

## **A Systematic Analysis of strategic management methods for conservation of Medicinal Plants in South African rural communities**

**Ms Nyiko Faith Shibambu**

*Department of Sociology and Anthropology, University of Limpopo, South Africa*

**Mr Moshohli Kenneth Malatji**

*Department of Sociology and Anthropology, University of Limpopo, South Africa*

**Prof Dr Witness Maluleke**

*Department of Criminology and Criminal Justice, University of Limpopo, South Africa*

### **Abstract**

This study was aimed to provide theoretical analysis on strategic management methods for conservation of medicinal plants in South African rural communities, owing to the reported scarcity of medicinal plants in most of the rural areas of South Africa. The strategic management methods were reviewed based on implementations and sustainability across rural South African communities. This qualitative study adopted non-empirical research design: Systematic review, closely looking at recent reputable reports in South African context, aided by international seminal studies on this subject. This was done by closely looking at recent reputable reports across globe, while using South African rural communities as case studies, from 1990-2020 (I.e. 30 years' projection, not in sequence). The Qualitative Content Analysis (QCA) was used to filter the reviewed literature studies, focusing on keywords. The data collected was analysed using inductive Thematic Analysis (TA).

This study established that medicinal plants in rural South African communities are mostly affected by urbanisation practices. It was also evident that few strategic of protecting and preserving medicinal plants are currently ineffective despite the conventional importance of these plants. It is recommended that the scarcity of medicinal plants should be highly prioritised by the local municipalities of rural South African communities, fully supported by the provincial and national spheres of government to avoid extinction resulting from urbanisation and other notable factors. The town planners should also consider medicinal plants during development phases.

**Keywords:** Conservation, Medicinal plants, Rural South African communities, South Africa, Strategic management methods, Theoretical framework, Urbanisation.

### **Introduction and background**

About 80% of the world's population relies on medicinal plants for its primary health care needs because modern medicine is either unobtainable or prohibitively expensive (Groombridge, 1982) (in Shumba, Carlson, Kojwang, Sibanda, Masuka & Moyo, 2009). The trend is likely to continue despite advances in modern medicine and the establishment of state of the art health institutions (Gelfand *et al*, 1986) (in Shumba *et al*. 2009). The history of traditional medicinal plant practice in Southern Africa is

as old as the people who first settled in the region. However, there are no records of remedies that were used at the time. Some form of documentation only started with the arrival of White settlers who, despite considering the practice as primitive and inferior to modern medicine, recognised its existence and acknowledged its effectiveness in some instances (King & King, 1992) (in Shumba *et al.* 2009). It is from these humble beginnings that the popularity of traditional medicinal plant practice in primary health care and in the pharmaceutical industry has grown. Some of the plants have found their way into the formal national and international health care systems through bio prospecting, value addition and bio trade.

Mander (1998) highlights that the emphasis on sustainable forestry as a means of making forestry contribute efficiently to sustainable development has drawn increasing attention to the ecological aspects, active involvement of people and utilisation of forest resources in a comprehensive manner. Sustainable and comprehensive utilisation of forest resources is achieved through appropriate harvesting, processing and marketing of both wood and non-wood forest products. Although local populations have utilised non-wood forest products extensively, relatively little systematically documented information exists. With the rapid urbanisation in developing regions, the importance of understanding thoroughly the commercial aspects of many of these products is becoming vital. The *medicinal plants* comprise one of the major non-wood forest product categories on the marketing of which information is scarce, although the use of traditional medicines is a common practice in many parts of the world.

Molewa (2015) (in Raimondo, 2015) states that plants are universally recognised as a vital component of the world's biological diversity and an essential resource for ecosystem functioning, goods and services. Additionally, plants have great economic and cultural importance. Plants play a key role in maintaining the planet's basic environmental balance, ensuring ecosystem stability, and they form an irreplaceable component of the habitats for the world's animal life.

Concurrently, of urgent concern is the fact that many plant species, [Rural] communities and their ecological interactions, including the many relationships between plant species and human [Rural] communities and cultures, are in danger of extinction, threatened by such human-induced factors as, among others, habitat loss and transformation, over-exploitation, pollution, clearing for development activities, alien invasive species and climate change. If this loss is not stemmed, countless opportunities to develop new solutions to pressing economic, social, health and industrial problems will be equally lost. Furthermore, plant diversity is of special concern to indigenous and local communities, and these communities have a vital role to play in addressing the loss of plant diversity.

Steenkamp (2002) expresses that human community possess a special ability to influence the management and conservation of biodiversity, and therefore, it is important to realise that people form an integral part of the ecosystem. Even if people have technological ability, they should not free themselves from the bounds and imitations of the natural laws. Negatively; human destruction of biodiversity simultaneously destroys their life-giving resource base (Steenkamp, 2002). The conservation and management of biodiversity remains a nation concern as research

in many parts of the world is focused on sustainable use of the natural resources for human development. Many of the natural resources, especially medicinal plants, have been used and are still used for food and other purposes. As a result, good management and conservation of these species is necessary for their continued availability (Stern, 2000).

Furthermore, this is still cited as a global crisis based on medicinal plants losses. It is reported that medicinal plants are becoming extinct because of habitat loss, population, urbanisation and the threat of climate change. Thus, it is becoming important that the world has professionals equipped with the necessary skills to understand and manage biodiversity in a sustainable way. The professionals working in the biodiversity crisis should ensure that recourses are conserved for the future while taking account of the needs of the growing human population, and the pressure for its development. They need a variety of skills, including a working knowledge of ecology, wildlife, conservation, population biology, taxonomy and systematic, environmental studies, legislation and the interactions between people and plants (Martin, 1995).

One of the aims of conservation biology as a scientific discipline that developed in response to the current crises of rapid and large-scale biodiversity loss, is to protect and conserve as much of all levels of biodiversity as possible. In South Africa, much of the local vegetation is depleted and therefore, through good management and conservation of biodiversity, the quality of life of all South African medicinal plants will improve especially in rural communities and the rural areas of South Africa, witnesses a depletion of plant resources is the results of indiscriminate chopping down of medicinal plants for settlement, fence posts, building of houses, animal enclosures, ploughing fields, firewood, medicine as well as for the making of artefacts and utensils (Mabogo, 1990; Rankoana, 2000; and Rankoana, 2001).

