most suitable genetic material was, therefore, a critical aspect of the pilot phase.

South African exports of lavender oil are estimated to be in the region of 600kg per annum. The prices obtained for lavender oils vary widely based on quality and batch size. Lavender oil sells for between \$80 and \$120/kg, yielding just more than half the return that is obtained per hectare for Geranium (Agriman et al., 2005, Department of Trade and Industry).

### **8.7.2.3 Chamomile**

Chamomile is anticipated to grow well in the Hogsback area. The species prefers cooler areas, south of 27 degrees, Latitude. The seeds must be sown in winter; hence irrigation is, therefore, required. There are two types of Chamomile: Roman and German, with German Chamomile being the more highly sought after cultivar. Chamomile is used medicinally and in aromatherapy. Very little Chamomile is produced in South Africa, being estimated at about 30kg to 40kg per annum. The world market is also

very small at an estimated 20 tons per annum. However, being a highly profitable crop, several community Programmes in the Eastern Cape have been scheduled to produce German Chamomile within the next two years assisted by the ECDC (ECDC, 2007).

Organically certified German Chamomile fetches prices that range from US \$400/kg for poorer quality oil to US \$700/kg for good quality oil. Roman Chamomile prices range from US \$200/kg to US \$400/kg (Pico-Gro, 2007).

#### **8.7.2.4 Lemon Balm (*Melissa*)**

Lemon balm is a relatively tender plant requiring a warm climate and lots of water and does not cope well with frost. For this reason it is only suitable for sites lower down in the region. Lemon balm is similar in fragrance to the lemon fruit. Unlike other essential oils, lemon balm is usually cold pressed and is used medicinally, as an antiseptic and in cosmetics and soap. There is a limited market for lemon balm, and the crop must be organically certified. The oil can fetch prices in excess of \$1200 / kg on the market (Pico-Gro, 2007).

#### **8.7.2.5 Peppermint (*Mentha piperita*)**

Mints have been grown successfully in the Tyume valley and are deemed to be suitable for the slightly heavier soils and colder climates in the area. Peppermint (*Mentha piperita*) is used primarily in beverages, confectionaries and personal hygiene products. The market for peppermint oil is steady and mature. Peppermint can only be grown at certain latitudes (which would limit production, in South Africa, to the Southern and Eastern Cape). The price of peppermint oil has been reasonably stable over the five year period (1999 to 2003). Peppermint is sold locally at between R90/kg and R120/kg. The product is a commodity and the market is mature (Pico-Gro, 2007). Supercritical extraction of peppermint oil improves the quality of the oils.

#### **8.7.2.6 Spearmint (*Mentha spicata*)**

The largest of the other mints appears to be spearmint (*Mentha spicata*). In general, spearmint is used in confectionaries such as chewing gums and in personal hygiene products such as mouthwash. Spearmint is also a staple plant species; hence the reasonably constant rate of imports year-on-year. The mints market is mature and formulations are strictly adhered to. As a consequence most mint imports are already formulated.

Spearmint oil tends to fetch, on average, a higher price than peppermint (between R150 and R250/kg over the period 1999 to 2003). However, there were some concerns regarding the quality of the root stock that is available in South Africa.

#### **8.7.2.7 *Rose damascena***

The Rose Damascena (rambling rose) plant species grows suitably in the Hogsback area. The wild type of rambling rose grows profusely in this area. The ideal climatic condition for its growth is low temperatures in winter in order to ensure the hardening or ripening of the shoots, which, in turn stimulates flowering in October. The short flowering season means that there is only a single harvest each year. The oil is difficult to extract, requiring specialized hydro distillation equipment and technologically complex methods, according to Teubes, a specialist in organic farming from Hogsback. Because of its organoleptic properties, the oil reaches high prices – R15 000 to R30 000/kg. The future market may be affected by the large increase in production capacity undertaken by Iran with EU government support (Agriman et al., 2005, Department of Trade & Industry).

At the time of writing up this thesis, trials were being undertaken on each of the above crops, with the exception of spearmint, because of the aforementioned concerns regarding the correct root stock. Different scenarios for the roll out of the project, using different combinations of some of the above crops, were formulated, and are described in the Annexure.

#### **8.7.2.8 *Pelargonium sidoides***

*Pelargonium sidoides*, which has been dealt with at length in Chapter 6, grows naturally in many parts of the Eastern Cape. The *Pelargonium* plant species have been used for traditional healing in the Eastern Cape for centuries before the colonial period, according to traditional healers interviewed during the course of this research. Some of the numerous *Pelargonium* species were used as a cure for ailments such as diarrhea, and dysentery, while the secondary metabolites of *P. sidoides* have antibacterial properties with beneficial effects on upper respiratory tract infections. The German pharmaceutical company, ISO-Arzneimittel based in the suburb of Ettlingen, is using extracts from the plant for the manufacturing of Umckaloabo, a treatment of childhood bronchial infections (van Wyk et al., 1997). As has been reported earlier on, the unfortunate situation has been the illegal harvesting of

*P. sidoides* from its natural habitat in the Nkonkobe and Peddie areas by the local communities to support livelihoods, allegedly encouraged by the demand that has been directly linked to this German company, which should be deriving super profit margins since the locals have reportedly been earning a pittance from the middlemen who, in turn, pass it on to a second middleman, who then sells the raw plant material to the German company.

*Pelargonium sidoides* has been heavily harvested without precaution about its conservation status. *Pelargonium reniforme* and *Pelargonium sidoides* have become a source of income for many communities in the region, but with its rate of harvesting far exceeding its rate of reproduction. In the past three years several tonnes have been harvested, but communities have received minimal income from intermediary dealers. The plant tubers are the suitable organs which are required by the buyers, and the digging up of the plants has left most of the velds with huge holes which can lead to either formation of soil erosion or be dangerous to stock farming.

These two sub-species of the plant have been known to have active medicinal properties from the ancient times by the local Eastern Cape communities (van der Walt, 1977; van Wyk et al., 1997). There is a clear case for the agricultural production of the *Pelargonium* species, and the extraction of the active ingredient from the plant before export to overseas markets as discussed in Chapter 6. It is estimated that higher prices can be obtained for the value-added product. This plant species has been the subject of research by the University of Fort Hare for a number of years and has been included into the essential oils project.

## **8.8 LOCATION OF CULTIVATION TRIAL SITES**

Six potential sites were identified for the project with trials planned for each of the sites from the fall of spring in the year 2007 to the end of winter in 2008. The sites were selected on the basis of the different soil and climatic conditions required for the growth of the various essential oil-producing crops selected as indicated in the previous section above. The selected sites had different underlying ownership structures. The six sites are:

- ❖ **The Pandulwazi Agricultural School**, which is located in the upper Tyume Valley on the road to Hogsback, and has a large farm attached to it that is used for demonstration and teaching purposes.

The farm is underutilized; hence, it is possible to convert a large part of it to essential oils production;

- ❖ **Auckland Village** is a communal area in the upper Tyume Valley, with large areas that were previously under cultivation, but are currently underutilized;
- ❖ **Bold Point Farm**, at the top of Hogsback, is municipal commonage that has been earmarked for a low income housing development. It is cold and exposed in winter and is characterized by an extremely high annual rainfall;
- ❖ **Cathcartvale** is a village situated on the outskirts of Seymour in the upper Kat River Valley. The valley is hot and dry in summer, with sandy soils and a nearby dam;
- ❖ **The Lushington Villages** lie between Seymour and Pandulwazi, and are communal land areas which were previously cultivated, and are currently underutilized. The area is also characterized by a high annual rainfall;
- ❖ **The Burnshill Irrigation Scheme** lies on the Keiskamma River and is part of the larger Zanyokwe Irrigation Scheme. The land is owned by individual farmers coordinated through an agricultural cooperative. The farmers are successfully producing vegetables, but are more interested in cultivating higher value cash crops;

**Table 19** below presents a summarized description of the various sites listed above with the climatic conditions, soil types, land ownership, arable area size available for cultivation purposes and the proposed plant crops for each area.

## **8.9 STANDARDS AND TECHNICAL SUPPORT**

As was stated in the introduction, to secure market access, adherence to the quality standards stipulated by the buyers was of critical importance, in particular, the European, North American and the Japanese markets, which are the markets with the highest demand for essential oils (Department of Primary Industries, 2002). This included adherence to Good Agricultural Practices (GAP), which were, in most instances, used as barriers of entry to products from emerging markets such as South Africa. Essential Amathole set up systems and business processes to have properly documented standards and procedures for each crop type. The future production plans had to be strictly backed up by the appropriate and relevant education and training programmes in respect of the operations management and cultivation techniques of essential oil-producing crops to ensure consistently high quality and optimum yields at all times. The project was planned to be managed along strict organic cultivation

principles. Organic Certification was found to be an advantage for access into specific markets with organically certified products commanding a premium in terms of the pricing structures prevailing in this industry. The buyers were found to be the stakeholders who were the *de facto* power brokers of the essential oils industry, wielding the most power and control over the entire value chain of the essential oils industry; hence, as an oligopoly, they collectively determine the going prices for most of the essential oils that are in high demand in global markets (Agriman et al., 2005; Pico-Gro, 2007).

Organic farming methods tend to be more labour intensive although savings in the cost of fertilizer and pesticides could be realized. From the onset, warehousing of cultivation and production data and historical information was planned for in a manner that all plant material batches could be traced back to their origins in anticipation of any problems that could suddenly arise, as is the rule of the thumb in agricultural cropping. Production processes had to be carefully monitored so as to exclude the use of chemical fertilizers, herbicides and pesticides. An essential part of the enterprise included training on organic farming methods of the local communities' workforce and farm managers who would be working on the cultivation component of the enterprise. One of the technical partners in the enterprise, Earth Harmony Innovators, led by a Hogsback resident, had vast experience in community training and capacity enhancement in the area of organic farming methods. The skills transfer process to communities was viewed as an overarching principle at a strategic level since Essential Amathole was committed to the long-term development of self-sufficient and sustainable rural communities who, as partners, had a key role to play towards the success of the start-up enterprise. The chemical analyses of the essential oils was to be performed by one of the leading wholesalers of essential oils in South Africa through the utilization of state-of-the-art technology in High Performance Liquid Chromatography (HPLC) and Gas Liquid Chromatography (GLC), as well as odour and taste tests, responsive and feedback comments from the marketplace and a continuous update on the pricing strategy of products.

The results of the analyses were intended to provide information on the composition of individual oils, as well as confirming the absence of upper level contaminants, solvents, other undesirable volatiles and by-products that are invariably formed during the extraction and fractional distillation processes. Through the partnerships formed with the University of Fort Hare and the CSIR, which were already

involved in the start-up phase, the aim was to develop and enhance the existing local technical capacity to analyze, innovate and develop the oils to comply with the market stipulated standards and quality.

<b>LOCATION</b>	<b>CLIMATE AND OWNERSHIP SOILS</b>	<b>AREA AVAILABLE FOR ESSENTIAL OIL CROPS</b>	<b>PROPOSED TRIAL CROPS</b>
<b>Pandulwazi Agricultural School</b>	Heavier soils; irrigation available.	Land owned by E. Cape Department of Agriculture and land available for lease or partnership	15 – 20 hectares (ha) Geranium Lavender Chamomile Spearmint Peppermint
<b>Auckland Village, Upper Tyume</b>	Rainfall approx. 800mm pa, shallow soils well drained on terraces	Communal land, dry land cultivation, available for partnership project	25 ha Geranium Lavender Pelargonium sidoides
<b>Bold Point Farm, Hogsback</b>	High rainfall, frost in winter, suitable for dry land cultivation	Land owned by Nkonkobe Local Municipality, available for community partnership	30ha Chamomile Peppermint Rose oil Pelargonium sidoides
<b>Cathcartvale, Upper Kat River Valley</b>	Well drained sandy soils, suitable for dry land or irrigated cultivation	Communal land, dry land cultivation, available for partnership project or outgrower model	30ha Geranium Chamomile Lemon Balm (Melissa) Spearmint Peppermint
<b>Lushington Villages</b>	Rainfall approx. 800mm pa, shallow soils well drained on terraces	Communal land, dry land cultivation, available for partnership project	40 ha Geranium Lavender Pelargonium sidoides
<b>Burnhill Irrigation Scheme</b>	Well drained sandy soils, with irrigated cultivation	Land owned by cooperative of farmers, suitable for outgrower model	60 ha Geranium Chamomile Lemon Balm (Melissa) Spearmint Peppermint

**TABLE 19: Tabulated Description of Six Sites for Potential Cultivation of Essential Oil Crops**

### **8.10 INSTITUTIONAL ARRANGEMENTS**

From its inception, Essential Amathole was structured and established to be a model of Community-Public-Private-Partnership Enterprise entity based in communities with a support base in local

investors, farmers, development professionals, research and development institutions and public sector specialist agencies.

The institutional arrangements to support this partnership principle, informed by rural community development interests, was to structure the Essential Amathole entity in the form of a Trust, with the appointment of prominent individuals on the Board as trustees to represent community interests while local capacity from the rural communities was still in the process of development. The long term strategic objective of Essential Amathole in this partnership was to enable the proposed Community Trust to generate sufficient revenues from the project to finance local development projects and the much needed social infrastructure.

Local partnership arrangements with the rural communities in each of the trial sites of the enterprise areas were established complete with revenue sharing arrangements, training of local community farmers, and employment creation prospects for the future. From previous experience and interactions, communities in most of the rural Eastern Cape normally have a complex network of relationships and rights to ancestral land that require tactful and diplomatic negotiations and social facilitation in order to initiate any programme pertaining to land utilization. It was, therefore, anticipated that the proposed community empowerment model would be developed and carefully customized based on the existing relationships in each of the selected land sites.

Over and above the institutional arrangements described above, the proposed direct cultivation of the crops on some of the core communal land created a space and an opportunity to develop an out-grower model with local farmers who wished to take the initiative of growing their own crops on a contractual and dedicated basis to supply Essential Amathole with primary plant material. The fully developed enterprise would provide root stocks, training and ongoing logistical and production support to out-growers.

The Community Trust's equity in Essential Amathole was to be funded through grant support from government and donor organizations with future plans to grow the Community Trust's shareholding in the enterprise over time. According to the institutional arrangements, the Trust would hold a minimum of 20% of the equity with a view to increase the stake to approximately 45%, while the other members of the Essential Amathole entity were expected to arrange funding for their stake from their own

sources. Essential Amathole Pty (Ltd) would be managed along business lines as it was deemed beneficial in ensuring long-term sustainability. The company was officially registered to operate on any site, managed by a Board of Directors, which would have the responsibility of; establishing and growing the company, source finance and commission business and management information and knowledge systems platform necessary for the business processes that would drive its operations.

A five-member Board was established during the trial phase comprising local leaders, farmers and project managers whose role in the enterprise was to contribute towards technical and managerial skills and the acquisition of seed funding. The Board members were the primary investors in the company, bringing both equity and skills into the business in its start-up phase. The shareholder base of the enterprise was structured in such a manner that it could be broadened in the process of raising an amount of ZAR6.0 million that was required in the business plan to finance the commercial phase of the enterprise. In addition to the grant finance that had to be acquired on behalf of the Community Trust, substantial empowerment component equity was set aside for an empowerment consortium that could be funded by a number of financial institutions with an interest as part of their social responsibility programme in support of their corporate strategy.

### **8.11 STRATEGIC PARTNERSHIPS**

To ensure the sustainability of the enterprise, strategic partnerships with institutions with the appropriate technical support and managerial capacity had to be formed. These business partners played a key role in advising, supporting, capacity building and/or financing the initial phase of the enterprise. Each business partner is briefly described below.

