The effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, South Africa

By

Shibambu Nyiko Faith

DISSERTATION

Submitted in partial fulfilment of the requirements for the degree of

MASTER ARTS

In

ANTHROPOLOGY

In the

FACULTY OF HAMANITIES

(School of Social Sciences)

at the

UNIVERSITY OF LIMPOPO

SUPERVISOR: Mr M Magoma

CO-SUPERVISOR: Prof SA Rankoana

2024

DECLARATION

I declare that the dissertation hereby submitted to the University of Limpopo, for the degree of Master of Arts (Anthropology) has not previously been submitted by me for a degree at this or any other university; that it is my work in design and in execution, and that all material contained herein has been duly acknowledged.

Shibambu, N.F (Miss) **2024/04/10**

Surname, Initials (title) **Date**

DEDICATIONS

- **Firstly,** this study is dedicated to the 'Highest God', for giving me strength to continue chasing my goals even though sometimes I feel hopeless.
- **Secondly,** I dedicate this study to myself for not giving up and for persisting to work hard in everything I put my mind into.
- **Thirdly,** this study is dedicated to my daughter, Dzuniso Vukahle Chauke; I do everything for you, so when you grow up, you can be proud of me and follow in my steps or even beyond.
- **Fourthly,** this study is dedicated to my Parents, Mr Teenage Shibambu and Mrs Nkhensani Shibambu), for not giving up on me and being there for me in every step I took and still taking.
- **Last but not least,** I dedicate this study to my beloved late grandmother, Khubani Victoria Shibambu. I know you were rooting for me, and you have been my biggest cheerleader until your departure. REST IN PEACE, KOKWANI, I will continue to make you proud.

ACKNOWLEDGEMENTS

This ‘Biblical Scripture’ resolutes with me: *“For I know the plans I have for you, declares the Lord, plans to prosper you and not to harm you, plans to give you hope and a future (Jeremiah 29:11).”* Moreover, the researcher made the following acknowledgements, based on this study:

- I would like to appreciate God for the wisdom and courage He granted me to conduct this Dissertation.
- I would also like to give my special thanks to my supervisor, Mr M Magoma and co-supervisor, Professor SA Rankoana, for sharing your knowledge with me, for you unlimited encouragement and support and for assisting me with all the difficulties I encountered while conducting this study.
- My deepest gratitude also goes to the National Research Foundation (NRF) for financial assistance.
- I would also like to appreciate everyone (friends and family members) for believing in my capabilities and for giving me advices throughout this study.

ABSTRACT

Medicinal plants are important to humanity and continue to be used worldwide as a source of food and basic healthcare. However, most of them are under threat of extinction. This was prompted by several negative factors contributing to the extinction of these [Medicinal] plants. These factors are, among others, demarcated to habitat loss, population increase, urbanisation and threats brought by climatic change. The purpose of this study was to 'explore the effects of urbanisation on the availability of medicinal plants in Malamulele area of Limpopo Province, South Africa (SA). From a qualitative standpoint, this study employed exploratory research design. This study used non-probability sampling, also known as purposive sampling, and snowball sampling and to select twenty participants. These twenty participants comprised five traditional health practitioners and fifteen community members. Further, the study employed semi-structured In-Depth Interviews (IDIs) and documentary studies to collect data. Additionally, the study was underpinned by the Afrocentric Theory and Dependency Theory. For data analysis, the Spiral data was adopted to organise data and identify study themes aligned to the aim and objective of this study.

The findings of this study highlight that the availability of medicinal plants in the Malamulele were threatened by urban development, leading to their extinction. All the participants reached a consensus that the 'indigenous medicinal plants' in Malamulele suffer a great loss due to urbanisation and lack of implementation of available conservation methods to prevent them from possible extinctions. The study found that these conservation methods are improperly implemented or not implemented at all. Again, it was found that the discovered rapid loss of these plants might negatively affect future preservations and protections. Apparently, urbanisation contributes to the witnessed decreases of natural resources, and medicinal plants are not immune. It is also shared that although the majority of Malamulele residents still heavily rely on positive use of medicinal plants such as sources of food, herbalism, medicinal activities, primary health care needs and therapeutic values; nevertheless, residents are often unable to protect these plants from threats imposed by urbanisation.

This study concludes and recommends that lack of information regarding the importance of these plants, necessary conservation methods and awareness should be urgently looked at by relevant stakeholders in this sector. Therefore, this study

reveals that indigenous people and Collins Chabane Local Municipality (CCLM) should take actions to protect these plants from extinctions. For Malamulele residents to achieve this, biodiversity knowledge and management skills are urgently required; also, responsive interventions should be introduced to better local current situations in the selected rural areas of Malamulele.

Keywords: Traditional medicine, medicinal plants, indigenous plants extinction, plants conservation, Urbanisation, Malamulele area, Limpopo Province, South Africa

TABLE OF CONTENTS

LIST OF TABLES

Page No.

LIST OF FIGURES

Page No.

LIST ACRONYMS AND DESCRIPTIONS

ATHPs: African Traditional Health Practitioners

BR: Biosphere Reserve

SATHF: South Africa's Traditional Healing Folklore

CBNRM: Community-Based Natural Resources Management

CCLM: Collins Chabane Local Municipality

CCLM IDPR: Collins Chabane Local Municipality Integrated Development Plan Review

FGDs: Focus Group Discussions

FHDC: Faculty of Higher Degrees Committee

FRIDP: Final Reviewed Integrated Development Plan

GDP: Gross Domestic Product

IDIs: In-Depth Interviews

IDPR: Integrated Development Plan Review

IUCN: International Union for Conservation of Nature

KIIs: Key Informant Interviews

KM: Kilometre

LC: Least Concern

OECD: Organisation for Economic Co-operation and Development

RSA: Republic of South Africa

SADC: Southern African Development Community

SAn / SAn's: South African/s

SANBI: South African National Biodiversity Institute

SAHO: South African History Online

SANSA: South African National Space Agency

SATHF: South Africa's Traditional Healing Folklore

SDF: Spatial Development Framework

SDGs: Sustainable Development Goals

Stats SA: Statistics South Africa

T & CM: Traditional and Complementary Medicine

TLM: Thulamela Local Municipality

THC: Traditional Health Care

THCS: Traditional Health Care System

THM: Traditional Herbal Medicine

THP: Traditional Health Practitioners

TREC: Turfloop Research Ethics Committee

UL: University of Limpopo

UN: United Nations

UNESCO: United Nations Educational, Scientific and Cultural Organisation

VDM IDPR: Vhembe District Municipality Integrated Development Plan Review

VOC: *Vereenigde Oostindische Compagnie*

WHO: World Health Organisation

CHAPTER ONE

INTRODUCTION

1.1. Background and Motivation

Indigenous people around the world possess an increased ability to influence the management and conservation of biodiversity (Steenkamp, 2002). The indigenous knowledge that these people have is such that they should not largely be reliant on western pharmaceutical methods for herbalism and medicinal activities (Hassan, 2012), and rather on their traditional practices, which are informed by indigenous knowledge. Hassan (2012) affirms that medicinal plants are important to humanity and continue to be used worldwide as a source of food and basic healthcare, some of the medicinal plants are recommended for their therapeutic values. Good management and conservation of these species are thus necessary for their continued availability (Stern, Bidlack, Jansky & Uno, 2000). However, improper management of biodiversity leads to the destruction of resources, which in turn is essential for the survival of people (Steenkamp, 2002).

Considerably, the World Health Organisation [WHO] (2020) recognises that traditional, complementary, and alternative medicine has many benefits, Africa has a long history of traditional medicine and practitioners that play an important role in providing care to populations, and natural remedies are burgeoning in popularity in western countries and have a long history in China and India. Major pharmaceutical companies are also looking to Africa for new active ingredients WHO (2020). With the right partnerships and investments, tried-and-tested African traditional medicines could find a broad global market (WHO, 2021). Hawkins, Kreuter, Resnicow, Fishbein and Dijkstra, (2008) indicate that medicinal plants are destroyed at an unprecedented rate and threatened by extinction. As highlighted above, several factors lead to the extinction of medicinal plants (Magoro, Masoga & Mearns, 2010; Rankoana, 2016; and Van Wyk, Oudtshorn & Gericke, 2002).

Furthermore, Hassan (2012) submits that several factors contribute to the extinction of medicinal plants. These include habitat loss, population increase, urbanisation and threats brought by climatic change. Medicinal plants have a promising future because there are about half a million plants around the world, and most of them their medical activities have not been fully investigated (Hassan, 2012). These medicinal plants may contain ingredients that could be decisive in the treatment of present or future studies; they are often used for synergic medicine, support of official medicine and preventive medicine, among others. According to Keskin (2018), there is approximately 1,000,000 plant species in the world, with almost half of these have been identified and named. Correspondingly, with plants, unlike most animals, we can regenerate tissue cultures relatively easily to produce whole, complete individuals (Raven, 2021). In addition, there are more than 115,000 species of plants that have been identified and named around the world, over a quarter of the total number, currently in cultivation in botanical gardens (Raven, 2021).

Medicinal plants are facing extinction; other negative future discoveries cannot be underestimated, as they are often threatened by various factors such as urbanisation. Most species could be classified as Least Concern [LC] (Brower, 2008). These species have been categorised by the International Union for Conservation of Nature (IUCN) and may soon be extinct. As a result, making regional risk assessments even in data-sparse countries can aid in the planning of conservation management, and for urgent considerations (Kaky & Gilbert, 2019). The IUCN Red Data List remains one of the most important of all conservation indicators; however, most developing countries do not have enough information with which to make assessments (Kaky & Gilbert, 2019). Therefore, finding sustainable ways to harvest, collect and grow medicinal plants from the wild, including training and education of the residents on better and progressive measures are needed (Shinwari, 2010).

According to Czech, Krausman and Devers (2000), urbanisation is amongst the major cause of native species extinction. These authors (Abdulai, Ahmed & Kuusaana, 2020; Aguilar, Flores & Lara, 2022; Pratiwi, Widyaningsih & Rani, 2022, Abdulai & Osumanu, 2023) show that peri-urban areas in Africa are often problem spaces. Coupled with climate change, and acute shortage of services amidst profound land conversion, urbanisation could pose far-reaching socio-economic and environmental consequences to peri-urban farmer households who depend directly on the

environment for their food and livelihoods. As a result, other study investigated the effects of urbanisation on plant reproductive success (Huan, Yong-Deng, Panagiotis & Chun-Feng, 2023). Negatively, urbanisation can lead to a loss of knowledge of the use and management of local wild species, with implications for the conservation of bio-cultural heritage. Substitution of native medicinal plants by introduced species shows disinterest and disuse in the local medicinal flora, which could be reflected in their ecosystems. Also, urbanisation is a complex economic process that entails social and environmental changes that occur over short time periods and often modify cultural patterns.

Urbanisation negatively affects the level of knowledge of locally distributed medicinal plants (Arjona-García *et al*., 2021); neglecting the effects of urbanisation in rural villages adjacent to townships. Although extensive research studies have been conducted on the medicinal uses of African plants (Stern *et al*., 2000), the therapeutic potentials of some of these plants remained unexploited. The African continent is naturally endowed with various plant species with nutritional and medicinal benefits. About 80% of the people in developing countries rely on folk medicines to treat different diseases because of indigenous knowledge, availability, and cost-effectiveness. Extensive research studies have been conducted on the medicinal uses of African plants, however, the therapeutic potentials of some of these plants has remained unexploited (Okaiyeto & Oguntibeju, 2021).

The medicinal plants produce certain bioactive phytochemicals, naturally toxic to microorganisms, and have been investigated as therapeutic agents (Rajput & Kumar, 2020). Plants have been well documented for their medicinal uses for thousands of years and traditional medicines are still a major part of habitual treatments of different maladies in different parts of the world. In recent years (2020-2023), there has been growing interest in alternative therapies and the therapeutic use of natural products, especially those derived from plants. Plants are considered as one of the main sources of biologically active materials (Kumar, Paul, Walia, Kumar & Singha, 2015). The pharmacological and therapeutic potential of the phytobio-actives. Polyphenols, alkaloids, terpenes, and polysaccharides isolated from medicinal plants showed remarkable antioxidant, anticancer, cytotoxic, anti-inflammatory, car-dioprotective, hepatoprotective, immunomodulatory, neuroprotective, and antidia-betic activities

(Riaz, Khalid, Afzal, Anjum, Fatima, Zia, Rasool, Egbuna, Mtewa, Uche & Aslam, 2023). The therapeutic benefits of medicinal plants are based on healing diseases like diabetes, hypertension, hypercholesterolemia and cancer, amongst others (Ramírez-Rosas, Perales-Torres & Santiago-Adame, 2020).

Besides, several researchers (Okaiyeto & Oguntibeju, 2021, Roberson 2008, Hassan, Hadi, Kassim, & Al-Hassany, 2012) show that some of the African floras are promising candidates for the development of novel drugs. Despite the plethora of studies on medicinal plant research in Africa, there is still little scientific data detailing the effects of urbanisation practices for rural areas adjacent to townships. Roberson (2008) indicates that the study and conservation of medicinal plant (And animal) species have become increasingly urgent. The accelerating loss of species and habitat worldwide adds to this urgency. Approximately 15,000 medicinal plant species are threatened with extinction worldwide (Czech *et al*., 2000).

Herbal medicines and their preparations have been used for thousands of years throughout the world, both developing countries such as South Africa and developed countries such Canada relies to some extent on herbal medicine (Czech *et al*., 2000, Mabogo, 1990, Keskin, 2018). Their dependence or usage of these appears to be as a result perpetuated lesser side effect, as well as dissatisfaction with the results of synthetic drugs, this further neglect the effects of urbanisation on medicinal plants (Thillaivanan & Samraj, 2014). The tremendous expansion in the use of traditional medicine worldwide, as well as quality control of herbal medicines, have become important concerns for both health authorities and the public. The challenge now is to ensure that traditional medicine is used properly and to determine how research and evaluation of traditional medicine should be carried out (Zhang, 2000).

Governments worldwide and researchers are increasingly requesting the WHO to provide standards, technical guidance, and information on the issues of urbanisation in relation to the availability of medicinal plants (Zhang, 2000). Ghebreyesus (2019) indicates that Traditional and Complementary Medicine (T & CM) are important and often underestimated health care resource with many applications, especially in the prevention and management of lifestyle-related chronic diseases, and in meeting the health needs of aging populations. Many countries [SA included] are seeking to

expand coverage of essential indigenous health care services at a time when consumer expectations for care are rising, costs are soaring, and most budgets are either stagnant or being reduced. Uttara, Bhuvandas and Aggarwal (2012) indicate that urbanisation entails industrialisation and economic development and with it, comes the clearance of land for residential stands, construction of malls, schools, hospitals, taxi ranks, and many more. All these are detrimental and if not managed properly, lead to extinction of medicinal plants. Therefore, this study will also attempt to fill the identified gap by focusing on urban ecology. This means that it will be possible to understand the complex relationship that exists between urbanisation and ecological contexts for sustainable use of medicinal plants and to prevent them from extinction during urban developments.

1.2. Problem Statement

According to Rasethe, Semenya and Maroyi (2019), despite all the efforts made to promote the use of traditional medicinal plants in rural South Africa, there have not been any positive results. As a result, accessibility of medicinal plants has declined due to effects of urbanisation; particularly, villagers and indigenous health practitioners no longer occupy an active role in the protection of plant species. Wang, Li, Kuang, He, Chen, Huang and Łowicki, (2020) and Stern *et al* (2000) asserts that urbanisation remains a major contributor to medicinal plants extinction. Therefore, if not properly managed, urbanisation in Malamulele area and selected villages can result in extinctions of biodiversity and medicinal plants. In support of this assertion, Wang *et al.,* (2020) report that urbanisation influences the loss of medicinal plant.

In addition, there seems to be little research done in Malamulele, or rural areas in general, that focuses on medicinal plants, Traditional Herbal Medicine [THM], and extinction. Most research studies are urban based as; a result, rapid urbanisation is affecting people in different ways, with some becoming more vulnerable to the impacts of climate change (Li, Stringer, Dallimer, 2022). Therefore, understanding the response of plant diversity to urbanisation is essential for conserving urban biodiversity (Hou, Li, Li & Qi, 2023). According to study conducted by Arjona-García, Blancas, Beltrán-Rodríguez, Binnqüist, Bahena, Moreno-Calles, Sierra-Huelsz and López-Medellín (2021), the more urbanised communities had greater knowledge of

introducing, maintaining and using plants species, while rural areas knowledge is vested on wild plants and one of the factors explaining these differences relate to occupation, with individuals working outdoors showing greater knowledge of wild plants.

In addition, Vhembe District Municipality Integrated Development Plan Review [VDM IDPR] (2019/2020) defines the 'biosphere reserve' as a field that accommodates habitat to various species (Those susceptible to extinction included). The Biodiversity of Vhembe District considers rural communities as priorities; as a result, shelter, food, fuelwood, and medicinal plants are provided (VDM IDPR, 2019/2020). Du Toit (2015) cautions that as rural population decreases and cities expand, natural resources (i.e., plants) are threatened in that they are cleared to make way for urbanisation. This trend is also common in the areas around Malamulele and has been observed in the villages of Roodhuis, Mphambo, Xigalo, Xitlhelani, Madonsi, and Mavambe. Therefore, this study aim to explore the effects of urbanisation on availability of medicinal plants in the selected rural villages of Malamuleke, under CCLM. This could probably allow for the documentation of these plants, leading to suggestive conservation and preservation measures. A consideration must be taken that species that are used for medicinal plants are becoming extinct, and unless some cognisant measures are adopted, medicinal plants will soon be extinct.

1.3. Study Aim

The aim of this study was to *explore the effects of urbanisation on availability of medicinal plants in the Malamulele area of Limpopo Province, South Africa*.

1.4. Study Objectives

Emanating from the study aim, the following objectives guided this study:

- To explore perceptions of THPs and community members on the effects of urbanisation on availability of medicinal plants in the Malamulele area of Limpopo Province, South Africa.
- To determine the contributory factors to the scarcity of medicinal plants in the Malamulele area of Limpopo Province, South Africa.

- To propose alternative strategic management methods to safeguard medicinal plants in the Malamulele area of Limpopo Province, South Africa.

1.5. Study Significance

This study will report the effects of urbanisation on the sustainability of medicinal plants to educate the urban developers and native residents adjacent to the Malamulele area, to effectively protect and preserve medicinal plants, and will contribute to the new body of knowledge in this study field. The local THP, authorities, and individuals that are dependent on medicinal plants for their primary health purposes should be trained on how to raise awareness of the importance of these medicinal plants and to teach people how to protect these plants against urbanisation. They should be at the forefront when it comes to protecting medicinal plants, they should implement effective conservation methods and create clear boundaries to places where these medicinal plants are found. When the local THP, authorities, and individuals that are dependent on medicinal plants are hands-on with the protective measures of medicinal plants, urbanisation will not have a major effect on the availability of medicinal plants, and a chance of extinction will be low (Rasool, 2012).

The local THP, authorities and individuals that are dependent on medicinal plants for their primary health purposes should be trained on how to raise awareness on the importance of these medicinal plants and to teach people how to protect these plants against urbanisation. They should be in the forefront when it comes to protecting medicinal plants, they should implement effective conservation methods and create clear boundaries to places where these medicinal plants are found. When the local THP, authorities and individuals that are dependent on medicinal plants are hands-on with the protective measures of medicinal plants, urbanisation will not have a major effect on the availability of medicinal plants, and chance of extinction will be low.

Furthermore, it is believed that this study added value to the following societal sectors:

1.5.1 Traditional Health Care

This study added value and established new ideas with regards to better and more effective strategies of protecting medicinal plants, as Traditional Health Care (THC) in Malamulele area has been affected owing to the effects of urbanisation on sustainability of medicinal plants in the study location, the recommendations of this study can be possibly adopted to promote more effective conservation strategies. This can be crucial for the general livelihoods of Malamulele residents that depend largely on medicinal plants while granting them an opportunity to protect their medicinal plants for future use. The outcome of this study benefited the community of THP in Malamulele area and other provinces in South Africa.

1.5.2 Scholarly Community

The results of this study can be published and made available to scholars. If published, it can be used as a reference for studies to close the gap in this or a similar field. Once the results of this study are made available, they will benefit the people who depend largely on medicinal plants in Malamulele area. Challenges concerning the current strategies to respond to this scourge can also be addressed. Most importantly, after the completion of this study, there might be possible solutions to the increasing the effects of urbanisation on the sustainability of medicinal plants in Malamulele area, and this may have a positive impact on addressing the extinction of these plants. It is also hoped that the residents of Malamulele may gain confidence at the local authorities and THP.

1.5.3 Traditional Healthcare Practitioners

The results of this study contributed to a higher competence level during the formulation of conservation strategies of medicinal plants against the effect of urbanisation in Malamulele. It is envisaged that it will also help to increase levels of trust and confidence to the THPs by community members and other relevant stakeholders by looking at and rectifying the perceived mistakes concerning protection

of medicinal plants that were previously made by the local Traditional Health Care System (THCS). Also, awareness will be developed to overcome the challenges of the past. This study will also provide information on the best conservation systems that can be implemented by THPs. This information will assist the THCS to do their job more effectively. The results of this study will also produce guidelines to compile future training manuals.

If the recommendations and findings of this study are accepted by the THCS policymakers, the local THCS in the Malamulele area will benefit, as both the findings and recommendations of this study will provide a better understanding of the challenges experienced. It will also assist to develop new methods or strategies on how to apply relevant and adequate procedures to prevent urbanisation from being a threat to the availability of medicinal plants.

In support of the outlined benefits to various stakeholders, this study highlights that the effects of urbanisation on the sustainability of medicinal plants are often solved by the implementation of conservation methods and chances of extinction are reduced. That noted, this study aimed to provide possible strategies to improve these conservation methods in Malamulele area. Finally, this study was also concerned with, among others, the evaluation of the effectiveness of local authorities' responses and operations concerning the effects of urbanisatin on the sustainability of medicinal plants.

1.6. Scope of the Study

The study was guided by this research topic: 'The effect of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, South Africa.' It will be conducted in Malamulele area, focusing on six (06) rural villages, namely: Roodhuis, Mphambo, Xigalo, Xitlhelani, Madonsi, and Mavambe. The study will also be limited to selected THPs and community members. The reviewed literature studies adopted theoretical frameworks and empirical data will collectively support this attempt.

1.7. Study Limitations

The University of Southern California (2016) defines limitations of the study as the characteristics of design or methodology that influenced the interpretation of the findings from research carried out by the researcher. Limitations refer to constraints regarding generalisability, applications to practice, and usability of findings that are the result of the ways in which the researcher initially chooses the design of the study and the method to establish internal and external trustworthiness.

Firstly, a concern with the research design and approach used for the purposes of this study was that it relied heavily on the selected participants' (THPs and community members) knowledge, experience and opinions based on the following criteria: **i)** To explore the effects of urbanisation on the sustainability of medicinal plants in the Malamulele area of Limpopo Province, SA. **ii)** To explore the actual perceptions of THPs and community members regarding the effects of urbanisation on medicinal plants in Malamulele area of Limpopo Province, SA. **iii)** To determine the contributory factors to the scarcity of medicinal plants in the Malamulele in Limpopo Province, SA, and; **iv)** To propose alternative strategic management methods to safeguard medicinal plants in Malamulele, Limpopo Province, SA. Further limitations were that the selected participants' views could not be transferred as the views of all the THPs and community members. However, the views expressed during the semi-structured IDIs, provided useful insights to the effect of urbanisation on the sustainability of medicinal plants in Malamulele area of Limpopo Province, SA.

Subsequently, other conceptual limitations were also experienced in this study, as the processes of urbanisation affected selected plants, such as the *Mavapfuka, Ximahlwamahlwani, Mgobo, Xibaha, Potsa, Sasavafi, Xikhundla, Nandela, Xikukutsi and Petswa'* [All translated in Xitsonga language] during deforestation and clearing of land. This study was limited to medicinal plants that are facing threat of extinction due to urbanisation, as indicated above.

Similarly, number of limitations were encountered during this study, to be presented as follows:

- **Geographical demarcation of the study**

This study was confined to Malamulele area in the Limpopo Province, SA. The central focus of the study was on the Malamulele area particularly on Roodhuis, Mphambo, Xigalo, Xitlhelani, Madonsi, and Mavambe villages. Thus, this study did not go beyond the borders of Malamulele.