In terms of the land cover / Flora and Fauna, Vhembe [Including the Collins Chabane Local Municipality was established by the amalgamation of portions of Thulamela Local Municipality and Makhado Local Municipality on 3 August 2016, South Africa, 2012-2020:1] Biosphere reserve in Makhado municipality is declared conservation area by United Nations Educational, Scientific and Cultural Organisation (UNESCO). The Biosphere Reserve provides a habitat to a diverse number of species including those that are on the brink of extinction. The Biodiversity of the Vhembe District is a strategic resource in nature, which provides the District communities with a lot of potential mostly in rural areas. It provides materials for shelter, food, fuel wood as well as *medicinal plants*. The district Fauna and Flora is under some enormous pressure primarily due to uncontrolled development activities, which also protrudes to the sensitive ecosystems thereby negatively affecting even the endangered species that are on the brink of extinction, such as the *medicinal plants*, Vhembe District Municipality Integrated Development Plan Review (2019/20:115). Du Toit (2015) warns that as rural population decreases and cities expand urban ecological or urbanisation research is significant.

Therefore, this study attempts to fill this identified gap by noting that urban ecology seeks to understand the complex relationship between human settlement and their ecological contexts in an attempt to ensure sustainable futures for species such as

medicinal plants since they become scarce because of urbanisation and will eventually come to an extinct in the South African rural communities.

### **Problem statement**

Efforts made by the rural people in rural South African communities to promote the use of medicinal plants and access to Traditional Herbal Medicine have not yielded positive expected results, as the accessibility of the medicinal plants to Traditional Herbal Medicine are seen to be declining. This brings with it the destruction of medicinal plants and many challenges faced in accessing Traditional Herbal Medicine because of the urbanisation. The community people, as well as the indigenous health practitioners no longer protect the plant species. Some plants in the community are being threatened by the development of the communities and have no longer have space to grow.

Concerns regarding the conservation of medicinal plant species are receiving much attention due to overharvesting and exploitation. Medicinal plant harvesting is a global concern, as plants are the source of the majority of medicines, either traditional or western, in the world. Medicinal plants materials are being exported annually from developing [South Africa included] to developed countries. The challenge in developing countries is that, apart from the exports, the majority of people in those countries still use medicinal plant material for their basic healthcare needs. Biodiversity loss is therefore a significant challenge (van Wyk & Prinsloob, 2018).

Rankoana (2016) shares that indigenous plant resources provide rural communities with non-timber forest products that provide energy, food, shelter and medicine. Indigenous plant users in the rural communities have developed selective management methods to sustain plant resources, with the most common demarcated to restrictions placed on the cutting of green plants, harvesting of some species during certain seasons, exclusive harvesting of the leaves of certain species and collection of lateral roots from medicinal plant species. The plants are sources of medicine, food, fodder and fuel. The local chief accomplishes sustainable management of indigenous plants through harvesting practices, seed propagation and control of plant use. These management strategies may be referred to as *in situ* management methods in which the fruits, leaves, roots, bulbs, stem, bark and wood are harvested in their habitats and direct conservation methods are applied to sustain the resources.

Zimu-Biyela (2016) shares that unsustainable harvesting of medicinal plants for the primary health care and commercial purposes should be revisited and better understood, as the importance of these plants cannot continue to be ignored. In other cases, the traditional knowledge about medicinal plants are gradually being replaced by the modern innovative medicines diffused by the Extension Officer to the local rural farmers' needs relatively. However, this knowledge still exists. Thus, a policy should include the stipulations that strengthen the sustainable use of nutritional plants and highly harvested medicinal plants

The results of a study '*on the sustainability of medicinal plants use in the local culture of Ongeluksnek, South Africa,*' as conducted by Stoffersen, Winstrup, Nieminen and

Allerton (2011) reveal that medicinal plants were frequently used and contributed to their ability to cope with health problems (Both physical and spiritual). Knowledge of the plants within the area varied depending on what role they played in various peoples' lives. Furthermore, there was limited transfer of knowledge regarding the plants between generations and within *Sangomas'* families. People in general though were flexible in their use of indigenous plant use and western healthcare. Medicinal plant extraction has been described as unsustainable in other areas in regions, a problem not found in the selected study areas. Their study demonstrated the endurance of cultural practices in the face of external influences such as religion, urbanisation and migration. Originally, the authors presented that many of the external influences we studied may represent a threat.

However, to the contrary the threat was more related to the management of the medicinal plant resource and the lack of knowledge surrounding harvesting. The findings of this study though should not be interpreted as illustrating definite future problems, but rather as pointing at the need to recognise the inevitable changes that are occurring with time and that although these may possibly threaten the use of medicinal plants in the future, in fact they can just as easily compliment the already rich local culture. In contrary, plants were once the primary source of medicines in the world. Since then, plants continue to provide humans with new remedies as 50% of all drugs in clinical use in the world are derived from natural products, of which higher plants contribute 25% of the total, the medicinal plants specifically play an integral role in basic healthcare in many developing countries, including South Africa (Fullas, 2007; and Van Wyk, Oudshoorn, Gericke, 2013).

In developing countries, approximately 80% of people use traditional medicines because of its affordability and cultural acceptability (Maroyi, 2013). Shumba *et al.* (2009) contend that the traditional medicinal plant practice is widely accepted as an alternative to modern medicine in rural, peri-urban and urban areas. Beneficiaries of the practice cut across the gender, age, education and social status divide. In the olden days, traditional medical practice was rurally based as a full time job and a healer would personally collect and process his/her remedies following certain principles of sustainable use. Today, the practice has infiltrated urban areas where healers operate from their houses and from market places and obtain medications through herbal vendors. Practitioners include men and women; the youth and elderly; the educated and uneducated; and the rich and poor and can be broadly grouped into Diviners [I.e. Popularly known as spirit mediums or '*N'anga,*' use their spiritual or magical powers to establish the cause of illness and prescribe medication to a patient] and Herbalists [I.e. Do not practice divination, have no spiritual touch. Their diagnosis is similar to that by modern medicinal practitioners whereby a client narrates a medical problem and they prescribe medication].