#### **8.11.1 Amathole District Municipality and Amathole Enterprise Development Agency**

The Amathole District Municipality has been playing an active role in promoting local economic development within the district, and was assisting a number of communities to establish essential oil and medicinal plant projects. One such programme was in Imingcangathelo Traditional Authority in the Nkonkobe Local Municipality, which had initiated a *Pelargonium sidoides* cultivation programme. Essential Amathole decided to engage this community in order to establish close linkages with the Pelargonium Programme. The Amathole District Municipality had a strategic intent of assisting rural communities to establish a broader cluster of emerging essential oil enterprises in the area; hence, plans to this effect were included in the Municipality's economic and development Integrate Development

Plans (IDP) for the area. The economic development agency for the District, the Amathole Enterprise Development Agency (AEDA), is the economic promotion, project development and facilitation arm of the Municipality. AEDA signed a Memorandum of Understanding (MOU) with Essential Amathole regarding the trials to be conducted by the company as well as providing financial and technical support for the trials. The Nkonkobe Local Municipality, which falls under the jurisdiction of Amathole District Municipality, also owns a number of portions of land in the area which could be potentially brought into the enterprise for cultivation purposes. Essential Amathole had also developed close working relationships with the Nkonkobe Local Municipality.

### **8.11.2 Eastern Cape Development Corporation**

The ECDC is the official economic development agency for the Eastern Cape Provincial Government. The ECDC is actively supporting community development programmes around the Province, and has been involved in a number of essential oil projects in the last five years. The Corporation was actively supporting the emergence of a number of essential oils clusters in the Province and had provided technical support and advice to Essential Amathole, as well as some funding to support the trials that were underway. A MOU was signed between the ECDC and Essential Amathole. The ECDC could potentially make loan finance available to the business once it had attained the commercial phase.

One other state development finance institution that had shown an interest in Essential Amathole is the Industrial Development Corporation (IDC), a national government funding agency, and in conjunction with the ECDC, it was anticipated that they would be the main providers of debt finance to Essential Amathole in the long-term. In the initial phase, IDC was not in a position to enter into an agreement with Essential Amathole since the Corporation funded much larger business initiatives; hence, its support would be ideal in the growth and expansion phase.

### **8.11.3 Department of Science and Technology and the CSIR**

The Department of Science & Technology (DST), working in conjunction with the CSIR Essential Oils Unit, provided valuable advice and support towards the establishment of Essential Amathole and was positioned to play a much more important role in its future growth and development. Historically, the CSIR has had the most experience with the South African essential oils industry. The CSIR had an interest in essential oil production where this involves rural development programmes (e.g. Giyani in the Limpopo Province, growing Lippia and Geranium). By pooling their information and experiences

across a number of projects being run country wide, it was possible to tap into best practice regarding agricultural production, oil extraction and marketing. The CSIR would assist in the establishment of markets for oils and opening up relationships with market players in the development and growth of the local essential oils industry.

The CSIR and DST assisted with the development of the project plan, including the identification of role players in the industry and the design of the pilot studies. Essential Amathole had been registered with the CSIR as a pilot project, in order to establish the critical biological, physical and technical determinants that could be influential in the reduction of the risks normally associated with a project of this nature. These organizations also committed to assist with the co-funding of the project once it reached the commercialization stage as well as assuming responsibility for skills development, training and capacity enhancement, quite an essential role in terms of the empowerment of rural communities, combined with the optimization of their role and participation in the business as well as the reduction of operational and managerial risks.

#### **8.11.4 The University of Fort Hare**

The University of Fort Hare, because of its location in Alice in the Tyume Valley, has a lengthy historical relationship with communities in the area. The Botany Research Unit based in the Department of Botany at Fort Hare University had been actively involved in community development programmes on essential oils and medicinal plants, and had also conducted extensive studies on the *Pelargonium sidoides* as reported in Chapter 6. The business plan authored by the Botany Research Unit for the cultivation of *Pelargonium sidoides* by Imingcangathelo Community is attached in the Annexure. This Unit was also in the process of developing links for collaboration with the emergent Walter Sisulu University around rural development programmes as discussed earlier on. In collaboration with the Department of Agriculture at Fort Hare University, the Unit had studied soil and climatic conditions in the area for many years. The Department of Agriculture manages the Fort Hare Agricultural Farm, a potential additional site for growing some of the essential oil-producing plants and pioneered the development of the South African essential oils industry, although many of the original researchers in this area had since moved on. The Botany Department has a well developed Chemistry component with an interest in studying the organoleptic properties of essential oils around which it has trained a number of post-graduate students at Master's and Doctoral levels.

Through a partnership with the University of Fort Hare, the Department of Science and Technology and the CSIR have proposed to build up technical capacity in the fields of social facilitation, crop science and oil analysis in order to support the emerging cluster of essential oils programmes in the Eastern Cape.

### **8.12 SCENARIO PLANNING AND THE CRITICAL PATH ANALYSIS**

The Essential Amathole project plan was to implement the project in phases through a progressive scaling-up of production with contingency plans to deal with issues that could arise, thus making an allowance for adaptation to changing circumstances. The process for the establishment of an essential oils production facility is normally done in phases (Department of Primary Industries, 2002). The Essential Amathole project was based on four phases, namely:

- ❖ **Phase 1** – Cultivation Trials on pilot sites;
- ❖ **Phase 2** – Initiation of limited commercial production, up to about 25 hectares;
- ❖ **Phase 3** – Full scale roll-out to 200 hectares under cultivation by Year 5;
- ❖ **Phase 4** – Consolidation of the business entity;

#### **Phase 1:**

Phase 1 was already underway at the time of writing up of this thesis, with the first pilot crops planted in the fall of spring in 2007. During Phase 1, six pilot sites were selected, with 2 – 5 crops per site and approximately 0.2 hectare trial blocks per crop. Phase 1 was planned to commence in the 2007/08 financial year, and would continue into the following year for some of the crops. Trials were deemed necessary since most of the crops had not been tested in the area before; hence, it was not yet established whether the selected crops would be suitable for cultivation in any of the pilot sites. Crop suitability, organic production methods and oil quality were being tested in this initial phase.

#### **Phase 2:**

Phase 2 was the commencement of the commercial production phase. Crops that had been through trials and proved to grow successfully would be expanded on a gradual basis. The cultivation programme would be rolled out in several sites as pilot projects, cultivating from 5 – 10 ha of the plants to test commercial production methods and resolve any challenges to cultivation and growth of the crops. Phase 2 would run for a period of one to two years, and would lay the basis for a full-scale commercial expansion.

### **Phase 3:**

From the third year onwards, a more aggressive scaling up would take place, with a target of 200 ha under cultivation by Year 5. Once established that crops were ready for a full scale roll out, the proposed plan was to progressively step up production to full commercial scale. The plan was to cultivate approximately three crops, to a maximum of four crops that would be rolled out in the same manner. At this stage it was not possible to predict which crops would be selected for the final roll-out plan. The business plan had, therefore, been structured around a number of scenarios for the roll-out, and each of these scenarios had been modelled in order to determine its financial impact. The plan was to progressively scale up production capacity to 200 hectares over a period of five years. The three scenarios are:

- ❖ **Scenario 1** – Rose Geranium is the most successful crop, and forms the bulk of the production system (120 ha). Lemon Balm and Peppermint are also successful, and are cultivated on a more limited scale (40 ha each);
- ❖ **Scenario 2** – The project still has a strong base with Rose Geranium (100 ha), and the ancillary crops that compliment this are Lavender (40 ha) and Roman Chamomile (60 ha);
- ❖ **Scenario 3** – The project has success with a diversity of crops, including the more complex but high value Rose oil production. The mix of crops is Rose Geranium (60 ha), German Chamomile (35ha), Rosa damascena (60 ha), and *Pelargonium sidoides* (45 ha).

### **Phase 4:**

Subsequent to the achievement of the cultivation target scale, the project would start focusing on consolidation, settling the accumulated loan debt, improving the oil production refinery process and product quality as well as business practices. Phase four was also planned to be an opportunity to consider the expansion of the project into other geographical areas, as well as into downstream beneficiation of products.

## **8.13 DISCUSSION AND CONCLUSION**

Chapter 7 discussed the Essential Oils Case Study, which was an attempt to make a business case for Community-Public-Private-Partnerships based on tried and tested business principles while maintaining top-of-the-mind awareness of the onerous social responsibility that various institutions in civil society and other social formations in a transitional South Africa have in order to mitigate poverty, underdevelopment and the high unemployment rate (Agriman et al., 2005, Department of Trade & Industry). A survey on the Essential Oils Industry worldwide and in South Africa clearly identified a

business opportunity as a result of the high demand for essential oils by various manufacturing industries such as Aromatherapy, Perfumery, Health, Food and Beverages to name but a few. It was established that most of these consumable goods industries with operations in South Africa were importing essential oils, mostly from Asian and Latin American countries, to cater for their manufacturing needs. The barriers of entry into the Essential Oils markets, both locally and internationally, were established to be quite high, being determined by the high quality standards stipulated by the buyers of essential oils as ingredients in the production of the high value items such as perfumes, healthcare products and others or as the final product as in the case of Aromatherapy (Pico-Gro, 2007). The demand for consistently high quality essential oils required sophisticated and meticulous cultivation methods that exclude the use of fertilizers, herbicides and pesticides since they contaminate the final product during the extraction process. The suitability of the climatic conditions for each essential oil-producing plant species was an additional critical factor in the cultivation of these plant species for optimum yields of a high standard.

The participation of institutions such as the Department of Science and Technology (DST), the CSIR, the University of Fort Hare, the local and district municipalities in encouraging communities and the entrepreneurs involved to form partnerships elevated the probability of success. The communities and their leadership at the pilot sites selected demonstrated a high level of enthusiasm that made entry into contractual agreements with them to be that much easier. However, patience had to be exercised since a fair amount of time, sometimes years, was a prerequisite to the achievement of the end results required. Communities were clearly briefed on all aspects to avoid future conflict and misunderstanding that could arise from unfulfilled expectations. Moreover, the communities were involved in the selection of the land for cultivation as well as the establishment of the liaising team to manage community relationships in partnership with other stakeholders.

The extreme levels of poverty and underdevelopment in the rural Eastern Cape as discussed in Chapter 2 called for extreme corrective measures, hence the galvanization of community activists who constitute Essential Amathole to design innovative business models in their endeavours to confront the challenges that are a function of the depressed socio-economic conditions prevailing in the rural Eastern Cape. In its strategy formulation, Essential Amathole adopted a long-term view and lengthy time horizons for a meaningful and lasting impact. The involvement of communities, albeit at a non-

technical level, was guaranteed throughout the planning process and the initial implementation phase such that they could take ownership of the strategy supporting the enterprise development. Social facilitation programmes were put in place to ensure maximum participation and understanding while caution had to be exercised to avoid the involvement of community members and leadership in decision-making situations where they did not possess the requisite technical background and knowledge to make informed decisions. On the other hand, skills transfer and capacity enhancement programmes were being gradually put in place to ensure that in the long-term, community members would have the capacity to make decisions and be fully involved in planning at all levels.

For the purpose of this research, results would become available in due course but were not yet available at the time of writing up this thesis. What was exciting and encouraging was the high level of interest taken in the development of the business model adopted throughout this thesis towards rural development by various stakeholders. This aspect definitely had positive prospects for the livelihood future of rural communities in the Eastern Cape whose success would go a long way in the development of other rural communities around South Africa and perhaps, on the entire African Continent. On the other hand relationships with key buyers and wholesalers in the Essential Oils Industry were being fostered through involving these critical role players in the pilot production phase to guarantee a favourable reception for the final products in the marketplace when the time came. One of the most important aspects taken into consideration in the planning phase was a recommendation from the members of Essential Amathole to establish an independent Board of Trustees that would have an oversight function in the governance of the commercial entity. Reputable individuals occupying influential social positions were nominated on the Board with a brief and responsibility of protecting community interests in the evolution of the startup enterprise. A high level of integrity was required to ensure equitable beneficiation for the rural communities while simultaneously ensuring that the strategic objectives of the enterprise were achieved without losing sight of the social responsibility that the enterprise had set for itself at inception.

## **SECTION D**

# **CONCLUSION, DISCUSSION AND RECOMMENDATIONS**

## **CHAPTER 9: CONCLUSION, DISCUSSION AND RECOMMENDATIONS**

### **9.1 INTRODUCTION**

This study demonstrated that the demographic profile of the Eastern Cape Province portrayed high levels of poverty and underdevelopment in the mostly rural population. This is despite the fact that the Eastern Cape is characterized by a rich endowment of natural resources, hosting a wide range of natural plant species, numerous rivers, water springs from mountains and no less than six biomes due to the variety of climatic conditions prevalent in the Province. In contrast, the natural resources found in the Province were regarded to have a high potential to grow and transform the economy of the Province.

In this study, an integrated approach was conceptualized, developed and implemented in action within the rural communities selected with varying degrees of success, as a function of the material and objective socio-economic conditions prevailing in each community. A model for rural enterprise development based on agricultural production utilizing the principles of Community-Public-Private Partnerships was conceptualized and executed with the assistance of specialist professionals from various disciplines and organizations. Case studies structured on the basis of methodologies derived from the integration of natural sciences and indigenous knowledge systems were conducted to demonstrate the feasibility of the conceptual framework of the study as indicated by the following case studies.

### **9.2 AGRICULTURAL ENTERPRISE DEVELOPMENT IN COMMUNITY PARTNERSHIPS**

The first case study undertaken was the development of agricultural enterprises in the selected rural communities in joint ventures through the commercial production of food and vegetable crops for local markets and to provide nutrition for the rural communities as the first line of therapy against the HIV/AIDS infection and other diseases associated with malnutrition. The limitations in the execution of the model were manifestations that were situated in the domains of; a dependence mindset and low levels of technical and management capability within rural communities to enable the translation of agricultural production from subsistence farming to a commercial framework as well as inadequate prioritization and planning of rural economic development by some of the state agencies. Social facilitation and Community-Public-Private -Partnerships were highly effective in mitigating some of these constraints. A pilot study with beetroot and cabbage was highly successful. The greatest

challenge was the acquisition of capital finance with financial services providers being wary of the risks anticipated.

### **9.3 AGRICULTURAL ENTERPRISE DEVELOPMENT: LUBISI SORGHUM-WHEAT INITIATIVE**

The second case study was the establishment of an agricultural enterprise in a partnership between rural communities, government agencies and agricultural specialist for the commercial production of grain crops, namely, Sorghum alternating with Wheat to satisfy the demand of local markets for these crops. The Ndonga community, who had a well-grounded experience in cultivating Sorghum, an indigenous food crop in South Africa contributed a lot in terms of generating the production plans. The issue that was of concern in this initiative was the fact that the government agencies were playing a leading role. As stated in the conclusion of the chapter of this case study, the programme did not have much success as a result of the inconsistencies and limited capacity on the part of these stakeholders in managing an enterprise of this nature. To a considerable extent other stakeholders and the community played a secondary role while the author and other members of the research group assisting were marginalized by the government officials. The fact that there was little follow up in monitoring and evaluation in the programme despite the elaborate business and marketing plans designed by the author as reported in Chapter 6. The events around this enterprise, although having serious shortcomings as stated, had valuable lessons for all stakeholders involves on what works and what does not work.