- **Financial constraints and travelling distances**

The sample for this study was selected from six (06) villages within Malamulele area; this required the researcher to make extensive travelling. In certain instances, only one participant was interviewed per day, after that the researcher had travelled a long distance from the study locations to Nghezimani village, distributed as follows:

  - Mphambo village to Nghezimani village is 33.7 kilometre (km) via R81
  - Xigalo village to Nghezimani village is 14.9 km via R524 and R81
  - Mavambe village to Nghezimani village is 28.4 km via R81
  - Madonsi village to Nghezimani is 24.7 km via R524 and R81
  - Rodhuis to Nghezimani village is 18.6 km via R524 and R81
  - Xitlhelani village to Nghezimani village is 25.1 km via R524 and R81

Correspondingly, the researcher had to travel to the same study location the following day and move to the next village depending on the availability of selected participant (THPs and community members).

- **Limited previous research in SA in general and Malamulele are specifically**

Local and international literature was available on the effects of urbanisation on the sustainability of medicinal plants respectively; however, limited previous research on this topic in South Africa in general and Malamulele are specifically limited.

- **Finding the THPs**

The study sample included five (05) THPs, however, most THPs were not willing to participate to the study. The researcher managed to find one willing participant who referred her to his colleagues, as per the sampling technique of snowball.

1.8. Chapter Outline

This dissertation is divided into five (05) chapters as follows:

- **Chapter One: Introduction:** This chapter addressed the general orientation that will include the introduction and motivation, problem statement, study aim and objectives. The significance of this study and chapters progressions were given in this chapter.
- **Chapter Two: Literature Review:** This was based on the reviewed studies and theoretical frameworks on urbanisation and medicinal plants. In this Chapter, the researcher looked at seminal literature review and application of Afrocentric Theory and Dependency Theory on urbanisation and medicinal plants, using the study aim and objectives as guidelines. The current and previous research works done by other scholars on this subject were evaluated. Grey areas were identified to make any advancement from the previous scholars. Precedence set by other scholars were regarded to be vital and used accordingly.
- **Chapter Three: Research Design and Methodology:** This chapter presents the adopted research design and methodology used in conducting the research. This included the adopted research design and methodology, in line with sampling and procedures, data collection and analysis methods.
- **Chapter four: Data Presentations, Interpretations and Discussions:** This chapter the researcher outlined the findings based on the aim and objectives of this study. The offered presentations, analysis, interpretations and discussions showed emanated from the data gathered from a non-empirical research design: Systematic review.

- **Chapter Five: General Summary, Conclusion and Recommendations:** In this chapter, the researcher briefly gave a summary of this study briefly; coupled by the conclusions and recommendations of this study. This was also aided by the future research studies on this subject.

1.9. Chapter Summary

In this chapter, the general orientation of this study was given. The introduction and motivation of this study was made to make clear to the reader based on the research subject of focus. This was showcased to provide understand of this study. The focal point of this research was to expose how urbanisation affects the availability of medicinal plants and find possible ways in which medicinal plants can be preserved. In a nutshell, chapter one presented the reasons on why this study was necessary to the medical anthropological arena. The problem statement, study aim, objectives and study significance, and the scope of this study and the chapters' progression formed part of this study.

The next chapter (Two) will provide literature reviews and the adopted theoretical framework on the effects of urbanisation on the sustainability of medicinal plants in South Africa and elsewhere based on the study aim and objectives presented in chapter one of this study. The research works of other scholars and commentators were considered in terms of what they wrote on this subject and further locate this study in the general discussions within the continent and South African context thereof.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter reviews literature on the effects of urbanisation on availability of medicinal plants. This was done by exploring literature studies on this subject to determine how its affected by urbanisation. This chapter details various cited researchers' perspectives on availability of medicinal plants, as this subject is regarded as a highly contentious discussion in South Africa. Importantly, the aim and objectives of this study guided this chapter.

2.2. Exploring Perceptions of Traditional Health Practitioners and Community Members on the Effects of Urbanisation on Availability of Medicinal Plants

2.2.1 The Conceptualisation of Urbanisation

The effect (Noun) is often referred as a product, consequence, result or outcome of a particular action, event, agent or cause (Tetzner, 2020). Therefore, the effects of urbanisation on species richness have been described, as the increase or decrease of species richness that influenced by urbanisation (McKinney, 2008). Another factor that contributes to medicinal plants being extinct is the decrease in species richness, or it can contribute to medicinal plants to being scarce such that people cannot access them for health purposes (McKinney, 2008). For this study, the changing effects that result from consequence of urbanisation in the villages around Malamulele formed the premise of this study.

Uttara *et al.* (2012) state that 'urbanisation' can be defined as a process that results to the growth of cities because of industrialisation and economic development, meaning that whenever there is industrialisation in terms of constructions, for example, building of malls, schools, hospitals, taxi ranks and many more and economic development in terms of business development it contributes to urbanisation.

Uttara *et al.* (2012) further show that urbanisation leads to urban-specific changes in concentration, such as labour and human behaviour, in a sense that urbanisation provides jobs and businesses and eventually changes people's behaviour as the relocate from rural to urban areas. However, this concept 'urbanisation' referred to general urban population growth or increase, and the amount of industrialisation of settlement. Urbanisation signifies the movement of people from rural to urban areas, people move from rural areas to urban areas mostly in search of better living conditions because urban areas are more and well developed than rural areas. The increase in the extent and density of urban population lead to urbanisation (Uttara *et al*., 2012).

Hussain and Imitiyaz (2018) state that urbanisation offers changes in the economic, social, and cultural features of the society and contribute to how people live their lives in general. Urbanisation is a great factor on how people live their lives in modern societies, this includes their medical system. The urbanisation is a process of becoming urban in the society's way of life, the movement of people or process to urban areas, intensification of urban areas, population, or processes (Hussain & Imitiyaz, 2018). Urbanised societies, in which most people live together in crowded towns and cities, represent a new and essential step in man's social population. In other words, urbanisation is the social process that leads to the creation of cities; urbanisation is the results of development of cities and populating cities or urban areas, Hussain and Imitiyaz (2018).

The United Nations [UN (2014)] describes urbanisation as the process of amendment in a population from isolated small rural settlements which agriculture is the central economic activity and less developments, as compared to dense urban settlements characterised by industrial and service activities (UN, 2014), these include cities and towns. Therefore, the UN (2014) describe 'urbanisation' as the process refers involving specific conditions at a given time and what continuously occurs over time, influenced by population residing in urban areas. Thus, the population size of cities and towns determines the conditions of urbanisation as they develop. These include factors such as migration as individuals move from rural to urban areas, complete the urban population increase and the rate of urban growth is higher than the rate of rural growth (Maluleke & Shibambu, 2021).

As people migrate from rural to urban areas, they are in a way contributing to or responding to urbanisation as the urban population increases and the rural population drops, in most cases when people migrate it is because they are looking for better living conditions as urban areas and cities have better services compared to rural areas (Maluleke & Shibambu, 2021). As individuals migrate from rural to urban areas, the population size of the rural areas decreased. Hence, the process of urbanisation infers an increase in the percentage of urban growth and the rate of urbanisation, thus, refers to the growth rate in the level of urbanisation (UN, 2014).

Mitchell (1956) highlights that urbanisation is described as a process where communities are becoming urban, people moving from one place to the other or processes of creating urban areas, increase of urban growth, population size or processes. Mitchell (1956) emphasises that from the beginning of urban creation and the whole process throughout, this include the building of infrastructure and the population growth as people migrate from rural to urban areas are characteristic of urbanisation. Mitchell (1956) notes that urbanisation identifies dual aspects of the definition of urbanisation using two different angles or aspects; referring to the '*demographic*' including the size of urban population as births and deaths are recorded and *sociological* framework relating to the change in behaviour based on how urban areas are structured and how they function because of its population size (Davenport, 2020). Thus, the urban way of life is highlighted by a unique way of living, Mitchell (1956).

Urbanisation is the increase in the proportion of people living in towns and cities. Urbanisation occurs because people move from rural areas (Countryside) to urban areas (Towns and cities). This usually occurs when a country or an area [Rural adjacent to the township are no exception] is still developing (European Environment Agency, 2023). Urbanisation also refers to a "process concerning the city's expansion due to the economical transformations that took place in society, and it is particularly clear in the rural population's exodus to the cities; as a result, the number of city inhabitants increases, as opposed to the population rate of rural areas," IGI Global (2023). Urbanisation is a process driven by people's migration from rural to urban areas and overall population growth, it is one of the greatest changes happening to humanity. Urbanisation has the power to transform people and societies by stimulating economic growth and raising people's living standards (CallUP Blog, 2023).

Lampard (1966) displays three (03) broad conceptions of urbanisation that have gained momentum in the field of social sciences, which are the; 1) Behavioural, 2) Structural, and; 3) Demographic conceptions. Lampard (1966) describes the concept 'urbanisation' from the highlighted Three different aspects by providing an overview of this concept and indicating that this concept comprehends an adjustment of personal behaviour in the sense that it focuses on the conduct of individuals, therefore, this concept focuses on how individuals behave in relation to urbanisation. Certain patterns of behaviour or thought or how society perceives economic and industrial developments, regardless of social environment and locale are said to be urban (Armstrong & Stedman, 2019).

Lampard (1966) mentions that the process of urbanisation is one factor that is experienced by individuals over time. The structural concept that ignores the patterned behaviour of individual persons in a certain area focuses on the patterned activities of the entire populations (Armstrong & Stedman, 2019). The process of urbanisation involves moving people out of communities which specialises in agriculture, with those residing in desert decides to join monetary stream in urban areas (Armstrong & Stedman, 2019). The demographic approach emphases and clearly shows on the space and expresses urbanisation as a process in which population is concentrated (Armstrong & Stedman, 2019). Lampard (1966) further provides that the demographic approach as superior or the major definition to other definitions of urbanisation and this is based in the uncomplicatedness of demographic approach.

Aligning to the tradition of demographic approach of urbanisation, Davis (1965) uses the term in a specific way as different to others. According to Davis (1965), demographic approach refers to the proportion and a total number of populations concentrated in urban settlements, or else to rise in this proportion. These sentiments were also shared by Vaidya and Chatterji (2020) who indicating that urbanisation in a fixed process and it is consistent as cities and towns develops, a cycle through which nations go in their evolution from agrarian to industrial society, where people or societies transform from agricultural economic pattern to industrial pattern.

Urbanisation is the movement of people from agricultural employment into industrial employment, which then leads to urban living (Davis, 1965), as a result, people rely more in industrial employment than in agriculture for survival and this leads to urban population to develop faster (Davis, 1965). Urbanisation also relates to the process through which cities grow, and higher and higher percentages of the population come to live in the city (National Geographic, 2023). Urbanisation also refers to the concentration of human populations into discrete areas. This concentration leads to the transformation of land for residential, commercial, industrial and transportation purposes. It can include densely populated centres, as well as their adjacent peri-urban or suburban fringes (EPA United States Environmental Protection Agency, 2023). Urbanisation is the process by which more and more people leave the countryside to live in cities (Cambridge Dictionary, 2023).

2.2.2 Factors Influencing Urbanisation Processes

The shift between the balance of urban and rural economies in South Africa are influenced by the rapid growth of the urban population (Hope, 1998). Urbanisation is closely associated with the growing economy and the changing patterns in terms of employment, as well as urban population strategies of development guided by development factors such as commerce and industry, and the increase in transportation, communication, education, and other related types of infrastructure that are found in urban areas (Hope, 1998). As initially stated that ‘urban areas’ are known as the capital cities that dominate in the development of the country for purely historical reasons (Hope, 1998). The primate city in Africa remains the focal point of both governmental and private sector activities and, as such, it is the rational settling place for the population. City growth and urbanisation are determined by Five (05) major factors of revolutions, namely: 1) Agricultural, 2) Technological, 3) Commercial, 4) Increased efficiency of transportation; and 5) Demographic (Hussain & Imitiyaz, 2018). Each factors have effects and consequences upon the growth of urban population in various space of time of history.

The industrialisation and urbanisation are characteristic of what in the modern society is viewed as the rapid changes of the mentioned 05 factors. (Wang, Liang, Sun & Wang, 2019), as discussed in the section to follow:

The *agricultural revolution* is known as the first factor that covered the way for the process of urbanisation (Hussain & Imitiyaz, 2018). For the emergence and growth of cities, the development of agricultural remaining was a requirement. The significant proportion of manpower from the land and opened the avenues to follow different pursuits was released by the generation of surplus (Wang *et al.,* 2019). The release of population from the necessity of producing food led to the concentration of people in cities and permitted this section of population to engage in non-agricultural endeavours characteristic of city life, this where people depend largely on industrial employment instead of agriculture for survival (Wang *et al.,* 2019). The application of technology to agriculture led to increase in agricultural production (Hussain & Imitiyaz, 2018) this resulted in commercial farming.

The agricultural revolution is followed by the second major factor behind urbanisation, which is the *technological revolution* (Hussain & Imitiyaz, 2018). The invention of steam engine, development of mass production techniques, factory system made possible the accumulation of people in a densely settled pattern, the emergence of technological revolution makes it possible for the people in the urban zone and the migrants to live comfortably and makes their lives easier (Wang *et al.,* 2019). The commercial revolution is the next factor in the growth of urbanisation after the technological revolution.

For the *commercial revolution*, the world market developments played an essential role, this was the beginning of the exchange systems and thoroughly improved means of transportation and communication allowed cities to develop under conditions which otherwise would have prevented their appearance (Wang *et al.,* 2019). Cities located in areas which dictate a high degree of specialisation are possible as consequence of trade and transport, and indeed it is no longer necessary or uncommon for a city to depend heavily upon its own immediate hinterland for the needed agricultural surplus (Hussain & Imitiyaz, 2018). Although, changes in the status of the economy occurs in the rural areas and have a potential of to generate economic push forces that spring

from very different sources, as many economic opportunities in urban areas that are created through urbanisation in the expense of medicinal plants (Nattrass, 1983).

Rural to urban migration is the one of the major determinants contributing to the urban population growth and the majority of these migrants falls under the age group the young adults that are classified to be on the peak of their reproductive age with higher fertility chances as compared to the urban population as a whole, the long-term contribution of internal migration to urban population growth is actually much greater (Hope, 1998). Subsequently, the process of urbanisation also experienced major implications from the new force in the automobile that came from the introduction of electricity to respond to the *increased efficiency of transportation* (Wang *et al.,* 2019). The use of electricity exercised a centrifugal influence upon the growth of the cities, thus paving the way for the emergence of metropolis and megalopolis resulted from a centrifugal influence upon the growth of the cities exercised using electricity (Hussain & Imitiyaz, 2018).

Another known factor relates to the *demographic revolution*, which is a consequence of the field of agriculture developments, introduction of commerce, industrialisation and transportation. The emergence of urban and industrial societies was highlighted by the developments that are seen in the field of medical sciences (Hussain & Imitiyaz, 2018). A natural urban population increase occurs when there is a high rate of fertility and low-rate mortality in the urban areas. Demographers refer to the broad pattern of secular birth and death rates changes as 'demographic transition', to that accompanies a population's development from a traditional agricultural base into a modern industrial society (Hope, 1998). Before and after the transition, population size is almost constant. However, during the process, which can take up a century, with occurring rapid growth, in accordance with African countries are regarded as lagging behind other regions in its demographic transition (Bongaarts, 1995).

Hussain and Imitiyaz (2018) state that the discoveries in the medical field certainly led to improvement in the health conditions of the people by providing cures to a multitude of ailments and diseases. This led to a sharp decrease in mortality. Birth rates, however, did not fell so rapidly and one result was a phenomenal growth of the population in western society during the nineteenth and early twentieth centuries (Kustoni & Rostiwati, 2020). These population increments in large measure found their

way either to colonial agricultural lands or to the cities. The demographic evolution in this way contributed heavily to the needs of the cities for an increasing labour force and consumer markets.

2.2.3 Urbanisation in South African Context

Importantly, South Africa has made tremendous legislative changes since 1994 to address its socio-political and economic challenges. The legislative changes were necessitated by the need to address poverty, racial inequality, and unemployment and change the bureaucracy that was meant to serve only the minority in South Africa (Matzopoulos, Bloch, Lloyd, Berens, Bowman, Myers & Thompson, 2020). South African municipalities needed somehow to balance the need to address issues such as the housing backlog (Through the Reconstruction and Development Programme) with environmental protection (Mthiyane, Wissink & Chiwawa, 2022). Matzopoulos *et al.,* (2020) suggest that the laws that were designed to alleviate the mass poverty and injustice inflicted on the people by the past regime have had negative outcomes in terms of environmental degradation.

Urbanisation is a global phenomenon, with some 56% of the world's population residing in cities and the figure is expected to reach 68% by 2050, Organisation for Economic Co-operation and Development [OECD] (2020). Urban migration is mainly driven by the economic prosperity in urban centres as people relocate to cities in search for employment or to take advantage of the urban market for trading and various economic activities. The World Bank (2021) indicates that over 80% of the Gross Domestic Product (GDP) of the world is generated in cities, as factories and industries are mostly found in urban areas, hence a pulling factor for urbanisation (Ringwood, 2016).

Urbanisation refers to the migration of populations from rural to urban settings and the consequent physical changes to urban settings (UN, 2022). According to Statistics South Africa [Stats SA] (2021), urbanisation can be formally defined as the increase in the urban population of a country or area because of the following components of urban population growth: (1) urban natural increase, (2) urban net migration and (3) the reclassification of parts of the rural population into the category 'urban,' because

of the sprawl of existing urban areas into their rural surroundings or the development of new towns in former rural areas.

Tacoli (2020) presents term ‘urbanisation’ as the population shift from rural to urban regions, the corresponding decline in the number of individuals living in rural areas and the way societies adapt to this change. As more people move into urban centres to live and work, towns and cities primarily grow through this process. Migration affects people with economic, social, educational and demographic peculiarities. Eze (2016) highlights that migration follows a variety of patterns on space dimension such as ‘rural-urban; urban-rural; urban-urban; and rural-rural.’ Rural-urban migration results from movement from rural to urban in the search for opportunities because of rural-urban inequality in wealth and better quality of life found in urban centres. Urbanisation can therefore be defined as the migration of people from rural areas to urban areas for socio-economic reasons (Mthiyane *et al*., 2022). The need for more jobs comes with the increase in population.

Additionally, South Africa is rapidly urbanising and that puts pressure on adequate and effective urban planning, South African National Space Agency [SANSA] (2019). The growth of cities also results in degradation of natural habitats, changes in species composition, cities micro-climate, energy flows and subsequently creating urban heat islands (SANSA, 2019). There is an urgent need for effective and sustainable urban planning and development management, supported by adequate and up-to-date geospatial information base (SANSA, 2019).

Urbanisation ‘is often seen as the consequence of ruptures, of environmental disaster, economic exploitation, or political or civil tensions and violence. And it is often perceived to be a cause of problems, like environmental degradation, health problems, “brain drain”, political or social instability, declining law and order, and unravelling social fabric and support systems’ (Arndt, Davies & Thurlow, 2018). Equally, SA faces many challenges, including modest economic growth and negative structural change, as well as high unemployment and inequality, and persistent poverty. Urbanisation over the last two decades is an additional concern (Arndt *et al*., 2018).

According to the World Bank (2021), cities and towns should increase the speed with which they are providing facilities to cater for the demands of urbanisation. However, the large influx of people from rural areas has put tremendous strain on cities across SA, causing traffic congestion, housing infrastructure backlogs, and, to some extent, a rise in crime rates. As a result, rural-urban migration has posed a significant challenge to both rural and urban communities in SA. The speed and scale of urbanisation brings challenges, including meeting accelerated demand for affordable housing, well-connected transport systems and other infrastructure, basic services as well as jobs (World Bank, 2021). The aim of the study was therefore, analysing the negative consequences of migration in SA, both in rural and urban areas. Besides the job opportunities that are a reality in urban areas, the migration to the towns and cities is a result of the neglect of rural communities in terms of service delivery. Urban areas are better supplied with social infrastructure than rural areas (UN, 2022). As a result, people who can afford to buy or rent accommodation migrate with their families to urban areas (Amoo, Wuraola & Adebanke, 2013).

According to the United Nations projections, by 2030, South Africa's population living in urban areas will be 71.3%, with possibilities of increasing to 80% by 2050 (UN, 2022). While this could be good for economic development, it also goes with developmental imbalances between the urban and rural areas. The increase in rural–urban migration may prejudice the rural development through loss of skilled labour, prolonging the poverty and underdevelopment cycle (Mlambo, 2018).

Urbanisation in South Africa can be traced through its historical context. Before the National Party took over the government of SA in 1948, discriminatory laws had already been passed by its predecessors. The most important laws that left South Africa with the current urbanisation status were 'the Native [Urban Areas Act] (No. 21 of 1923) and 'the Native Land Act (No. 27 of 1913),' South African History Online [SAHO] (1913). This legislation impoverished black people as they were forced off their farms and became farm labourers. It was because of the implementation of these Acts that black South Africans [SAn(s)] are still migrating from rural areas to urban areas to find job opportunities. Under the Native Land Act, 1913; black people could own only 13% of the land in South Africa, and the remainder was to be owned by colonial settlers (Jili & Masuku, 2017). The new democratic government of SA has had

to embark on legislative changes to address the socio-economic gaps created by Apartheid legislations (Thompson & Wissink, 2018).

As a result, there is no doubt that the legislative changes have transformed the political landscape in SA, but the question of whether post-Apartheid legislation has brought about economic change is still a matter to be debated (Kuddus, Tynan & McBryde, 2020). Nnadozie (2013) argues that the SAn government has however not been able to ensure the accessibility of basic services to most of its citizens, which is part of the reasons why people leave rural areas for urban areas. Hence, people migrate to urban destinations to access the available basic services that were initially established to serve the minority during the Apartheid era. Reddy (2016) alludes that basic services provide for community needs, and they include water, sanitation, electricity, refuse removal and other necessities as outlined in the Constitution of the Republic of South Africa.

SA is regarded as the first economic power in the African continent, has a population of nearly 50 million inhabitants, of whom more than 60 % were urban in 2008. The country has a long-standing network of metropolises (cities), towns and localities (places). These have developed and become hierarchised in the course of a history where population settlement and its distribution have been markedly influenced by colonisation, land occupation, segregation, industrialisation, globalisation and disenfranchisement. Throughout the past century to the classic changes in borders and nomenclature were added changes in category and distinctions in terms of status that were applied to entities of one and the same nature. Paradoxically, the distinctions among individuals based on race and origin, forming the basis of the racist political order until the end of apartheid, generate only minor difficulties in statistical follow-up. Indeed, these distinctions, already present in the colonial era, were maintained, refined and made more rigid in the apartheid period, Giraut and Vacchiani-Marcuzzo (2009).

2.2.3.1 Urbanisation and History of Land Occupation

SA's urbanisation differs from what can be observed in other African countries in various respects. First, SA urbanised earlier than other parts of sub-Saharan Africa because of its distinctive economic history of mineral extraction and associated industrialisation. By the late-19th century it was still a sparsely populated territory with a largely agrarian society and extensive arid regions, but with a few localised areas of great industrial dynamism. These emergent cities quickly became powerful drivers of growth with substantial multiplier effects on the economy of the whole region and far-reaching social consequences as they suctioned large quantities of labour from the wider sub-continent. The urban population of the country rose rapidly during the 20th century, and the number of urban areas increased more than ten-fold. The urban share of the national population increased from about 17% in 1900 to about 65% today, making SA one of the most urbanised countries on the continent (Turok, 2014; and Baffi, Turok & Vacchiani-Marcuzzo, 2018).

The pattern of urbanisation in SA has been deeply influenced by its extreme political history. The promulgation of segregation laws at the beginning of the 19th century and the implementation of "separate development" during apartheid caused a departure from trends observed elsewhere and produced a distinctive form of urban growth. Urbanisation accelerated during the first half of the 20th century and then slowed down. Rapid industrialisation during the first period attracted more and more people from the countryside to migrate towards the cities in search of livelihoods. The growing black African population in the cities produced a negative reaction from the ruling white minority group, which resulted in stringent state controls to restrict further urbanisation. Although the controls did not stop the process, they dampened it, particularly at the height of apartheid between the late-1950s and early-1980s (Turok, 2014; and Baffi, Turok & Vacchiani-Marcuzzo, 2018).