The South African rural areas have become breeding grounds for the Township development [Urbanisation], with more residents losing on the protection of medicinal plants. The inhabitants [Many families] of the selected rural areas are living in fear for the protection and preservation of these rare plants. Consequently, these rural areas have taken measures of intervention to ensure that these plants do not become extinct,

in anticipation of having a significant effect on the resulting urbanisation. Furthermore, there exists a cloud of no confidence in the rural South African Local Municipalities management and other relevant stakeholders to restore the protection of these plants, as effective preservation strategies seem unfound. It becomes evident that, a review of the current strategies can be of paramount importance to create awareness of the effects of urbanisation on these plants, with a greater chance of extinction. Consequently; although urbanisation is a major cause of native species extinction, the complex nature of urban land use has a complicated influence on local biodiversity. On one hand, some aspects of urbanisation promote the loss of species diversity. Biodiversity was influenced by the development of some areas in part of the country and many plants were under threat of being distinguish. The medicinal plants and Traditional Herbal Medicine in the study area have continuously received just a shallow treatment. The species diversity of medicinal plants and access to Traditional Herbal Medicine has little been evaluated in such communities. Some plant species faced a serious threat by the development in communities where there will be no more seen. Urbanisation or development of human kind plays a significant role on the negative impact of the availability of medicinal plants in various communities in South Africa.

### **Methods and materials**

Supporting the adoption of the non-empirical research design: Systematic review in this study; Gough, Oliver and Thomas (2012:5) and Punch (2014) explain this form of research design identifies, describes available research literature 'using systematic and explicit accountable methods and pre-specified formalised tools for searching and integrating literature, aided by qualitative research approach. To accomplish data collection methods; seminal literature [Documentary] sources where selected, Creswell (2014) reveals that researchers may collect qualitative documents, such as the public documents, such as newspapers, minutes of meetings or official documents and they can also ask questions to documents in the same ways as one might ask questions of the study participants (Matthews & Ross, 2010; and Maluleke, 2016). To this course; the medicinal plants media releases, South African online newspapers and media reports, journal articles and internet searches (I.e. Electronic databases - Google Scholar, EbcOHost, Emerald Insight, Jstor, ProQuest, Sabinet, Sage Online and Science Direct) and other seminal publications like the South African National Biodiversity Institute (SANBI), the Botanical Society of South Africa (BotSoc SA), the 'Network of South African Botanists and Conservationists and the Southern African Botanical Diversity Network (SABONET), among others (Creswell, 2014; and Maluleke, 2020). The sampling methods involved the 'non-probability: Purposive sampling' focusing on data primarily relevant to the study subject. The keywords/phrases were used to filter info relevant to reach data saturation of the research problem, while applying QCA to identify the themes to respond and verify the study objective. This was applied to present honesty reporting relating to the consulted literature, (Liamputtong 2013;

and Mokwena & Maluleke, 2020). The reviewed data was restricted to 1990-2020 (I.e. 30 years' projection, not in sequence) to demarcate inclusion/exclusion criterion. For data analysis; the TA was adopted, solely depending on a very detailed analysis of the collected data, Mokwena, Motsepe, Maluleke and Shandu (2020).

### **Preliminary literature review**

#### **Strategic management methods for conservation of medicinal plants**

Up for debate, South Africa is believed to be a home to more than 30,000 species of higher plants of which at least 3000 species could possibly be used medicinally (Van Wyk & Gericke, 2007). Kepe (2007) elaborate that the positive contribution of medicinal plants to rural economies, as well as their role as an alternative to Western medicine, has been well recognised throughout the world, including in South Africa. As diseases, such as the Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome (HIV/AIDS) spread and poverty becomes more prevalent in rural areas, medicinal plants have gained prominence as key natural resources within the livelihoods of the poor. At the same time, however, many have argued that medicinal plant collection by the poor, including commercialisation, poses a threat to global biodiversity. Willis (2006) highlights that The Global Strategy for Plant Conservation (GSPC) was developed through extensive international collaboration and consultation and adopted unanimously and approved in Decision VI/9 of the sixth meeting of the Conference of Parties (CoP) to the Convention on Biological Diversity (CBD) held in The Hague on 19 April 2002.

The ultimate and long-term objective of the Strategy is to halt the current and continuing loss of plant diversity. To achieve this and its secondary goals, the Strategy is divided into 16 outcome-orientated global targets intended for completion by the year 2010. The date of 2010 was used to synchronise the Strategy with the CBD's Strategic Plan. Of the 16 targets, four are regarded as cross-cutting targets to be considered in relation to the achievement of each other target. The cross-cutting targets in the GSPC are Targets 3 (Conservation protocols and techniques), 14 (Communication, education and public awareness), 15 (Training/capacity building) and 16 [Conservation networks], Willis (2006).

Mi Nzue (2009) reveals that the use of medicinal plants for primary healthcare needs has been practiced by local populations across the world for centuries and still exists in their lifestyles at present. In South Africa, several species of medicinal plants are used by many ethnic groups for the treatment of various ailments in both humans and domestic animals. There are also many policy and legal frameworks that bear on the exploitation of the country's natural resources, including medicinal plants. For the past 50 years have witnessed a major evolution in our understanding of conservation and its inter-relationship with the elusive goal of sustainable development. The concept of conservation significantly changed following the United Nations Conference on the Environment and Development in Rio de Janeiro in 1992. The subsequent ratification by most of the world's governments of the CBD marked a turning point and has

placed the subject of biodiversity firmly on the political agenda (Heywood & Iriondo, 2003).

Similarly, Ghimire and Pimbert (1997) mention the emergence of major environmental organisations such as the International Union for Conservation of Nature (IUCN), the World Wide Fund for Nature (WWF) and the United Nations Environmental Programme (UNEP), as well as a number of powerful environmental campaigning organisations such as Greenpeace and Friends of the Earth, as a turning point in the history of conservation. Loundou (2008) reveals that medicinal plants represent a pivotal asset to the livelihoods of many people in developing countries, South Africa included, as most of the rural and also urban communities heavily rely on medicinal plants for their primary healthcare needs and income generation. Harvesting of domestic usage is not generally detrimental to the wild populations of these plants. However, the shift from subsistence to commercial harvesting is posing unprecedented extinction threat to the wild populations of these plants.

The Community-Based Natural Resources Management has been established as one of the mechanisms for plant conservation (Moeng & Potgieter, 2011). Cunningham (1991) highlights that to ensure the availability of raw material and to explore the possibility of future development, sustainability of medicinal plants and preservation of the variability of germplasm are necessary. Although not specifically designed for conserving medicinal plants, other government has implemented the conservation efforts by designating various types of natural ecosystems as nature reserves, wildlife sanctuary, national parks, biosphere reserves, protection forests, recreational forests and other type of protected areas. Although some of the management's methods are not well established in some part of the areas in the sense that the management of protected areas is not yet effective because of the vastness and widely scattered distribution of the protected areas. Stricter control in and better management of protected areas still have to be developed further (Cunningham, 1991).