### **9.4 MEDICINAL PLANT COMMERCIALIZATION: THE CASE OF THE PELARGONIUM SPECIES IN THE NKONKOBÉ LOCAL MUNICIPALITY**

The third case study was the establishment of a community-based enterprise through the commercial production of two *Pelargonium* plant species, namely, *Pelargonium reniforme* and *P. sidoides*. The two species had a high market demand in the pharmaceutical industry; hence, the plant species were domestically cultivated to satisfy the industry demand and to ensure the survival of the plant species. The enterprise succeeded in sustaining the livelihoods of the rural communities and conserving the plant species. This case study demonstrated the effectiveness of the strategic planning inputs and the engagement of the community as equal partners in the initiative. The Nkonkobe Community around which the two *Pelargonium* species, *P. reniforme* and *P. sidoides* are found had centuries of intimate knowledge about the healing properties of the plant species. As a matter of fact, all the information about the uses of the species was acquired from the indigenous knowledge of the communities by the

traders and the pharmaceutical manufacturer of medicine derived from the species extracts. Through the interaction with the communities by the author and the participation of the Amathole District, the Nkonkobe Local Municipality officials and the officials from the Department of Water Affairs and Forestry who happened to be responsible for enforcing biodiversity conservation regulations on the harvesting thereof were key elements in the success of the implementation plans. Illegal harvesting was minimized while the cultivation programme and trading in the raw materials brought the much desired income to improve rural livelihoods. Much was still to be done with the original plans seeking to present a proposal to the pharmaceutical company to establish a manufacturing facility next to the field where the plant species were being cultivated. The negotiations with the company were at a planning phase at the time of the submission of this thesis. The negative aspects about the exploitation of *Pelargonium* through illegal harvesting were still a challenge although they had been sharply reduced by the case study intervention.

#### **9.5 ESSENTIAL OILS: A CASE FOR PARTNERSHIPS WITH RURAL COMMUNITIES IN ENTERPRISE DEVELOPMENT**

The fourth case study was the commercial production of essential oil-producing plants in six selected rural communities providing employment for some of the members of these communities even though the initial phase of the start-up enterprise was a trial cultivation to determine the suitability of the environmental and climatic conditions for the propagation of the selected essential-producing plants. The demand for essential oils in local and international markets was determined to be relatively high. The challenges in the cultivation of essential-oil producing plants were the suitability of the soil and the ideal climatic conditions for a successful cultivation programme. As stated in Chapter 8, the enterprise development was in its initial phase. In the short period of the cultivation trials on the six selected sites, the constraints were the organic farming techniques that required a high level of expertise and the rapid growth of weeds since the use of pesticides and fertilizer were strictly prohibited to avoid chemical contamination. The buyers of the essential oils imposed stringent quality requirements while also demonstrating reluctance to source the materials from startup companies with no track record. These limiting factors were taken into consideration through an ongoing process of forming strategic partnerships with established essential oil producers local to South Africa as well as the government showing a keen interest in committing resources to the programme. Again, the intimate indigenous knowledge of the communities on the environment and the prevailing climatic conditions had a critical role in discussion on production planning. In the long-term, this programme had the potential of being

highly successful due to the co-operation of the key stakeholders, being the communities, the academic community, business entities, government development agencies and the local leadership represented on the Board of Trustees with oversight functions. Employment opportunities were provided from the initial phase with community members selected to work on the cultivation being employed for planting, watering and weed control. A major achievement was the willingness and enthusiasm of the state financial services organizations such as ECDC, the Departments of Science & Technology, Economic Development and Environmental Affairs, Agriculture and the Industrial Development Corporation and Uvimba Finance.

### **9.6 INTEGRATION OF INDIGENOUS MEDICINE AND PRIMARY HEALTHCARE**

The incorporation of Indigenous Knowledge Systems of the rural communities in the planning and implementation processes in the areas of Commercial Agricultural Production and Primary Health Care resulted in a gradual paradigm shift on the part of rural communities from a dependence mindset to one of self-reliance that was critical for sustainable rural economic development and the improvement of rural livelihoods. An integrated approach in the strategic planning and execution that involved the rural communities by government stakeholders, the academic community and other stakeholders from the Private Sector was piloted with varying degrees of success.

### **9.7 CONCLUSION AND RECOMMENDATIONS**

The recognition of Indigenous Knowledge Systems by all the relevant stakeholders and their essential role in rural enterprise development, food production and primary health care as a pre-requisite for a successful transformation agenda was highlighted as never before. An all-inclusive approach that accorded the rural communities the status of equal partnership had a positive impact on most aspects of planning and implementing programmes for sustainable rural economic development and biodiversity conservation. Working in partnership with rural communities was found to be a challenge; hence, an understanding of the sub-cultures and the social dynamics that often manifested themselves in the form of internecine conflicts became necessary for successfully initiating the research programme in the rural communities. Furthermore, recognition of the rural communities as an integral part of the solution towards biodiversity conservation and the sustainable exploitation of natural resources was found to be a critical component for an effective strategy to ensure the continued survival of the endangered plant species. This attitude underpinned the co-operation of the rural communities and the overarching goals of rural transformation towards the consistent and sustainable improvement of rural livelihoods. The

approach also marked a radical shift from all the preceding practices in biodiversity conservation and the management of sustainable natural resource utilization. This study demonstrated that the integration of Indigenous Knowledge Systems and Natural Sciences for sustainable rural economic development with the ultimate strategic objective of contributing towards the reduction of poverty, the improvement of the quality and cost-effectiveness of primary health care and adequate food production is feasible. In the advocacy for a role for indigenous medicinal plant species through an integration of Traditional Medicine into the National Primary Healthcare System, it was recommended that the South African Government should accelerate the incorporation of Traditional Medicine to complement the current National Primary Healthcare System which has been established to be highly inadequate in servicing the poorest sectors of the country's population.

A further recommendation was the initiation of communication lines between the various stakeholders such as government institutions, rural communities, and the academic community and Private Sector companies who produce the end products from the indigenous natural resources and work towards the establishment of manufacturing facilities next to the fields where the community are cultivating these plant species. Community harvesters must be trained in harvesting methods that will not permanently damage the species while being encouraged to start nurseries some of these species in their gardens. For an effective biodiversity conservation strategy, protecting these valuable natural resources, partnerships between the relevant government departments and authorities and academic institutions in the region are essential. The tertiary institutions should take the responsibility of training the natural game parks and reserves warders in the identification of the plant species and assist in formulating and updating the policies that protect these valuable natural resources. Research and Development of medicinal products in collaboration with medical research institutions in the country and elsewhere in the world should be pursued by institutions of higher learning while also subjecting these products to internationally accepted scientific validation methodologies and clinical trials to affirm their efficacy.

The slow pace of funding rural development initiatives of the nature described in this study by state agencies was a source of concern. The question that came up was; if the state development agencies do not fund such initiatives what then do they fund in the form of rural development projects and what form must they assume to merit funding? Whether this question could acquire a response remained to be seen. The government had to take the responsibility for the development of such initiatives if it was

to realize its goals of poverty eradication and rural economic development as put forward in the Provincial Growth and Development Plans to 2014.

## REFERENCES

- Agricultural Research Council (2004).** Agasthoma Harvesting and Germination of seeds.
- Agricultural Research Council (2005).** Cultivation, Economics and Uses.
- Agriman et al. (2005).** A study and Preparation of a Strategic Development Plan for the South African Essential Oils Industry. Published by The Department of Trade and Industry.
- Agrimark Trends (2003).** Agricultural Products Market Trends in South Africa. Sorghum and Wheat 1998-2003.
- Ainslie, A., Cinderby, S. and Petse, S. (1997).** Rural livelihoods and local – level natural resource management in Peddie District. Unpublished report, Institute of Social and Economic Research, Rhodes University, Grahamstown.
- Ake, C. (1996).** Democracy and Development in Africa. The Brookings Institution.
- Alberta Agriculture, Food and Rural Development (1996).** Essential Oils Industry Canada. Alberta Farm Business Management Initiative Agdex 188/830-1
- Alexander, N. (as Nosizwe) (1979).** One Azania One Nation: The National Question in South Africa. London: Zed books.
- Alexander, N. (2002).** An Ordinary Country: Issues in the Transition from Apartheid to Democracy in South Africa. University of Natal Press.
- Allan, K and Fakir, S. (Undated).** Transforming the Policy Process in post-apartheid South Africa with special reference to state-formulated policy in the rural sector. Unpublished Paper Braamfontein: Land and Agricultural Policy Centre.
- Angell, M and Kassirer, J.P (1998).** Alternative Medicine-the Risks of Untested and Unregulated Remedies. New England Journal of Medicine 1998; 339:839.
- Anon, (1993).** Intellectual Piracy and the Neem Patents. The Research Foundation for Science, Technology and Natural Resource Policy, India
- Arnold, J.E.M and Ruiz-Perez, M. (1996).** Framing the issues relating to non-timber forest products research. In: Current Issues in Non-Timber Forest Products Research (Eds M. Ruiz-Perez & J.E.M.Arnold) Bogor: CIFOR: 1-18.
- Astin, J.A. (1998).**”Why patients use alternative medicine: results of a national study” Journal of American Medical Association 1998; 279 (19):1548-1553.
- Babbie, E. and Mouton, J. (2001).** The Practice of Social Research. Published by Oxford University Press.

- Bank, L. (2001).** Living Together, Moving Apart: Home-Made Agendas, Identity Politics and Urban-Rural Linkages in the Eastern Cape, South Africa: *Contemporary African Studies*, 19,01,2001.
- Barnes, P.M., Powell-Griner, E., McFann, K. and Nahin, R.L. (2004).** "Complementary and Alternative Medicine Use among Adults: United States 2002". National Center for Health Statistics.
- Basil, A. (1981).** The Politics of Eastern Cape Separatism 1820-1854. Oxford University Press.
- Beinart, W. (1992).** Transkei Smallholders and Agrarian Reforms. *Journal of Contemporary African Studies*, Vol.11, No.2:178-199.
- Bolton, G. (2007).** Poor Story: An insider uncovers how globalization and good intentions have failed the World's poor. Published by Ebury Press.
- Boltivnik, J. (1998).** Poverty Measurement Methods-An Overview: UNDP Seped Series on Poverty Reduction.
- Bond, P. (2001).** Against Global Apartheid 2<sup>nd</sup> Edition. Zed Books Ltd.
- Bond, P. (2002).** Unsustainable South Africa: Environment, Development and Social Protest. University of Natal Press.
- Botha, J (2001).** Perception of species availability and values of medical plants traded in areas adjacent to the Kruger National Park. M.Sc. Thesis, School of Animal, Plant and Environmental Sciences, University of the Witwatersrand, Johannesburg.
- Botha, J., Witkowskie, E.T.F and Shackleton, C.M. (2004).** Market Profiles and Trade in Medicinal Plants in the Lowveld, South Africa: *Environmental Conservation* 31(1):38-46.
- Bozzoli, B. and Delius, P. (Eds) (1990).** History from South Africa: *Radical History Review*, 46(7).
- Broham, J. (1996).** Post-War Development in the Asian NIC's: Does the Neo-Liberal Model Fit Reality. *Economic Geography*, Vol. 72, No 2, p108.
- Brokensha, D., Warren, D. and Werner, O. (1980).** Editors of Indigenous Knowledge Systems: The Cultural Dimension of Development. University Press of America, Lanham.
- Brouwer, J. (1998).** IK, IKS and ITK. *Indigenous Knowledge and Development Monitor* 6:13.
- Bruneton, J. (1995).** Pharmacognosy, Phytochemistry, Medicinal Plants. Intercept, Hampshire.
- Bryant, A. T. (1966).** Zulu Medicine and Medicine Men. Struik. Cape Town (originally published in 1909 in the *Annals of the Natal Museum*).
- Bryceson, D.F. and Bank. L. (2001).** End of An Era: Africa's Development Policy Parallax. *Journal of Contemporary African Studies*, Vol. 19, No. 1:5-23.

- Buenz, E. J., Schneppe, D.J., Bauer, B.A., Elkin, P.L., Riddle, J.M. and Motley, T.J. (2004).** Techniques: Bio-prospecting historical herbal texts by hunting for new leads in old tomes. *Trends in Pharmacological Science* 25,495-498.
- Bundy, C. (1988).** The rise and fall of the South African Peasantry. Phillip, 1988: Cape Town
- Callinicos, L. (1980).** A People's History of South Africa. Volume 1: Gold and Worker. Johannesburg: Ravan Press.
- Callinicos, L. (1987).** A People's History of South Africa. Vol. 2: Working Life 1886-1940. Johannesburg: Ravan Press.
- Candan, F., Unlu, M., Tepe, B., Daferera, D., Polissiou, M., Sokmen, A. and Akpulat, H. A. (2003).** Antioxidant and antimicrobial activity of the essential oil and methanol extracts of *Achillea millefolium* subsp. *Millefolium Afan. (Asteraceae)*. *Journal of Ethnopharmacology* 87 (2003) 215-220.
- Cawe, S.G. and Ntloko, S.S.T. (1997)** Distribution, Uses and Exploitation Patterns of *Flagellaria guineensis*, Schumach with Particular References to Port St John's, South Africa. *South African Journal of Botany*, Vol. 63, No. 4: 233-238.
- Chambers, R. (1993).** Rural Development: Putting the Last First. Published by Longman Inc., USA.
- Chambers, R. (1997).** Whose Reality Counts? Published by ITDG Publishing, UK.
- Chavanduka, G. L. (1994).** Traditional Medicine in Modern Zimbabwe. University of Zimbabwe, Harare.
- Cheli, B. (1995).** Total Fuzzy and Relative Measures of Poverty in Dynamic Context: An Application to the British Household Panel Survey, 1991-1992. Institute for Social and Economic Research Working Paper 95-13.
- Chiej, R. (1984).** The McDonald Encyclopedia of medicinal plants. McDonald, London
- Chris Hani District Municipality (2006).** Chris Hani Socio-Economic Profile in 2006.
- Cocks, M.L. (1997).** Towards an understanding of Amayeza esiXhosa-stores (African Chemists): How they operate and the services they offer in the Eastern Cape. M.A. thesis, Rhodes University, Grahamstown.
- Cocks, M. and Dold, A. (2000a).** The role of the "African Chemists" in the Eastern Cape Province of South Africa. *Social Science and Medicine*, Vol.51, Issue 10, 16 November 2000.
- Cocks, M.L. and Dold, A.P. (2000b).** The Medicinal plant trade in the Eastern Cape Province. Unpublished Report, Department of Water Affairs and Forestry, Pretoria.

- Cocks, M. L., Dold, A. P. and Grundy, I. M. (2004).** The Trade in Medicinal Plants from Forests in the Eastern Cape Province. IN: *Indigenous Forests and Woodland in South Africa* (Eds) M. J. Lawes, H. A. C. Eeley, C. M. Shackleton and B. G. S. Geach. University of KwaZulu-Natal Press.
- Cocks, M. and Moller, V. (2002).** Use of indigenous and indigenized medicine to enhance personal well-being: A South African Case Study. *Pergamon: Social Science & Medicine* 387-397.
- Coopoosamy, R. M. (2007).** Biological Activity and Chemical Profile of Aloe excels Extracts in Relation to their Application to Traditional and Allopathic Medicine. A doctoral thesis, University of Fort Hare.
- Cornwall, A. and Jewkes, R. (1995).** What is Participatory Research? *Social Science and Medicine* Vol. 41 Issue 12, pp1667-1676.
- Council For Scientific and Industrial Research (2005).** The Essential Oils Industry in South Africa.
- Cousins, B. (1999).** Invisible Capital: The Contribution of Communal Rangelands to Rural Livelihoods in South Africa. *Development Southern Africa*, Vol.16, No 2. Winter 1999.
- Cragg, G. M. and Newman, D. J. (2001).** Natural product drug discovery in the millennium. *Pharmaceutical Biology* 39, 8-17.
- Cunningham, A.B. (1984).** Are we barking up the wrong tree? Medicinal plants and witchdoctors. *African Wildlife* 38,247-249.
- Cunningham, A. B. (1988).** An investigation of the herbal medicine trade in KwaZulu-Natal. Pietermaritzburg: University of Natal, Institute of Natural Resources. (INR Investigational Report 29).
- Cunningham, A. B. (1993a).** African medicinal plants: Setting priorities at the interface between conservation and primary healthcare. *People and Plants Working Paper* 1, 1-50.
- Cunningham, A. B. (1993 b).** Ethics, Ethnobiological Research and Biodiversity. *The Indigenous Plant Use Newsletter* 1:2-3.
- Cunningham, A. B. (1997).** Review of Ethnobotanical Literature from Eastern and Southern Africa. *AETFAT Bulletin* 1: 23-88.
- Cunningham, A. B. (1998).** An investigation of the herbal medicinal trade in Natal/KwaZulu. Investigational Report no.29. Pietermaritzburg: Institute of Natural Resources.
- Cunningham, T. (1989).** Herbal medicine trade: A hidden economy. *Indicator SA*, Vol. 6, No 3.
- Dauskardt, R. (1990).** The changing geography of traditional medicine: Urban Herbalism on the Witwatersrand, Johannesburg. *Geo Journal* 22: 275-283.
- Davenport, R. (1977).** *South Africa: A Modern History*, London: Macmillan.