Access to living space for Africans, Coloureds and Indians became dependent of the Group Areas Act at the urban scale, and the implementation of “displaced urbanisation” at the national scale with the creation of so-called homelands. These laws imposed a very restrictive and uneven urbanisation on the country’s development path and the removal of restrictive laws and the opening of the country to global economic forces in the 1990s led to the imposition of new spatial dynamics onto the inherited patterns. The polarisation of economic activities has been reinforced by the adoption of orthodox macro-economic measures, namely the Growth, Employment and Redistribution programme in 1998. The inherited socio-spatial inequalities constitute major challenges for the different spheres of national, provincial and metropolitan government. Indeed, the difficulties of addressing the inherited inequalities are exacerbated by the state’s reluctance to constrain private actors in their choice of location. The desires for economic connections to international networks and to gain visibility on the international stage have tended to concentrate development within restricted areas in the biggest cities. These dynamics partly explain why SA remains one of the most unequal countries in the world, with a Gini index of 63.4 % in 2011 according to the World Bank (Todes & Turok, 2017; and Baffi, Turok & Vacchiani-Marcuzzo, 2018).

According to Akinola (2021), one of the consequences of civilisation in Africa was the emergence of cities and massive emigration from the rural areas. In SA, apartheid policies underdeveloped the rural areas and appropriated arable lands for the minority population, which broadened the gap between cities and rural areas. This ultimately engendered the impoverishment of 13 million black SAn’s, who experienced land dispossessions and were restricted to the hinterland. The abolition of apartheid and development of the cities stimulated massive rural-urban migration. However, these generated contradictions like poverty, unemployment, food scarcity, land hunger, informal settlements and ineffective service delivery. Thus, this chapter explores how land reform impacts on rural-urban migration and the convergence between poverty and urbanisation within the land reform framework. The findings revealed that land reform has not addressed the rural-urban surge and the deepening rural poverty. Indeed, effective and equitable land reform schemes, which are the driving forces of a programme of rural development, are an essential corollary for combating rural-urban migration. Government and stakeholders in the urbanisation-land reform

projects have the responsibility to utilise the gains of land reform for human capacity development, improvement in the livelihood of rural dwellers and elimination of congestion in SAn's cities.

Urbanisation of SA occurred in rather unique circumstances, linked firstly to the different phases of economic development which gave the main role to port cities on the periphery, and later to mining cities in the interior. The processes of urbanisation were then subjected to a shaping process in the form of the spatial and ethnic apartheid policies, on national scale and on intra-urban scale. It is for this reason that the SAn's town and city system is often presented as being specific or unique, and difficult to compare with any other, more so because the different populations have not had the same rates of growth, so that the whole system is very heterogeneous (Giraut & Vacchiani-Marcuzzo, 2009).

Relatively primitive economies are characterised by a heavy dependence upon agriculture and a reasonably widely dispersed population. However, once incomes start to rise and a point is reached at which the immediate food needs of the population are satisfied, history has shown that both the structure of the economy and the spatial distribution of the population start to change. It is largely economic phenomena and people's reactions to them that determine the exact nature of the change that takes place. Although the actual changes that happen are specific to the circumstances surrounding them, there are several characteristics of the economic growth process discussed below that occur generally and it is these which tend to generate increasing levels of urbanisation (Nattrass, 1983). Some of the notable characteristics of Urbanisation and history of land occupation are demarcated to the following:

- The income elasticity of non-food items is very much greater than that of food, as incomes rise in an economy so the demand for non-food items, such as the medicinal plants, as well as manufactures and personal services, grows faster than that for food (Johnston & Mellor, 1961). As a result of this rapidly growing and uneven demand, employment opportunities in the non-food producing sectors usually offer better prospects than do those in the food sector (particularly as regards jobs in agriculture). Consequently, people start to move off the land in search of the better opportunities in industry (Lewis, 1954).

- The nature of non-food industry itself also often encourages increased urbanisation. Although some industries locate at the source of a major raw material (Medicinal plants) inputs, most choose their location, like rural areas in the context of this study in terms of either the ease of access to the market for their final product or the availability of processed factor inputs, such as electricity and repair facilities or their access to a pool of adequately trained labour. All these latter factors lead to industries grouping together and forming a nucleus for urban growth. The prospects for such growth are then further enhanced by the commercial opportunities that flow from the growing concentration of population, that accompanies the agglomeration of industry (Nattrass, 1983).
- Industrialisation and the general rise in the living standards of those that are associated with it, affects the balance of men and land in the rural areas, the assumption usually made here is that the relationships referred to above lead to a gradual depopulation of the land and in many countries, this has indeed been the case. Thus, in these cases, one sees a fall in the proportion of both the population living in rural areas and that engaged in agriculture (Kuznets, 1965). However, it seems that in several developing countries and indeed in SA herself, there has been a reverse relationship. Industrialisation has been accompanied by an increase in the number of people living in the rural areas. Land/man ratios have been reduced and standards of living in the rural areas have fallen rather than risen as industrialisation and modernisation has taken place elsewhere in the economy. In circumstances like these, the gap between economic opportunities in the expanding urban areas and the rural areas widens even more rapidly and people are not only attracted to the towns by the higher living standards apparent there but are also pushed out of the rural areas by the fact that the land becomes increasingly unable to support them. Their rural standards of living are not only lower than the average in the towns, but are declining to socially, and in some instances physically, unacceptable levels (Nattrass, 1983).
- Changing economic circumstances in the rural areas can in some instances generate economic push forces that spring from very different sources. Both the enclosure movement in Britain in the late eighteenth century and the ejection of the bywoners from the Boer farms in the Trekker Republics in the late nineteenth centuries are examples of this second type of push factor. Here the economic

> opportunities for the rural areas created by the growth of the domestic market for agricultural products, led farmers to switch their techniques of production from farming practices that were based upon an allotment system, to large scale production based on 'open fields cultivation. This was a move away from labour intensive production techniques to more capital-intensive methods of production and the switch in techniques led to large numbers of people being forced from the land - people who, having no alternative, found their way to the towns (Nattrass, 1983).

To clearly understand the history of urbanisation and land occupation in SA, the colonial origin and apartheid foundation of spatially segregated rural and urban (Economic developments) of human settlement in SA context should be accordingly mapped by providing an overview of the spatial organisation and settlement patterns of indigenous rural populations prior to the colonial occupation of the Southern African Development Community (SADC) region and considers how municipal and public health administration, planning, land-use management and industrialisation contributed to segregated urban development in the earliest major colonial settlements. The pre-apartheid period and investigates the use of legal mechanisms to legitimate and enable the systematic dispossession, spatial segregation, political control and socio-economic marginalisation of the majority black population remains of utmost important in the preservation of medicinal plants across SAn rural areas, using Malamulele as the crux of this discussions. Considerably, the roles of the national government in enabling spatial control, segregation, displacement and dispossession through land-use management, planning, public health and safety administration, evictions and forced removals should be equally shared. Cumulatively, these measures established the foundation for spatially segregated urban development during apartheid. The final part of this contribution examines the use of legal frameworks by the apartheid state to consolidate spatial control and segregated settlement development in towns and cities. In doing so, it provides insight into the extensive legislative framework, as well as the political, economic and social contexts that contributed to the spatial restructuring of apartheid urban areas and entrenched the spatially unjust settlement patterns that characterise contemporary rural and urban SA (Strauss, 2019).

The dominant roles of the national, provincial and local spheres of government in constructing and sustaining spatially and racially segregated rural and urban settlement patterns or an associated developments through the implementation of various administrative, economic, political and legal mechanisms. In doing so, it illustrates the significant function of these spheres as the primary developer of space at the intersection of land, planning and housing, which represents a further prominent dimension and source of spatial injustice and segregated urban development in SA. Moreover, it discloses the role of law in legitimating this function through regulations, prohibitions and sanctions that enabled the state to establish and sustain spatial injustice and inequality in towns and cities. The SA's history of land, planning, housing and the development of informal settlements and economic developments through the inceptions of shopping centres, residential areas, clinics/hospitals, stadium and recreational areas, amongst others are deeply rooted in a legacy of spatial injustice that was entrenched by a plethora of discriminatory legislation. As a result, the legal system used to develop urban space in the areas of land-use management, planning and housing has historically operated on a spatially and racially exclusive basis. Accordingly, black SAn's inherited a mixed legacy of disparities in access to urban opportunities and the housing spaces they were consigned to during centuries of oppression. Therefore, developing comprehensive legal and policy responses that address the complex nature of spatial injustice and exclusion in urban areas thus represents an important dimension of future initiatives aimed at enabling SA's urban poor to access integrated and sustainable settlement and livelihood opportunities in towns and cities, Strauss (2019).

2.2.3.2 Urbanisation and Colonialism

Africa has undoubtedly been dominated and subjugated by external powers longer than any other major region of the world. In ancient times parts of the continent were annexed by various Asian and European conquerors and much later, in modem times, virtually all of Africa became part of different European empires (Chandler & Tarver, 1993). On the other hand, urbanisation is a worldwide phenomenon though marked differences exist both within and between countries in the Global North and Global South, SAn's rural included. The rate of urbanisation tends to be relatively slow in the Global North and much faster in the Global South, although this obscures considerable

diversity within both regions. Therefore, more research is required to interrogate the detailed dynamics of urbanisation in different regions and countries because of the far-reaching implications for public spending, infrastructure development, urban planning and design. It is important to improve our understanding of the heterogeneity of urbanisation trends within and between countries, especially in Africa, given the challenges associated with rapid urbanisation. Therefore, rural areas adjacent to the Malamulele should be acknowledge that thee increasing rate of growth of large cities (Township), coincident with stronger urban primacy, needs to be taken seriously by researchers and policymakers. Most large cities in poor countries struggle to provide adequate housing, jobs and basic services for residents. Accelerating growth means mounting pressure on central and local governments to cater for the surging population (Gambe, Turok & Visagie, 2023).

Importantly, towns (Malamulele included) in the pre-colonial period were rare, but there were some, so that it is justified to refer to a “pre-colonial stage,” which more widely concerns southern Africa, and only the margins of the present SA. The urban area of Mapungubwe situated on the northern border appears as the first instance of an isolated urban agglomeration with political and economic functions. The Tswana ‘agro towns,’ some of which set up and developed within present-day SA territory (Dithaking, Kaditshwene), probably over several centuries from the middle of the second millennium, are certainly the most notable pre-colonial SA agglomerations for their size and longevity, and they were indeed in existence at the time of the first colonial incursions (Freund, 2007). Two capitals of warrior kingdoms should also be mentioned, Ulundi for the Zulus and Thabo Bosiu for the Basothos, also in existence as native agglomerations at the time of the 19th century colonisations (Giraut, F & Vacchiani-marcuzzo, 2009).

Cape Town was the first place to see urban concentration of colonial origin from 1652 and the establishment of the Dutch East India Africa trading company. This is the “colonial pre-industrial phase” extending from 1652 to 1806. No town, in the sense Europeans would give the word, existed on the territory before this date, and it was the implementation of the Western colonial model that marked the beginnings of modern urbanisation. If across the African continent generally, the African colonial town was not a white town, SA constitutes an exception, with Cape Town being the only white city in black Africa until as late as the end of the 19th century. Thus, the

originality of the establishment of the SA urban system and its evolution over time highlight its marked dependence on, and openness towards, the outside world. The first clusters of urban population, established by successive urban frontiers, were totally dependent, in economic and trading terms, on the outside world. At this stage in the process of urbanisation, the main centres of urban growth were the coastal towns, the ports, and the towns situated in the immediate hinterland, for example in Cape Town first, starting from the 19th century ten of the thirteen established towns were situated around Cape Town, the others being Durban, Port Elizabeth, Grahamstown and secondarily East London. The arrival of the British settlers in Durban in 1824 emphasised the prime role of the ports in the process of urbanisation (The 'Colonial transition stage' 1806-1833).

These various urban areas maintained marked autonomy, and each developed relatively dense communication networks with their immediate influence zones, but there were few links from one to the other. There was little integration among these areas of urban growth. Before 1860, urban development thus remained linked to the growth of regional economies, entirely created by Dutch and British settlers (Giraut & Vacchiani-marcuzzo, 2009). Africans have become more integrated, but the majority are constrained in their choice of residential options by the general levels of poverty. Asian and Coloured people have witnessed the greatest changes, with significant declines in segregation levels in many cities as they begin to return to the areas from which they were forcibly removed in the previous 40 years. However, segregation levels remain exceptionally high and rapid integration may require government intervention, Christopher (2021).

Historically, SA's experience of urbanisation is unusual in several respects. Until the 1990s there was extensive government intervention in the process: first to accelerate a particular form of temporary rural-urban migrations and subsequently to restrict people moving to the cities. A wide range of policy instruments, laws and institutions was used to influence household mobility, including racially discriminatory government controls on people's ability to own land their ability to settle where they wished the regulation of employment the education and training system The process of urbanisation in the late 19th and early 20th centuries was closely associated with industrialisation and involved the exploitation of both natural resources (Minerals) and human resources (Rural migrants). It was stimulated by the discovery of diamonds in

the interior of the country in 1867, and more importantly gold in 1884. The resulting 'Mineral Revolution' (Yudelman, 1984) stimulated rapid industrialisation and large-scale national and indeed international migration, particularly to the Witwatersrand (now known as Gauteng, and centred on the country's largest city, Johannesburg). The mining boom required the rapid creation of an extremely large workforce. Mining output grew rapidly but was repeatedly held back by a shortage of labour (Wilson, 1972). The need to assemble a bigger labour force through immigration had profound social and geo-political ramifications, including the transformation of SA from a patchwork of agrarian states to a unified industrial nation with a strong political centre in the early 20th century. Until then, the country was divided between provinces of the British Empire, states formed by Afrikaner settlers, and various native African states. All these territories were dominated by farming cattle or cash crops such as sugar, coffee and wine. During the 19th century, urban areas were few and small (Turok, 2012). In essence, SA has a troubled history of extreme policies aimed at spatial engineering, first to accelerate forcibly a peculiar form of urbanisation and then to resist and reverse it. This has created a situation in which there is now great sensitivity towards spatial policies and a general reluctance to be seen to be giving overt preference to urban areas or to be encouraging rural-to-urban migration. Consequently, there has been no explicit urban policy framework or strategy to manage urbanisation since the democratic government came to power in 1994, much to the surprise of many observers. Nevertheless, the relative economic success of the cities and the fragility of rural economies have further widened spatial inequalities and reinforced the misalignment between jobs and population (Turok, 2012).

Oliver and Oliver (2017) provides that from the 15th century onwards, most of the countries in Africa have been colonised by the European world powers, Great Britain, France, Portugal, Germany, Spain, Italy and Belgium. SA was officially colonised in 1652. Apart from the European colonisation being executed from the south of the continent, SA also experienced a migration and invasion of people groups from the North.

Therefore, by reading the history of SA, it becomes clear that this country has its own unique story about colonisation. Having in mind what the term ‘colonisation’ entails, thus, it can be concluded that SA, in fact had four colonisers, as follows:

- **About 2000 years ago:** An unofficial colonisation by the Black people groups from the north. This colonisation was ended in 1880 when the country was divided into Four polities, two being ruled by the British and two by the Afrikaners.
- **1652:** An official colonisation from the south by the Dutch *Vereenigde Oostindische Compagnie* (VOC). This colonisation came to an end when Britain finally took the country from the Netherlands in 1806 (Actually for the second time).
- **1806:** An official colonisation of the country by Great Britain. This era came to an end when the country became a Republic in 1961.
- **1961:** An internal colonisation of the country by the white Afrikaners, which ended in 1994 when the country became a Democracy (Oliver & Oliver, 2017).

Essentially, all the different people groups that arrived in the Cape and started to ‘mingle’ with each other and with the indigenous people, saw the birth of a new people group in the country, called the mixed-race people. Added to that, a new language also emerged, which can at first be characterised as ‘Pidgin Dutch.’ This language would become one of the dominant languages in the country but is regarded by most black people as the language of the oppressor. Fortunately, after the fourth and last colonisation of the country and after much pain and oppression and apartheid, the country became a Democracy, establishing a rainbow nation where everybody has equal rights. Amidst much critique on the colonisation of SA and for that matter, on Africa as a whole, the aim of this article was to look at some unique features of the colonisation. As it is obvious that the European and Afrikaner colonisations can and will never be justified, this article also wanted to add some perspective on the migrations or invasions from the north of the continent, which can also be classified as some sort of colonisation and which are mostly overlooked or ignored (Oliver & Oliver, 2017). As a result, the urban growth continued under colonial occupation from the late nineteenth century but extended itself by leaps and bounds, particularly in the final generation of colonial rule beginning with World War II. Essentially, not all urbanisation should be linked directly to commercial expansion (The University of Warwick, 2019).

The Urbanisation, as we understand it today (2024), began to spread from Europe to the developing world because of colonisation. The Industrial Revolution and economic development in developed regions of the world led to a large increase in the total urban population. In developing regions, urbanisation has increased rapidly in the past four decades. The urban centres constructed by colonial regimes were primarily developed for commercial and security purposes and colonial urban centres reflected the lifestyle and priorities of the colonisers, rather than the indigenous population. African urbanisation has experienced a major urbanisation boom, as it has witnessed a massive urban growth of population moving toward cities and changing the pattern of urbanism. Population growth and migration towards cities is the hallmark of the African urbanisation, in which people abandon the life associated with primary activities in favour of urban activities. In addition, African major cities in most regions were newly constructed or developed during the colonial era to become commercial and political centres (Attwairi, 2017).

2.2.3.3 Urbanisation and Racial Segregation

Segregation was the name coined in early twentieth-century SA for the set of government policies and social practices which sought to regulate the relationship between white and black, colonisers and colonised. Many elements of segregation had precursors in the period of Dutch rule between 1652 and 1806, as well as in the nineteenth-century Boer republics and British colonies. But it was only in the twentieth century that the ideology of segregation was refined and the reach of the system fully extended. This followed a lengthy historical process which saw the final conquest of African chiefdoms in the 1890s and the consolidation of the boundaries of the SAn state in the aftermath of the 1899-1902 SAn War. Modern segregation represented a response to the industrialisation of the subcontinent, initiated by the discovery and exploitation of diamonds and gold from the 1860s. It arose out of the modernising dynamics of a newly industrialising society and was therefore not, as some have suggested, a mere carryover into the twentieth century of older traditions of slavery, agrarian paternalism, or frontier conflict (Beinart & Dubow, 2023).

SA differed from most colonial territories in Africa in that it attracted a high proportion of European settlers. The Southern tip of the continent was not the first port of call for European mariners. Their presence was felt earlier in West Africa which had been the centre of trade in tropical commodities and slaves from the sixteenth century. But in West Africa, so an early Portuguese sailor wrote, 'God has placed a striking angel with a flaming sword of deadly fevers, who prevents us from penetrating to the springs of this garden'. Furthermore, diseases such as Malaria, blackwater fever and trypanosomiasis, so inimical to white settlement there, proved far less of an obstacle in the more temperate south. And the hinterland of Cape Town, the first node of settlement, was populated by small and dispersed communities of Khoisan ('Bushman and Hottentot') peoples who were far less equipped to offer effective armed resistance than the large kingdoms of West Africa (Beinart & Dubow, 2023).

Therefore, explanations of segregation, like many recent historical debates, have veered between the materialist and the ideological, the structuralist and the individualist. On the one hand, scholars have tried to explore the thinking and ideas behind various phases of racial legislation and segregatory practice, questioning why colour became such a critical fault line of social division. On the other, they have examined the ways in which rigid forms of racial discrimination have helped to facilitate capitalist growth and provide whites with material and political benefits. The different forms of explanation are not mutually exclusive, nor has there necessarily been agreement within shared paradigms. In the 1970s and early 1980s, when a powerful left and materialist critique of existing historiography was developed, approaches polarised and debates became more intense. Many academics took seriously Marx's dictum that their task was not just to interpret the world but to change it; from this it seemed to follow that a scholar's political affiliation and commitment were revealed by his or her interpretation of history. Since then, SAn historiography has become more eclectic and varied and perhaps less passionate (Beinart & Dubow, 2023).

It is now possible to gain some idea of the extent to which desegregation has taken place in the towns and cities of the country. The extremely high White segregation levels, attained under the previous dispensation, have changed comparatively little. At the same time, African patterns have been strongly influenced by rapidly growing numbers concentrated in peripheral informal settlements. Only the Coloured population appears to be experiencing some significant degree of reintegration.

Furthermore, the rate of integration has declined after an initial rush in the early 1990s. The post-apartheid city continues to look remarkably like its predecessor, the apartheid city. For many cities in the Global South, colonialism played a dominant role in shaping their urban form. The historical objective of planning in colonial mother-cities was dealing with poor health and living conditions, therefore a planning approach like that followed in post-war Britain would appear beneficial in post-colonial cities, characterised by environmental and physical infrastructure unable to cope with massive population growth. Urban growth management is a discourse born to control the growing industrial city in the early twentieth century, and in recent years applied through instruments such as urban edges or growth boundaries to limit urban sprawl and encourage higher density urban development. In SA, the principles of compaction and urban growth management formed part of the post-apartheid planning agenda towards transforming the inefficient and fragmented landscape inherited from separate spatial development. Consequently, urban edges and urban growth boundaries formed key components of municipal spatial planning frameworks since the early 2000s to date [2024] (Horn, 2018).

According to (Turok, 2012), with the demise of apartheid, these repressive controls have been withdrawn, causing a recovery in the rate of urbanisation. The post-1994 government has sought to be even-handed in its treatment of cities, towns and rural areas, with no explicit policy either to support or to discourage migration because of its sensitivity and perceived negative effects on both sending and receiving areas. This neutral stance has avoided the serious social damage of the past, but relatively little has been done positively to overcome the legacy of segregation within the rural and urban areas. Similarly, the pursuit of economic investment in cities is not as vigorous as in many other countries. Ambiguity towards urbanisation also translates into a reactive, indifferent and sometimes hostile approach towards informal settlements and backyard shacks. In short, there is no consistent national policy for planning and managing the present and significant process of urbanisation. Within the towns and cities, the 1918 Natives in Urban Areas Bill was designed to force blacks into outlying townships or ‘locations’ specifically reserved for them. The Urban Areas Act, 1923 introduced the idea of residential segregation of different racial groups. Besides the aim of racial separation and containment of an ‘undesirable tide’ of black urban

migration (Maylam, 1990), these laws were also shaped by wider concerns not exclusive to SA at the time.

The consequences of urbanisation for settlement patterns suggests that the colonial and apartheid policies of racial segregation have left a daunting legacy, a fragmented rural and urban form with unequal access to jobs, amenities, public services and the use of raw materials like the medicinal plants often found in rural areas of SA. The legacy has not disappeared in the aftermath of apartheid because of the durability of the built form, the power of vested interests, persistent income inequalities between races and lack of upward mobility. The dispersed built environment demands long journeys, raises carbon emissions, reduces city productivity, and undermines the financial viability of municipalities because of the high servicing costs. Population densities within each city are also extraordinarily uneven (Turok, 2012).

Globally, race and social cohesion in urban areas have received significant research focus. However, it may appear that scholars have not paid adequate attention to the role of race as a facilitator or barrier to social cohesion in rural areas. many communities are still racially segregated and the concerns raised by race can be attributed to the historical system of exclusion and discrimination. Racial segregation diminishes contact and prevents meaningful interaction among the different race groups, thus reducing the capacity to build mutual trust and implementing common goals towards a cohesive society. Therefore, race as a barrier or a facilitator of social cohesion cannot be understood in isolation when the citizens engage seriously with the notion of social cohesion (Van Staden, Khaile, October, Human-Hendricks & Roman, 2023).