The conservation of medicinal plants is concerned mainly with activities to protect them against human disturbance, hence public participation is mandatory. Industries and exporters but rural people do not directly do exploitation of medicinal plants that leads to their extinction with capital provided by private creditors. People who collect and harvest medicinal plants from the wild are not aware that they are annihilating resources that nurture them, Cunningham (1991). In general, they are lowly educated and poor people who continuously exploit the resources in order to get as much cash as possible for their subsistence without thinking of the future. Provision of information concerning sustainable means of harvesting resources so as not to endanger both plants and people and on other alternative ways of earning living is extremely important in this respect (Cunningham, 1991).

The Pre-Colonial era was dominated by traditional leaders in Africa, which enforced good management of plants species through sanction, customary laws, taboo systems, and effective control system form community compliance. The colonial approach, however, forcefully removed communities out of resource management and creates reserves and parks (Magoro, 2008). Traditional medicine and traditional agriculture represent significant economic activity in South Africa. However, the knowledge

system of local communities played an important role in managing natural resources. The knowledge of the Traditional Health Practitioners pertaining to medicinal plants and their environments sustained their practices; indigenous knowledge can be a fundamental starting point in conservation strategies. When there is additional assurance that land tenure and management regimes support the role of community and the Traditional Health Practitioners, these factors can be more effective (Magoro, 2008).

Taxonomies often ascribe identity and spiritual values to plants, in characterising the medicinal properties of plants (Bodeker, 2007). Therefore, indigenous knowledge still plays an important role in sustainable livelihood of a significant proportion of the South African population of medicinal plants (Mosimege, 2004). Individuals are less likely to readily accept new doctrines thrust upon them in the form of modern environmental conservation strategies, which most of them do not understand (Mavi & Shava, 1997). For example, certain conservation techniques are implicit in the traditional methods of obtaining medicines from plants. The Traditional Health Practitioners have voiced serious concerns regarding extinct medicinal plants and environmental degradation (Manaswe, 2005).

According to traditions, Rural African communities have been relying upon the spiritual and practical skills of the Traditional Health Practitioners, whose botanical knowledge of plant species and their ecology and scarcity are invaluable. Given the lack of documents regarding the knowledge of Traditional Health Practitioners about conservation of traditional medicines in their local environment, this subject has never been fully explored. It is therefore, necessary that people and the Traditional Health Practitioners understand traditional medicine from a traditional ecological perspective and the knowledge to protect threatened plant species (Magoro, 2008).

Mander (1997) states that at the provincial level there are nature conservation ordinances, which have strict limit on the access of the plants. Furthermore, he states that, the Limpopo Environmental Management Act (No. 7 of 2003) forbid any individual who has no permit to access the protected plants or specially protected plant in the province. According to Moeng (2010), a role played by traditional medicine shops and street vendor on the trade of indigenous medicinal plants in Limpopo Province was investigated in order to develop strategies that will prevent further loss of medicinal plants. Nearly 231 medicinal plants were traded at the 16 investigated traditional medicine shops, about 0.96 tons of plant material were traded per year. Moeng (2010) also states that communal land is the main supply source of the traditional medicine, joined with the disparaging harvesting methods and involvement of unprincipled middlemen in collecting medicinal plants sources a serious impact on the survival of the plants. The traditional medicine traders highlight that medicinal plants in nature are declining due to over harvesting. To ensure some form of sustainability, 81% of traders' harvest only few plants in a specific area to allow species regeneration and to ensure population integrity. The remaining traders are ignorant on how to ensure that plants species are preserved and its population is stable (Moeng, 2011).

Using these mechanism communities refers to a notion that it can be possible to manage their environment on ecological principles and benefits economically from

becoming stewards over wildlife and land. Community conservation activities could also lead to the re-establishment of grass roots democracy and the freedom to control their destinies, which would further improve the socio-economic status of communities and by that benefit conservation (Damn. 2002). For this to happen, conservation authorises, tribal authorities and local communities must enter into a partnership. An agreement should be established, which decreases that benefits from proper management of the permit system would flow commensurately to all partners (Damn, 2002).

### **The role of theory to effectively respond to strategic methods for conservation of medicinal plants**

#### **Afrocentric Theory**

This study adopted an Afrocentric Theory to explore the identified research problem. Asante in (1993) founded the paradigm as a systematic challenge to the western epistemology. Afrocentricity Theory seeks to re-locate the African person as an agent in human history in an effort to eliminate the illusion of the fringes. For the past five hundred years, Africans have been taken off cultural, economic, religious, political, and social terms and have existed primarily on the periphery of Europe (Asante, 2007). Based on this paradigm; the Afrocentricity Theory is the philosophical and theoretical concept in the discipline of Africana Studies where laws, generalisations, methodologies, and theories are created (Pellerin, 2012). Pellerin (2012) further argues that the institutionalisation of organising principles generates a basis for methodological approaches that are rooted in Africana people's realities. As a methodological frame, Afrocentricity serves as a foundation for exploratory, explanatory and descriptive research (Pellerin, 2012).

This theory is going to be applied in this study to explore and analyse how urbanisation affects the availability of medicinal plants in the rural areas of South Africa, only untapped African perspectives on this subject will be gathered during this process. Indigenously, the South African rural communities was mostly dependent on Flora and Fauna for their health, using African ways. The medicinal plants are mostly used in African societies than in Western societies; therefore, the researcher is interested in viewing the existence of medicinal plants using this theory.

There are seven criteria of Afrocentric theory according to Pellerin (2012), which are as follows: the *First* one is that the African experience must guide and inform all inquiry during the study, the *Second* one is that the spiritual is important and must be given its due place, the *Third* one is that immersion in the subject is necessary, the *Fourth* one is that holism is a must while conducting a study, the *Fifth* one is that the intuition is a valid source of information, the *sixth* one is that not everything that matters is measurable, and *Lastly* knowledge generated must be liberating. Although the Afrocentric Theory has positive reviews about exploring African societies and their resources, it also has some limitations. According to Schiele (2000), there are four existing criticisms of this theory. *Firstly*: The Afrocentric Theory is criticised on the

definition that African philosophy is incomplete because it does not contribute to a critical tradition. *Secondly*: it reported to be unsuitable to execute a cultural unity among a diverse African society and among the varied groups of people of African descent. *Thirdly*: The 'Afrocentric Paradigm Apes' concepts stems from the European social science and history and *fourthly*: This theory lacks a 'social class' analysis of Africa and people of African descent.