- Davenport, R. and Saunders, C. (2000).** South Africa: A Modern History: London: Macmillan.
- Department of Agriculture (2006).** Food Security in South Africa. Department of Agriculture Bulletin.
- Department of Agriculture (2007).** The 2007/2008 Policy Speech by the Member of the Executive Council for the Department of Agriculture, Eastern Cape.
- Department of Environmental Affairs and Tourism (1997).** White Paper on the Conservation and Sustainable Use of Biodiversity, Pretoria.
- Department of Health (Eastern Cape). (2005).** Department of Health Antenatal Survey, 2004.
- Department of Health. (2003).** Antenatal Survey, October 2002.
- Department of Health. (2000).** Prevention of Mother-To-Child HIV Transmission and Management of HIV-Positive Pregnant Women. HIV/AIDS Policy Guideline. Department of Health, 2000.
- Department of Health (Eastern Cape). (2005).** Department of Health Antenatal Survey, 2004.
- Department of Primary Industries, State of Victoria (2002).** Agriculture Notes, Essential Oils. AG0656. ISSN 1329-8062.
- Department of Water Affairs and Forestry (1997).** National Forestry Action Programme. Pretoria: Department of Water Affairs and Forestry.
- De Paula, J. P., Gomes-Carneiro, M.R. AND Paumgarten, F. J. R. (2003).** Chemical Composition, Toxicity and Mosquito Repellency. *Journal of Ethnopharmacology* 88 (2003) 253-260.
- Devereux, S. and Maxwell, S. (2001).** (ED). Food Security in Sub-Saharan Africa. University of Natal Press.
- De Vos, K. and Hagenars, A. J. M. (1998).** A Comparison of the Poverty Concepts by Sen and Townsend, Rotterdam: Erasmus University.
- Dictionary of Natural Products. (1996).** CD-ROM, Release 4:2: Chapman and Hall, London.
- Dold, A. P. and Cocks, M. L. (1997).** Amayeza esiXhosa – An Insight into Xhosa Medicine. *The Phoenix (Eastern Cape Museum Magazine)* 9, 4-9.
- Dold, A. P. and Cocks, M. L. (1999).** Preliminary List of Xhosa plant names in from the Eastern Cape, South Africa. *Bothalia* 29,267-292.
- Dold, A. P. and Cocks, M. L. (2000).** The medicinal use of some weeds, problem and alien plants in the Grahamstown and Peddie Districts of the Eastern Cape, South Africa. *South African Journal of Science* 96, 467-475.

- Dold, A. P. and Cocks, M. L. (2001a).** The Trade in Medicinal Plants in the Eastern Cape Province, South Africa. *Traffic Bulletin* 19, 11-13.
- Dold, A. P. and Cocks, M. L. (2001b).** A Succulent Herbal-The Medicinal and Cultural Use of Some Succulent Plants Traded in the Eastern Cape Province of South Africa. *Cactus and Succulent Journal* 73,141-145.
- Dold, A. and Cocks, M. (2002).** The trade in medicinal plants in the Eastern Cape Province, South Africa. *South African Journal of Science* 98:589-597.
- Dorrington, R., Johnson, L., Bradshaw, D. and Daniel, T-J. (2006).** The Demographic Impact of HIV/AIDS in South Africa: National and Provincial Indicators for 2006. Cape Town: Centre for Actuarial Research, South African Medical Research Council and Actuarial Society of South Africa.
- Drewes, S. and Liebenberg, R. W. (1983).** Extracts of plants from the *Hypoxidaceae* family for treatment of cancer. *Eur. Pat. Appl. EP2226a* 26 October 1983. From *Chemical Abstracts* 100(9):61782m.
- Du Bois, D. and Prade, H. (1980).** *Fuzzy Sets and Systems*. Boston: Academic Press.
- Duncan, G. J. (1987).** "The Perceptions of Poverty". Book Review, *Journal of the American Statistical Association*, Vol. 82, No. 399, pages 959 – 960.
- Eastern Cape Development Corporation (2007).** *Developing Essential Oils Clusters in the Eastern Cape Province*. Published by the Eastern Cape Development Corporation, 2007.
- Eastern Cape Provincial Government (2006).** *Budget Statements 2006/2007*.
- Eastern Cape Provincial Government (2004).** *The Provincial Growth and Development Plan, 2004-2014*.
- Eastern Cape Provincial Government (2007).** *Budget Statement I: 2007/2008*.
- Eastern Cape Socio-Economic Consultative Council (2001).** *Eastern Cape Districts Profiles: Alfred Nzo District; Amathole District; Cacadu District; Chris Hani District; Nelson Mandela Metro; OR Tambo District; Ukhahlamba District*.
- Eastern Cape Socio-Economic Consultative Council (2007).** *Eastern Cape District Profiles: Nelson Mandela Metro*.
- Eidelberg, P. G. (1997).** *The Tripartite Alliance on the eve of a new millennium*. Paper presented at the Institute of Advanced Social Research no.413. University of the Witwatersrand, Johannesburg.

- Eisenberg, D. M., Davis, R. B. and Ettner, S. L. (1998).** "Trends in alternative medicine use in the United States 1990-1997". *Journal of American Medical Association* 1998; 280: 1569-1575. PMID 9820257.
- Elden, M. and Chisholm, R. F. (1993).** Emerging varieties of action research: Introduction to the special issue. *Human Relations*, 46 (2), 121 – 142.
- Elvin-Lewis, M. (2006).** Evolving Concepts Related to Achieving Benefit Sharing for Custodians of Traditional Knowledge. *Ethnobotany Research & Application* 4: 75-96.
- Ernst, et al. (1995).** "Complementary medicine is diagnosis, treatment and/or prevention which complement mainstream medicine by contributing to a common whole by satisfying a demand not met by orthodoxy or by diversifying the conceptual frameworks of medicine. *British General Practitioner* 1995; 45: 506.
- Ernst, E. (2006).** The Health Watch Award 2005: Complementary Medicine: the good the bad and the ugly.
- Fall, I. (1995).** Democracy Within the Context of Human Rights. A Speech Delivered at the University of Fort Hare Graduation Ceremony, April 1995.
- Fanon, F. (1967).** The wretched of the earth. Publisher: New York, N.Y.: Penguin 1967. Location: UFH, Alice open shelves 325.3 FAN.
- Fanon, F. (1986).** Black Skins, white masks. Publisher: Pluto Press, London.
- Fassil, H. (2005).** Beyond Plants, Professionals & Parchments: The Role of Home-Based Medicinal Plant Use and Traditional Health Knowledge in Primary Healthcare in Ethiopia. *Ethnobotany Research & Applications*.
- Faux, C. (1990).** Input-Output Analysis of Employment in Agribusiness. MBA Thesis, University of the Witwatersrand, Johannesburg.
- Feit, H. (1988).** Self-management and State Management: Forums of Knowing and Managing Northern Wildlife. Pp 72-91 in "Traditional Knowledge and Renewable Resource Management in Northern Regions. Occasional Publication No. 23. (Ed) M. M. R. Freeman & L. N. Carbyn Boreal Institute for Northern Studies. University of Alberta. A joint publication of the IUCN Commission on Ecology and the Boreal Institute for Northern Studies, Edmonton.
- Fennell, C. W., Lindsey, K. L., McGaw, L. J., Sparg, S. G. Stafford, G. I., Elgorashi, E. E. Grace, O. M., Van Staden, J. (2004).** Assessing African Medicinal Plants for Efficacy and Safety: Pharmacological Screening and Toxicology. *Journal of Ethnopharmacology* 94, 205-217.

- Figueroa, M., Rivero-Cruz, I., Rivero-Cruz, B., Byer, R., Navarrete, A. and Mata, R. (2007).** Constituents, biological activities and quality control parameters of the crude extract and essential oil from *Arracacia toluensis var multifida*. *Journal of Ethnopharmacology* 113(200)125-13.1
- Fluck, H. (1976).** Medicinal Plant. Foulsham, London.
- Fontanarosa, P. B. and Lundberg, G. D. (1998).** Alternative medicine meets science. *JAMA*.1998; 280: 1618-1619.
- Forster, J., Greer, J. and Thorbecke, E. (1984).** A class of Decomposable Poverty Measures *Econometrica* 52(3):761-766.
- Fort Hare Institute for Socio-Economic Research (2006).** Rapid Services Survey Conducted for the Office of The Premier.
- Fox, F. W and Weintroub, D. (1937).** Native foodstuffs. *South African Journal of Science* vol.33, p 708.
- Foy, T. J. and Willis, C. B. (1998).** A forest policy for South Africa: Why we should have one and what should it contain. *South African Forestry Journal* 181:33-37.
- Foy, T. J., Pitcher, M. J. and Willis, C. B. (1998).** Participatory Development of Forest Policy: some practical lessons from recent South African experience. *Commonwealth Forestry Review* 77:100-106.
- Freeman, M. M. R. and Carbyn, L. N. (1988).** Editors of Traditional knowledge and Renewable Resource Management in Northern Regions. Occasional Publication No.23. Boreal Institute for Northern Studies University of Alberta. A joint publication of the IUCN Commission on Ecology and Boreal Institute for Northern Studies, Edmonton.
- Freeman, M. and Motsei, M. (1992).** Health Planning in South Africa: Is there a role for traditional healers? *Social Science & Medicine* 34, 1183-1190.
- Freire, P. (1970).** *Pedagogy of the Oppressed*. Published by: Harmondsworth, Middlesex: Penguin, 1996.
- Fridge (2004).** Study into the Establishment of an Aroma and Fragrance Fine Chemicals. [www.nedlac.org.za](http://www.nedlac.org.za)
- Fridge (2004).** Aroma Chemicals Report.
- Gali-Muhatsib, H., Hilan, C. and Khater, C. (2000).** Traditional uses of *Salvia Libanotica* (Eastern Mediterranean sage and the effects of its essential oils. *Journals of Ethnopharmacology* 71(2000)513-520.

- Gana, F. S. (2003).** The Usage of Indigenous Plant Material among Small-Scale Farmers in Niger State Agricultural Development Project – Nigeria. *Indilinga: African Journal of Indigenous Knowledge Systems*, Volume 2: No 1, pages 53 – 60.
- Gari, A. J. (2005).** The Roles of Indigenous Crops and Plants in Improving Nutrition and Fighting HIV/AIDS. World Bank.
- George, J., Laing, M. D. and Drewes, S. E. (2001).** Phytochemical Research in South Africa. *South African Journal of Science* 97, 93-104.
- George, J. and Van Staden, J. (2001).** Intellectual Property Rights: plants and phytomedicinals-past history, present scenario and future prospects in South Africa. *South African Journal of Science* 96:433-443.
- Gilani, A. H. and Rahman, A. (2005).** Trends in Ethnopharmacology. *Journal of Ethnopharmacology* 100, 43 – 49.
- Global Insights (2003).** Provincial Growth Rates.2003.
- Goldblatt, P. (1978).** An analysis of flora of Southern Africa: its characterization relationships and origins. *Annals of the Missouri Botanical Gardens* 65.369-436.
- Gopalan (1997).** Review of Nutrition and Poverty. Delhi: Oxford University Press: 234-241.
- Government Gazette (1998).** The National Environmental Management Act 107 of 1998.
- Government Gazette (2005).** Traditional Health Practitioners Act (2004).
- Greenwood, D. J., Whyte, W. F. and Harkavy, I. (1993).** Participatory action research as a process and a goal. *Human Relations*, 46 (2), 175 – 192.
- Grunwald, J. (2004).** The European Phytomedicines Market, Figures, Trends and Analyses. *Herbal Gram*.34: 60-65
- Hagenaars, A. J. M. (1991).** The Definition and Measurements of Poverty in Osberg, L. (Ed) *Economic Inequality and Poverty: International Perspectives*. Armond & London: M.E Sharpe.
- Hart, G. (1994).** The New Economic Policy and Redistribution in Malaysia: a Model for Post-Apartheid South Africa. *Transformation* No.23, pp 44-59.
- Hirschowitz, R. and De Castro, J. (2000).** A National Household Survey of Health Inequalities in South Africa.<http://www.hst.org.za/case/chap6.htm>.
- Hirst, M. (1990).** The healer’s art: Cape Nguni diviners in the township of Grahamstown. PhD Thesis, Rhodes University, Grahamstown.

- Hlanze, Z., Gama, T. and Mondlane, S. (2005).** The Impact of HIV/AIDS and Drought on Local Knowledge Systems for Agrobiodiversity and Food Security. FAO-Links Project: gender, biodiversity and local knowledge systems for food security.
- Holdstock, T. L. (1978).** Proceedings of a Conference and Traditional Medicine. *The Leech*, 48 (2).
- Human Sciences Research Council (1998).** Household Survey 1998.
- Human Sciences Research Council (2003).** Household Survey on HIV Prevalence, 2003.
- Hutchings, A. (1989).** Observations on plant usage in Xhosa and Zulu Medicine. *Bothalia* 19, 2: 225-235.
- Hutchings, A. (1996).** Zulu medicinal Plants. Natal University Press, Pietermaritzburg.
- Indilinga Editorial (2003).** INDILINGA: African Journal of Indigenous Knowledge Systems. Volume 2, Number 1.m
- Institute For Management and Development Studies (IMDS). (1986).** Socio-Economic Survey of Area 6, Eastern Pondoland (Bizana Sugar Project). Umtata: IMDS, University of Transkei.
- Jager, A. K., McGaw, L-J., Grace, O. M. and Van Staden, J. (2004).** Bioprospecting of Forest and Woodland Plant Species Used in Zulu Traditional Medicine In: *Indigenous Forest and Woodland in South Africa: Policy, People and Practice* (Eds). Lawes, M. J., Eeley, H. A. C., Shackleton, C. M. and Geach, B. G. S. pp.493-516.
- Jingfeng, C. (1987).** Towards a comprehensive evaluation of alternative medicine. *Social Science & Medicine* 25,659-667.
- Joffe, P. (2001).** Creative Gardening with Indigenous Plants: A South African Guide. Published by Briza Publications.
- Johnson, M. (1992).** Lore: Capturing Traditional Environmental Knowledge. International Development Research Centre, Ottawa.
- Kaplinsky, R. (1994).** Economic restructuring in South Africa: The debate continues: A response. *Journal of Southern African Studies*, Vol. 20, No.4 pp 533-537.
- Karousou, R., Balta, M., Hanlidou, E. and Kokkini, S. (2007).** “Mints”, smells and traditional uses in Thessaloniki (Greece) and other Mediterranean countries. *Journal of Ethnopharmacology* 109 (2007) 248-257.
- Kepe, T. (1997a).** Environmental Entitlements in Mkambati: Livelihoods, Social Institutions and Environmental Change on the Wild Coast of the Eastern Cape. Research Report No.1, Programme for Land and Agrarian Studies, School of Government, University of the Western Cape.