To clearly understand the consequences of exclusion and segregation, both exclusive and inclusive mechanisms to negotiate difference and order urban space (I.e. Erecting walls or pedestrianising spaces) promote symbolic spaces of safety, but also of danger (Where disorder is displaced), informed by a perception of the relative riskiness of zones. Strategies to banish crime paradoxically establish new versions of dangerous people and dangerous places, incited by moral panics. Urban exclusion is driven by economic, based on the fortified enclaves have higher property values, political, in reference to Haussman fragmented a perceived revolutionary threat, and social, such as fear of other considerations. This analysis principally addresses the latter as the

over-arching motivation, generating a new urban ecology based on the perceived dangerousness of other, in reference to Malamulele rural selected areas. This can be confined to the following, according to Spinks (2021):

- **Fear of other:** Although fear of crime is commonly used as the justification for segregatory rural-urban-forms, it is not necessarily matched by increasing crime, and is often used to disguise underlying motivations. Gold and Revill define this as “fear of crime plus”, and Judd’s urban America research reveals no direct link between crime rates and fear of crime (I.e. Except in high-crime areas), with the majority exhibiting fear having minimal first-hand victimisation experience. Precisely, culture of fear permeates daily life.
- **Exclusion of other:** The hanging question is: Who is felt to belong and not to belong? Th shapes residential space. Ironically, although fear induces strategies to separate difference, such separations generate increased ‘moral panic’ by limiting social mixing and thus increasing paranoia and mistrust between groups. Mead’s “generalised other provides a means of spatialising (i.e. Representational space).
- **Public order and citizenship:** The consequence of replacing public spaces (I.e. Open land) with urbanisation (I.e. Malls and other related developments) and transforming public space to discourage the preservation and protection medicinal plants is paradoxically to a decline in public order.

The spatial injustice, urban and rural residential segregations represent significant dimensions in the historical development of the settlement patterns of SA’s urban poor, which have strong links to colonialism and apartheid. A myriad of political, economic, legal and social factors contributed to the legacy of spatial injustice and socio-economic exclusion that characterises contemporary towns and cities (Strauss, 2019).

Against the existing predictions, the legacy of rural and urban apartheid, in the form of residential segregation; based local developments, buffer zones between races, peripheralisation of the black population and long dislocation between residence and workplace, may appear largely irrelevant. But the kind of cities constructed or reconstructed under apartheid themselves constrain the capacity of any government, present or future, to respond to the rising tide of urbanisation and especially to the needs of the poor. Indeed, the very practice of urban planning and state housing

provision in SA is itself so tainted by apartheid as to require considerable effort to regain popular confidence among those whose actual experience is of community destruction and forced relocation. In the meantime, people will find their own solutions to the daunting challenges of day-to-day living, seeking this generation's survival while perhaps unconsciously compounding the problems facing those to come (Smith, 2001).

2.2.3.4 Urbanisation and Disenfranchisement

From the researcher standpoint, it is easy to witness that there are institutionalised systems that disenfranchise the preservation of medicinal plants in SAn rural areas. These institutions include the planning approach and the way the city/township has been practicing their planning. These institutions are touted as chief disenfranchising instruments denying rural residents their rights to protect medicinal plants against local developments, resulting from urbanisation. Therefore, there is a dire need for the CCLM in the Malamulele area to be flexible enough to embrace the realities of the rural areas adjacent to the township, as urbanisation is seen as destroyer of the medicinal plants, which can face extinctions if further ignored. It should be highly noted that cities/township of the global South are dynamic places where transformation is the result of political, economic, social and spatial processes, while disregarding the importance of rural contributions to the mainstream economy of the local sphere of government. As a result, the livelihoods of the rural poor people are fast becoming real issues of urbanity facing strong resistance from institutions, like the local government that do not recognise land uses, hence they are excluded from the planning and management of cities/township. The rural residents and THPs remained disenfranchised for their rights to protect, monitor and safely keep their medicinal, as they have not been given the chance to access space in the developing areas [Township/city centre] close to them, they continue to be marginalised and their cultural activities suffers (Average, 2020).

Existing projections indicate that 50% of Africa's population will be urbanised by 2034, while the total population of Africa will reach a staggering 2 billion by 2050. Of these, at least 60% will be urbanised (Ruhiiga, 2014). In SA, the 2011 census (Stats SA 2012) indicate that the country had a population of roughly 51.8 million people as of 2011 with an annual growth rate of 1.5% and an urbanisation rate at 61.7% (Ruhiiga, 2014). Despite clear policy directives of local governments and directed infrastructure spending to effect rural and urban densification, very little evidence of effective urban densification is apparent. Although at a national scale urbanisation (polarisation) is the dominant migration trend, sub-stream migration patterns reveal population migration towards decentralised locations in and around the major metropolitan areas. Within metropolitan cities, decentralisation is clearly the dominant spatial trend. It is evident that, although production is a dominant driver of urbanisation, historic path dependencies have resulted in deferred urbanisation of low-income urban migrants along the rural and urban fringe. Environmentalism is a subdominant driver of middle-income to high-income groups away from inner-city areas as well as to satellite cities and intermediate-sized cities located near the metropolitan daily urban systems (Geyer Jr, Geyer, du Plessis, van Eeden, 2012).

In SA, spatial injustice holds profound implications for the democratic transformation of society, the planning and development of inclusive towns, rural areas and cities and the realisation of the constitutionally enshrined right to equality enabling vulnerability of marginalised rural inhabitants. The hoped opportunities of using medicinal plants for various purposes in the rural setting is dismissed, owing partisanship and local political power (Strauss, 2017). The poor rural people residing adjacent to the developing township or areas facing local developments often experience living conditions that are constantly militating against building positive livelihoods and hence negatively impacting on their quality of life (Parnell & Robinson, 2012)

The World Cities Report 2020 convincingly affirms that well-planned, managed, and financed cities and towns create economic, social, environmental and other unquantifiable value that can vastly improve the quality of life of all. Urbanisation can be leveraged for the fight against poverty, inequality, unemployment, climate change and other pressing global challenges. In this regard, sustainable urbanisation can play a key role in the Decade of Action to accelerate growth and shared prosperity to advance the achievement of the SDGs by 2030 (Sharif, 2020).

Urbanisation has been a contentious process in SA for more than a century. It has posed dilemmas for successive political regimes and resulted in draconian efforts to contain and control it in pursuit of racial domination and segregation. Until the year 1994, state restrictions on population movement and forced removals had egregious impacts on settlement patterns and living standards. A widening economic gap between urban and rural areas was one of the outcomes, creating pent-up migratory pressures. A highly segregated urban form was another effect, generating a variety of harmful social, economic and environmental consequences, including the effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province of SA. Fractured cities create poverty traps on the periphery, favour road-based private transport and undermine the economic advantages normally associated with dense agglomerations. The SAn cities are among the most unequal and visibly divided in the world (Turok, 2014).

The economic expansion took place under governments with rapidly increasing capacity to rule their territories effectively. Not a single part of rural SA reached the turn of the present century with a substantial body of people able to escape the pressures of incorporation into a rapidly growing capitalist economy. Most were deprived of independent control of what they saw as their land, and most rural households henceforth found it difficult to avoid participation in the urban economy through selling the labour of one or more of their members in the towns or mines. Nevertheless, and importantly, most SAn households remained based in rural areas, in actual occupation if not legal possession of some piece of land. This combination of powerlessness and possession of land strengthened a circular system of migration which gained support and eventually enforcement from large companies and the state (Mabin, 2021).

The limitations of urban policy design, based on; the low priority accorded to population change in the urbanisation process, planning outcomes out of tune with policy objectives, failure to reform the urban land market, continuing growth of informal settlements on the urban edge and disregarding rural areas while planning for the local developments are some of the factors negatively affecting preservation and protection of medicinal plants in SA (Ruhiiga, 2014). According to Maluleke (2024), the vision of the CCLM municipality is to become a spatially integrated and sustainable local economy by the year 2030, while guided by a rich and varied cultural heritage that has

a profound power to help build SA in general and Malamulele areas [Rural areas and township]. It is believed that the CCLM offer the best of rural and urban life with green fertile landscape and lively local rural communities and the main township, where economic hubs are found. The landscape of this municipality is completely different, consisting of wilder, warmer with a raw and dramatic beauty. The CCLM is gifted with mountains scenery, beautiful landscape, its stories and its people and it is a grand tourist destination, with beautiful wildlife, tropical fruits, cultural multiplicities and forests that depict our rich cultural history, inclusive of medicinal plants. This is further complemented by presence of academic institution, National Park and historic site, rich tourism resources, development potential, rich natural beauty, boasting markets prospects, culture and wildlife (Maluleke, 2024).

The tendency for urban scholars to dismiss SAn urbanisation as an aberration has a strong following. To most casual observers, apartheid shaped the country's peculiar forms of urbanism. Its uniqueness arises from the result of the mapping of white political power onto the country. This standard view contains considerable dangers. Politically, the result is to emphasise ideology and the state, at the expense of economics and daily life as the primary spheres of struggle against the oppressive order. Intellectually, the consequences include an aversion to probing the real material conditions [I.e. Destructions of medicinal plants due to urbanisation in the context of this study] and social character of urbanisation, 'urbanisation' is regarded as a process is understood primarily as population movement towards densely populated and mainly non-agricultural settlements, while disregarding and ignoring the importance of medicinal plants (Mabin, 2021).

Many socio-economic factors could potentially have played a role in the decentralisation of residential and economic development. These include the relatively high cost of land in central locations; the low friction of distance in transportation costs; diseconomies of scale; congestion spillovers; social embeddedness; and the environmental quality of locations. Whatever the weight of these factors in the morphological evolution of the major metropolitan areas of the country in recent years, they certainly contributed to the continuation of the social and economic stratification of the post-apartheid city structure. While generally, strides have clearly been made in the integration of social urban space in SAn cities over the past decade or more, settlement patterns in and around the major urban agglomerations of the country point

to the apparent continuing importance of social path dependencies of the past. Despite policy measures aimed at urban densification and the mixing of land uses, strong modernist elements are still clearly visible in the SAn cities or township (Geyer Jr, Geyer, du Plessis, van Eeden, 2012). The population change and urbanisation are inter-linked processes in time and space and there are inherent limitations in the country's urban policy design and the translation of this into planning interventions. The population change and the resulting socio-economic forces that drive urbanisation cannot ignore the major role played by rural-urban migrations and urban developments, which in turn have impacted on income distribution in metropolitan areas (Ruhiiga, 2014).

SA has a troubled history of extreme policies of socio-spatial engineering accelerating a peculiar form of urbanisation and then to resist and reverse it. This has been a painful experience for most of the population and has placed a heavy burden on the current generation, both in rural areas and in urban townships and informal settlements. It has created an environment in which spatial policies are sensitive, and it is difficult to address urban issues overtly. Consequently, there has been no explicit urban policy or programme to address urbanisation since 1994. Cities are the dominant centres of economic activity, but they are not performing to their potential or reaping the benefits of agglomeration because of infrastructure constraints, bureaucratic obstacles and shortfalls in skills. Nevertheless, the relative economic success of the cities and the fragility of rural economies have further widened spatial inequalities and reinforced the mismatch between jobs and population (Turok, 2014).

For a recourse, global agendas provide comprehensive, multi-sectoral and multi-stakeholder frameworks for unlocking the value inherent to urbanisation. Things should be done correctly by ensuring that cities are well-planned, well-managed and with sustained financing, without disregarding the effects of urbanisation on the availability of medicinal plants. For this to happen, national governments must create an enabling environment for cities to thrive, and local authorities must seize the opportunities given to them to flourish and develop. Urbanisation should not be at the expense of rural development. In fact, both should be symbiotic and mutually enhancing. The public and private sectors should invest in sustainable development projects, deploying innovative ideas for affordable housing, infrastructure and clean technologies. Civil society must strengthen institutions and contribute with their powers

of imagination to be part of this transformative process with a renewed sense of openness, participation and commitment. When all the interlocking parts operate in harmony and are supported by appropriate institutions and policies, cities will thrive and their value will be enhanced and shared by all; and in the process, no one and no place will be left behind, including rural areas (Sharif, 2020).

2.2.4 The Nature of Urbanisation and Medicinal Plants

It is necessary to sustain urbanisation as it is the major factor of the survival of the society, growth in developing countries, and it produces other benefits as well, however, it is not necessarily drive and it is not painless, or always welcomed by policy makers or the general public as it has some negative impact on the natural vegetation including medicinal plants (Cox, Shanahan, Hudson, Fuller & Gaston 2018). Managing urbanisation is a significant part of nurturing growth, heavy costs can be imposed by negligence of cities even in countries in which the level of urbanisation is low, urban zone is a center of commercial activities in societies, it is with this reason that it must be sustained (Cox *et al*. 2018). In terms of development and growth, urbanisation occupies a puzzling position (Uttara *et al*., 2012), urbanisation is not an easy process and it evolved over time. On the one hand, urbanisation is acknowledged as important to the multidimensional structural transformation that low-income rural societies undergo to modernise and to join the ranks of middle- and high-income countries (Uttara *et al*. 2012).

Jain (2016) postulates that plants are considered as one of the most important sources of medicines around the world in both traditionally and pharmaceutical. Among the 250 000 higher plant species reported in the world, more than 80 000 species are being used as medicinal. The use of medicinal plants is not only limited to their availability and affordability, but is also culturally driven, as these plant products are also found in urban settlements (Khumalo, Van Wyk, Feng, & Cock, 2022).

The medicinal plants are extensively utilised throughout the world in a way that most people depend largely on medicinal plants for their health and are not only a major source base for the traditional medicine and herbal industry but also provide livelihood and health security to a large segment of world population as recently most pharmaceutical medicine are manufactured from medicinal plants.

The Jain (2016) estimates that over 80% of the world's population depends directly on traditional form of medicine, mainly plant based to meet their primary health care needs. Jain (2016) shows that about 40% of the pharmacological industries mostly rely only on medicinal pants. In India an estimated number of about 3000 plant species are known to have medicinal qualities or properties, or rather are used no meet the primary health needs for the citizens and being used in the traditional system of medicines, there are different kinds of medicinal plants, for example: *'Ayurveda, Yunani, Siddha, and Homeopathy.'* The medicine is made either from the whole plant or from different parts of the plant, like leaves stem, bark, root, flower, and seeds (Jain, 2016), some of the plants only provide the medicinal qualities from other parts of the plants while others can provide the medicine from the whole plant.

The medicinal plants include a various type of plants used in herbalism and pharmacological industry for the survival of human beings and some of these plants have a medicinal activity, in a way that they are used to manufacture medicine that can cue different diseases. These medicinal plants consider as a rich and necessary resources of ingredients, which can be used in drug development and synthesis, which are pharmacological industries. Besides that, these plants play a critical role in the development of human cultures around the whole world (Hassan *et al.*, 2012), they play a major role in the sustainability of people's health. Some plants are considered as important sources of nutrition, and these plants are recommended for their therapeutic values. Some plants such as ginger, green tea, walnuts and some other plants have nutritional value, but they are not necessarily regarded as medicinal plants. Other plants such as aloe vera, willow tree, cloves, olive, and mint are considered as important sources for active ingredients used in products such as aspirin and toothpaste (Hassan *et al.,* 2012).

2.3. The Contributory Factors to the Scarcity of Medicinal Plants

2.3.1 Notable Factors Contributing to Scarcity of Medicinal Plants

Medicinal plants have come under increasing pressure due to a number of factors, which have resulted in the decline of certain species, extinction in others, and a general decrease in biodiversity of high use areas of South Africa (Mathibela, 2013).Vast number of medicinal plants have been studied regarding their phytochemical constituents including those commonly used in the treatment or prevention of specific ailments and diseases, and generally considered to play a beneficial role in healthcare (Egamberdieva, Wirth, Behrendt, Ahmad & Berg, 2017).

The cultivation, harvesting, processing, utilisation, and marketing of medicinal plants make valuable contributions to the economic well-being of communities developing new value-chains and traditional healthcare knowledge systems (Bareetseng, 2015, Mohâ & Al-Uzaizi, 2016). The reported critical over-harvesting of wild populations is considered an urgent issue for biodiversity conservation (Nwafor, 2020). Growing demand for therapeutic products from indigenous medicinal plants have led to increased interest in its cultivation (Nwafor, 2020). Surveys conducted among medicinal plant traders in urban markets have thus far been the main method used to understand the effect of medicinal plant harvesting on rural livelihoods, as well as the impact of this activity on the environment (Kepe, 2007). With increasing population growth, urbanisation and strong cultural values regarding traditional medicines, the trade in medicinal plants has surged considerably (Xego, Kambizi & Nchu, 2016). This has resulted in the over-harvesting of certain important species found in the wild, to the point of certain extinction (Kepe, 2007).

Other major factors which affect medicinal plant growth are fire, wattle expansion or eradication program and grazing. Fire can destroy the parts of above ground vegetation including medicinal plants. Particularly, it may harm the bud of herb medicinal plants (Liu, Vind, Promchote & Ly, 2007). Climate change is causing noticeable effects on the life cycles and distributions of the world's vegetation, including medicinal plants. Some medicinal plants are endemic to geographic regions or ecosystems particularly vulnerable to climate change, which could put them at risk (Cavaliere, 2009).

Factors that influence whether or not taxa will face extinction threats include the size of the distribution range, the relative abundance of mature individuals in the wild and the intensity of the deterministic threat(s) (Williams *et al*., 2013). Since certain factors (e.g. plant parts removed, harvesting intensity, inherent susceptibility to wound infection, regeneration rates) render some taxa more vulnerable than others to harvesting for medicinal purposes, the IUCN Red List system provides an excellent tool in South Africa for prioritising taxa that are threatened with extinction in the short and medium term (Williams *et al*., 2013). Hence, while medicinal plant harvesting poses threats to the persistence of socio-economically valuable species, such harvesting is not a significant driver of plant population decline nationally within the context of all (Combined) factors threatening South Africa's flora (Williams *et al*., 2013).

2.3.2 Evidence of Medicinal Plant Uses

The use of plants for treating various diseases is as old as the human existence. Popular observations on the use and efficacy of medicinal plants significantly contribute to the disclosure of their therapeutic properties, so that they are frequently prescribed, even if the chemical constituents of medicinal plants are not always completely known, they are however, frequently prescribed and popular observations on the use and efficacy of these medicinal plants significantly contribute to the disclosure of their therapeutic properties (Silva & Fernandes-Júnior, 2010). On many accounts medicinal plants are widely used. Population increase, insufficient supply of medical drugs, expensive cost of treatment, side effects of several synthetic drugs and the new development of resistance to the drugs that are currently used for infectious diseases have led to increase in the uses of plant materials as source of primary medicine (Khan, 2016).

The medicinal plants have different characteristics and roles when used for treatment of different diseases, which are *firstly,* synergic medicine, that is the ingredient of plant species that all interact simultaneously so their uses can complement each other or damage others or neutralise their possible negative effects, they work effectively with each other. *Secondly*, support of official medicine, that is, in the treatment of complex

cases like cancer diseases the components of the plants proved to be very effective, they are used to treat chronic diseases, for example, *Moringa* (Khan, 2016).

Lastly, preventive medicine, that is, these medicinal plants are used to boost the immune system and assist the body to resist certain diseases, it has been proven that the component of the plants also characterised by their ability to prevent the appearance of some diseases (Hassan *et al*., 2012). This will help to reduce the use of the chemical remedies which will be used when the disease is already present, for example it reduces the side effect of synthetic treatment (Hassan *et al*., 2012). The natural antiseptic properties of medicinal plants are one of the reasons they are used. Consequently, the potential properties and uses of medicinal plants have been investigated to extracts for the preparation of potential nanomaterial based medical drugs to cure diseases (Greenwell & Rahman, 2015). Various medicinal plant products possess analgesic and antipyretic properties (Mohammad, Majumder, Rashed-al-Qayum, Bhattacharjee & Kar, 2013). These plants can be used as digestive stimulants, anti-diarrheic, antiseptic, anti-inflammatory, anti-parasitic and for appetite purposes stimulants in humans (Al-Snafi, 2021).

2.3.3 The Effects of Urbanisation of Medicinal Plants

Several researchers (Arjona-García *et al*., 2021, African Development Bank, 2022, Du Toit, 2015, Dylewski, Banaszak-Cibicka, Maćkowiak & Dyderski, 2023, Eckart, 2022, Hou, et al, 2023, Li, Stringer and Dallimer, 2022, Sakketa, 2023, Magoro, 2008, McKinney, 2008, McKinney, 2006, Ngcamu, 2022, Sierra-Huelsz & López-Medellín, 2021, Van Wyk *et al*., 2002, Wang et al., 2020) documented the effects of urbanisation on species scarcity. Most of these researchers mention urbanisation as a major contributor to the extinction of medicinal plants. Based on geographical settings, urbanisation can either increase or decrease the richness of rural species (Czech *et al*., 2000). Plants that are mostly used for health purposes are negatively affected by urbanisation (McKinney, 2008). This subsequently causes scarcity of these plants, leading to extinction (McKinney, 2008). To determine the effects of urbanisation on species richness [Medicinal plants included], McKinney (2008) reviewed one hundred and five (105) types of species.

His study (McKinney, 2008) concludes that approximately sixty-five percent (65%) of plants showed increasing species richness, based on moderate urbanisation. The other remaining thirty-five percent (35%) are affected by non-development factors, such as climate change. According to Bolund and Hunhammar (1999), biodiversity is a key output for urban environments and developments. Urban biodiversity wants to offer and instil knowledge about the effects that urban populations have on medicinal plants as well as the importance of protection and conservation of nature (Medicinal plants included). This involves the management of medicinal plants that are already coming to an extinction (Miller & Hobbs, 2002). Equally, the increase of urbanisation and conservation practices should be better understood based on challenges and effects of biodiversity (McKinney, 2008).

While acknowledging the effects of urbanisation on medicinal plants extinction, the complexities surrounding the nature of urban land use and availability should be prioritised to clearly accommodate local rural biodiversity and related influences (Czech *et al.* 2002; and McKinney, 2006). Another negative impact on medicinal plants is structural simplification of vegetation in many areas (Marzluff & Ewing, 2008). Landscaping and maintenance of residential and commercial areas typically involves removal of vegetation and dead wood and an increase in grasses and herbs which leads to plant species being destroyed and not preserved (Marzluff & Ewing, 2008).

According to Mander, Ntuli, Diederichs and Mavundla, (2007), the African Health Care System of SA has always been dependent of medicinal plants. Due to the increase in urbanisation, the demand of medicinal plants also increases (Williams *et al*., 2013). Knowledge of medicinal plants that people have can be affected by urbanisation [which involves recognising, naming, using, and managing species in that use category] (Arjona-García *et al*., 2021). It is also evident that due to the unlimited access to medical health care service that are provided by the government, there are higher chances that the use and knowledge of medicinal plants can be neglected. Notably, the loss of this indigenous knowledge and abandonment of medicinal plants could be seen as due to a decrease in agricultural, agroforestry, and forested areas, since urbanisation reduces the areas for medicinal plant collection and destroys the existence of medicinal plants (Arjona-García *et al*., 2021).

The trade of medicinal plants is currently greater than it was in the past because of the important indigenous values associated with medicinal plants, the high human population growth and rapid urbanisation (Wiersum, Dold, Husselman & Cocks, 2006). To documents medicinal plants coming to an extinct, research activities have been carried out to address the conservation and sustainable use of traditional plant genetic resources that are being over-exploited and traditional knowledge holder's contributions were not integrated and reflected in the research. The following sub-section will be focusing on the influence that biodiversity has on preservations and protections of medicinal plants. In essence the *'biodiversity influence on preservations and protections of medicinal plants*' can be demarcated to these aspects; at the starting point of the ecosystem approach to its conservation, lies the recognition that humans form a fundamental part of plants existence (Van Wyk & Prinsloo, 2018).

Therefore, the goal of 'conservation' is aimed at supporting the sustainable development of natural resources by protecting and preserving them by utilising biological resources in ways that do not threaten and diminish the world's multiplicity of genes and plant species or destroy important habitats and ecosystems to a point where they face extinction (Kasagana & Karumuri, 2011). Accompanying the loss of habitat (Medicinal plants included) is the loss of associated indigenous knowledge. When people lose their indigenous knowledge, the resultant loss is that of plant species. For centuries, THP in villages have been harvesting medicinal plants in their local environment in ways that ensure sustainable supply (Magoro, 2008). Considerably, the targeted population numbers of these medicinal plants are declining continuously and some of them are now on the verge of facing extinction leaving their therapeutic potential unfulfilled (Rasethe *et al.*, 2019).

The THP are no longer the only harvesters of plants, and this poses a serious problem on collection and usage of medicinal plants. The primary cause of loss of plant species at local, regional and global level is the expansion of urban areas, and this is a problem to the entire community and ecosystems (Magoro, 2008). Conservation of biodiversity in SA used to be based on a law enforcement approach, until recently, now that it is increasingly evident that the used approach was not effective new conservation methods are needed (Moeng, 2010).