## Data discussions and identifications of study themes

### The strategic management methods for conservation of medicinal plants in South Africa

As the consulted literature studies of this study refers; over reliance on medicinal plants for health purposes and undocumented effectiveness were shared by Shumba *et al.* (2009). These researchers also cited the modern era as some of disturbing mechanism for the preservation and protection of these plants. Mi Nzue (2009) went on to reveal that 'the use of medicinal plants for primary healthcare needs has been practiced by local populations across the world for centuries and still exists in their lifestyles at present.' Van Wyk and Prinsloob (2018) supported the use of these plants for basic healthcare needs. The recognition of these plants as the world's biological diversity are shared by Raimondo, (2015). Whereas, Mander (1998) revealed that sustainable of forestry should be interlinked with ecological aspects to avoid scarcity of these plants. Importantly, Rankoana (2016) highlighted that indigenous plant resources provide rural communities with non-timber forest products that provide energy, food, shelter and medicine, among others.

Subsequently, Stoffersen, Winstrup, Nieminen and Allerton (2011) stated that medicinal plants are frequently used and contributed to individuals' ability to cope with health problems (I.e. Both physical and spiritual). It is also revealed that plants continue to provide humans with new remedies across the globe, for example; approximately 50% of all drugs in clinical use stems from natural products, with about 25% contributed by plants, playing an integral role in basic healthcare in many developing countries like South Africa, this was agreed by Fullas (2007), Van Wyk, Oudshoorn, Gericke (2013). It is also showed that in developing countries, approximately 80% of people use traditional medicines because of its affordability and cultural acceptability, as confirmed by Maroyi (2013). Evidence from this study shared that 'more than 30,000 species of higher plants, confirming that at least 3000 species could possibly be used medicinally,' as revealed by Van Wyk and Gericke (2007). Therefore, the recognition of positive contributions of medicinal plants to rural economies, and the role played as an alternative to Western medicine cannot be understated, as stated by Kepe (2007). Loundou (2008) further highlighted that medicinal plants represent a pivotal asset to the livelihoods of many people in developing countries, South African rural areas included.

Negatively, Zimu-Biyela (2016) confirmed that unsustainable harvesting of medicinal plants for the primary health care and commercial purposes should be re-emphasised,

as these plants remains pivotal. The link between the conventional and modern innovative medicines should be created. As a recourse, the ratification by most of the world's governments of the CBD is very important and has placed the subject of biodiversity firmly on the political agenda (Heywood & Iriondo, 2003). Similarly, Ghimire and Pimbert (1997) mentioned the emergence of major environmental organisations as a matter of urgency. The call for South African government to meet its obligations for Target 16 remains very essential (Willis, 2006), as the indigenous plant species still satisfy the needs of rural dwellers, such as the maintenance of good health, food, fuel, fodder for livestock, construction and manufacturing of household utensils, thus, they should develop mechanisms of reducing indigenous plant species mortality (Rankoana, 2011). Moreover, the recommended actions regarding the growing demand for indigenous medicinal plants as a basic consumer good in South Africa, other African countries and abroad should be strongly considered, as presented by Mander (1998). South Africa should honour its commitment to the CBD by developing this Strategy for Plant Conservation, which aligns with the CBD-endorsed GSPC, as illustrated by Raimondo (2015).

Cunningham (1991) highlighted that to ensure the availability of raw material such as medicinal plants and to explore the possibility of future development, sustainability of medicinal plants and preservation of the variability of germplasm are necessary. This author (Cunningham, 1991) continued to state that although no specifically designed for conserving medicinal plants; other government has implemented the conservation efforts by designating various type of natural ecosystems as nature reserves, wildlife sanctuary, national parks, biosphere reserves, protection forests, recreational forests and other type of protected areas. Although some of the management's methods are not well established in some part of the areas in the sense that the management of protected areas is not yet effective because of the vastness and widely scattered distribution of the protected areas this is also stated by Cunningham (1991) in this study.

The Mosimege (2004) revealed that indigenous knowledge still plays an important role in sustainable livelihood of a significant proportion of the South African population of medicinal plants. Moreover, Magoro (2008) confirmed that indigenous knowledge can be used as a tool for preservation of medicinal plants and that the traditional medicine and traditional agriculture represent significant economic activity in South Africa. However, the knowledge system of local communities played an important role in managing natural resources. The 'Health Care Practitioners' pertaining to medicinal plants and their environments sustained their practices, indigenous knowledge can be a fundamental starting point in conservation strategies. When there is additional assurance that land tenure and management regimes support the role of community and the Traditional Health Practitioners, these factors can be more effective. Steenkamp (2002) expressed that human community possess a special ability to influence the management and conservation of biodiversity, and therefore, it is important to realise that people form an integral part of the ecosystem.

Furthermore, Stern (2000) showcased that the conservation and management of biodiversity remains a nation concern as research in many parts of the world is

focused on sustainable use of the natural resources for human development. Many of the natural resources, especially medicinal plants, have been used and are still used for food, health and other purposes. As results, good management and conservation of these species is necessary for their continued availability. Magoro (2008) revealed that the Pre- Colonial era was dominated by traditional leaders in Africa, which enforced good management of plants species through sanction, customary laws, taboo systems, and effective control system form community compliance. The colonial approach, however, forcefully removed communities out of resource management and creates reserves and parks. Furthermore, Moeng (2010) highlighted a role played by traditional medicine shops and street vendor on the trade of indigenous medicinal plants in Limpopo Province was investigated in order to develop strategies that will prevent further loss of medicinal plants.

Notably; the Vhembe District Municipality Integrated Development Plan Review (2019) outlined that in terms of the land cover/ Flora and Fauna, Vhembe Municipality was established by the amalgamation of portions of Thulamela Local Municipality and Makhado Local Municipality on 3 August 2016 (South Africa, 2012-2020) Biosphere reserve in Makhado municipality is declared conservation area by the UNESCO. The Biosphere Reserve provides a habitat to a diverse number of species including those that are on the brink of extinction. The Biodiversity of the Vhembe District is a strategic resource in nature, which provides the District communities with a lot of potential mostly in rural areas. It provides materials for shelter, food, fuel wood as well as *medicinal plants*.