- Kepe, T. (1997b).** Communities, Entitlements and Nature Reserves: the Case of the Wild Coast, South Africa. *IDS Bulletin*, Vol.28, No.4: 47-58.
- Kepe, T. (1999).** The Problem of Defining “Community”: Challenges for the Land Reform Programme in Rural South Africa. *Development Southern Africa*, vol.16, no3: 415-434.
- Kepe, T. (2001a).** Waking up from the Dream. The pitfalls of “fast-track” Development on the Wild Coast of South Africa. Research Report No.8, Bellville: Programme for Land and Agrarian Studies, University of the Western Cape.
- Kepe, T. (2001b).** Tourism, Protected Areas and Development in South Africa: Views of Visitors to Mkambati Nature Reserve. *South African Journal of Wild Life Research*, Vol.31, No.3 and 4. 155-159.
- Kepe, T. V. (2002).** Grassland Vegetation and Rural Livelihoods: A Case Study of Resource Value and Social Dynamics on the Wild Coast, South Africa. A Doctoral Thesis: Faculty of Arts, University of Western Cape.
- Kepe, T., Ntsebeza, L. and Pithers, L. (2001).** Agro-tourism Spatial Development Initiatives in South Africa: Are they enhancing rural livelihoods? *ODI Natural Resource Perspective*, No.65, March, 2001.
- Kepe, T. and Scoones, I. (1999).** Creating Grasslands: Social Institutions and Environmental Change in Mkambati Area, South Africa. *Human Ecology*, Vol.27, No.1: 29-53.
- Kepe, T., Cousins, B. and Turner, S. (2000).** Resource Tenure and Power Relations in Community Wildlife Contexts: The Case of Mkambati Area on the Wild Coast of South Africa. *Evaluating Eden Series Discussion Paper No.16*. London: International Institute for Environmental and Development.
- Kiringe, J. W. (2006).** A Survey of Traditional Health Remedies used by the Maasai of Southern Kaijiado District, Kenya. *Ethnobotany Research and Applications* 4:61-73.
- Klee, G. (1980).** *World Systems of Traditional Resource Management*. V. Winston and Sons, New York.
- Komiya, M., Takeuchi, T. and Harada, E. (2006).** Lemon Oil and Vapour Causes an Anti-Stress Effect via Modulating the 5-HT and DA Activities in Mice. *Behav. Brain Res* 172 (2): 240-9. PMID 16780969.
- Koopman, J. (2005).** Reconciliation of Proprietary Interests in Genetic and Knowledge Resources: Hurry cautiously! *Ecological Economics* 53:523-541.
- Kruger, F. J., Everard, D.A. and Manders, P. T. (1995).** Forestry and Conservation in South Africa. *Commonwealth Forestry review* 74:71-75.
- Kuipers, S. (1996).** *Traditional Chinese Medicines*. Natural Medicine Marketing, London, UK.

- Kuriyama, H., Watanabe, S., Nakaya, T., Shigemori, I., Kita, M., Yoshida, N., Masaki, D., Tadai, T., Ozasa, K., Fukui, K. and Imanishi, J. (2005).** Ambient odours of orange and lavender reduce anxiety and improve mood in a dental office. *Physiological Behaviour* 88(1-2): 92-5 PMID 16095639.
- Lange, D. (1997).** The Trade in Plant Material for Medicinal and other Purposes: A German case Study. Cambridge: Traffic International. (Traffic Bulletin Vol.17, No.1).
- Lanjouw, J. O. (1998).** Demystifying poverty lines. UNDP Seped Series on Poverty Reduction.
- Lambert, J., Srivastava, J. and Vietmeyer, N. (1996).** Medicinal Plants: Rescuing a Global Heritage. World Bank Technical Paper No. 355.
- Launs, L. (1989).** Integrated Medicine - A Challenge to the Healthcare System. *Acta Sociologica* 32, 237-251.
- Lawes, M. J., Eeley, H. A. C., Shackleton, C. M. and Geach, B. G. S. (2004).** Indigenous Forests and Woodlands in South Africa: Policy, People and Practice. (Eds). University of KwaZulu-Natal Press.
- Leakey, R. R. B., Temu, A. B., Menlyk, M. and Vantomme, P. (1996).** Domestication and Commercialization of Non-Timber Forest Productions in Agroforestry Systems. Non-wood forest products No.9. Rome: FAO.
- Le Cordeur, B. (1981).** The Politics of Eastern Cape Separatism. Oxford University Press.
- Legassick, M. (1972).** 'The Dynamics of Modernization in South Africa'. *Journal of Modern African History*, 13(1): 145-150.
- Leslie, C. (1980).** Medical pluralism in world perspective. *Social science and medicine* 14b, 191-195.
- Lewington, A. (1993).** A Review of the Importation of Medicinal plants and plant extracts into Europe. Traffic International, Cambridge, UK.
- Liengme, C. A. (1983).** A survey of Ethnobotanical research in Southern Africa. *Bothalia* 14, 3 and 4; 621-629.
- Light, M. E., Sparg, G., Stratford, G.I., Van Staden, J. (2005).** Riding the wave: South Africa's contribution to ethnopharmacological research over the last 25 years. *Journal of Ethnopharmacology* 100. 127-130.
- Lima, F.F., Carvalho, F., Fernandez, E., Basto, E., Santo-Gomez, M.L., Fernandez-Ferreira, M. and Pereira-Wilson, C. (2004).** Evaluation of toxic/protective effects of essential oil of *Salvia officinalis* on freshly isolated rat hepatocytes. *Toxicology in Vitro*. 18:457-465.

- Lipton, M., Ellis, F. and Lipton, M. (1996) (eds).** Land Labour and Livelihoods in Rural South Africa. Volume Two: KwaZulu-Natal and Northern Province. Indicators Press.
- Lipton, M., De Klerk, M. and Lipton, M. (1996).** Land Labour and Livelihoods in Rural South Africa volume one: Western Cape. Indicator Press.
- Low, A.B and Rebelo, A.G. (1996).** Vegetation of South Africa, Lesotho and Swaziland: A companion to the vegetation map of South Africa, Lesotho and Swaziland. Pretoria: Department of Environmental Affairs and Tourism.
- Lubcke, R.A., Everard, D.A. and Jackson, S. (1986).** The biomes of the Eastern Cape with emphasis on their conservation. *Bothalia* 16, 251-261.
- Lupuwana, P. and Magwa, M.L. (2003).** The Lubisi Sorghum Agricultural Initiative. Unpublished.
- Lupuwana, P., Mayekiso, B. and Magwa, M. L. (2007).** *Pelargonium* Case Study: A study on the usage of the *Pelargonium sp* and its role in the livelihoods of the rural communities in the Nkonkobe District.
- Lupuwana, P. and Magwa, M.L. (2007).** Developing Strategies for Sustainable Rural Development in the Eastern Cape. Unpublished.
- Lurongsen. (1992).** Seabuckthorn: A Multipurpose Plant Species for Fragile Mountains. ICIMOD Occasional Paper No. 20. International Centre for Integrated Mountain Development, Katmandu, Nepal.
- McLennan, B. (1986).** A proper degree of terror: John Graham and the Cape's Easter frontier. Ravan Press (Pty. Ltd)
- Madden, D. (2000).** Relative or Absolute Poverty Lines: A New Approach. *Review of Income and Wealth* 46(2): 181-199.
- Magwa, M.L, Gundidiza, M., Gweru, N. and Humphrey, G. (2006).** Chemical Composition and biological activities of essential oil from the leaves of *Sesuvium portulacastrum*. *Journal of Ethnopharmacology* 103, 85-89.
- Lupuwana, P., Magwa, M.L and Nojoko (2006).** Traditional Medicine and the Primary Healthcare System in South Africa. Unpublished Report.
- Magwa, M.L. and Lupuwana, P. (2007).** HIV/AIDS Campaign and Intervention Management Strategy Programme. Report Commissioned by the Department of Economic Affairs, Environment and Tourism. Unpublished Report.

- Maloka, E. (2002) (eds).** Africa's Development Thinking Since Independence: A Reader 2<sup>nd</sup> Edition. Africa Institute of South Africa
- Mander, M. (1997).** Medicinal plant marketing in Bushbuckridge and Mpumalanga: A marketing survey and the recommended strategies for sustaining the supply of plants in the region. Danced, Danish Environment Protection Agency.
- Mander, J., Quinn, N.W. and Mander, M. (1997).** Trade in Wildlife Medicinals in South Africa. Pietermaritzburg: Institute of Natural Resources. (INR Investigational Report No.157)
- Mander, M. (1998).** Marketing on Indigenous Medicinal Plants in South Africa: A case study in KwaZulu-Natal. Food and Agriculture Organization, Rome.
- Mander, M. (2004).** The Phytomedicines Industry in Southern Africa. Commercial Products from the Wild Consortium. [www.cpwild.co.za/phytomed.pdf](http://www.cpwild.co.za/phytomed.pdf)
- Mander, M. and Le Breton, G. (2006).** Overview of the medicinal plants industry in Southern Africa: A status quo statement summarizing the dynamics of the medicinal plants industry in Southern Africa. In: Commercializing Medicinal Plants: A Southern African Guide (ed N. Diederichs).
- Manona, C. (2001).** De-Agrarianization and Rural-Urban Interactions: The case of Melani Village in the Eastern Cape. In J. Coetzee, J. Graaf, F. Hendricks and G. Woods (Eds), Development Theory, Policy and Practice. Cape Town: Oxford University Press.
- Marcus, T. (1989).** Modernizing super-exploitation: Restructuring agriculture in South Africa. London: ZED.
- Marshall, N.T. (1998).** Searching for a cure: Conservation of Medicinal Wildlife Resources in East and Southern Africa, pp.74-80. Traffic International, Cambridge.
- Martindale (1958).** The Extra Pharmacopoeia 24<sup>th</sup> edition Pharmaceutical Press, London.
- Mather, C. (1998).** Macroeconomic Strategies, Agriculture and Rural Poverty in Post-Apartheid South Africa. Vol.28 No.1/2 Africa Insight p 25-35.
- Matsiliza, B. (1997).** Plants Used in Traditional Medicine in Grahamstown. B.Sc. Honours. Thesis, Rhodes University, Grahamstown.
- Maxwell, D. (1999).** The Political Economy of Urban Food Security in Sub-Saharan Africa. World Development, Vol.27, Issue 2, November 1999, Pages 1939-1953.
- Mayekiso, B. (2006).** The *Salvia repens* B. Essential Oil and Anatomical Status of the Oil Glands in Relation to Plant Defensive Strategy and Commercial Applications. A doctoral thesis, University of Fort Hare.

- McCracken, D.P. (2004).** Dependence, Destruction and Development: A History of Indigenous Timber Use in South Africa. In: eds. Lawes, M.J, Eeley, H.A.C, Shackleton, C.M. and Geach, B.G.S. Indigenous Forests and Woodlands in South Africa: Policy, People and Practice. University of KwaZulu-Natal Press.
- McAllister, P. (1992).** Rural Production, Land use and Development Planning in Transkei: A critique of the Transkei Agricultural Development Study. *Journal of Contemporary African Studies*, Vol. 2, No. 2: 201-221
- McGaw, L., Jager, A., Grace, O., Fennel, C., van Staden, J. (2005).** Medicinal Plants. In: Van Niekerk, A. (Ed), *Ethics in Agriculture: An African Perspective*. Springer, Dordrecht, The Netherlands, pp 67-83.
- Medical Research Council/ Department of Health. (2003).** Umthente Uhlathw' usamila-The First South African National Youth Risk Behaviour Survey, 2002.
- Memmi, A. (1974).** *The Colonizer and the Colonized* (3<sup>rd</sup> Ed.) Published by London: Earthscan. 2003.
- MERG (1993).** *Making Democracy Work: a Framework for Macroeconomic Development Policy in South Africa*. Cape Town: Oxford Press.
- Merriam-Webster Online. (2007).**
- Mhinana, Z., Coopoosamy, R.M., Mayekiso, B. and Magwa, M.L. (2007).** Characterization and Biological Activity of Essential Oils of Vaaltee, *Plecostachys serpyllifolia* leaves. *Medicinal and Aromatic Plant Science and Biotechnology* © 2007 Global Science Books.
- Mills, G. (2002).** *Poverty to Prosperity: Globalization, Good Governance and African Recovery*. Tafelberg
- Mulholland, D.A. and Drewes, S.E. (2004).** Global Phytochemistry: Indigenous medicinal chemistry on track in Southern Africa. *Phytochemistry* 65, 769-782
- Myles, J. and Picot, G. (2002).** Poverty Indices and Policy Analysis. *Review of Income and Wealth* 46 (2): 161-179
- Mzimela, T. (1995).** *The Muthi Business Indicator SA* Vol. 12, No. 12.
- National Research Foundation (2003).** *Indigenous Knowledge Systems*.
- Nattrass, N. (1994).** "Economic restructuring in South Africa: the debate continues" *Journal of Southern African Studies* vol. 20, no. 4, pp 517-531.
- Nattrass, N. (1996)** Gambling on investment. *Transformation* No. 30, pp 25-45.

- Ngugi waThiong'o. (1981).** *Detained: A writer's prison diary.* London: Heinemann Educational Book, 1981.
- Ngubane, H. (1977).** *Body and Mind in Zulu Medicine: An Ethnography of Health and Disease in Nyuswa-Zulu Thought and Practice.* London: Academic Press.
- Nojoko, L.E. (2007).** Pro-Health Wellness Clinics Organization: "A presentation on diabetes and nutrition". Diabetes and Nutrition Workshop at the University of Fort Hare, 22 June, 2007.
- Nolutshungu, S.C. (1982).** *Changing South Africa: Political Considerations.* Manchester University Press.
- Ntsebeza, L. (2001).** Traditional Authorities and Rural Development in Post –Apartheid South Africa: The Case of the Transkei Region of the Eastern Cape. In J. Coetzee, J. Graaf, F. Hendricks and G. Wood (Eds.), *Development: Theory, Policy and Practice* Cape Town: Oxford University Press.
- Ntsebeza, L and Hall, R. (2007).** *The Land Question in South Africa.* Human Sciences Research Council Press, Cape Town.
- October Household Survey (1997)** Statistics South Africa.
- Oliver-Bever, B. (1986).** *Medicinal Plants in Tropical West Africa.* Cambridge University Press, Cambridge.
- Osberg, L. (2000).** Poverty in Canada and the United States: Measurements, Trends and Implications. *Canadian Journal of Economics* 33 (4): 847-877.
- Pearl, R. and Wilson, J. (1998).** Environmental Policy-making in the new South Africa: *South African Journal of Environmental Law and Policy* 5: 236-267.
- Peires, J.B. (1981),** *the House of Phalo: A History of the Xhosa People in the Days of Their Independence.* Ravan Press (Pty) Ltd.
- Peires, J.B. (1989).** *The Dead Will Arise: Nongqawuse and the Great Xhosa Cattle-killing of 1856-7.* Jonathan Ball Publishers.
- Peters, C.M. (1996).** *The Ecology and Management of Non-Timber Forest Resources.* World Bank Technical Paper 322. Washington DC: The World Bank.
- Pico-Gro (2007).** Essential Oils Product Range by Pico-Gro. Pico-Gro website [www.picogro.co.za](http://www.picogro.co.za).
- Posey, D.C. (1999).** Editor of the *Cultural and Spiritual Values of Biodiversity.* United Nations Environment Programme, Intermediate Technology Publications, London.
- Posey, D. (2002).** Commoditization of the sacred through intellectual property rights. *Journal of Ethnopharmacology* 833-12.