2.5. Strategic Management Methods of Safeguarding Medicinal Plants

The Community-Based Natural Resources Management (CBNRM) are responsible for plant conservation (Moeng & Potgieter, 2011). Cunningham (1991) highlights that the availability of raw material and exploration of future development requires sustainability and preservation of medicinal plants. Without a specific available conserving of medicinal plants, government structures are implementing conservational efforts to protect various types of natural ecosystems, such as the nature reserves, wildlife sanctuary, national parks, biosphere reserves, protection forests, recreational forests and other types of protected areas.

Note must be taken that some of these management's methods are ineffective in other areas due to vastness and widely scattered distributions of these areas. Therefore, stricter control measures and better management of these areas should be developed (Cunningham, 1991). In addition, conservation of medicinal plants should be directed towards protection against human disturbance. The notably exploitation of medicinal plants is not directly done by hired industries and exporters, the rural people with capital provided by other private creditors often perform this exploitation. Individuals collecting and harvesting medicinal plants from the wild/forest are unaware of practices of annihilating resources that can nurture them (Cunningham, 1991).

These individuals are uninformed about the importance of these plants, and continuously exploit resources for monetary value. Thus, dissemination regarding efficient harvesting resources to avoid endangering plants and [Rural] communities is very essential (Cunningham, 1991). Considerably, the traditional leaders enforcing good management of plant species, using sanction, customary laws, taboo systems and effective control systems for communal compliances, dominated the Pre-Colonial era in Africa, Cunningham (1991). This colonial approach is challenged by transformation practices that are introduced in other areas (Magoro, 2008). The demand by majority of the people in SA for medicinal plants has been met by indiscriminate harvesting of spontaneous flora including those in the forest and some were harvested properly though some were destroyed completely during harvesting (Cunningham, 1991).

Thus, the consulted researcher provides that traditional medicine and associated agricultural practices conform to important economic activities across SAn rural communities and knowledge management by rural native residents for the perseverance of natural resources is however largely ignored. Medicinal plants trade at local, regional and international levels has had an increase, as the subsistence consumer has distanced from harvesting areas because of urbanisation (Marshall, Lockwood, & Gath, 1995). The sustenance of indigenous knowledge of the THPs on medicinal plants and their environments of origin should be protected at all costs. The operations of rural communities and THPs should be assured to support land tenure and management of these plants (Magoro, 2008; Posey, 2000; and Department of Science and Technology - DST, 2004). According to Mavi and Shava (1997), the term 'modern environmental conservation strategies' is unclear to many stakeholders in this sector. This prompted the THPs to link extinction of medicinal plants and environmental degradation to urbanisation (Shibambu & Maluleke, 2021).

The indigenous knowledge still plays an important role in sustainable livelihood of a significant proportion of the SAn population of medicinal plants (DST, 2004). Magoro (2008) confirms that this is also supported by the 'Rural African Traditions,' which highlights that the botanical knowledge of plant species, ecology and scarcity is largely affected by urban developments in their respective areas. This leads to limited knowledge on conservation of traditional medicines. Thus, requirements of understanding the relevance of traditional ecological perspectives and related knowledge to protect threatened medicinal plant species is urgently required (Magoro, 2008).

The 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 SA (Magoro, 2008). Mander *et al*. (2007) states that 'Provincial levels' consist of 'Nature Conservation Ordinances' which endorse strict limitations on accessibility of plants. This reads with the Limpopo Environmental Management Act (No. 7 of 2003), which "forbid any individual who has no permit to access the protected plants or specially protected plants in the province."

According to Moeng (2010), the role played by 'Traditional Medicine Shops' and 'Street Vendors' on the trade of indigenous medicinal plants in the Limpopo Province is valued to develop strategies to prevent loss of these plants. Nearly 231 medicinal plants are reported to be traded at about Sixteen (16) shops, and approximately 0.96 tons of plant material are traded per year (Moeng, 2010).

Approximately 4000 tons of wild plant materials, harvested from 200 medicinal plants species are traded per year in rural areas of Limpopo and KwaZulu-Natal Provinces. This led to the extinction of wild ginger and pepper-bark tree and other medicinal plants outside protected areas (Mander *et al.*, 2007). These plants are declining due to over-harvesting. For sustainability, an estimated 81% of traders in the province harvest a few plants in a specific location to allow species regeneration and to ensure population integrity. About 19% of them seem to be ignorant of insurance of plant species preservations (Moeng, 2011). For recourse, their respective environments should be managed based on ecological principles, partnership management and permit systems to benefit socio-economic and conservational management of medicinal plants (Damn, 2002).

2.6. Afrocentric Theory

The following sub-sections are about the theoretical applications in relation so this study. They focus is placed on two theories, namely: Afrocentric Theory and Dependency Theory, their respective development, criticisms and lasting value in relation to the effects of urbanisation on the sustainability of medicinal plants are shared.

2.6.1 The Historical Development of Afrocentric Theory

This study adopted an Afrocentric Theory to explore the research problem. Afrocentricity seeks to re-locate the African person as an agent in human history to eliminate the illusion of the fringes (Asante, 1993). For many years, Africans have been taken off cultural, economic, religious, political and have existed primarily on the periphery of Europe (Asante, 1993, and Asante, 2007). 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), indicates 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).

The Afrocentric Theory emerged in the African American cultural panorama as a set of premises that would account for the understanding of an African sense of totality and wholeness in a network of multiple and manifestations of different fields of knowledge to address the life and experience of people of African descent in America, in the African continent, and in other diasporas (Warfield-Coppock, 1995). Basic administration factors that include support of all community members, community management, and people over profits are the philosophical orientation of various factors such as harmony, spirituality, and humanistic/people-oriented principles that the Afrocentric Theory is based on (Warfield-Coppock, 1995). Afrocentricity is also known as an intellectual program, a political approach, and/or a historical evolution that influences the African culture and achievements of Africans (Chawane, 2016).

Correspondingly, Afrocentricity is defined in three main categories, which are known as the methodology, theory, and ideology that should be implemented to achieve its objectives towards accomplished the proposed change (Chawane, 2016). The Perspective acknowledges African cultural resiliency as a foundation to help society in practicing and solving pressing social problems that affects human potential and preclude positive social change (Young Jr, 1967). In short, it has become a formidable Pan-African force that must be reckoned with. The reason for its appeal lies both in the disturbing conditions of African people and the remedy that Afrocentricity suggests (Mazama, 2001).

2.6.1.1 The Criticisms of Afrocentric Theory

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 incomplete in that it does not contribute to a critical tradition. ***Secondly,*** it is reported to be unsuitable to execute a cultural unity among a diverse African society and the varied groups of people of African descent. ***Thirdly*****,** the 'Afrocentric Paradigm Apes'

concepts stem from European social science and history, and *fourthly*, the theory lacks a 'social class' analysis of Africa and people of African descent. Despite its limitations, this theory still offers the importance of protecting and preserving the conventional methods of utilising medicinal plants for the benefit of rural citizens (Mazama, 2001), from which, the study of this nature can add to the identified vacuum in the body of knowledge.

Although the Afrocentricity has been the most analysed theory that has an intellectual idea with the main purpose of centrality of the African experience that African people have, be it historical or cultural (Mazama, 2001). Mazama (2001) argues that Afrocentricity cannot be limited to an epistemological project. He continued to state that Afrocentric should not be approached as a simply analytical tool. He in fact argued that it is believed that such a reduction could be Afrocentric at times and could change to something else at different times, as if being Afrocentric could be a part-time affair leading maybe even to the reinforcement of the double consciousness.

The aims and objectives the Afrocentric approach comprises a sequence of activities by concerned African and Afro-American scholars and academics aimed at achieving the objective of ensuring that the African heritage and culture and its history and contribution to the body of knowledge of the civilised world (Chawane, 2016). Additionally, the organised epistemological views are seen to be better than any other theories as generated from daily praxis "intended to explain universal phenomena across space and time" (Miike, 2006). A transformative project can become a mere organisation of ideas that transcends from Afrocentricity (Monteiro-Ferreira, 2014).

2.6.1.2 The Value of Afrocentric Theory

Afrocentricity serves as a foundation for exploratory, explanatory, and descriptive research (Pellerin, 2012). Despite its limitations, this theory still offers the importance protecting and preserving the conventional methods of utilising medicinal plants for the benefits of rural citizens, from which, the study of this nature can add to the identified vacuum in the body of knowledge. In addition, and to effectively respond to the four noted limitations, this theory is applied in this study to explore and analyse how urbanisation affects the availability of medicinal plants in the Malamulele area,

only untapped African perspectives and discoveries on this subject will be gathered during this process.

As the Afrocentric conceptualisations and operationalisations are implemented, its concepts and variables remain of critical concern for Afrocentric researchers (Pellerin, 2012). Conceptualisation of culturally attuned within Afrocentric methodologies fosters the application of the meaning of the concepts used (Pellerin, 2012). Hence, the development of research is also influenced by Afrocentric methodologies whereby Africa is culturally based by Africans for the liberation of Africana people (Asante, 1988; Mazama, 2001). Valid and reliable research that emerge from Afrocentric methodologies must operate as aimed towards the freeing of African peoples' thoughts and realities (Modupe, 2003). Suggests that Afrocentricity must function as a methodology of the absolute and not one of comparative analysis (Banks, 1992).

In addition, and to effectively respond to the four noted limitations, this theory is going to be applied in this study to explore and analyses how urbanisation affects the availability of medicinal plants in the Malamulele area, (Bent-Goodley, Fairfax & Carlton-LaNey, 2017). Therefore, the following measures are going to be applied to respond to the noted limitations of this theory by gathering cultural perceptions on the effects of urbanisation on the availability of medicinal plants in Malamulele area.

2.6.2 The Development of Dependency Theory

The Dependency Theory refers to an approach to understanding economic under-development that emphasises the putative constraints imposed by the global political and economic order. First proposed in the late 1950s by the Argentine economist and statesman Raúl Prebisch, this theory gained prominence in the 1960s and 1970s. According to this theory, under-development is mainly caused by the peripheral position of affected countries, a developing country like SA in this context in the world economy. Typically, under-developed countries (Disadvantaged rural communities) offer cheap labour and raw materials [Medicinal plants in this regard] to the world market, while paying little attention to the effects of urbanisation on the availability of medicinal plants, as this study affirms, using Malamulele area of Limpopo Province, SA as a blueprint. The urbanisation practices often leave rural areas affected. These resources (Medicinal plants) are sold to advanced economies, which have the means

to transform them into finished goods, contributing to the pharmaceutical methods for herbalism and medicinal activities. In some instances, these medicinal plants get destroyed during urbanisation processes, positively some of them are protected and preserved by the THPs, IUCN, South African National Biodiversity Institute (SANBI) and community members. The under-developed countries end up purchasing the finished products at high prices, depleting the capital they might otherwise devote to upgrading their own productive capacity. The result is a vicious cycle that perpetuates the division of the world economy between a rich core and a poor periphery. While moderate dependency theorists, such as the Brazilian sociologist Fernando Henrique Cardoso, who served as the president of Brazil in 1995-2003, considered some level of development to be possible within this system, more-radical scholars, such as the German American economic historian Andre Gunder Frank, argued that the only way out of dependency was the creation of a non-capitalist [Socialist] national economy (Munro, 2024).

The Dependency Theory is a school of thought in contemporary social science which seeks to contribute to an understanding of underdevelopment, an analysis of its causes, and to a lesser extent, paths toward overcoming it. It arose in Latin America in the 1960s, became influential in academic circles and at regional organisations, spread rapidly to North America, Europe, and Africa, SA included, and continues to be relevant to contemporary debate. This article examines the history of its chief concept, describes its evolution over time, analyses its influence, and evaluates its validity and prospects for social science in the future (Sonntag, 2021). This theory explains how poor countries depend on rich countries. It goes further and indicates that rich countries cause dependence by destabilising the weak countries and causing them to be in need. The rich exploit the raw materials of poor countries and lead these countries to debt for their benefits by sharing insights why some countries are poor, while others are rich. The theory traces the sources of wealth of the rich countries and points to exploitation of resources causing dependence (Ntara & Cloud, 2023).

Therefore, some characteristics of the Dependency Theory are confined to the following aspects:

- Two sets of nations are involved, which includes an advanced and poor nations, using the differences between urban and rural areas in SAn's context.
- Poor nations depend on rich nations, due to development; urbanisation is seen as catalyst for economic change in rural areas adjacent to the township (Malamulele), while seriously paying less attention to the importance of medicinal plants.
- Advanced nations actively cause dependence, urbanisation is used as a tool of rural areas development to create job opportunities and enhance the standard of living, while improving the outlook of the adjacent rural areas to the township or city centre.
- Advanced nations are interested in the resources of the poor nations, despite urbanisation; some of the medicinal plants are sold at influent urban areas, further validating their value for primary health purposes (Ntara & Cloud, 2023).

From the historically notions, towns, cities and predominantly urban modes of living have been equated with development, industrialisation and modernisation, whilst rural settings were looked upon as primitive, backward, poor and deprived. Urbanisation was thus held to be the means by which these undesirable conditions could be overcome and developmental goals be achieved. This submission still resonates with current practices witnessed in the Malumelele selected areas regarding urbanisation, which have drastically effects on medicinal plants. Therefore, the purpose of the present discourse is to establish an awareness amongst researchers, policy-makers and development planners concerning the daunting, although obscured, reality of the rural areas adjacent to the city/metropolis Centre. It is undoubtedly a phenomenon that demands the more serious attention of development practitioners over the full spectrum - planners, engineers, economists, sociologists, anthropologists, political scientists and the like (Fick & Mentzel, 1995).

2.6.2.1 The Criticisms of Dependency Theory

The notion of dependency focuses on asymmetrical relationships and ties among nations, small groups (The disadvantaged and martialised rural residents) and classes, in other words, although dependency is mostly seen between nations, it includes broader ties among classes and groups within and among nations who have common interests, in this instance the identified rural areas suffered, as the medicinal plants are destroyed due to urbanisation. While the Dependency Theory gained advocates also in other parts of the world during the 1970's, it also became subject to many criticisms. This study focused on following Five (05) factors of criticisms, amongst others:

- This theory focused on the fact that "this theory does not provide exhaustive empirical evidence to support its conclusions. Furthermore, this theoretical position uses highly abstract levels of analysis" (Reyes, 2001).
- This theory pays much attention to the role of external ties and relationships while distracting attention from the dynamics of internal conflict (Ateş, Es & Bayraktar, 2005).
- Other critics questioned whether this theory still have a unified and coherent message for today, taking into the facts that it reflects the conditions and understanding of the 1960's, and it experienced several divisions since its initial initiation (Ateş, Es & Bayraktar, 2005).
- This theory had come from some neo-classical economists although their number is surprisingly small. These neo-classical economists considered dependency a transitory division of Third World economists, guided more by ideological predilection and based on questionable research (Sayigh, 1991; Escobar, 1996; and Kueger, 2000).
- The dependency movement considers ties with trans-national corporations as being only detrimental to countries when these links can be used as a means of transference of technology (Reyes, 2001).

Summarily, many of those who examined the dependency literature concluded that the dependency analysis proved unable to prove its basic thesis scientifically and unable to show that dependence and development were incompatible (Reyes, 2002; and Ateş, Es & Bayraktar, 2005). Distinctively, the underdevelopment of the third world is marked by several common traits; distorted and highly dependent economies devoted to producing primary products (Medicinal plants) for the developed world and to provide markets for their finished goods; traditional, rural social structures; high population growth; and widespread poverty. Despite the widespread poverty of the countryside and the urban shantytowns (Malamulele township development), the ruling elites of most third world countries are outrageously wealthy (Emeh, 2013).

2.6.2.2 The lasting value of Dependency Theory

Although Dependency Theory is usually described as the worldview of the 1960s and 1970s, economic and political life in poor countries (Poor rural areas of SA) are still not able to overcome their standing problem of dependency on other countries, depending on the economic upliftment owing to urbanisation (Ateş, Es & Bayraktar, 2005). Dependency in this regard can be defined as “an explanation of the economic development of a state in terms of the external influences, political, economic, cultural and urbanisation, based on national, provincial and local development policies” (Ferraro, 1996). The Dependency Theory utilise three major hypotheses on the issue of development of so-called under-developed and developing countries. These can be summarised as follows: 1) In a sharp contrast to the development of the rich Western countries, development of underdeveloped and developing countries necessitates subordination to the core countries of the West, 2) The peripheral nations experience their greatest economic development when their ties to the core are weakest, and; 3) When the core countries get out of their crisis situation, they try to fully integrate peripheral countries into the world capitalist economic system (Reyes, 2001; and Ateş, Es & Bayraktar, 2005).

The relevance of this theory today in making our analyses informed by historical context and the importance placed on the role of power relations in shaping development outcomes, the relation between the preservation and protection of medicinal plants in the selected rural areas of Malumulele [Establishments of shopping complex, stadium, residential areas and recreational centre] versus urbanisation, in terms of local developments and the old lines of inequality still remain broadly in rural spaces in spite of the economical advances (Olukoshi, 2017). The dependency's contribution has been silently incorporated into schools (Sociology and Anthropology included) of thought that have aimed at explaining global capitalism and the effects of urbanisation on medicinal plants in rural settings cannot be ignored and although the theory was developed with Britain and the US in mind, the drastic increase of urbanisation in SA perpetuates its relevance, further creating a state economic dependency, while neglecting the importance of medicinal plants for various pertinent reasons (Centeno, 2017).

Afrocentricity serves as a foundation for exploratory, explanatory, and descriptive research (Pellerin, 2012). Despite its limitations, this theory still offers the importance protecting and preserving the conventional methods of utilising medicinal plants for the benefits of rural citizens, from which, the study of this nature can add to the identified vacuum in the body of knowledge.

2.7. Chapter Summary

This chapter (Two) gathered actual perceptions on this subject, focusing on THPs and community members' insights to explore the effects of urbanisation on the sustainability of medicinal plants, as well as determining contributory factors to scarcity of medicinal plants and proposing alternative strategic management methods to safeguard medicinal plants and the theoretical applications: Afrocentric Theory and Dependency Theory. The next chapter (Three) focuses on the adopted research design and methodology in this study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

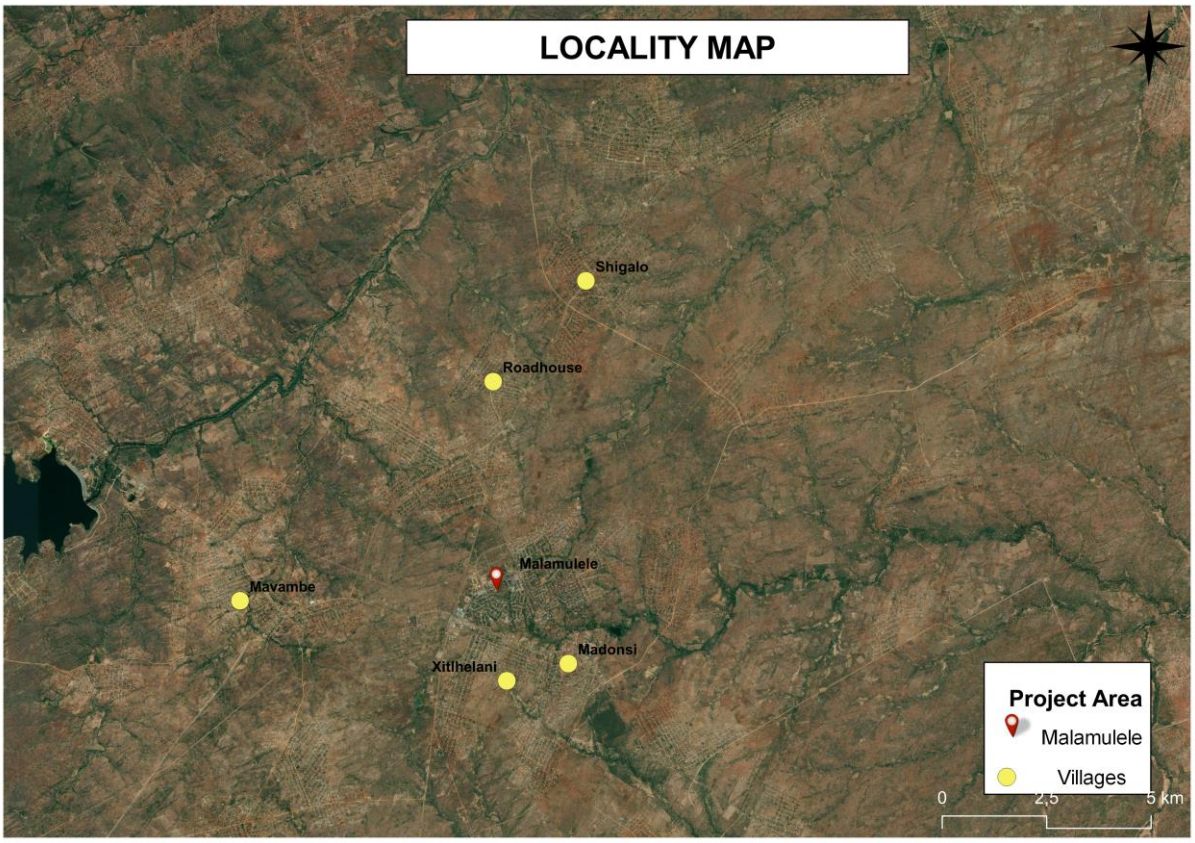
3.1. Introduction

This chapter provides details of the employed research design and methodology, as adopted in this study. This was deemed as important chapter of this study as it presents its crux, as used by the researcher to arrive to the study findings. The exploratory research design and qualitative research approach were used method. This study focused on Six (06) selected villages, namely: 'Roodhuis, Mphambo, Xigalo, Xitlhelani, Madonsi, and Mavambe,' under Malamulele Township of CCLM. The THPs and community members were selected using non-probability: Purposive and snowball sampling to form part of this study; they were all subjected to the semi-structured IDIs. The Six (06) Spiral Data Analysis was adopted to analyse the collected data. The Four (04) elements to ensure trustworthiness were outlined and applied to this study and the selected principles of ethical considerations were also listed and discussed based on this study.

3.2. Study Context

Malamulele Township is located in the CCLM within the District of Vhembe in Limpopo Province of SA. Malamulele area is the first order settlement classified as a district growth point, which is well positioned along the National and Provincial movement network, and functions as a high order service centre, with relatively large local populations, adjacent to immediate rural areas. Therefore, this study was confined to the 06 selected villages, namely: Roodhuis, Mphambo, Xigalo, Xitlhelani, Madonsi, and Mavambe (Refer to figure 1) in Malamulele area.