Mander (1997) stated that at the provincial level there are nature conservation ordinances, which have strict limit on the access of the plants. Furthermore, he (Mander, 1997) stated that the Limpopo Environmental Management Act (No. 7 of 2003) forbid any individual who has no permit to access the protected plants or specially protected plant in the province. Negatively, the researchers suggested that the plant species are no longer protected by the community people as well as the indigenous health practitioners of South African rural communities and some plants in the community are being threatened by the development of the communities and have no longer have space to grow.

The researchers discovered that the inhabitants [Many families] of the selected rural areas are living in fear for the protection and preservation of these rare plants as stated introductory section of this study. Therefore, these rural areas have taken measures of intervention to ensure that these plants do not become extinct, in anticipation of having a significant effect on the resulting urbanisation. Furthermore, there exists a cloud of no confidence in South African rural communities' municipality management and other relevant stakeholders to restore the protection of these plants, as effective preservation strategies seem unfound. It becomes evident that, a review of the current strategies can be of paramount importance to create awareness of the effects of urbanisation on these plants, with a greater chance of extinction.

Miller and Hobbs (2002) revealed that urban biodiversity has an important role in educating an increasingly urban population about nature and science conservation, which include the preservation of plant species. Moeng (2011) also indicated that

Community-Based Natural Resources Management has been established as one of the mechanisms for plant conservation.

Damn (2002) provided that in using these mechanism communities would be able to manage their environment on ecological principles and benefits economically from becoming stewards over wildlife and land. Community conservation activities could also lead to the re-establishment of grass roots democracy and the freedom to control their destinies, which would further improve the socio-economic status of communities and by that benefit conservation. Damn (2002) also stated that for this to happen, conservation authorizes, tribal authorities and local communities must enter into a partnership. An agreement should be established, which decreases that benefits from proper management of the permit system would flow commensurately to all partners.

### **Identified study themes and challenges based on strategic management methods for conservation of medicinal plants in South Africa**

- **Indigenous knowledge:** As showcased by this study, multiple researchers, such as the Mosimege (2004) and Magoro (2008) respectively agreed that indigenous knowledge still plays an important role in sustainable livelihood of a significant proportion of the South African population of medicinal plants.
- **Strict limited access:** As indicated by this study, Mander (1997) stated that another method for conservation of medicinal plants is through having strict limited access at the nature reserve where medicinal plants are protected.

### **Overall study conclusions strategic management methods for conservation of medicinal plants in South Africa**

The findings of this study were that indeed the extinction of medicinal plants in South African rural areas was as a result of urbanisation. According to the findings of this study; the main source of how urbanisation affects the availability of medicinal plants was through the development of urban settlement. This is because majority of people who live in-and-around rural villages of South Africa were relocating from their villages to urban areas, where medicinal plants are destroyed without preservation for the building of houses in the city. Although some of the institutions such as Community-Based Natural Resources Management are established to protect and preserve medicinal plants, they are not successful to protect some of the medicinal plants; this was supported by Moeng and Potgieter (2011) in this study.

As stated by McKinney (2008) in this study, it is found that the studies on the effects of urbanisation on plant richness indicate that urbanisation can increase or decrease species richness, depending on several variables, because of decrease in species richness it leads to medicinal plants being extinct or being scarce for their health purposes. Thus, the issue of extinction of medicinal plants is recognised as the major problem in the South African rural communities, since the residents who use them now needs to travel long distance in order to find medicinal plants as they are not protected in that area.

In Conclusion, this study looked at the effects that urbanisation has on the availability of medicinal plants and suggested how medicinal plants can be protected from such. The effects were singled out to find the causes through theoretical frameworks and determine the root cause. The purposes of the overall research were not mainly to identify how urbanisation affects the availability of medicinal plants but rather to find ways in which medicinal plants can be preserved and protected. The issue of urbanisation has been proven by this study that it has greater effects on the availability of medicinal plants.

### **Study recommendations on strategic management methods for conservation of medicinal plants in South Africa**

The researcher's recommendation goes to the reader as a non-professional, as a fellow researcher and as authority. To the general reader, especially those who are under medical anthropology, the researcher recommends this research to be used as a guide to equip them so that they can be aware of the effects that urbanisation has on medicinal plants. To fellow researchers, the researcher recommends that further research could be done pertaining to this area. In addition, a similar should be implemented to ensure triangulation as a method of reliability so that the relevance of this research could be known. To the responsible authority, the research recommends that the below mentioned suggestions together with this document could be taken into consideration during the process of urbanisation.

As Willis (2006) states to meet its obligations for Target 16, South Africa must elaborate more specific objectives that relate to the target. In particular, these will be concerned with the comprehensiveness and appropriateness of multi-agency, multiple-level co-ordination networks for research, science and policy development, and for the strategic implementation of large-scale and targeted conservation programmes. Key requirements for the future will be to achieve an understanding of how network governance supports and enhances coordination, co-operation and effectiveness. Governance principles and good governance in practice must be analysed, understood and promoted. In addition, since the conservation programmes are targeted and purposeful, effective systems for integrating knowledge and for measurement, monitoring and evaluation of progress towards programme goals must be established.

A study entitled: '*Sustainable use and management of indigenous plant resources: A case of Mantheding Community in Limpopo Province, South Africa*' by Rankoana (2011) confirmed that indigenous plant species still satisfy the needs of rural dwellers in the Limpopo Province [Other South African rural communities included]. The species are harvested for purposes such as maintenance of good health, food, fuel, and fodder for livestock, construction and manufacturing of household utensils. Then rural community members have developed mechanisms of reducing indigenous plant species mortality. Indigenous plants use is sustainable in the community. The plants have been the source of livelihood and they are still valued for survival. Continuous use of the plant species is made possible by the methods developed to preserve the

species. The species are sustained by the harvesting methods adopted by community members. Such mechanisms are culturally developed management systems known and practiced by community members. Observations of the regulations on the harvesting of plant species uphold common allegiance to the chief of the community. The use and management of plant resources promote environmental conservation and are *in situ* management methods. The fruits, leaves, roots, bulbs, stems, bark and wood are harvested in their habitats and direct conservation methods are applied to sustain the resources.