- Prabuseenivasan, S., Jayakamur, M. and Igiyacimuthu, S. (2006).** In-vitro antibacterial activity of some plant essential oils. *BMC Complementary Alter Med.*6 (39). DOI10.1186/1472-6882-6-39.
- Pretorius, E., De Klerk, G.W. and Van Rensburg, H.C.J. (1993).** The traditional healer in South African health care. Co-operation HSRC Programme: Affordable social provision report ASS/BB5-27. Pretoria.
- Qizilbash, M. (2000).** Vagueness and the Measurement of Poverty. The Economics Research Centre Discussion Paper No. 20003. University of East Anglia.
- Quansah, N. (2004).** The Neglected key to successful Biodiversity Conservation and Appropriate Development: Local Traditional Knowledge. *Ethnobotany Research and Applications* 2:89-91.
- Quansah, N. (2005).** Integrated Health Care System: Meeting healthcare needs in the 21<sup>st</sup> century. *Ethnobotany Research and Applications* 3:067-072.
- Rapid Services Survey (2006)** Conducted by Fort Hare Institute for Socio-economic Research for the Office of The Premier.
- Republic of South Africa (1996)** Growth, Employment and Redistribution: A macroeconomic strategy. Pretoria: Department of finance, pp 1-5.
- Republic of South Africa (1998)** A Report on Poverty and Inequality in South Africa. Prepared for the Office of the Deputy President and the Inter-Ministerial Committee for Poverty and Inequality. 13 May, 1998.
- Review, R., and Gamble, L. (1998).** The Inuit and Wildlife management today. Pp 31-37 in traditional knowledge and reviewable resource management in Northern Regions. Occasional Publications No. 23. (Ed.) MMR. Freeman and Carbyn, L.N. Boreal Institute for Northern Studies. University of Alberta. A joint publication of the IUCN, Commission on Ecology and the Boreal Institute of Boreal Institute for Northern Studies, Edmonton.
- Rix, S. (1996).** A nightmare and a near miss. *South African Labour Bulletin*, vol. 20, No. 3, pp 30-35.
- Roux, E. (1948).** Time Longer Than Rope: The Black man's struggle for freedom in South Africa. University of Wisconsin Press.
- Shackleton, C.M and Mander, M. (2000).** The value of resources used in Woodlands. In: *South African Forestry Handbook 200*. Volumes 2 (ed) Owen, D.L. Pretoria: Southern Africa Institute of Forestry: 635-641.
- Shackleton, C.M., Willis, C.B. and Scholes, R.J. (2001).** Woodlands or Wastelands: Examining the Value of South Africa's Woodlands. *South African Forestry Journal* 192: 65-72.

- Scoones, I. and Thompson, J. (1994). (Eds).** Beyond the Farmer First: Rural People's Knowledge, Agricultural Research and Extension Practice. Published by Intermediate Technological Publications, Ltd, UK.
- Scoones, I. et al. (1996).** Hazards and Opportunities: Farming Livelihoods in Dryland Africa: Lessons from Zimbabwe. Zed Books in association with International Institute for Environment and Development, London.
- Sen, A. (1999).** Development as Freedom. Oxford University Press.
- Sender, J. (1994).** Economic Restructuring in South Africa: Reactionary Rhetoric Prevails. Journal of Southern Studies. Vol. 20, No. 4, pp 639-543.
- Scholes, R.J. (2004).** Woodlands of South Africa. In: eds. Lawes, M.J., Eeley, H.A.C., Shackleton, C.M. and Geach, B.G.S. (2004). Indigenous Forests and Woodlands in South Africa: Policy, People and Practice. University of KwaZulu-Natal Press.
- Short, S. D. and Tsey, K. (1992).** Economic Rationalization of Healthcare in Ghana and Australia. In Primary Healthcare Development and Diversity: An International Conference, 18-20 November, Conference Proceedings, pp 1103-112. University of Sydney and Cumberland College of Health Sciences, Sydney.
- Singer, P. (1977).** Traditional Healing: New Science Dr. New Colonialism? (Essays in Critique of Medical Anthropology) conch Magazine Limited.
- Sitarz, D. (1994). (Ed.).** Agenda 21 Earth Summit Strategy to save our planet. Published by Boulder, Colo: Earth Press 1993.
- Slater, R. (2001).** De-Industrialization, Multiple livelihoods and Identity: Tracking Social change in Qwaqwa, South Africa. Journal of Contemporary African Studies, Vol. 19, No. 1: 81-92.
- Smith, A. (1895).** A contribution to South African material, 3<sup>rd</sup> edition Juta, Cape Town.
- Smith, C.A. (1966).** Common names of South African plants. Memoirs of the Botanical Survey of South Africa 35.
- Smith, W. (2005).** Working together to take care of the land: Building bridges with traditional knowledge in the Gwich'in Settlement Area. Ethno botany research and Applications 3: 057-065.
- Sola, P. (2005).** The community resource management plan: A tool for integrating IKS into natural resource management. Ethno botany research and applications 3: 143-153.
- Srivastava, J., Lambert, J. and Vietmeyer, N. (1996).** Medicinal Plants: An Expanding Role in Development. World Bank Technical Paper No.320.

- Stafford, G.I. (Eds) Lawes M. J., Eeeley, H.A.C., Shackleton, C.M. and Geach, B.G.S.) (2004).** Indigenous Forests and Woodlands in South Africa: Policy, People and Practice. University of KwaZulu-Natal Press.
- Statistics South Africa (1997).** October Household Survey, 1997.
- Statistics South Africa (2000).** Key Baseline Statistics for Poverty Measurements. Measuring Poverty in South Africa. Statistics South Africa
- Statistics South Africa (2001).** Census 2001.
- Statistics South Africa (2004).** Stats in brief, 2004.
- Streek, B., Wicksteed, R. (1981).** Render unto Kaiser: A Transkei Dossier. Ravan Press (Pty) Ltd.
- Struhsaker, T.T. (1996).** A biologist's perspective on the role of sustainable harvest in conservation, *Conserve. Biol.* 12, 930-932.
- Swazo, N.K. (2005).** Research Integrity and Rights of Indigenous Peoples: appropriating Foucault's critique of knowledge of power. *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and biomedical Sciences* Vol. 36, Issue 3. September 2005. pp 568-584.
- Tan, N., Kaloga, M., Radtke, M., Kiderlen, O. A., Oksuz, A. F., Ulublen, S. and Kolodziej, A. (2002).** Abietane diterpenoids and triterpenoic acid from *Salvia cilicia* and their antileishmanial activities. *Phytochemistry* 61: 881-884.
- Taylor, L. (1997).** Editorial: The Revival of the Liberal Creed-The IMF and World Bank in a Globalized Economy. *World Development*, Vol. 25, No.2, pp145-152.
- The Constitution of the Republic of South Africa (1996).**
- Thompson, M. W. (1999).** South African National Land-Cover Database Project. Data Users Manual. Final Report (Phases 1, 2 and 3). Report No. ENV/P/C 98136. Pretoria. CSIR.
- Townsend, P. (1962).** "The Meaning of Poverty". *British Journal of Sociology*, Vol.13, 210-27.
- Townsend, P. (1970) (Ed).** The Concept of Poverty. Working Papers on Methods of Investigation and Lifestyles of the Poor in Different Countries. American Elsevier Publishing Company, Inc. New York 1970.
- Trease, G. E. and Evans, W. C. (1983).** *Pharmacognosy* 12<sup>th</sup> edn. Bailliere Tindall, London.
- Tsey, K. (1997).** Traditional Medicine in Contemporary Ghana: A Public Policy Analysis. *Soc. Sc. Med.* Vol. 45 No.7 pp. 1065-1074.
- United Nations (1999&2002).** International Trade Yearbook.

- United Nations (1992).** Agenda 21 Earth Summit: United Nations Program of Action from Rio. United Nations Publication.
- United Nations (2000).** Millennium Development Goals 2000-2014.
- Uzel, A., Guvensen, A. and Cetin, E. (2004).** Chemical Composition and Antimicrobial Activity of the Essential Oils of *Anthemis xylopoda* O. Schwarts from Turkey. *Journal of Ethnopharmacology* 95 (2004) 151-154.
- Valant-Vetschera, K., Roitman, J. N. and Wollenweber, E. (2003).** Chemo Diversity of Exudates Flavonoids in Some Members of the *Lamiacea*. *Biochemical Systematics and Ecology* 31: 1279-1289.
- Van Averbek, W. (1995).** Land Reform Research Programme. Compiled from Reports by Agriculture and Rural Development Research Institute, UFH, Alice. Published by Land and Agriculture Policy Centre, 1995 Founded by the Danish International Development Agency (DAIDA).
- Van Der Walt, J. J. A. (1977).** *Pelargoniums* of Southern Africa. Purnell, Cape Town.
- Van Der Walt, S. J. (2002).** A Multidimensional Analysis of Poverty in the Eastern Cape. Assignment Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Commerce with Honours at the University of Stellenbosch.
- Van Staden, J. (1999).** Medicinal Plants in Southern Africa: Utilization Sustainability, Conservation - Can we change mindsets? *Outlook on Agriculture* 28, 75-76.
- Van Wyk, B. E. (2002).** A Review of Ethnobotanical Research in Southern Africa. *South African Journal of Botany* 68, 1-13.
- Van Wyk, B. E. and Gericke, N. (2000).** People's Plants: A Guide to Useful Plants of Southern Africa. Briza Publications. Pretoria, South Africa, ISBN 1-875093-19-2.
- Van Wyk, B. E., Van Oudtshoorn, B. and Gericke, N. (1997).** Medicinal Plants of South Africa. Pretoria. Briza Publications.
- Viljoen, A. M., Subramoney, S., Van Vuuren, S. F., Baser, K. H. C. and Demirci, B. (2005).** The Composition, Geographical Variation and Antimicrobial Activity of *Lippia javanica* (*Verbenaceae*) Leaf Essential Oils. *Journal of Ethnopharmacology* 96 (2005) 271-277.
- Visser, J. H. and Musselman, L. J. (1986).** The Strangest Plant in the World. *Velds & Flora* 72: 109-110.
- Watt, J. M. and Breyer-Brandwijk, M. G. (1928).** The present position of our knowledge of South African medicinal and poisonous plants. *South African Journal of Science* 25: 227 – 236.

- Watt, J. M. and Breyer-Brandwijk, M. G. (1962).** The Medicinal and Poisonous Plants of Southern and Eastern Africa, 2<sup>nd</sup> edition. Livingstone, London.
- Wetzel, M. S., Eisenberg, D. M. and Kaptchuk, J. (1998).** "Courses involving complementary and alternative medicine at U.S medical schools". Journal of American Medical Association 1998; 280(9): 784-787.PMID 9729989.
- Wikipedia Foundation (2007).** Complementary Medicine & Alternative Medicine. [http://en.wikipedia.org/wiki/Alternative\\_medicine](http://en.wikipedia.org/wiki/Alternative_medicine).
- Wilkinson, R. (2006).** Politics and Health Inequalities. The Lancet Vol. 368, Issue 9543, pp 1229-1230.
- Williams, V. L. (1996).** The Witwatersrand Muti Trade. Velds and Flora 82, 12-14.
- Williams, V. L., Balkwill, K. and Witkowski, E. T. F. (1997).** Muti Traders on the Witwatersrand, South Africa - An Urban Mosaic. South Africa J. Bot. 636 (6) 378-381.
- Williams, V.L (2004).** Trade and Socio-Economic Value of Forest and Woodland Resources Within the Medicinal Plant Market in Johannesburg, South Africa in Indigenous forests and Woodlands in South Africa: Policy, People and Practice. (Eds) Lawes, M. J., Eeley, H. A. C., Shackleton, C.M. and Geach, B.G.S. (2004). Indigenous Forests and Woodlands in South Africa: Policy, People and Practice. University of KwaZulu-Natal Press.
- Willis, C. B. (2004).** Policy Frameworks Pertaining to the Conservation and Sustainable Use of Forests and Woodlands in South Africa in: (eds) Lawes, M. J., Eeley, H. A. C., Shackleton, C.M. and Geach, B.G.S. (2004). Indigenous Forests and Woodlands in South Africa: Policy, People and Practice. University of KwaZulu-Natal Press.
- Wilson, F. and Ramphele, M. (1989).** Uprooting Poverty: The South African Challenge First Edition. Cape Town: David Phillip.
- World Health Organization/IUCN/WWF. (1993).** Guidelines on the Conservation of Medicinal Plants, IUCN, Gland, Switzerland.
- World Health Organization (2000).** WHO Traditional Medicine Strategy 2002-2005. World Health Organization, Geneva WHO/EDM/TRM/2002.1.
- World Health Organization /IUCN/WWF. (2003).** Guidelines on the Conservation of Medicinal plants IUCN Gland, Switzerland.
- World Health Organization (2004).** Medicinal Plants-Guidelines to promote patient safety and plant conservation for a U.S \$60 billion industry.

- World Health Organization (2006).** Medicinal Plants guidelines to promote patient safety and plant conservation for a U.S \$60 billion industry. WHO issues new recommendations for Ginseng, Echinacea and other medicinal plants.
- World Bank (1994).** "South African Agriculture: Structure, performance and options for the future." Discussion Paper 6, World Bank Southern Africa Department, Washington DC.
- World Bank Group (2006).** World Development Indicators 2006.
- Wright, G., Noble, M. and Magasela, W. (2007).** Towards a Democratic Definition of Poverty: Socially perceived necessities in South Africa. Human Sciences Research Council Press.
- WWF/IUCN(1995).** Centres of Plant Diversity: A Guide and Strategy for their conservation vol.2 Davis, S.D, Heywood, V.H and Hamilton A.C (Eds). WWF/IUCN, Cambridge, .UK.
- Wynberg, R. (2002).** A Decade of Biodiversity Conservation and Use in South Africa: Tracking Progress from Rio Earth Summit on Sustainable Development. South African Journal of Science 98: 233 – 243.
- Zadeh, L.A(1965).** Fuzzy Sets. Information and Control 8: 338-353.

## **ANNEXURES**

## **ANNEXURE 1: REPORTS ON QAMATA QUESTIONNAIRES**

The following reports are:

1. Interviews-cum-discussions held with the Executive Committee members of the Opengo Agricultural Co-operative in Qamata, Section 2, and Dam 5.
2. Executive Committee of the Vukuzenzele Agricultural Co-operative responses before the official registration of the co-operative:

### ***A. INTERVIEWS WITH SECTION 2, DAM 5 FARMERS' EXECUTIVE COMMITTEE***

**QUESTION:** I have been passing this way since 1990 but I haven't seen any development although you have this beautiful land and plenty of water from the irrigation scheme and lots of sunshine. I need to hear from you the story about this lovely land of yours and why it is not productive. The people who assist with funds would like to hear why you want to work the land. Please state your name and whether you belong to the committee or you own land on the scheme.

**First Respondent (SM):** My name is Smith Mbengo. I am a farmer and a Chairperson of the Farmers' Committee in Section 2 of the irrigation scheme with 82 member farmers. The story of the land is that the scheme was founded in the 70's by K D Matanzima, the founder and first Prime Minister of the former Transkei Homeland. The first company to work the land was Tracor (Transkei Farming Co-operative, now defunct) brought by KD (K D Matanzima was always referred to as KD by the people of the region) which then left because of misunderstanding between them and K D. He then brought in a company known as Interscience which worked for a while and left. Tracor came back and worked on cultivating the land in partnership with us. The way it worked was if I harvested 10 bags from my land, Tracor would quantify their costs of the seeds, fertilizer and the tilling of the land and take an equivalent amount from the harvest and leave me with the balance. After some time Tracor left and the land started lying fallow because we did not have the means to cultivate it.

Many years passed until a company called Farmer- Africa came and entered into partnership with the farmers in the year 2000. They entered into a three year contract giving us a sum of R70, 000-00 for the cultivation, which was meant to circulate among the farmers as we paid back our loan. After three years they left and we then went back to our state of not being able to work the land due to lack of resources. Whenever we got a small amount of money we would then use it to cultivate the piece we could afford to on and off. Early in 2005 I approached the officer from the Massive Food Production

Programme run by the Dept. of Agriculture, but I could not get any assistance from them since they were already over-stretched. Luckily he then told me about a contact that was reputedly keen to assist emerging farmers in a predicament like ourselves. I then persuaded my fellow-farmers to approach him to find out what he could do for us.