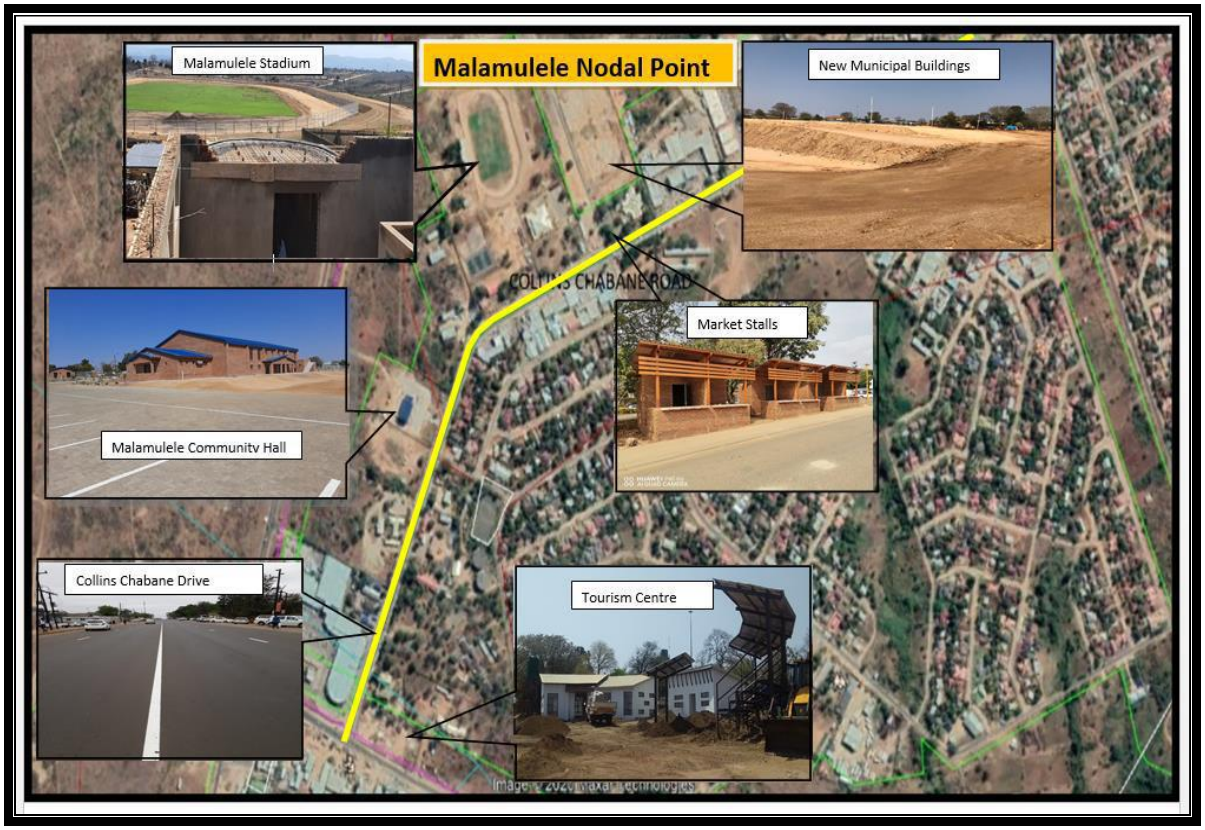
Figure 1: Map of Malamulele areas



Source: Google Map (2022)

The selected villages under this study are symbolised by the Yellow dots, with descriptions on Figure Four (04). The Red indicated location symbolised Malamulele central, the main Town. Based on the identified study location, the CCLM areas are touted to be having amazing biological diversity of 'Flora and Fauna,' this rich biological diversity can be attributed to its biogeographically location and diverse topography, the CCLM Final Reviewed Integrated Development Plan [FRIDP] (2021/22). The District falls within the greater savanna biome, commonly known as the bush veld with some small pockets of grassland and forest biomes (CCLM FRIDP, 2021/22). However, the map below shows that the western part of the Municipality consists of land with moderate potential for agricultural production (CCLM FRIDP, 2021/22). Thus, the Eastern part of the Municipality has potential grazing land, which is unsuitable for growing of crops (CCLM FRIDP, 2021/22).

Figure 2: Malamulele nodal point projects



Source: CCLM Final Reviewed Integrated Development Plan (2021/22)

Figure Four (04) shows the spatial presentation of Malamulele nodal point projects. These projects include the following: Malamulele stadium, new municipal buildings, municipal community hall, market stalls, Collins Chabane drive, and tourism Centre, amongst others.

3.3 Research Design

There are several research designs, which the researcher may adopt for the study, which include the following: Case study, ethnography, phenomenological study, grounded theory study, narrative inquiry, and content analysis, including the descriptive, evaluation, explanation, exploratory and action research objectives/designs, amongst others (Leedy & Ormrod, 2019). In the study, the researcher adopted the exploratory research design/objective to explore the effects of urbanisation on sustainability of medicinal plants in the selected rural areas of

Malamulele. According to Thomas and Lawal (2020), exploratory research design is a type of research that is conducted when the researcher has little or no knowledge about the subject matter. Mbaka and Isiramen (2021) concur that the exploratory research design is conducted when enough is not known about a phenomenon and a problem that has not been clearly defined. The main objective of exploratory research design is to improve a researcher's knowledge of a topic, and it is often used to clarify the study aim and objectives which guided this study entirely (Singh, 2021).

De Vos, Strydom, Fouché and Delport (2011) point out that this research design is conducted to gain insight into a situation, phenomenon, community or individual. Referring to this study, there seems to be a lack of basic information the effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, SA. Therefore, the study ensures the selected participants' (Community members and THPs) are familiar with this subject, to increase their understanding on the processes to follow to achieve protection and preservation, for them to become involved in the attempt to mitigate the effects of urbanisation in the selected rural areas of Malamulele. In exploratory studies, the researcher aims to become conversant with the basic facts and to create a general picture of conditions (De Vos, *et al.* 2011).

Similarly, the study was exploratory in nature aiming to provide an understanding of the identified phenomena and to grasp the deeper meanings associated with the phenomenon under research, by determining whether the community members and THPs in the selected rural areas of Malamulele can actively contributes to safeguard medicinal plants, against the prospects of urbanisation. This was explored through the application of documentary studies and semi-structured IDIs. This research design was aided by the exploratory research objective, defined as the methodology approach that investigates a phenomenon that have not previously been studied in-depth. It is often used when the issue you are studying is new, or the data collection process is challenging in some way (George, 2022). For this study, the researcher adopted the exploratory research design to explore the effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, SA.

Kumar, Mitra, Adhikari and Rawat (2018) define a research design as “the roadmap that you decide to follow during your research journey to find answers to the researcher’s study aim and objectives as validly, objectively and economical as possible.” According to Bless and Kathuria (1993), the process followed by the researcher by looking at road map while conducting a study refers to set of procedures guiding researchers in the process of verifying study aim and objectives, in reference to study findings. This allows researchers to draw conclusions between the-said study aim and objectives. Polit and Hungler (1985) state that research design refers to the researcher’s overall plan for obtaining answers to the study aim and objectives.

The researcher submits that the research design relates to a blueprint, the procedure, or the plan of action, which acts as a framework or guideline to the study. Therefore, the exploratory research design was used in this study *“to explore the effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo province, South Africa.”* From a qualitative standpoint, the obtained information from selected participants is not expressed in a numerical form and the researcher was not interested in determining the relationship between variables and to generalise study results, in contrary, the researcher was concerned with providing study findings which were qualitative inclined, guided by the stated research topic above to gain insights into the selected participants thoughts, attitudes, behaviour, value systems, feelings, concerns and motivations to transfer the findings too other settings facing similar problems.

Haile (2023) states that one main **advantages** of exploratory research design is that it is flexible and adaptable, as there are no specific set rules about conducting exploratory research. Haile (2023) further adds that in exploratory research, the sample size tends to be small. Small samples save time and resources. According to Mbaka and Isiramen (2021), this research design can add quality and insightful information to a study and is vital to a study. This research design allows for the researcher to be creative to gain the greatest amount of insight on a subject. The **disadvantages** of the exploratory research design is that it seldom offers adequate answers to the study aim and objectives, because the sample size and methods are not representative of the larger population of interest (Universal teacher, 2023). The other disadvantages of this research design is that it provides qualitative data, and interpretation of qualitative data information can be judgemental and biased. It lacks

statistical strength and inability to draw definite conclusions (Jebb, Parrington & Woo, 2017).

The adopted research design displayed that the research topic has limited research under the field of Social Sciences in general and Anthropology in particular. Neuman (2011) explains that this research design is used when the subject is very new; we know little or nothing about it. There is wide literature on availability of medicinal plants, however, there is little research done on the effects of urbanisation on the availability of medicinal plants in South Africa in general and Malamulele in particular, based on post-apartheid era. This research design is often used to gain insight into a situation, phenomenon, community or individual, De Vos *et al.* (2011) (in Maluleke, 2016). As highlighted prior, referring to this study; there seems to be a lack of basic information on understanding the effects of urbanisation on availability of medicinal plants at Malamulele areas of Limpopo Province, South Africa.

3.4. Adopted Research Approach

There are three (03) methods that can be adopted when conducting research, namely quantitative, qualitative and the mixed-method approach. However, this study adopted a qualitative research approach for data collection and documentary analysis as part of the research method. Mohajan (2018) states that “qualitative research approach is a form of social action that stresses the way people interpret and make sense of their experiences to understand the social reality of individuals and this research approach help researchers to understand the social world in which they live, and why things are the way they are.” Creswell (2007) concurs that qualitative research is applied when the researcher needs to explore and have a detailed understanding of the issues, which can only be established by talking directly with the people. The traditionally researchers apply either a quantitative or qualitative research approach in a single project. However, some researchers adopt the combination of quantitative and qualitative approach, which is a mixed-method approach (Seale, 2012). Therefore, the qualitative research approach was employed in this study, as the researcher explored the views, experiences, and beliefs of individual participants.

This research approach focuses on extracting data from words, sentences, photos, and symbols, amongst others, unlike quantitative research approach, which relies on hard data, such as numbers making a study inappropriate or irrelevant, based on hypotheses, heavily relying on variables and statistics (Akerlof, Maibach, Fitzgerald, Cedeno & Neuman, 2013). Different the quantitative research approach, the qualitative research approach does not attempt to verify or falsify a relationship or a hypothesis (Akerlof *et al*., 2013). However, this qualitative study research extracted data from participants' words (Empirical findings) and available conventional and seminal literature studies, as well as cases studies and relevant contexts (Akerlof *et al.,* 2013), this is reflected in the introduction and background, problem statement, literature review and theoretical framework sections of this study.

According to Etikan, Musa and Alkassim (2016), some **advantages** of this research approach confirm that it is intended to acquire an in-depth understanding of the study undertaken. The qualitative approach will be used to get the perception of cartel investigators in relation to the use of electronic surveillance to investigate cartel conducts. As such the researcher will obtain practical answers to address the research problem since the participants are expected to give answers based on their personal experience. Ayres (2020) highlights that a subject matter can be assessed with considerably more detail, there are many restrictions in terms of time that rests on research methods. The objective of a restricting time is to generate a quantifiable result meaning metrics can be established. According to (Bachman & Schutt, 2013), a qualitative approach allows the researcher to obtain richer data. Research studies in qualitative nature provides a contrasting perspective; it allows for the modification to the information of the quality that was collected. If the data that are available do not appear to be delivering any outcomes, the research gathered can instantly be altered and desire to obtain the data in a different direction. "Thereby offering more chances to collect key evidence; about any other subject and therefore not being restricted to finite and a self-satisfying perspective" (Ayres, 2020; and Rahman, 2016).

Negatively, **disadvantages** of this research approach exist, as the outcome of the study if the quality of the data gathered is subjective. This will be because of the perceptions of participants being influenced by personal biases and experiences (Gaille, 2017). Another disadvantage is that the influence of the researcher can have a negative effect on the collected data, in that, if a researcher has a biased point of

view, then their perspective will be included and affect the outcome (Gaille, 2017). The advantage of qualitative research is that it uses individual choices as workable data (Regoli, 2019). The other advantage is that the researcher can interact with participants face-to-face and create a positive rapport (Rahman, 2020). Rahman (2016) argues that “qualitative research approach sometimes leaves out contextual sensitivities and focus more on meanings and experiences.” It is also hinted that, with the use of phenomenological research design; qualitative researchers attempt to uncover, interpret and understand the participants’ experiences, as the motive of this study. Ayres (2020) states that data inflexibility is more demanding to evaluate and display.” Because viewpoints of individuals are normally the basis of the collected data in qualitative research, it is harder to demonstrate that there are inflexibilities in the information that is collected. The mind of a human being is so inclined to recall things in such a way in which it wants to recall them. Therefore, memories are often gazed at fondly, even though the actual events that took place may have been disturbing at a specific period. This desire in humans to look at all the good in things makes it that much harder for researchers to show data reliability.

According to Regoli, d’Errico, Nardi, Mezzelani, Fattorini, Benedetti, Di Carlo, Pellegrini and Gorbi, (2019), qualitative research approach can create subjective information points.” The quality of the information collected using the qualitative research process can sometimes be questionable. This approach requires the researchers to connect all the data points, which they gather to find the answers to their questions. That means that the results are dependent upon the skills of those involved to read the non-verbal cues of each participant, understand when and where follow-up questions are necessary, and remember to document each response. Because individuals can interpret these data in many ways, there can sometimes be differences in the conclusion because each researcher has a different take on what they receive.

3.4.1 Sample Size and Procedures

This study adopted a non-probability: Purposive sampling and snowball sampling. The purposive sampling is often used in instances where a researcher conducts research with a specific purpose in mind and is likely to produce the most valuable data, Denscombe (2017). According to Saunders, Lewis, and Thornhill (2012) and Saunders *et al*., (2012), this sampling method entails a process where subset participants stand chances of forming part of a study. The purposive sampling technique is often used in instances where a researcher conducts research with a specific purpose in mind and is likely to produce the most valuable data, Denscombe (2017). The snowball sampling occurs when the researcher starts with a small number of initial participants, who fit the research criteria (Parker, Scott & Geddes, 2019). The agreeable participants are then asked to recommend other contacts who fit the research criteria and who potentially might also be willing participants, who then in turn recommend other potential participants, and so on (Parker *et al*., 2019).

The sample consisted of Twenty (20) participants irrespective of gender and age, distributed as follows: Five (05) THPs, which were sampled using the snowball sampling. The reasons for selecting this sample was based on the following, their experience to traditional medicine, the importance of traditional medicine on their job as traditional healers and the other Fifteen (15) community members were sampled using the purposive sampling, because they were indigenous people who use the medicinal plants, have knowledge about medicinal plants and also experience on how urbanisation affects the availability of medicinal plants. Overall, the researcher selected these samples to gather rich experiences, knowledge, opinions, and views on this subject.

3.4.2 Data Collection Methods

Data collection refer to the method of gathering and measuring information on variables of interest in an established systematic way to enable one to answer stated questions and evaluate the outcomes (Kabir, 2016). The data of this study was collected using primary and secondary sources. Primary data sources are broadly used to embody all sources that are original. Primary sources provide first-hand information that is closest to the object of study" (Persaud, 2010). The primary sources provide a first-hand account of an event or period and are authoritative. They represent original thinking, reports on discoveries or events, or they can share new information. Often these sources are created at the time the events occurred, but they can also include sources that are created later. They are usually the first formal appearance of original research (University of New South Wales, 2023).

Conceptually, the secondary sources involve analysis, synthesis, interpretation, or evaluation of primary sources. They often attempt to describe or explain primary sources. They often involve generalisation, synthesis, interpretation, commentary, or evaluation to convince the reader of the creator's argument. They often attempt to describe or explain primary sources (University of New South Wales, 2023). Scholarly peer reviewed publications on a specific subject *(The effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, SA)* and may be the primary source of information on new developments. For this study, data was collected using the relevant literature studies and semi-structure IDIs to get first-hand information from the selected participants.

3.4.2.1 Semi-structured In-Depth Interviews

A semi-structured interview has been referred to as a 'conversation with a purpose' (Burgess, 1984), the characteristics of which include the interviewer and respondents engage in a formal interview, the interviewer develops and uses an interview guide (Qualitative Research Guidelines Project, 2018). This is a list of open-ended questions and topics that need to be covered during the conversation, usually in a particular order. The open-ended nature of the question defines the topic under investigation but provides opportunities for both interviewer and interviewee to discuss some topics in more detail (Qualitative Research Guidelines Project, 2018).

It often includes prompts to help the interviewee to answer. The interviewer follows the guide but can follow relevant lines of enquiry in the conversation that may stray from the guide when they feel this is appropriate (Qualitative Research Guidelines Project, 2018). The researcher has formulated Interview Schedule Guide as Annexure B, the semi-structured IDIs are purposeful interactions in which an investigator attempts to learn what another person knows about a topic, to discover and record what that person has experienced, what he or she thinks and feels about it, and what significance or meaning it might have (Mears, 2012). This process appears to be innately simple and intuitive (Mears, 2012). Therefore, the researcher used the semi-structured in-depth interview to explore the opinions and experiences of the selected participants on the effects of urbanisation on the availability of medicinal plants.

This interviewing type and technique were used to provide detailed information on the effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, SA, about 06 villages were selected villages, with the THPs and community members purposively selected to share the views on this subject. The adopted semi-structured IDIs, together with the Interview Schedule Guide assisted the researcher to obtain new knowledge from the consulted literature studies, as well as broad views from the 20 selected participants.'

Equally, the conventional and seminal studies on this subject were reviewed to demonstrate that the researcher was familiar with the key authors, texts and, central concepts relevant to this study and the mentioned interviews were conducted at a conducive environment (Their homes and the researcher's home) to the selected participants. The-said Interview Schedule Guide (Refer to Annexure B) was used for gathering the collected data. The selected participants were asked for consent before these interviews. The researcher also interacted with them throughout this process to obtain adequate understanding of this subject.

3.4.2.2 Documentary Study

Research that uses personal and official documents as a source material (Tight, 2019). Documents may include such things as newspapers, diaries, stamps, directories, handbills, maps, government statistical publications, photographs, paintings, gramophone records, tapes, and computer files (Tight, 2019). A documentary study provided an overview of existing publications about the effects of urbanisation on the availability nor sustainability of medicinal plants, focusing on rural areas, while using Malamulele area as a crux. The researcher conducted a literature study on previous research, as done across Southern Africa and some parts of the globe. The views of different authors that relate to the problem were researched and discussed to place this study within the current conceptual context. Information sources comprised additional, recent academic books, academic journal articles, legislation, policy documents, national instructions, and information available on the Internet, relating to this study topic.

Information obtained through the literature research was collected and integrated with the data to be obtained during the interviews. The documentary sources were compared to data already gathered by other researcher, and then added as new information to the present study, wherever relevant. For the orientation of this study subject, the researcher read the existing and published literature that appeared relevant to this study topic under investigation. Considering this, herewith the selection of primary and secondary sources, among others, that were consulted by the researcher:

- The VDM IDPR (2019/2020).
- The CCLM IDPR (2020/2021).

Also consulted, were the following documents and research databases:

- Textbooks on the research subject.
- Journal articles on urbanisation and medicinal plants.
- Internet sources on urbanisation and medicinal plants.
- Dissertations and theses on crime urbanisation and medicinal plants.

- South African online newspapers and media reports, internet searches (I.e. Electronic databases – Google Scholar, EbcoHost, Emerald Insight, Jstor, ProQuest, Sabinet, Sage Online and Science Direct).

3.5. Data Analysis Methods

Creswell (2013) provides that data analysis in the qualitative research approach consist of preparing and organising data and then reducing the data for themes. This study adopted the 'Spiral Data Analysis' as described by Creswell (2013). This process entails the reduction of the volume of the collected data to a manageable size; the researcher can start by identifying trends and exercise summarising (Creswell, 2013). While applying the qualitative research approach, a variety of methods could be used for data analysis such as content, thematic or discourse analysis. This study employed Spiral Data Analysis as initially stated to identify themes and patterns within the collected qualitative data (O'Reilly & Kiyimba, 2015).

The researcher organised the collected data (I.e. Obtained through breaking down the study aim and objectives of this study). The index cards were used by breaking down large bodies of texts into smaller units such as phrases. The researcher read the collected data several times, to obtain the participants' perspectives, while writing down notes and using the voice recorder. The identified themes and sub-themes gave the researcher a general sense of the patterns of the collected data. The collected data were integrated and summarised for the reader to understand thematically. For this study, the researcher followed the following Six (06) steps of the Spiral Data Analysis when analysing the collected data as proposed by Braun and Clarke, (2006), as well as Maguire and Delahunt (2017) (in Birks & Mills, 2014):

- **Step 1: Familiarise with the data:** The first step in any qualitative analysis is based on reading and re-reading the transcripts used during the fieldwork as data collection instruments. Thus, the researcher read the collected data and became familiar with the entire body of it.
- **Step 2: Create initial codes**: The second step when analysing is to create the initial codes. In this step, the researcher started by organising the gathered data in a meaningful and organised way. The coding lessens the collected data into small portions of meaning by the researcher was exercised.

- **Step 3: Search for themes**: In this step, from the created codes, the researcher searched for the study themes. In this study, the study theme refers to patterns that captures something substantial or interesting about the collected data in reference to the study aim and objectives of this study.
- **Step 4: Reviewing of themes:** In this step, the researcher reviewed, modified and developed the initial themes that were identified when searching for the identified study themes. This process was done to find out whether the identified themes in this study made sense or not.
- **Step 5: Define themes:** This step was aimed at identifying the essence of what each of the identified themes was all about. For this reason, the researcher defined the intended meaning of the identified theme, while the emerging sub-themes were interacted and related to the main identified theme to determine how they relate to each other.
- **Step 6: Writing-up:** This is the last step for data analysis. Once the collected data was defined and named, the researcher started to write the full Dissertation detailing the triangulation of the literature review and the empirical data.

3.6. Quality Criteria

There are four (04) indicators that are used in a qualitative study to ensure trustworthiness, namely, credibility, transferability, dependability, and confirmability. The four (04) indicators are discussed and applied to this study as follows:

3.6.1 Credibility

Leedy and Ormrod (2013) indicate that the validity of the research project entails its accuracy, meaningfulness, and credibility. Data was validated through consulting books, journals, and information from the sample population intranet. The sample population credited all the data collected and the interview schedule guides was prepared to ensure the reliability of the data. The researcher ensured credibility by making sure that the collected data are not misrepresented. Credibility is the alternative to internal validity and with credibility the goal is to demonstrate that the research was conducted in such a manner to ensure that the participants had been

accurately identified and described. The credibility of qualitative research can be increased through prolonged engagement and persistent observation in the field, triangulation of different methods, making use of formalised qualitative methods, and member checks. During the interviews, the researcher obtained data on the same question put to different participants.

For the purpose of this element, the researcher conducted semi-structured IDIs with participants that were selected to explore their perceptions and experiences on the effects of urbanisation on the sustainability of medicinal plants as the researcher indicated in section 3.3.3.1 of this study that, the semi-structured interview assisted the researcher to obtain new and broad views of the participants' ideas, while open-ended questions will allow for additional questions. The credibility of the employed interview type and techniques and consulted literature studies as used for data collections. The researcher ensured that these interviews and literature studies on this subject are deemed credible by presenting a true and accurate picture of what is claimed by the literature studies and the-said interviews.

3.6.2 Transferability

Transferability implies that the findings of the research study can be appropriate to similar circumstances or persons. According to Lincoln and Tierney (2005), whether findings hold in some other context or even in the same context, is an empirical issue. This study ensured that there is transferability in all the processes that will be followed, for example, the entire process that followed was described, and these include data collection methods and challenges encountered in this study. The researcher also indicated how and to what extent the theoretical knowledge was obtained in this study. In addition, how it can be transferred to future studies with similar contexts.

Saunders *et al.,* (2012) define transferability as the degree to which the outcomes of a research can relate or transfer outside the limits of the scheme. The researcher used transferability as it indicates that findings of the research study can be appropriate to similar circumstances or persons. Lincoln and Tierney (2005) explain that, whether study findings hold in some other context or even in the same context at some other time, the empirical issues prevail. The transferability in this study was ensured as follows: The researcher described the process to be followed to conduct this study for

other researchers to replicate, such as data collection methods as indicated in paragraph 3.3.3.1 of this study that semi-structure interviews were conducted as a form of data collection method and challenges encountered in this study. The researcher also indicated how and to what extent the theoretical knowledge that is obtained in this study could be transferred to similar contexts in line with this subject.

Importantly, the researcher questioned whether the findings of this study can be transferred from one specific situation to another. The researcher indicated how the transferability was ensured in this study. This was done by describing the process followed for other researchers on this subject to replicate, such as the research design and methodology, as well as challenges encountered in this study. The researcher also indicated how and to what extent the theoretical knowledge obtained in this study could be transferred to other similar contexts.

3.4.3 Dependability

Dependability was achieved in this study by explaining the choice of research design and methodology to be followed to determine whether these procedures and processes are acceptable at Masters' level. This ensured coherent linkages between the data collected and reported findings. The consensus discussions held between the researcher and allocated supervisors to corroborate identified study themes and inferences. For the purpose of this study this study; dependability was achieved by explaining the choice made for the adopted research design and methodology to determine whether these procedures and processes are acceptable at Master's level. This ensured coherent linkages between the consulted studies on this subject, collected empirical data collected and reported study findings.

The researcher asked whether the research process is presented logically and well documented. Dependability is noted as the alternative to a process whereby the researcher attempts to account for changing conditions in a chosen phenomenon under research. The researcher indicated how the level of dependability was ensured in this study. This was achieved by explaining the choice of the research design and methodology to determine whether the procedures and processes followed in this study were acceptable. This ensured coherent linkages between the collected data (Literature studies) and reported study findings.