Other recommended actions regarding the growing demand for indigenous medicinal plants as a basic consumer good in South Africa, other African countries and abroad are demarcated to the following:

- Decision-makers at all levels of government, business and civil society need to acknowledge the magnitude and permanence of indigenous medicine and the associated indigenous plant demand.
- Promote public awareness and open discussion regarding the demand and utilization of indigenous medicine.
- Investment in supply and market development should be undertaken given an assured market for indigenous medicine products.
- There should be long-term investment in the market.
- New opportunities should be investigated as demand grows.
- Export opportunities should be investigated and developed.
- Exploit consumer reverence for indigenous plants for promoting biodiversity conservation (Mander, 1998).

Furthermore, South Africa is proud to honour its commitment to the CBD by developing this Strategy for Plant Conservation, which aligns with the CBD-endorsed GSPC. In 2010, South Africa, along with all Parties to the CBD, endorsed an updated version of the GSPC and the adoption of Decision X/17 committed Parties to achieve the following:

*“Develop or update national and regional targets relevant to the GSPC, and, where appropriate, to incorporate them into relevant plans, programmes and initiatives, including national biodiversity strategies and action plans, and to align the further implementation of the Strategy with national and/or regional efforts to implement the Strategic Plan for Biodiversity 2011-2020.”*

This strategy, while aligning closely with the GSPC, is also appropriate to the Megadiverse context in which conservation takes place in South Africa. It has been developed simultaneously with the review of South Africa’s National Biodiversity Strategy and Action Plan, and all activities in South Africa’s Strategy for Plant Conservation nest under activities within the National Biodiversity Strategy and Action Plan. This strategy responds to the priorities of the South African government, such as job creation through research projects on how to grow medicinal plants on a national scale and promoting a healthy environment for all of South Africa’s people, one of the fundamental rights outlined in South Africa’s constitution. With 85% of South Africans using medicinal plants harvested from the wild, without the availability of these plants the government would need to significant increase fiscal

spending on health care. Maintaining ecological infrastructure through protection and restoration of threatened ecosystems is also addressed here and is a crucial intervention required to safeguard water provision services to South Africa’s people, Molewa (2015) (in Raimondo, 2015). For the purposes of good practice to ensure that urbanisation does not affect the availability of medicinal plants and to ensure that medicinal plants are preserved and protected, this research has recommended the depicted themes and challenges in table 1:

**Table 1:** Recommendations to improve the strategic management methods for conservation of medicinal plants in South Africa

Identified themes and challenges	Recommendations
Indigenous knowledge	This research suggests that, indigenous people with indigenous knowledge about medicinal plants should be part of the conservation team and they can be used to document medicinal plants.
Strict limited access	This study recommends that the nature reserves that have strict limited access are better option that can be used to document the medicinal plants.

Source: Researcher’s illustrations (2020/2021)

### References

Asante, MK. 2007. *An Afrocentric Manifesto: Toward an African renaissance*. Available from: [https://www.wiley.com/en-us/An+Afrocentric+Manifesto% ...](https://www.wiley.com/en-us/An+Afrocentric+Manifesto%...) [Accessed: 2020/11/23].

Asante, MK. 1993. Racing to leave the race: Black postmodernists off-track. *Black Scholar*, 23(3), pp.50-51.

Bodeker, G. 2007. Medicinal Plant Biodiversity and Local Health Care: Rural Development and the Potential to Combat Priority Diseases. *Endogenous Development and Biodiversity, Compass, Leusden*, P. 241.

Creswell, JW. 2014. *Research design. Qualitative, quantitative & mixed methods approaches*. 4th Ed. Thousand Oaks, CA: Sage.

Cunningham, AB. 1991. *Medicinal plant: policies and priorities: Conservation of medicinal plants*. Cambridge University Press: New York.

Damn, GR. 2002. *The conservation game: Saving Africa’s biodiversity*. Safari Club International: African Chapter.

Du Torit, MJ. 2015. ‘Temporal change. An urban ecological synthesis of socio-economical systems dynamics in South Africa. *Environmental Science*, 6.

Fullas, F., 2007. The status of African medicinal plants and their future. *Afr. Renais*, 4

(3/4), 102-112.

Ghimire, KB & Pimbert, MP. 1997. *Social change and conservation: Environmental politics and impacts of National Parks and protected areas*. Earthscan Publications: London.

Gough, D., Oliver, S & Thomas, J. 2012. *An introduction to systematic reviews*. London: Sage.

Heywood, VH & Iriondo, JM. 2003. Plant conservation: Old problems, new perspectives. *Biological Conservation*, 113, 321-335.

Kepe, T. 2007. Medicinal plants and rural livelihoods in Pondoland, South Africa: Towards an understanding of resource value. *The International Journal of Biodiversity Science and Management*, 3:3, 170-183.

Liamputtong, P. 2013. *Qualitative research methods*. 4<sup>th</sup> Ed. Victoria: Oxford.

Loundou, P. 2008. *Medicinal plants trade and opportunities for sustainable management in the Cape Peninsula, South Africa*. Unpublished Master of Science. Department of Conservation Ecology and Entomology, Faculty of Agriculture and Forestry Sciences: Stellenbosch University.

Mabogo, DEN. 1990. *The ethnobotany of the Vhavenda*. Unpublished Master's Dissertation. University of Pretoria: Hartfield.

Magoro, MD. 2008. Traditional health practitioners and the sustainability of extinction-prone traditional medicinal plants. *International Journal of African Renaissance Studies - Multi- Inter- and Transdisciplinary*, 5(2):229-241.

Maluleke, W. 2020. The African scare of Fall Armyworm: Are South African farmers' immune? *International Journal of Social Sciences and Humanity Studies*, 12(1): 207-221.

Maluleke, W. 2016. *The use of Deoxyribonucleic Acid in combating stock theft in South Africa*. Unpublished Doctor Technologiae: Policing. Soshanguve South: Tshwane University of Technology.

Manaswe, K. 2005. *Understanding and promoting traditional medicine: A journey of correctness workshop*. Traditional Health Practitioners Workshop held at Magatle village: Limpopo Province: Polokwane.

Mander, M. 1998. *Medicinal plant marketing in Bushbuckridge and Mpumalanga: A market survey and recommended strategies for sustaining the supply of plants in the region*. Danced Community Forestry Project in the Bushbuckridge area, Darudec and DWAF: Bushbuckridge.