**Second Respondent (LD):** My name is Liziwe Dumekude. I am the Deputy-Chairperson of the Farmers' Committee. I also want to say something about the workings of the scheme. The crop that gave us the highest returns was Lucerne. Lucerne really had the potential to change our lives, because when we came back from the fields empty-handed, our children would treat us with thinly veiled contempt because they saw us as people who wasted their time in the back-breaking work in the fields yet there was no gain from what we were doing. We followed in the footsteps of our parents in producing Lucerne. But 10 years elapsed and the soil became less productive since we planted Lucerne every year. We then changed to planting maize and the harvest was bountiful. The major problem with all the contract companies such as Tracor, Interscience and Farmer-Africa was the fact that none of them gave us any training. Once they left things went back to how they were before they came. Out of all three companies, Farmer-Africa taught us the most about types of soil and what best to grow in what type of soil. We get to know about farming from agricultural officers, otherwise. Our soil is over-used and needs fertilizers. But for all we know we would thank Farmer-Africa and to a lesser extent Tracor.

**Q:** What are your dreams about this land if you were to get all the resources you required?

**Second Respondent:** Our dream is to produce high value crops for export markets. We would then use the earnings to bring up our children some of whom have AIDS, and provide for their education.

**Q:** I have noticed that the youth leaves for the cities and only the old folk are left behind. Where then is continuity when the old folk die?

**Second Respondent:** We think that we would develop the area to have places where they can play and develop sport if that is the right thing to do. They leave because they see no future in staying here. We

have no serious schooling because there is no money. When school fees are demanded, we cannot pay because we are poor whereas things would be different if we earned enough money.

**Q:** About these companies, they come and go, what would you want to happen to ensure that you do not regress when they leave? Like ourselves, we shall work with you but we shall also leave in due course just like all the companies you have told us about. The most important thing is that you must be able to sustain the initiatives we shall start with you long after we are gone.

**Second Respondent:** If we had training then we would have better financial management. If we had markets to sell our produce, that would also help so much. What is important is that we must reach a stage where we are able to manage our business without any assistance from outside.

**Third Respondent (PV):** My name is Polile Velem. I am the Secretary of the Farmers' Committee. I do not have any land; I was elected to the position because they thought I could do a good job. I would agree with the last speaker that we have no markets. All the companies left us with no markets to sell our produce.

**Q:** Earlier on the Chairperson spoke about Da Gama, the textile manufacturing company based in East London. Can you tell us more about them and the cotton?

**First Respondent:** Da Gama approached us and invited us to their offices in East London. We had a verbal agreement with them to utilize our land to cultivate cotton and were promised a sum of R1,000.00 each for the harvest. Afterwards, we came back and started preparing the fields for cotton. The first time that we had a disagreement with them was when the cotton grew and was quite tall; the weeds had also grown and were supposed to be removed. We never received any payment from them. How can you remove weeds alone without any labour to assist you? The official from Da Gama told us to employ labour to remove the weeds and in turn, they would compensate us, but this never happened since we did not have any funds to pay for the labour. All the cotton is still here.

**Q:** Companies like Da Gama came and went. We have also arrived. If unsuccessful operations like Da Gama's cotton happen and you incur expenses, how will you be protected in future so that a legally binding agreement makes you and the second party responsible for sharing the risk? They come with

promises and big plans, and now you have to use the grant money, for those who are eligible, given to you by government to pay for other things like you have to do now instead of maintaining your families.

**First Respondent:** We have to have insurance against such mishaps. We had no legal agreement with Da Gama because we stopped them from drawing up one since we felt it was only a pilot. The agreement was to the effect that should the pilot work out; we would then draw up a binding contract with them holding the two parties responsible for any risks incurred in future.

**Q:** What will you do now and how will you ensure that you are protected? Do you have a Trust or any person who can offer you legal advice?

**First Respondent:** All land owners in the Qamata Irrigation Scheme belong to a Trust. Mr. Bengu, a member of our committee, is the one we are relying on. He was supposed to join us here, but he did not say where he was going. We would like Magwa to tell us what his plans are. In so far as the succession plans are concerned, we want to select 12 youths from our community and give them a piece of land and request Prof Magwa to assist us in the acquisition and setting up of a capital fund for them to pay for production outputs. All operations shall be monitored by us.

**Question:** We would like to hear from you. You are an expert in Rural Development and we would want to understand your objectives in so far as this programme is concerned. We also understand that your homestead is not far from here.

**Third Respondent:** Yes, my origins are in Maya. For a start, there is a Xhosa saying that says those who are blind are led by those who can see. My expertise and my associates felt that we should organize the people so that they could benefit something from a relationship with us. The land is there; there are several organizations offering financial assistance to productive community farmers and there are big markets for fresh farm produce. The community will learn from this campaign, they will profit so that they can educate their children so that they can also have an interest in participating. Ms Dumekude has spoken about the role of Lucerne. We want to help them realize their dreams so that they can have the financial freedom to do what they want. That is why I invited my associates to come

at Mr. Mbengo's invitation. The people have the land and the strength to work the land but they lack the expertise to produce crops for commercial purposes and to manage a business. They also have no know-how on where startup capital and markets can be sourced. This partnership will work, so that the children can have a rich legacy. My dream is that we generate business opportunities for the children for their future. Our expertise should not just remain book knowledge but should work in practice for the children, for the Nation and to stop being the laughing stock of other nations.

*Q:* My last question is the size of the population in Section 2 or Dam 5 because this is the kind of information needed for financial assistance. Next time we meet I would like to have this information. I want to know how many people will benefit from the land we aim to cultivate.

The information on the population size of Section 2 was obtained from the Chris Hani District Municipality offices in Queenstown. The number of households in Section 2 was estimated to be 940 with an average of 5,9 people per household translating to a population of approximately 5,546.

## **2. INTERVIEWS WITH SECTION 3, DAM 14 FARMERS' EXECUTIVE COMMITTEE**

*Question):* You have such fertile land and an irrigation scheme but you are not farming. Most of the people from this area leave for the urban areas in search of work when they could get their wealth right here. What is wrong?

*First Respondent (Selani):* My name is Selani; I was a worker employed on the scheme. Sometimes companies came and partnered with us to grow various vegetable and grain crops and shared the harvest with us. We have the land, the water and our strength, but we do not have the funds and the equipment to work the land. We depended on the scheme for farming implements. All these things helped. When the last company left, they left behind all the farming equipment such as tractors and other implements with the drivers. We do not know why they did this, because we now have to queue for these things. We do not have the money to hire these services. A company came and destroyed all the furrows in the fields because it wanted to use its own method of cultivating the fields. Shortly thereafter, this company left and we were told that the funds were exhausted. The company's name was Interscience. We do not know whether they still exist or where they are based. The fields were then destroyed and the livestock started grazing in the field since nothing was happening. An example is this

lady here next to me. She has Lucerne in her field but the neighboring fields are lying fallow and are thus used for grazing including hers but she can do nothing because people are not interested. Fencing was put into place, but the fence was cut since other landowners who had not planted wanted to use the fields for grazing. But the people did not have the means to work the lands.

**Second Respondent (Dyoldan):** My name is N Dyoldan. We as women in this area are involved in a sewing business to produce uniforms and tracksuits for schools. We have organized orders from potential clients, but we need machinery and materials to start the venture but we do not know who to approach for these resources. We believe that farming our fields is hopeless since the government and the municipalities have not taken heed of our plight for so long; hence we want to start other businesses not related to farming. Should assistance be available, we are willing to try again, but we need cooperation from everybody so that we do not grow crops only to be destroyed by livestock. This is too expensive and discouraging.

**Q:** I can assist in contacting organizations for finance in projects like bakeries and sewing. Today I came to focus on the farming the land. We have contacts in Queenstown and elsewhere. There is a bakery in the Ncora Irrigation Scheme financed by the state organization known as Small Enterprise Development Agency (SEDA). This organization does not fund operations directly, but they assist in many other ways such as assisting communities to register co-operatives and in setting up manufacturing systems, marketing of products and training. Another organization that can assist with finance for outputs is the government's National Development Agency (NDA) which is already funding farming activities by other communities on the Irrigation Scheme. The Eastern Cape Development Corporation (ECDC) is another government agency that lends small farmers and other enterprises amounts of up to R20,000.00 without collateral; other development organizations such as Uvimba Finance and the Land Bank are also available.

Why do you want to work the land? Do you want to produce just enough to feed your families or do you have a dream. As an example, the shacks and squatting has grown rapidly even in the rural areas like Ngqamakhwe where you find people from nearby villages leaving their homes to settle next to the small towns. Why would they want to do this? Can you elaborate on this phenomenon?

**First Respondent:** When I met the people who own the land, I wanted to address the role of the youth. When it comes to companies, Da Gama came with a cotton project. Outside you will find bales of cotton from that project just lying in the sun for weeks. What will be the effect of the rain on this harvest? The original agreement has not been kept. They shifted the goal posts. Some of the bales have been trucked away but no one has been paid for this produce. Now they have left the rest of the cotton.

**Q:** Were these agreements written down or were they verbal?

**First Respondent:** No written agreements were made. In one of the community meetings I wanted to know who had signed that the specific land I referred to had been handed over for the production of cotton. The owner said he had no agreement. Without any agreement the companies can do anything. With Prof Magwa, people signed unlike the cotton project. The question that was posed by the farmers, who had formed a committee, was what happens when a member cannot work because he/she is too old and has no strength but has the land.

**Q:** Can you please tell us how this case is treated?

**Third Respondent:** What will work is forming a partnership with the farmers. As an example, if we start off with 50 hectares, this will be run as a business by a joint venture. We shall look for a member of the family or assistance from the community. We must support one another in order to succeed. When we harvest, we shall first pay off the loans and debts and reinvest the profits to avoid having to borrow funds from the banks all the time. The owners of the land will be encouraged to provide the labour to earn a living.

**Q:** Like the other group you want to plant this season still. We shall endeavour to go for production in this season. But legal agreements are important so that we level the playing fields. You want to plant any high cash crop, but this must be written down in the agreement or a Memorandum of Understanding (MOU).

## **ANNEXURE 2: RESEARCH METHODOLOGY: PELARGONIUM CASE STUDY**

### **1. STUDY APPROACH**

The study involved gathering information from reports and the literature, as well as a fieldwork component and a distribution map. The field survey approach and questionnaires were designed on-site after reviewing information, and with inputs from the communities, nature conservation officials and Nkonkobe municipality officials. The field study aimed to identify the distribution range of *Pelargonium reniforme* / *sidoides* and the communities involved in this project.

### **2. SURVEY METHODOLOGY**

Information was collected from a sample of ten villages in the following ways:

- ❖ Meetings with village communities and government representatives;
- ❖ These meetings served to introduce our activities to the village committee and to collect basic information on villages, such as population statistics, control of *P. reniforme*/ *sidoides* harvesting and numbers of households engaged in this project.

### **3. VILLAGE MAPPING**

A small group of villagers, including elders and members of the village committee, were asked to describe the village area in terms of its general boundaries, natural habitats and access to natural resources. Where possible, distances were indicated on the maps in terms of walking time.

### **4. FOCUS GROUP DISCUSSIONS**

Focus group discussions were held on several topics in each village, where applicable:

- ❖ Current *Status quo*
- ❖ Future plans
- ❖ Conservation plans
- ❖ Harvesting procedures from natural resources

The discussions were held with groups of 5 to 10 people who were involved in the relevant activities. Although following a questionnaire, the discussions were allowed to deviate from the questionnaire, or to concentrate on a particular aspect, as appropriate. The purpose of these discussions was to collect information of a generally applicable nature, for example, on seasonality, markets and prices, as well as to collect sufficient information to be able to make preliminary quantitative estimates natural resources

harvesting and associated economic values which has been extracted from the following focus group discussions:

❖ **Introduction**

The purpose of the discussion was explained, and members of the group were encouraged to be as free and open as possible about the issues to be discussed.

❖ **Resource description**

The natural occurrence and the distribution of *P. reniforme/ iodides* was described in detail and attempts to domesticate.

❖ **Rules of access**

The group was asked how describe how households gain access to resources, and any limitations on use.

❖ **Who is involved**

People were asked about the role of men, women and youth in the production or harvest of *P. reniforme/ sidoides*

❖ **Seasonality**

The group was usually first asked to describe seasonality in the availability and harvesting of *P. reniforme/ sidoides*. Some groups were also asked about seasonality and growth pattern of this species.

❖ **Returns to effort**

The group was asked how much could be harvested in a day or week during different times of year.

❖ **Prices and inputs**

Selling prices were obtained for *P. reniforme/ sidoides* and prices were estimated the products made from this plant species.

❖ **Changes in availability**

Members of the group were asked to describe and explain changes in availability over time.

## **5. KEY INFORMANT INTERVIEWS AND INFORMAL DISCUSSION**

In addition to, and sometimes instead of, formal focus group discussions, informal discussions were held with members of the village. Key informant interviews were held with senior members of the communities and nature conservation officer as well as with the executive management project. Informal discussions were held on a variety of activities. These were usually initiated by asking a women, youth or men to show the authors certain in the village which promote sustainability of this project. The purpose of these discussions was to actually observe the activities discussed above, to

allow for information gathering which had not been anticipated in the formal surveys and to glean information on issues which people are fairly reluctant to disclose when in groups. It was very interesting to note that everybody (women, youth and men) were particularly responsive to this type of "walking and talking", and in all cases, the initial one-on-one interaction ended up with other people voluntarily joining in to provide more information (as opposed to the more forced nature of the focus group method). Because the interviewers were more familiar people to the communities, there was little suspicion if there was any, and a great deal more access into the confidence of everybody was achieved with great success.

#### ❖ **Household questionnaires**

In order to quantify the contribution of *P. reniforme/ sidoides* to a household economy, household surveys were carried out. These surveys included questions about the harvesting, income generated and the impact of this income in an improvement of quality of life in each household.

The basic structure of the household surveys was as follows:

#### ❖ **Household information**

- ❖ Household size and composition
- ❖ Other source of incomes

#### ❖ **Relative value of household production**

Respondents were asked to apportion a pile of an average *P. reniforme/ sidoides* stuck which can be sold on a monthly basis and how often do they harvest during the annual seasons. This was to get an indication of the relative contribution of *P. reniforme/ sidoides* to household income in an average year.

#### **Concerns about the buyer(s), protection of *P. reniforme/ sidoides* and market impingements**

Respondents were asked the following questions:

- ❖ How much do the buyers pay for a kilogram of *P. reniforme/ sidoides*?
- ❖ How often do they come to buy the harvest?
- ❖ Should the present buyer stop purchasing their harvest, do they have other alternative or prospective buyers?
- ❖ Are there any mechanisms in place to protect *P. reniforme/ sidoides* from being smuggled from its natural resources and as well as their industry from being taken away from their local or district municipality's jurisdiction?
- ❖ **Sustainability of the industry and conservation of *P. reniforme/ sidoides***

In order to ascertain the status of industry sustainability and conservation of *P. reniforme/ sidoides*, the following questions were asked:

- ❖ Since this plant species is in demand do the respondents have any sustainability programme to satisfy the market demand?
- ❖ Do they have any plan or knowledge about value addition to the products which are derived from *P. reniforme/ sidoides*?
- ❖ Are they aware that by selling the raw tubers from the field, are tempering with sustainability of their industry as the buyer(s) is (are) able to propagate *P. reniforme/ sidoides* from the tubers?
- ❖ What conservation plan do they have for *P. reniforme/ sidoides*?
- ❖ Is there any attempt to domesticate *P. reniforme/ sidoides*?
- ❖ Is there any plan to co-ordinate or integrate the activities of the respondents with that of the affected municipalities and appropriate government departments such as water and forestry, environmental affairs and nature conservation?

#### **Field observations and some scientific perspectives of *P. reniforme/ sidoides***

Several sites where *P. reniforme/ sidoides* occurs its natural habitat, were visited. An inspection was conducted about its natural distribution.