3.4.4 Conformability

Saunders *et al.*, (2012) define confirmability as the degree to which the findings could be established or validated by others. To ensure conformability in this study, the researcher kept a detailed record of all literature studies to be consulted and the interview transcripts. As a result, the researcher was able to prove that the findings of this study and presented interpretations were not subjective. The researcher also indicated and addressed bias, motivations and perspectives that could negatively influence this study. The researcher also ensured that this study is completely guided by the literature reviews and researchers to be conducted.

In this study, conformability was concerned with ensuring that, while recognising that complete objectivity is impossible in social research to allow the researcher to act in good faith. As initially stated, the researcher kept detailed record of all literature studies consulted and the interviews transcripts (Empirical evidence). As a result, the researcher can be able to proof that the study findings and offered interpretations did not derive from her imaginations but was clearly linked to the data collected. The researcher also indicated in paragraph 3.3.3.1 of this study that the Interview Schedule Guide (Refer to Annexure B) was used for gathering data.

The researcher continued to mention that Answers were also recorded with a voice recorder and participants were asked for consent before they were recorded during the conducted interviews. The researcher also interacted with participants throughout this process to obtain an adequate and understanding of this subject. The researcher also indicated how she had set aside any biases, motivation and perspectives that could have influenced this study as the permanent native resident of Malamulele area, she ensured that this study was completely guided by the literature reviews consulted and conducted interviews.

3.5. Ethical Considerations

The researcher will abide by the core ethical principles and Policy on Research Ethics of the University of Limpopo (UL), Faculty of Higher Degrees Committee (FHDC) and Turfloop Research Ethics Committee (TREC), CCLM, and customs (Traditional authorities) concerning the respective villages to be selected for this study. This will include the following ethical principles**:**

3.5.1 Informed Consent

The researcher negotiated consent by communicating information likely to be material to a person's willingness to participate, such as the purpose of this study, and the anticipated consequences of the research (Refer to the attached Annexure A). The researcher did not use participants' legally compelled consent (I.e. By their Ward Councilors/Traditional leaders) to participate in this study. Consent from participants was absolved the researcher from her obligation to protect research participants against the potentially harmful effects of this study.

3.5.2 Respect and Dignity

The researcher treated all participants with respect and dignity. The participants were free to withdraw from this study at any stage of the research provided a courtesy notification of withdrawal is sent to the researcher. No negative repercussions were enacted on the participants, as participation is voluntary, and all data received from the participants was assumed void.

3.5.3 Standard of Care

The researcher protected the physical, social and psychological well-being of those whom she studies and respected their rights, interests, sensitivities, and privacy, and operated with honesty and integrity. The researcher ensured that research participants are prioritised and that when there was conflict, the interests and rights of those studied came first.

3.5.4 Privacy and Confidentiality

The research participants had the right to remain anonymous and to have their rights to privacy and confidentiality. The researcher used pseudonyms in field records, oral and written forms of data dissemination. The device of anonymity immediately protected participants and the researcher anticipated long-term effects and repercussions on individuals or groups because of this study. The researcher took care not to infringe uninvited upon the private space of an individual or group. All information was regarded as personal and confidential. The researcher did not disclose participants' names or contact details unless permission is obtained.

3.5.5 Benefits / Risk Harm

There were no perceptible benefits or incentives available for the respondents of this study. However, it was revealed that the participant of this study can benefit in some way through the process of knowledge production. If the researcher received permission from the participants, the researcher published their names in the final dissertation. There were no predetermined risks accompanying this study. The research participant was merely providing the researcher with knowledge about the subject matter.

3.5.6 Translations

The researcher translated the letter of consent, and Interview Schedule Guide into the local language (*Xitsonga* in this regard) that is suitable for the participants.

3.6. Chapter Summary

This chapter presented that this study was executed with an appropriate research design and methodology to fulfil the study aim and objectives, as outlined in chapter one. The next chapter (Four) offer the data presentations, interpretations and discussions of all data gathered for this study based on the aim and objectives of this study. This was done by incorporating the consulted literature studies, theoretical framework on this subject and the empirical data.

CHAPTER FOUR

DATA PRESENTATIONS, INTERPRETATION AND DISCUSSIONS

4.1. Introduction

The previous chapter discussed the research design and methodology used in collecting data under the methodology title. Because this research is empirical based, data was collected from primary sources. The semi-structured IDIs was used to provide detailed information about the availability of medicinal plants and related effects of urbanisation in the selected villages. In this discussion and analysis chapter, the views from the literature were engaged and related to the theme, and it reflected on what should be done or could have been done considering the examples of cases discussed. The data was analysed using the Spiral Data Analysis, as indicated and discussed in section 3.5 of chapter Three (03).

The researcher empirical data was collected by means of semi-structured IDIs. The researcher followed the recommendations of how the allocated supervisor: Mr M Magoma and the co-supervisor: Prof SA Rankoana made to offer these presentations. Therefore, the researcher explored available literature studies on the effects of urbanisation on availability of medicinal plants in SA and in other parts of the world; with the use of Spiral Data Analysis. To this course, this study brought an understanding of this subject based on the study aim and objectives, this was done to offer the effects caused by urbanisation on availability of medicinal plants and to inform certain conservation methods that exist for promotion of more sustainable and reliable preservations of medicinal plants against urbanisation.

The referencing method for the conducted interviews in this study comprised a numerical sequence, adhering to the following notation example: (5:1:2). The 1st digit (5) relates to the village where the semi-structured IDIs were conducted. The 2nd digit (1) refers to the interview number, while the 3rd digit (1) cover the sequence of the cited interview, based on the conducted semi-structured IDIs, guided by the same Interview Schedule Guide (Annexure B), consisting of the following questions. All the

selected participants were asked the following questions and their verbatim expressions are shared herewith:

4.2. Presentation, Interpretation and Discussions

This section presents the empirical data, analysis of such data and discusses the findings of this study, focusing on the findings based on study aim and the findings relating to the objectives. The findings presented, analysed and discussed are grouped based on the questions posed to the selected participants, all emanating from the Interview Schedule Guide, guided by the aim and objectives of this study, their verbatim expressions and the linkage of their responses and reviewed consulted literature studies throughout this study. While adhering to the steps of the Spiral Data Analysis, the related content to reflect on similar trends and patterns in the various issues that might be happening in different setting but indicating similar traits. This helped in outlining the study content and themes that were dominantly identified in this study. This also enabled the researcher to present the findings of this study in a simple and logical manner that can be easily interpreted.

4.2.1 Biographical Data of Participants

Table 1: The biographical data of selected participants

Participant number	Participants categories	Gender	Occupations	Age (years)	Village Names
1	Community member	Female	Pensioner	65	Xigalo village
2	Community member	Female	Unemployed	58	Mphambo village
3	Community member	Female	Pensioner	72	Mavambe village
4	Community member	Male	Pensioner	76	Madonsi village
5	Community member	Male	Pensioner	60	Roodhuis village
6	Community member	Female	Teacher	32	Xitlhelani village
7	Community member	Female	Lecturer	47	Xigalo village
8	Community member	Male	Pensioner	76	Mphambo village
9	Community member	Male	Pensioner	Unknown	Mavambe village
10	Community member	Male	Pensioner	63	Madonsi village

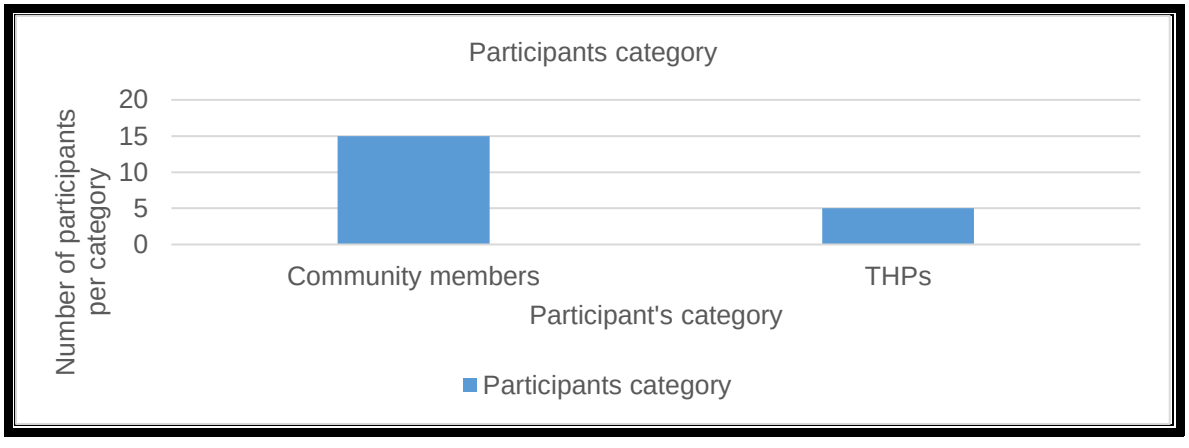
11	Community member	Female	Pensioner	Unknown	Roodhuis village
12	Community member	Male	Pensioner	68	Xitlhelani village
13	THP	Male	THP	30	Xigalo village
14	THP	Male	Unemployed	55	Mphambo village
15	THP	Female	Pensioner	83	Mavambe village
16	Community member	Female	Pensioner	Unknown	Madonsi village
17	THP	Female	Police officer	47	Roodhuis village
18	THP	Female	Unemployed	53	Xitlhelani village
19	Community member	Female	Pensioner	Unknown	Xigalo village
20	Community member	Male	Pensioner	78	Mphambo village

Source: Researcher's illustrations (2023)

4.2.2 Participants' Categories

The sample of this study was categorised into two groups. The category included THPs and community members. The purpose of selecting these two categories was to explore the experiences of both THPs and community members on the effects of urbanisation on the availability of medicinal plants in Malamulele area.

Figure 3: Categories of the selected participants



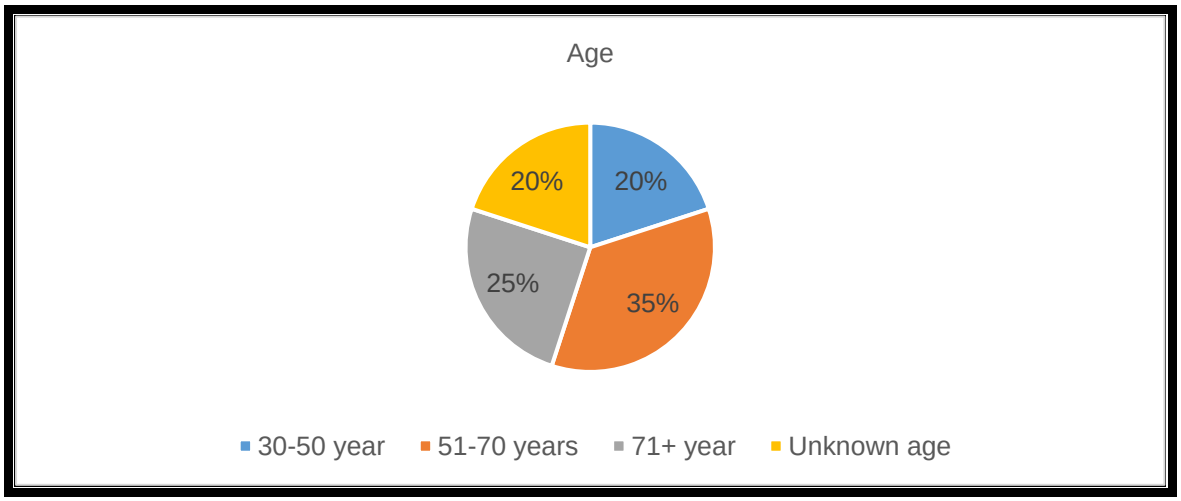
Source: Researcher's illustrations (2023)

Figure 3 present that 15 community members were sampled as participants of this study and 5 THPs were also sampled to be participants of this study.

4.2.3 Participants Age

Participants from different age groups were sampled for the purpose of this study in order to gather data based on the different experiences and knowledge from selected participants.

Figure 4: Age of the selected participants



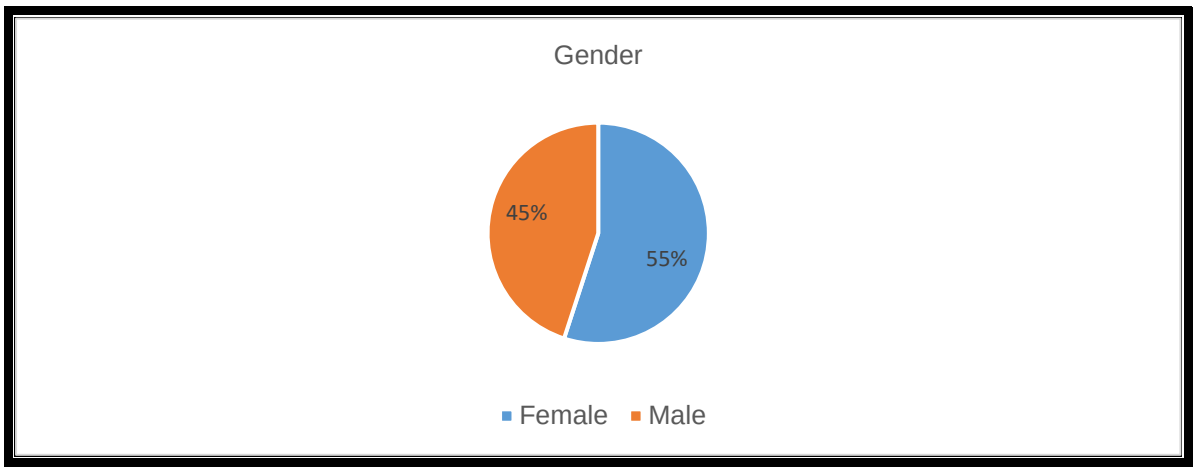
Source: Researcher's illustrations (2023)

Figure 06 present 03 different age groups and 1 group that the age is unknown. It is present that 20% of the participants were between the age of 30-50 years, while 35% were between the age of 51-70 year, and 25% percent of them were 71+ years. The other remaining 20% their age is unknown.

4.2.4 Participants' Gender

Gender statistics of the participants was recorded to determine experience, opinions and knowledge of both genders on the effects of urbanisation of the availability of medicinal plants in Malamulele area.

Figure 5: Gender of the selected participants



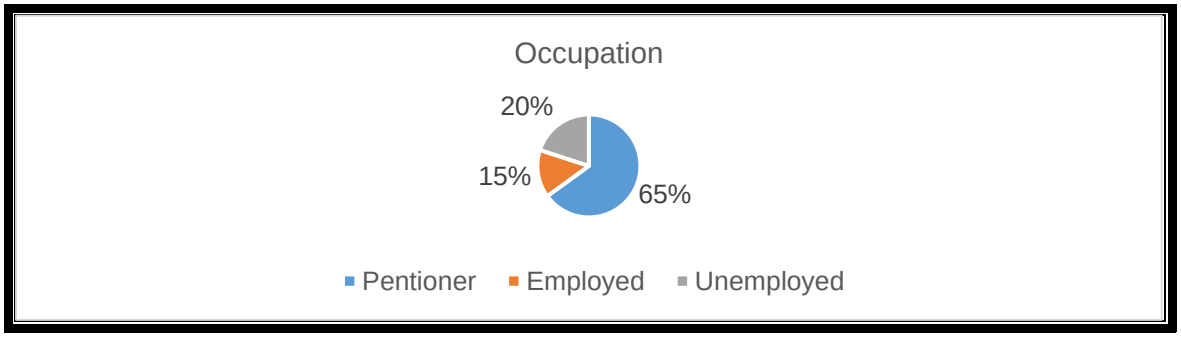
Source: Researcher's illustrations (2023)

From Figure Seven (07) present that from all the selected participants 45% of them were Males and 55% were Females.

4.2.5 Participants Occupations

The occupational statistics of the participants were recorded, as follows:

Figure 6: Occupations of the selected participants



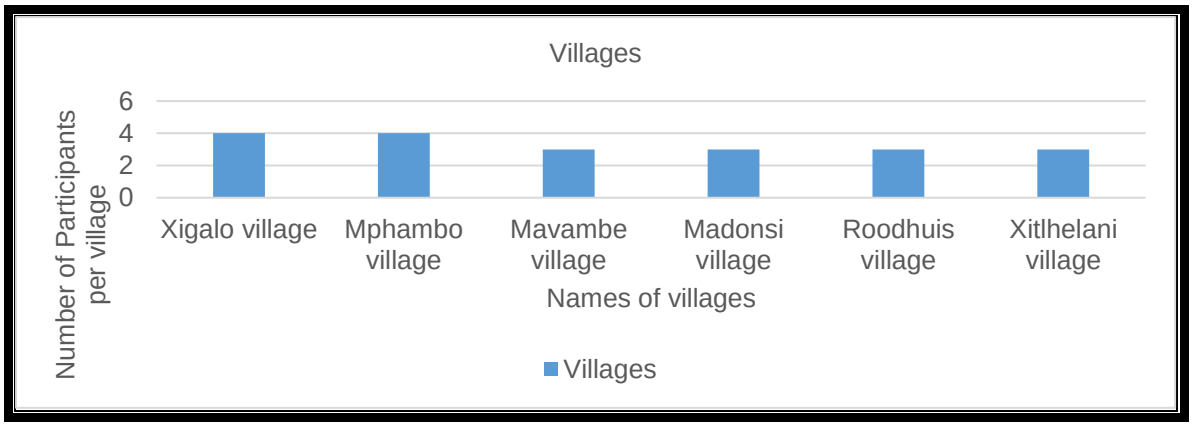
Source: Researcher's illustrations (2023)

In relation to the occupational status of the selected participants of this study, Figure Eight (08) presents that 65% of the selected participants were pensioners, 15% were employed and 20% of the participants were unemployed. The attached statistics reflect both the 20 study participants, involving the THPs and community members, from different villages under CCLM, as selected by this study.

4.2.6 The Selected Study Villages

Participants were selected from 06 sampled villages, namely: Xigalo, Mphambo, Mavambe, Madonsi, Roodhuis, and Xitlhelani village.

Figure 7: The selected villages of this study



Source: Researcher's illustrations (2023)

From Figure Nine (09) it is presented that Four (04) participants were from Xigalo village, another 04 participants from Mphambo village. In Mavambe, Madonsi, Roodhuis, and Xitlhelani village, 03 participants were sampled from each village.

4.3. Study Findings

4.3.1 The Effects of Urbanisation on the Availability of Medicinal Plants

To gather the study findings on the effects of urbanisation on the availability of medicinal plants, the following questions were posed to all the participants (THPs and community members):

- *What is the nature of urbanisation in your area?*
- *Do you think urbanisation influences the availability of medicinal plants in your area? Elaborate.*
- *To what extent is urbanisation affecting the availability of medicinal plants in your area?*

The researcher asked the participants about the nature of urbanisation in their area, and they shared their verbatim herewith:

> *"What I can say about the nature of urbanisation in our area is that there is a lot of development that is happening that can account to urbanisation. I say this because recently we got a new school built in our area, now as I am talking to you, there is huge part of land that has been allocated to the old citizens for recreational purposes. Also, as our population grow so is the demand of new stands. A huge part of our land is used to build new stands"* **(3:3:1-Mavambe village, In-depth interview-Community member)**

> *"The nature of urbanisation in our area is quite high. There is always something happening that relates to urbanisation. For example, not so long ago we had a shopping complex, followed by a filling station, and now they are building a bakery. I can lie our area is developed as compared to other rural area"* **(1:7:2-Xigalo village, In-depth interview- Community member)**

"Urbanisation in our area in quite normal. The development that is happening mostly is that of new stand. Our population grow so fast and people are buying their own stands. However, there are things like building of churches, we have two new churches in our area currently and the recreational centre. There are schools and clinics that we have here we have had them for some time now" **(4:16:3- Madonsi village, In-depth interview-community member)**

"I can associate urbanisation with economic development. In our area there are lot of business that take up the land and equals to deforestation. We have several guest houses, recreational centres, clubs, among other things. These are the things that I can say they contribute so much to urbanisation in our area. This contributes so much to our economy as a community. We have jobs because of these developments. Although we are closer to town we also have our own shopping complex just here" **(6:18:4-Xithlelani village, In-depth interview-THP)**

It is quite evident that urbanisation is on the rise in Malamulele areas, based on the experiences of the participants. The residents mentioned that there is quite a lot of development in their communities that is happening. It is also clear that the economic advantage influences urbanisation in Malamulele areas. The residents acknowledge the importance of urbanisation as the benefit from the service that accompany urbanisation.

According to Kepe (2007) in section 2.3.1 of chapter two of this study, surveys conducted among medicinal plant traders in urban markets have thus far been the main method used to understand the effect of medicinal plant harvesting on rural livelihoods, as well as the impact of this activity on the environment. Xego *et al*. (2016) in section 2.3.1 of chapter two of this study agreed that, with increasing population growth, urbanisation and strong cultural values regarding traditional medicines, the trade in medicinal plants has surged considerably. Kepe (2007) further indicated that, this has resulted in the over-harvesting of certain important species found in the wild, to the point of certain extinction. This section also reads with section 2.2.3 in terms of urbanisation in SAn context, focusing on the unique patterns of urbanisations in SA, inclusive to urbanisation in relation to history of land occupation, colonialism, racial segregation and disenfranchisement.

The researcher further asked the participants whether they think that urbanisation influences the availability of medicinal plants in their area and asked them to elaborate. The participants therefore, share their verbatim:

> *"Yes, urbanisation have effect in the availability of medicinal plants in our community, although it is great in terms of the development and improvement of our community our plants suffer a great deal. Remember that for urbanisation to happen deforestation needs to happen first. By so doing lot of medicinal plants are destroyed and killed and it becomes unfortunate if the area was the only area that has a particular kind of medicinal plants, because they become extinct or scarce"* **(1:13:1-Xigalo village, In-depth interview-THP)**
>
> *"In my opinion and what I have witnessed urbanisation does have an effect in the availability of medicinal plants. Due to urbanisation, we have less medicinal plants in our area, although we used to be rich with medicinal plants. There was an area that was full of marula trees which we use to cue ring worm and ulcers, I was surprised the other they when I passed and there was not a single tree because they cleared the land to build a shopping complex. So, you can just imagine what happens to medicinal plants that are naturally scarce, they become completely extinct in our area"* **(5:5:2- Roodhuis village, In-depth interview, community member)**
>
> *"Urbanisation does have effect in the availability of medicinal plants in our area. I have mentioned that urbanisation is associated with economic growth in our area. People does not really care about plants, if what they are doing is going to give them money and if the targeted area have medicinal plants, then it is unfortunate to the nature itself and the people that use those plants, because that is not going to stop the development from happening. People will always choose economic security over medicinal plants, especially because we have western healthcare services"* **(2:2:3-Mphambo village, In-depth interview-community member)**

In as much as the participants acknowledge the importance of urbanisation in their communities, they also acknowledge that urbanisation have a negative effect on the availability of medicinal plants. They stated that for urbanisation processes to take place clearing of land is required and in all that medicinal plants suffer a great loss. In addition, for urbanisation processes to take place, such as, building of schools, shopping complex, filling stations a huge part of land is required and unfortunately medicinal plants are being destroyed during the process.

Czech *et al.* (2000) stated that urbanisation is a major cause of native species extinction, most of the medicinal plants that have come into extinct or are recently scarce is because of urbanisation as indicated in section 1.1 of chapter one of this study. McKinney (2008) in section 2.2.1 of chapter two of this research agreed that all group of species, they tend to reduce in areas with extreme urbanisation where large number of land is consumed by the expansion of urban areas, for example in central urban core areas where medicinal plants are destroyed and not protected or preserved for future medical use. McKinney (2008) in section 2.2.1 of chapter two indicated that the effects of moderate levels of urbanisation vary significantly among groups because some urban developments are done in areas that does not necessarily have lots of medicinal species.

Martin (1995) highlighted that medicinal plants are becoming extinct because of habitat loss, population, urbanisation and the threat of climate change as indicated in section 1.1 of chapter one of this study. Mabogo (1990) and Rankoana (2000) and Rankoana (2001) in paragraph 1.1 of chapter one of this study shared that in South Africa, much of the local vegetation is depleted due to factors of urbanisation and therefore, through good management and conservation of biodiversity or medicinal plants, the quality of life of all South Africans will improve especially in rural communities and the rural areas of Limpopo Province [Malamulele included], witnesses of 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 which is the results of urbanisation or the building of urban cities.