Mander, M. 1998. *Marketing of indigenous medicinal plants in South Africa: A case study in KwaZulu-Natal*. Food and Agriculture Organisation of the United Nations: Rome.

Maroyi, A. 2013. Traditional use of medicinal plants in South-central Zimbabwe. *Rev. Perspect. J. Ethnobiol. Ethnomed*, 9 (31), 18.

Martin. GM. 1995. *Ethnobotany: A methods manual*. Chapman and Hall: London.

Matthews, B & Ross, L. 2010. *Research methods. A practical guide for the social sciences*. Essex: Pearson.

Mavi, S & Shava, S. 1997. Traditional methods of conserving medicinal plants in Zimbabwe. *Botanic Gardens Conservation News*, 2(8), 36-37.

McKinney, ML. 2006. Biological conservation: Urbanisation as a major cause of biotic homogenisation. *Biological Conservation*, 127(3), 247-260.

- Miller, JR & Hobbs RJ. 2002. Conservation biology: Conservation where people live and work. *Conservation Biology*, 16 (2), 330-337.
- Mi Nzue, APM. 2009. *Use and conservation status of medicinal plants in the Cape Peninsula, Western Cape Province of South Africa*. Unpublished Master of Science in Conservation Ecology and Entomology. Faculty of AgriSciences: University of Stellenbosch.
- Mitchell, J.C. 1966. Theoretical orientations in African urban studies. *The Social Anthropology of Complex Societies*, 1, pp.37-68.
- Moeng, E.T & Potgieter, M.J. 2011. The trade of medicinal plants by muthi shops and street vendors in the Limpopo Province, South Africa. *Journal of Medicinal Plants Research*, 5(4), pp.558-564.
- Moeng, T.E. 2010. *An investigation into the trade of medicinal plants by muthi shops and street vendors in the Limpopo province*. Unpublished Masters Dissertation. University of Limpopo: Sovenga.
- Mokwena, RJ & Maluleke, W. 2020. South African rural communities and the land restitution process: The application of criminological and legal theories in identifying obstacles to rightful allocations of land. *Gender & Behaviour Journal*, 18(3): 16145-16156.
- Mokwena, RJ., Motsepe, LL., Maluleke, W & Shandu, SN. 2020. A study of land restitution to rural communities in South Africa: An analysis of traditional leaders perpectives. *Gender & Behaviour Journal*, (18(3): 16132-16144.
- Mosimege, M., 2004. Indigenous knowledge systems in South Africa: perspectives from the Department of Science and Technology: news and views. *Indilinga African Journal of Indigenous Knowledge Systems*, 3(1), pp.78-84.
- Pellerin, M. 2012. Benefits of Afrocentricity in exploring social phenomena: Understanding Afrocentricity as a social science methodology. *The Journal of Pan African Studies*, 5(4), 149-160.
- Punch, K.F. 2014. *Introduction to social research. Quantitative & qualitative approaches*. 3rd Ed. Thousand Oaks, CA: Sage.
- Raimondo, D (ED). 2015. *South Africa's strategy for plant conservation*. South African National Biodiversity Institute and the Botanical Society of South Africa: Pretoria.
- Rankoana, SA. 2000. *Aspects of the Ethnobotany of the Dikgale Community in the Northern Province*. Unpublished Masters Dissertation. University of the North: Sovenga.
- Rankoana, SA. 2001. Plant-based medicines of the Dikgale of the Northern Province. *South African Journal of Ethnology*, 24 (3): 99-104.
- Rankoana, SA. 2011. Sustainable use and management of indigenous plant resources: A case of Mantheding community in Limpopo Province, South Africa. *Journal of Sustainability*, 8, 1-13.
- Schiele, JH. 2000. Human services and the Afrocentric paradigm. *Contemporary Sociology*, 32(4), 433.
- Shackleton, NJ., Hall, MA & Pate, D. 1995. Pliocene stable isotope stratigraphy of site 846. *Proc Ocean Drill Program Science Results*, 138, 337-355.
- Shumba, E., Carlson, A., Kojwang, H., Sibanda, M., Masuka, M & Moyo, N. 2009. *Traditional medicinal plant practice in Southern Africa: A situation analysis in Zambia and Zimbabwe*. World Wide Fund for Nature: Zimbabwe.
- Stoffersen, A., Winstrup, M., Nieminen, R & Allerton, T. 2011. *Medicinal plants and*

*traditional healing in contemporary rural South Africa: The sustainability of medicinal plant use in the local culture in Ongeluksnek, Eastern Cape, South Africa.* Interdisciplinary Land Use and Natural Resource management. Faculty of Life Sciences: University of Copenhagen.

South Africa. 2012-2020. *Collins Chabane Local Municipality (LIM345) – Demographic.* Available from: <https://municipalities.co.za/demographic/1241/collins-chabane-local-municipality> [Accessed: 2020/11/23].

Steenkamp, Y. 2002. *The concept of endemism and the conservation of plant diversity impact.* Impact Printers: Pamsgale.

Stern, KR. 2000. *Introductory plant biology.* California State University-Chico: New York.

Van Wyk, BE & Gericke, N. 2007. *People's plants. A guide to useful plants of Southern Africa.* Briza: Pretoria.

Van Wyk, BE., Oudshoorn, B & Gericke, N. 2013. *Medicinal plants of South Africa.* Second edition. Briza: Pretoria.

*Vhembe District Municipality Integrated Development Plan Review [Online].* 2019/20. Available from: [http://www.vhembe.gov.za/media/content/documents ...](http://www.vhembe.gov.za/media/content/documents...) [Accessed: 2020/11/23].

Willis, C.K (Ed) 2006. *Conserving South Africa's plants: A South African response to the Global Strategy for Plant Conservation.* SANBI Biodiversity Series 1. South African National Biodiversity Institute, Pretoria.

Wyk, AS & Prinsloob, G. 2018. Medicinal plant harvesting, sustainability and cultivation in South Africa. *Biological Conservation*, 227, 335-342.

Zimu-Biyela, AN. 2016. *The management and preservation of indigenous knowledge in Dlangubo village in Kwa-Zulu-Natal, South Africa.* Unpublished Doctor of Literature and Philosophy in Information Science. University of South Africa: Muckleneuk.