## **6. RECOMMENDATIONS**

### **Sectoral and cross-sectoral approaches towards biodiversity conservation of *P. reniforme/ sidoides***

To achieve this objective, the Government departments in collaboration with the municipalities and affected communities have to comply with the following extracts from the Act of Nature Conservation and protection of threatened *P. reniforme/ sidoides*:

- ❖ To comply to the norms and standards required to ensure that the existing South African domestic and foreign policies, plans and programmes which support the conservation and sustainable use of biological resources and minimize adverse impacts on biodiversity.
- ❖ To ensure the effective incorporation of national environmental policies and biodiversity conservation considerations into all plans and programmes in relation to business ventures.

- ❖ To ensure the full participation of all government departments and appropriate municipality components responsible for activities affecting biodiversity, or for activities concerning the conservation or use of biodiversity.
- ❖ To develop sector specific plans between the nature conservation departments, communities and municipalities whose demarcation under which *P. reniforme/ sidoides* falls within and all the stakeholders have to agree upon the guidelines which have to be developed simultaneously. Such sector-specific plans must reflect the integration of biodiversity considerations in relevant sectoral budgets.
- ❖ To adopt measures to allow for full environmental, social and economic costs and benefits of conserving and using biodiversity sustainably to be reflected in economic markets, and in national indices of economic status.
- ❖ Support efforts to bring about changes in human numbers and lifestyles to achieve socially and ecologically sustainable development

A strategic planning process should identify vital links between this component of plant biodiversity (*P. reniforme/ sidoides*), environmental and human well-being, and the value addition to *P. reniforme/ sidoides* product development which will sustain livelihoods and provide new options for socio-economic development. A productive planning process can identify those activities and investments that most effectively strengthen these linkages. This strategic planning process has to deal also with the benefits of developing a conceptual framework which will relate to the wide array of methods necessary to sustainably use, conserve, and restore this plant species at provincial, national and international levels. There are several issues which need to be considered, and which constitute the fundamental basis of interaction and effectiveness of conservation and sustainable use measures. These issues include the importance of:

- ❖ Integrating different types of approaches and techniques to ensure that the plant species is well-conserved whilst it is sustainably used.
- ❖ Recognizing that the conservation and sustainable use of *P. reniforme/ sidoides* are heavily influenced by social, cultural, economic and political attitudes and

- ❖ Encouraging policy and institutional co-operation and co-ordination to achieve conservation goals and objectives.
- ❖ Developing an action plan which will involve the organizations ( public and private) that will take charge of implementing specific activities included in the strategy, where, by what means, and with what resources (people, institutions, facilities and funds). The time phases for action must be identified.
- ❖ Implementing the activities should follow accordingly. Partners should take responsibility for particular elements of the plan and biodiversity planners become “biodiversity implementers” in the key government departments, non-government organizations, communities, indigenous groups, business and industries involved in the utilization of *P. reniforme/ sidoides*.
- ❖ Monitoring and evaluation process will be the key aspect of this project. It is necessary that indicators of success have to be established, determining which organization(s) will monitor which factors and the methods that will be employed. Monitoring should track the status and the trends of the project, as far as biodiversity is concerned, implementation of policies and laws, implementation of specific strategic actions and investments, and the development of needed capacity (people, institutions, facilities and funding mechanisms).
- ❖ Reporting is vitally important. It needs to be determined what type of reports are required, who are responsible for reporting, and agree on format, content and timing of the delivery of documents.

### **Export control**

- ❖ As an exporting country South Africa has to comply with the import conditions of a specific country or group of countries by issuing phytosanitary certificates.
- ❖ The NPPO of South Africa
- ❖ Maintains a database on the import conditions and procedures of various countries and the occurrence of harmful organisms in South Africa.
- ❖ renders advisory and identification services for pests and diseases
- ❖ conducts relevant laboratory tests as requested by the importing country, and
- ❖ Carries out field inspections.

### **Procedures to follow when exporting plants and plant products out of South Africa**

- ❖ Before export the exporter should find out what phytosanitary import conditions of the importing country apply to his/ her goods.
- ❖ The exporter may obtain the import conditions from the importer or his/ her agent in the importing country or from the National Plant Protection Organization (NPPO) of South Africa
- ❖ The NPPO of SA liaises with the NPPO of the importing countries to establish phytosanitary export programmes
- ❖ In conjunction with the NPPO of South Africa the exporter establishes whether or not he/ she can comply with the import conditions of the importing country
- ❖ The agent or importer in the importing country must apply for an import permit from the NPPO of the importing country
- ❖ If the import conditions can be complied with, the exporter may proceed to apply for a phytosanitary certificate from the NPPO of South Africa
- ❖ The exporter must present the goods to the NPPO of South Africa for evaluation and inspection
- ❖ The NPPO of South Africa issues a phytosanitary certificate if the goods pass evaluation and inspection
- ❖ The exporter must ensure that the goods are exported within 14 days of the final inspection
- ❖ The exporter must ensure that the goods are accompanied by the original phytosanitary certificate
- ❖ Plant inspectors of the NPPO of the importing country detain goods for evaluation and inspection
- ❖ The agent or the importer must clear all documents with Customs of the importing country at the port of entry before the goods are released

### **International Cooperation**

- ❖ Develop mechanisms to deal effectively and in the national interest with international issues affecting the environment.
- ❖ **Supporting Objectives**
- ❖ *International agreements*
- ❖ To ensure South Africa acts in accordance with national environmental policy in dealing with international treaties and agreements and that environmental considerations are included in all international negotiations.
- ❖ To ensure adequate opportunity for consultation with all relevant interested and affected parties before negotiating, entering and implementing international agreements.

- ❖ To meet all requirements arising from international environmental agreements and obligations.

### **International cooperation**

- ❖ To cooperate internationally on shared environmental concerns, giving priority to the Southern African region.

### **Maintaining environmental integrity**

- ❖ To ensure that foreign investment does not compromise the environmental integrity of South Africa, people's environmental rights, the principles and obligations established in this policy and national environmental norms and standards set in terms of this policy.

### **Transboundary impacts**

- ❖ To adopt appropriate measures to prevent transboundary environmental harm, incorporating the prevention of transboundary movement of hazardous and toxic waste.
- ❖ To ensure that international trade does not lead to wasteful use of natural resources or interfere with their conservation or sustainable use.

## **7. GOVERNANCE**

Constitutional setting for environmental policy is as set out:

- ❖ the essential requirements for effective environmental governance
- ❖ the powers and responsibilities of the lead agent
- ❖ the coordination of functions
- ❖ an integrated and comprehensive regulatory system
- ❖ regulatory mechanisms
- ❖ programmes for delivery

### **Constitutional Setting**

The starting point for developing environmental policy in South Africa is the Constitution. The adoption of a democratic Constitution and Bill of Rights has made government accountable to the

people. The Constitution sets out the legislative and executive authority of different spheres of government within a framework of cooperative governance. It states that national and provincial governments have concurrent responsibility for environmental management. This section sets out the implications for government of the general and specific clauses in the Constitution that bear on environmental management.

## **Sovereignty**

The Constitution states that South Africa is a sovereign, democratic state based on the values of human dignity, equality, non-discrimination, the rule of law and universal suffrage. In terms of environmental management it is important to recognize that sovereignty includes the ability to limit sovereign powers by entering into international agreements where the need arises. For example, in terms of the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, we have given up our sovereign power to accept hazardous waste from Organization for Economic Cooperation and Development (OECD) countries.

## **Cooperative governance**

Chapter Three of the Constitution sets out principles of cooperative government and intergovernmental relations that govern the relations between all spheres of government and all organs of the state within spheres. Amongst those important for environmental management are the obligations to preserve the peace and national unity of the Republic; secure the well-being of its people; provide effective, transparent, accountable and coherent government; respect the powers, functions and institutional integrity of other spheres of government; inform, consult, assist and support other government agencies; co-ordinate actions and legislation; adhere to agreements; and avoid legal proceedings against other government agencies. This chapter provides for structures to facilitate intergovernmental relations and resolve conflicts.

## **8. POWERS OF THE NATIONAL AND PROVINCIAL SPHERES OF GOVERNMENT**

### **National Legislative Powers**

The national legislature has the power to amend the Constitution and to legislate on all matters, including those listed in Schedule 4 as functional areas of concurrent national and provincial executive

competence. It does not generally have the power to legislate on those matters listed in Schedule 5 as functional areas of exclusive provincial legislative competence. Exceptions occur where it is necessary to intervene to maintain national security or economic unity, maintain or establish national or minimum standards, and prevent unreasonable action by a province or action that prejudices the interests of another province or those of the country as a whole.

Schedule 4 matters include agriculture, cultural matters, environment, health services, housing, nature conservation, pollution control, regional planning and development, soil conservation, tourism, trade and urban and rural development. The implications of these powers are addressed later in this section.



*The Road  
to Rio*



*The Five Rio  
Documents*



*The Road  
From Rio*

### [Complete text of Biodiversity Convention](#)

#### **Convention on Biological Diversity**

The world's biological diversity— the variability among living organisms— is valuable for ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic reasons.

The diversity is important for evolution, and for maintaining the life-sustaining systems of the biosphere. The conservation and sustainable use of biological diversity are of critical importance to meet the food, health and other needs of the growing world population.

However, biological diversity is being significantly reduced by certain human activities, and it is vital to anticipate, prevent and attack the causes of this loss. Substantial investments are required to conserve biological diversity, but they will pay off with a broad range of environmental, economic and social benefits.

#### **5 Rio Documents**

1. [Rio Declaration on Environment and Development](#)

2. [Agenda 21](#)

3. [Statement of principles to guide the management, conservation and sustainable development of all types of forests](#)

4. [United Nations Framework Convention On Climate Change](#)

5. [Convention on](#)

The world needs to conserve biological diversity and make sustainable use of its components in a fair and equitable way. Sustainable use means use in a way and at a rate that does not lead to the long-term decline of biological diversity. This will maintain its potential to meet the needs and aspirations of present and future generations. The uses include those of genetic material, which is any plant, animal, microbial or other material containing functional units of heredity. We also need to conserve ecosystems, which are groupings of living and non-living material that act as a unit.

Countries have rights over their biological resources, but they are also responsible for conserving their biological diversity and for using their biological resources in a sustainable manner.

Nations that sign the Convention shall:

- ❖ Identify the components of biological diversity important for conservation and sustainable use, and monitor activities which may have adverse impacts to this diversity.
- ❖ Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity.
- ❖ Make conservation and sustainable use of biological diversity part of planning and policy-making.
- ❖ Use the media and educational programmes to help people understand the importance of biological diversity and need for measures to conserve it.
- ❖ Establish laws to protect threatened species, develop systems of protected areas to conserve biological diversity, and promote environmentally sound development around these areas.
- ❖ Rehabilitate and restore degraded ecosystems and promote the

recovery of threatened species, helping local people to develop and carry out these remedial plans.

- ❖ Establish means to control the risks from organisms modified by biotechnology.
- ❖ Use environmental impact assessment, with public participation, on projects that threaten biological diversity, in order to avoid or minimize damage.
- ❖ Prevent the introduction of, and control or eradicate alien species which threaten ecosystems, habitats or species.

Many indigenous and local communities have a close dependence on biological resources, and nations should make use of this traditional knowledge of the conservation and sustainable use of biological diversity. Countries are to preserve and maintain such indigenous and local knowledge and promote its wider use. This is to be done with the approval and involvement of those who have such knowledge, and these people should benefit from the use of their practices.

The Convention says that:

- ❖ Countries are to facilitate access to genetic materials within their borders for environmentally sound uses. Access will be allowed with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other uses of genetic resources.
- ❖ Developing countries are to have access to environmentally sound technologies that they need for the conservation and sustainable use of biodiversity. This access will be under fair and most favourable terms, and will recognize patent rights.

- ❖ Developing countries are to have access to technology that makes use of resources they provided. They are also to have a role in biotechnological research.
- ❖ Developing nations are to receive technical and scientific assistance, so they can develop their own institutions and expertise in sustainable use of biological diversity.
- ❖ Countries are to consider the need for an agreement on the safe handling and use of living organisms modified by biotechnology.
- ❖ Developed countries that sign the convention shall provide new financial aid to developing countries to help them implement terms of the Convention. The initial funding will be handled by three United Nations organizations involved in environment and development.

The convention comes into force once it has been ratified by 30 nations.

### **Chemistry & Pharmacology of *P. reniforme*/ *sidoides***

According to Health Bells (<http://www.healthsbells.co.za/Umckaloabo.htm>), the biochemistry and pharmacology of *P. reniforme* and *P. sidoides* have the following properties: The bioactive ingredients in both *P. sidoides* and *P. reniforme* are the tri- and tetra-oxygenated coumarins, gallic acid and gallic acid methyl ester (polyphenols), various flavonoids, as well as significant levels of calcium and silica. *P. sidoides* contains two distinct coumarins: umckalin and its 7-O-methyl ester, together with four other methoxycoumarins and three unique coumarin sulphates that

are not found in *P. reniforme*. The highly oxygenated coumarins, fraxinol, isofraxetin and fraxidin, together with a unique trimethoxy coumarin are found in *P. reniforme*. Scopoletin and 6, 7, 8-trihydroxycoumarin are found in both species. Most of the coumarins found in these two pelargonium species contain a methoxy function at the C7 position and an OH group at either the C6 or C8 positions; functionality that is responsible for their antibacterial activity. Gallic acid and its methyl ester present in large amounts in *P. sidoides* and in its active extracts were identified as the prominent immunomodulatory principle for this herbal medicine. Macrophage activation was confirmed by an in vitro study based on *Leishmania* parasites ( *Phytother Res* 2001 Mar;15(2):122-6). The same authors, Kayser, O. and Kolodziej, H. (*Planta Medica* 63, 508-510) also studied the antibacterial performance of the various coumarins and gallic acid compounds found in *P. sidoides* and *P. reniforme* and found that with the exception of the ineffective (+)-catechin, all the potentially active compounds exhibited antibacterial activities with minimum inhibitory concentrations (MICs) of 200-1000 micrograms/ml. These results provide for a rational basis of the traditional use of Umckaloabo.

#### **Application:**

The Englishman Charles Stevens already acknowledged the successful treatment of tuberculosis with Umckaloabo in the early 1920's. Extracts of the root tuber have been available in German pharmacies since 1983 without prescription and have found widespread usage against infections of the sinus, throat and respiratory tract. Double-blind, placebo-controlled studies on patients with acute bronchitis confirmed that extracts of *P. sidoides* were effective in treating this ailment. Similar studies have also shown the effectiveness of *P. sidoides* extracts for treating tonsillopharyngitis in children in the age group 6-10 years (*Phytopharmaka* VII, October 2001). Encouraging results have also been achieved with children, especially those who have not responded well to repeated treatment with antibiotics. The alcoholic extract of the root has been shown to have a three-way effect: 1.) Anti-bacterial: The Umckaloabo extract prevents bacteria from attaching to cells in the mucous membranes. 2.) Antiviral effect: Similarly, Umckaloabo prevents viruses from attaching to the mucous membrane cells and stimulates the body's immune system in such a way that both bacteria and viruses are prevented from multiplying. 3.) Expectorant: the extract acts as an expectorant, allowing the body to expel contaminated mucous making conditions less suitable for the multiplication of the bacteria and viruses. The three-way effect attacks the acute infection at its root, the stabilization of the immune system prevents a re-infection and the vicious circle of infection, short recovery phase and new infection is broken. Due to its bacteriostatic and immune-modulating characteristics Umckaloabo appears to be a

good alternative to the conventional therapy of treating respiratory illnesses with antibiotics

#### Dosage

Adults in the acute stage of infection should take 20 to 30 drops three times daily. Children of 6 to 12 years take 10 to 20 drops three times daily, while children starting from 6 months 5 to 10 drops daily.

#### **Contraindications**

Medicine is not to be taken during pregnancy, if inclined to experience bleeding or during liver and kidney illnesses.