McKinney (2008) in paragraph 2.2.1 of chapter 2 of this study indicated that urbanisation could increase or decrease species richness, depending on several variables. Some of these variables include the following aspects which are taxonomic group, spatial scale of analysis, and intensity of urbanisation. In support of these findings VDM IDPR (2019) in paragraph 1.1 of chapter one of this study shared that 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.

Marzluff and Ewing (2008) in section 2.3.3 of chapter two of this study confirmed that another negative impact on medicinal plants is structural simplification of vegetation in many areas. Marzluff and Ewing (2008) in section 2.3.3 of chapter two of this study stated that landscaping and maintenance of residential and commercial areas typically involves removal of vegetation and dead wood and an increase in grasses and herbs which leads to plant species being destroyed and not preserved. McKinney (2006) in paragraph 2.3.3 of chapter two of this research argued that some aspects of urbanisation could promote increasing levels of biodiversity, usually by the addition of non-native species that replace native species faster than they are lost.

Positively, the researcher in paragraph 1.2 of chapter one of this study revealed that efforts made by the rural people in the Malamulele area of Limpopo Province to promote the use of medicinal plants and access to THM have not yielded positive expected results, as the accessibility of the medicinal plants to THM are seen to be declining, this brings with it the destruction of medicinal plants and many challenges faced in accessing THM because of the urbanisation and development of urban settlements.

The plant species are no longer protected by the community people as well as the indigenous health practitioners because the landowners have more power over what happen to the plant species around the area. Some plants in the community are being threatened by the development of the communities and no longer have space to grow.

In support of the highlighted study findings, the researcher confirms that some plant species faced a serious threat by the development in communities where there will be no more seen. Urbanisation or development of humankind plays a significant role on the negative impact of the availability of medicinal plants in various communities in SA as indicated in 1.2 of chapter one of this study.

4.3.2 Perceptions of Traditional Health Practioners and Community Members on the Effects of Urbanisation on Medicinal Plants in the Malamulele Area of Limpopo Province, South Africa

All the selected participants were asked the following questions to ascertain their perspectives regarding the effects of urbanisation on medicinal plants and their verbatim expressions were shared herewith:

- *How is development of Malamulele affecting the availability of medicinal plants in the area?*
- *Which plants species are specifically affected?*
- *Which of these plant species are still available, but scarce due to urbanisation?*
- *In which places are medicinal plants still available in your area, despite urbanisation?*

The findings reported below were largely echoed by majority of the selected participants, regardless of the study location. For instance, their remarks regarding effects that urbanisation have on the availability of medicinal plants were similar. The participants indicated their knowledge on the importance of medicinal plants, but these medicinal plants are mostly destroyed due to urbanisation in the area. On clearly understanding the effect of urbanisation to the extinct medicinal plants in your area, in this respect; Eleven (11) of the selected participants had the following to highlight in verbatim:

> *"In Malamulele area we still prefer to use medicinal plants to meet our primary health care needs regardless of the western health care services [public clinics and hospitals] that the government provide us with, hence the loss of medicinal plants that is influence by urbanisation affects our wellbeing"* **(1:7:1-Xigalo village, In-depth interview-community member)**

"In instance medicinal plants are found in the wild and when there are developments that are happening, like school building, and expanding of the city, amongst others, the wild is the targeted area for such development and medicinal plant are destroyed without any conservation methods to protect them" **(5:11:2- Roodhuis village, In-depth interview-community member)**

"One of the notable cases is the building of new Malamulele high school. The school is built at an area where people around the area used to collect medicinal plants to cue different diseases. The medicinal plants that were found in that area are Aloe vera, Mangane, Tsenga and Xibaha. Therefore, due to the large land that is used to build, the school majority of these medicinal plants were destroyed and no conservation measures were implemented during the course of clearing the land" **(4:16:3-Madonsi village, In-depth interview-community member)**

"Expansion of cities due to urbanisation, affects preservation and protection of medicinal plants in our area because in most cases we not even given an opportunity to suggest that medicinal plants should be protected before the developments resume. Thus, the larger portion of medicinal plants population is destroyed and lost due to urbanisation" **(3:9:4-Mavambe village, In-depth interview-community member).**

"Urbanisation is happening so fast in our area. There is always something happening as an improvement in our community. However, medicinal plants suffer a great loss in the process in it all. What I mean by this is that due to urbanisation there is a lot of clearing of land and deforestation happening and it results in medicinal plants being extinct in our area" **(6:18:5-Xitlhelani village, In-depth interview-THP).**

"In my line of work as a THP I have witness that urbanisation or improvement of our community greatly affect the existence of medicinal plants and most of them are already facing extinction in our area. Another thing, the rate in which urbanisation is happening we have high chance of losing most of our medicinal plants as they are already scares" **(5:11:6-Roodhuis village, In-depth interview-THP).**

"From my observations, it is evident that medicinal plants suffer great deal from the processes of urbanisation. The clearing of land and deforestation that happen during the building of infrastructures such as malls, schools, stadium, recreation centres and so on, destroy lot of our plants" **(2:8:7-Mphambo village, In-depth interview-community member)**

"Urbanisation is good for our economic development, but it is damaging to our natural resources like medicinal plants. There are many medicinal plants that have come to an extinct in our area and are no longer found in the wild. Plants like Bimbe, Mahimbe, Vela vahleka, Rompfha, Mabope, and Chinamane are no longer found in the wild in Malamulele areas, meaning that they have come to an extinct in those particular areas, resulting in us abandoning the indigenous knowledge that was passed to us by our parents since we cannot access medicinal plants easily. Because of these medicinal plants that are already extinct in our area we are facing difficulty in meeting our primary health care needs in a way that we are used to. Most of the plants that are extinct are the ones that were found in areas where developments such as building of schools and shopping centres are implemented and all the natural resources were destroyed in those areas" **(4:16:3-Madonsi village, In-depth interview-community member)**

"The plants that have come to an extinct due to urbanisation was because when those people were clearing the land they were uprooting and burning these plants leading to their existence to be completely destroyed" **(6:12:4-Xitlhelani village, In-depth interview-community member)**

"Majority of the indigenous people who reside in Malamulele areas depended in the use of medicinal plants that were found in the wild for their primary health care needs. In the past before most of these developments were implemented, when I have a toothache or stomach ache I would just go to the wild to get leaves of Aloe Vera without even struggling because they were everywhere. Public clinics and hospital were far from where we reside and we will struggle to get transport to access those facilities, therefore we will rely on medicinal plants to cue different diseases since they were easy to access. I personally preferred the use of medicinal plants be because of its free cost as compared to health care facilities that I had to pay for transport to access them" **(1:19:5-Xigalo village, In-depth interview-community member)**

"Medicinal plants are organic and have less after effects as compared to Western medicine, this is why I prefer the use of medicinal plants. In most cases people who have knowledge about the use of medicinal plant are indigenous people or better-known old people, and for that knowledge to remain existing our lifetime it is passed from one generation to the other. Old people share this indigenous knowledge with the young people through teaching them how to harvest and use those plants. Most of this knowledge is not is not documented is not something that you can learn through reading a book but it is taught verbally, this is the reason I am scared that the knowledge that has been existing for years might go in vain since these plants are getting extinct in the wild and I cannot share the same knowledge to my children and we are ending up relying on western medicine" **(2:20:6-Mphambo village, In-depth interview-community member)**

The participants echoed each other's views, that medicinal plants are becoming extinct in their areas due to urbanisation. Some of the participants mentioned that there are a lot of medicinal plants that they used to get from their communities however now they are no longer available. They also mentioned that most of the medicinal plants in their areas are threatened with extinction due to clearing of land and deforestation that happen during the building of infrastructures such as malls, schools, stadium, recreation centres, amongst others.

Du Toit (2015) in section 1.1 of chapter one of these studies warned that as rural population decreases and cities expand urban ecological, or urbanisation research is significant. He continues to state that this attempt to fill the identified gap by noting that urban ecology seeks to understand the complex relationship between human urban settlement and their ecological contexts to ensure sustainable futures for species such as medicinal plants since they become scarce because of urbanisation and will eventually come to an extinct. Therefore, McKinney (2008) in section 2.2.1 of chapter two of this study mentioned that the effects of urbanisation on species richness has been described, as the increase or decrease of species richness that influenced by urbanisation.

According to McKinney (2008) in section 2.3.3 of chapter two of this study, plants that are mostly used for health purposes are negatively affected by urbanisation. This subsequently causes scarcity of these plants, leading to extinction as stated by McKinney (2008) in section 2.3.3 of chapter two of this study. In determining the effects of urbanisation on species richness, in section 2.3.3 of chapter two of this study McKinney (2008) reviewed one hundred and five (105) types of species. His study concluded that approximately sixty-five percent (65%) of plants showed increasing species richness, based on moderate urbanisation. The other remaining thirty-five percent (35%) are affected by non-development factors, such as climate change.

Czech *et al. (*2002) and McKinney (2006) in section 2.3.3 of chapter two of this study presented that, while acknowledging the effects of urbanisation on medicinal plants extinction, the complexities surrounding the nature of urban land use and availability should be prioritised to clearly accommodate local rural biodiversity and related influences. In addition, ‘on the use of different plants species for health purposes in the past,’ 03 of the selected participants shared the following in verbatim:

> *“A lot of medicinal plants are affected due to urbanisation, plants such as Mavapfuka which is used to help people that are on their death beds, Mgobo is used for stomach ache, Rinyamanyama also used to cue stomach ache, Mthagwari is used for detox and cleansing, Mdorho is used to cue swollen legs”*
> **(5:17:1- Roodhuis village, In-depth interview-THP)**

"The plants that were used for health purposes in the past are Mhangani which is used to cue different kinds of diseases, such as stomach ache, skin problems and tooth ache, Mavapfuka is used to help people who are on their death beds, Nhlaba ya fole is used for head ache and spiritual purposes (snuff), Ximahlwamahlwani is used as eye drops, and Mgobo which is used to cue stomach ache" **(3:15:2-Mavambe village, In-depth interview-THP)**

The participants mentioned common plants known for their medical qualities and the disease that are cued by these plants. These plants were mentioned by most of the participants because they are the once that are most threatened by urbanisation. Hassan (2012) in section 1.1 of chapter one of this study presented that, medicinal plants have a promising future because there are about half a million plants around the world, and most of them their medical activities have not been fully investigated. According to Brower (2008) in section 1.1 of chapter one of this study medicinal plants are facing extinctions; other negative future discoveries cannot be underestimated, as they are often threatened by various factors such as urbanisation. Furthermore, Brower (2008) in section 1.1 of chapter one of this study stated that, most species could be classified as LC. These species have been categorised by the IUCN. These plants may soon be extinct.

As a result, making regional risk assessments even in data-sparse countries can aid in the planning of conservation management, and for urgent considerations as supported by Kaky & Gilbert (2019) in section 1.1 of chapter one of this study. The IUCN Red data List remains one of the most important of all conservation indicators; however, most developing countries do not have enough information with which to make assessments as stated by Kaky & Gilbert (2019) in section 1.1 of chapter one of this study. Czech et al., 2000 concured in se tion 1.2 of chapter one of this study that, approximately 15,000 medicinal plant species are threatened with extinction worldwide.

In reference to this study, to understand 'which of these plant species are still available in the selected villages, but scarce due to urbanisation;' other 05 of the selected participants hinted on the following aspects:

> *"Medicinal plants such as Aloe vera, Mangane, N'tita, Thlathlangati, Combretaceae, Xicucutse, Xiwondzwana, Tsenga and Mpfungura are still found in the wild, however they are very scarce unlike in the past. Some of these plants are still available because we can plant them at the back of our yards. I have planted Aloe vera at my yard, so it makes it easier for me to access them, even though most of it is destroyed in the wild"* **(4:16:1-Madonsi village, In-depth interview-community member)**
>
> *"Urbanisation has had a greater effect on the availability and existence of medicinal and for us to access them is more difficult and because although most of the plants are already extinct some of them are still available but are very scarce and now we have limited access to these plants, because the natural supply of these plants is very low as compared to the demand from the general public"* **(1:1:2-Xigalo village, In-depth interview-community member)**
>
> *"Over the years we have witnessed that although some of the medicinal plants are becoming extinct in our area due to urbanisation, there are also some plants that are still available but are very scares. These plants include plants such as Mhangani and Nhlaba ya Fole. These are some of the plants that we can still find in although they are still scares and one of the reasons we still can find these plants in our area is because their growth they are not dependent to the wild, they can also be planted at our backyards"* **(5:17:3- Roodhuis village, In-depth interview-THP)**
>
> *"There are several medicinal plants that are affected by the processes of urbanisation in our area. Notable plants that are scare because of urbanisation are Xugulu, Xibaha, Potsa and Tsengele. These are the few that I can remember. Lots of the plants I just knew them when I see them but did not know their names, so now since they are no longer easy to find it becomes even more difficult to remember them"* **(6:18:4-Xitlhelani village, In-depth interview-THP)**

Despite the effect that urbanisation have on the availability of medicinal plants, there are still some plants that are still available in Malamulele communities. However, the participants mentioned that they are scared that at the rate that urbanisation is going even these available plants will be affected and eventually face extinction. According to Khumalo *et al*. (2022) in section 2.2.4 of chapter two of this study, the use of medicinal plants is not only limited to their availability and affordability, but is also culturally driven, as these plant products are also found in urban settlements. The WHO (2016) (in Jain, 2016) in section 2.2.4 of chapter two of this study reported that, it was estimated that over 80% of the world's population depends directly on traditional form of medicine, mainly plant based to meet their primary health care needs. It is also estimated that, about 40% of the pharmacological industries mostly rely only on medicinal plants.

According to Keskin (2018) is section 1.1 of chapter one of this study, there is approximately 1,000,000 plant species in the world, with almost half of these have been identified and named. Raven (2021) in section 1.1 of chapter one of this study stated that, with plants, unlike most animals, we can regenerate tissue cultures relatively easily to produce whole, complete individuals. In addition, Raven (2021) in section 1.1 of chapter one of this study presented that, there are more than 115,000 species of plants that have been identified and named around the world, over a quarter of the total number, currently in cultivation in botanical gardens (Raven, 2021).

Hassan *et al.* (2012) argued in section 2.2.4 of chapter two of this study that besides that, these plants play a critical role in the development of human cultures around the whole world, they play a major role in the sustainability of people's health. Importantly, Hassan *et al.* (2012) in section 2.2.4 of chapter two of this study added that some plants consider as important sources of nutrition and these plants are recommended for their therapeutic values. These include ginger, green tea, walnuts and some other plants, which are not necessarily medicinal but nutritional. Some other plants their product is consider as important sources for active ingredients, which are used in aspirin and toothpaste as stated by Hassan *et al.* (2012) is section 2.2.4 of chapter two of this study.

The researcher was also interested in determining places which medicinal plants still available in their villages, despite various urbanisation processes, this what Three (03) of the selected participants said in verbatim:

> *"Urbanisation destroyed most of the medicinal plants' population in our area, but plants that are found by the side of the river and those that can be uprooted to be planted in another area are still available. Hence, we are most like to find medicinal plants that grows by the side of the river and the ones that we have planted in our own yards. The reason plants that grows by the side of the river are less likely to be affected by urbanisation is because most of the development activities are not done in such areas and the ones that plant in our own are still available is because most of them is the leaf part that is used so it gives a plants a chance to grow again"* **(6:12:1-Xitlhelani village, In-depth interview-community member)**

> *"Medicinal plants that grow next to the river or mountains can still be found. This is because so far the land developer does not target such places when doing their projects, I can say that for now those plants are still safe. Also plants that can be planted in our own home such as Mhangani, Nhlaba ya Fole, Xikwavava, and Muringa can still be found, because people have control of what happens in their homes"* **(4:16:2-Madonsi village, In-depth interview-community member)**

> *"Most of the medicinal plants that I use as a traditional healer to assist my clients are no longer found in our area. The closest place where I can find the medicinal place in in Thengwe which is in Venda far from our area. For some of the plants I travel to Gauteng to a place called Faradale in order to find plants like Sasavafi, Xikhundla, Nandela, Xikukutsi, and Petswa"* **(3:15:3-Mavambe village, In-depth interview-THP)**

The participants mentioned that the place where medicinal plants are still available is place where it is rare for urbanisation processes to take place, for example river side, back yards and mountains.

4.3.3 Contributory Factors to the Scarcity of Medicinal Plants in the Malamulele Area of Limpopo Province, South Africa

All the selected participants were also asked the following questions to reveal the experiences and perceptions on the Contributory factors to the scarcity of medicinal plants and their verbatim expressions were shared herewith:

- *What kinds of medicinal plants can still be found in your area, with a higher possibility of extinction due to urbanisation?*
- *What kinds of diseases are cured by these medicinal plants, with likely extinction?*
- *What are the contributory factors to medicinal plants extinction in your area, urbanisation included?*
- *What are the existing challenges faced by the local residents in preserving medicinal plants in your area, urbanisation considered?*
- *What are the consequences when medicinal plants come to an extinct owing to urbanisation?*

The researcher continued to ask the participants about the kinds of medicinal plants that can still be found in your area, with a higher possibility of extinction due to urbanisation and the researcher was also interested in knowing what kinds of diseases are cured by these medicinal plants, with likely extinction. About 04 participants expressed their verbatim, as presented in Table 1 of this study:

> *"As I have mentioned before that urbanisation affects the availability of medicinal plants, but the notable medicinal plants that are still available but with a higher possibility of extinction due to urbanisation are Mavapfuka, Ximahlwamahlwani and Mgobo"* **(1:13:1-Xigalo village, In-depth interview-THP)**

"The kinds of plants that are found in our area and they are in higher possibility of extinction are medicinal plants that are used to cue diseases such as tooth ache, stomach ache and wounds. These plants are exposed to extinction due to urbanisation because they mostly grow in areas that can be easily chosen for building of infrastructure" **(4:10:2-Madonsi village, In-depth interview-community member)**

"Plants such as Xibaha and Potsa are facing possibility of extinction due to urbanisation. Since they are mostly found in areas that are targeted for development projects and they are being cleared for the purposes of urbanisation" **(5:17:3-Roodhuis village, In-depth interview-THP)**

"Plants such as Sasavafi, Xikhundla, Nandela, Xikukutsi and Petswa are facing high possibility of extinction due to the rate in which urbanisation is going. Although these medicinal plants are still available, high chance are, they will face extinction sooner or later" **(3:15:4-Mavambe village, In-depth interview-THP)**

Participants mentioned different kinds of plants that are still available but facing a possibility of extinction in their area. They also mentioned that the kinds of plants that are found in our area and they are in higher possibility of extinction are medicinal plants that are used to cue diseases such as tooth ache, stomach ache and wounds. These plants are exposed to extinction due to urbanisation because they mostly grow in areas that can be easily chosen for building of infrastructure. Steenkamp (2002) in section 1.1 of chapter one of this study indicated that negatively, human destruction of biodiversity simultaneously destroys their life-giving resource base. Martin (1995) in section 1.1 of chapter one of this study confirmed that 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. To this end, VDM IDPR (2019) showed that 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.

Furthermore, the researcher posed a question to the participants about what other contributory factors to medicinal plants extinction in their area, urbanisation included, 04 participants expressed their verbatim herewith:

> *"In most cases what affect the availability of medicinal plants is urbanisation and development of new stands. As the population grow so is the demand of new stands, which makes it a problem for the sustainability of medicinal plants"* **(2:20:1-Mphambo village, In-depth interview-community member)**

> *"Climate change is also a contributory factor when it comes to the extinction of medicinal plants. We have seen harsh weathers kill lots of vegetation, medicinal plants included. Most of the medicinal plants that we have in our area cannot survive harsh weathers. Another thing that contribute to scarcity or even extinction of medicinal plants is over population. As population grow so is the demand for new stands and in such processes there's a lot of deforestation that take place"* **(4:4:2-Madonsi village, In-depth interview-community member)**

> *"One of the factors that contribute to the extinction of medicinal plants is inexperienced harvesters. Usually when we harvest medicinal plants we do not cut to kill them, but to leave them in a good state for future use. For example, when we harvest we do not uproot the entire plants but we cut up few roots of the plants and cover up the remaining roots with soil so that it does not die. But other people do not care, they will uproot the entire plant and that lead to extinction"* **(1:13:3-Xigalo village, In-depth interview-THP)**

> *"I cannot think of much now because most of the things that contribute to the extinction of medicinal plants are processes of urbanisation. For example, the building of the new school, stadium, and new stands contribute largely to the extinction of medicinal plants"* **(5:11:4-Roodhuis village, In-depth interview-community member)**

From the verbatim given by the participants it is evident that urbanisation is not the only factor that contribute to the extinction of medicinal plants or that threatens the availability of medicinal plants. There are other factors that contribute to the extinction of medicinal plants in Malamulele areas. Climate change and improper harvesting has been mention by majority of the participants to be the contributing factors to the extinction of medicinal plants.

Nwafor (2020) in section 2.3.1 of chapter two of this study stated that, the reported critical over-harvesting of wild populations is considered an urgent issue for biodiversity conservation. He further presented that Growing demand for therapeutic products from indigenous medicinal plants have led to increased interest in its cultivation in section 2.3.1 of chapter 2 of this study.

Cunningham (1991) in section 2.5 of chapter two of this study indicated that the demand by majority of the people in SA for medicinal plants has been met by indiscriminate harvesting of spontaneous flora including those in the forest and some were harvested properly though some were destroyed completely during harvesting. Mander (1997) in section 2.5 of chapter two of this study showcased that as many as 4000 tons of plant materials from the wild harvested from 200 medicinal plants species, were traded per year in in some rural areas in Limpopo such as Malamulele and some parts of KwaZulu-Natal, which led to the extinction of wild ginger and pepper-bark tree and other medicinal plants outside protected areas.

According to Liu *et al*., (2007) in section 2.3.1 of chapter two of this study, other major factors which affect medicinal plant growth are fire, wattle expansion or eradication program and grazing. Fire can destroy the parts of above ground vegetation including medicinal plants. Particularly, it may harm the bud of herb medicinal plants. Cavaliere (2009) on section 2.3.1 of chapter two of this study, presented that, climate change is causing noticeable effects on the life cycles and distributions of the world's vegetation, including medicinal plants. Some medicinal plants are endemic to geographic regions or ecosystems particularly vulnerable to climate change, which could put them at risk.

The researcher also asked the participants about the existing challenges faced by the local residents in preserving medicinal plants in your area, urbanisation considered. Some of the participants shared their verbatim expressions as follows:

> *"As a THP, the challenges that we face are that, when the land developers begging their processes of urbanisation they do not consult or engage with us. And since most people do not understand or even believe in the traditional way of medicine they tend to take the preservation of these plants for granted, and they do not allow us anywhere near the development site even before the processes start"* **(6:18:1-Xitlhelani village, In-depth interview-THP)**

"When it comes to preservation of medicinal plants during the processes of urbanisation we face different challenges but the worst of them all is that we are never told in time or even formally that there will be deforestation for the purposes of urbanisation. We sometimes just hear rumors, and that is on some fortunate cases because we can act upon the rumor. However, if we are not told, then it means that we do not get time to come up with measures to preserve the existing medicinal plants in those areas" **(1:1:2-Xigalo village, In-depth interview-community member)**

"I will speak for us THP, one of the challenges that we have is that we do not have enough space where we can preserve medicinal plants for future use. Even though we are not informed on when or where urbanisation processes is going to take place, we are will to prepare beforehand and preserve our existing medicinal plants for future use, but it is difficult because we do not have space or a land in which is given to us to do so" **(3:15:3-Mavambe village, In-depth interview-THP)**

"The most challenging experience that we have regarding preservation of medicinal plants is that people who uses or depend on medicinal plants for primary health care purposes, such as THP do not have the authority to decide on which part of the land should urbanisation take place. However, they follow whatever the land allocators say. This on its own make the preservation of medicinal plants difficult" **(5:5:4-Roodhuis village, In-depth interview-community member)**

From the verbatim of the participants, THP seems to be experiencing common challenges when it comes to the preservation of medicinal plants. The common challenges are that they experience are that they are never told in time or even formally that there will be deforestation for the purposes of urbanisation so that they can come up with strategies to preserve these medicinal plants. Also, in some instance they do not have enough or appropriate environment where they can replant the medicinal plants. They also mentioned that as THP they do not have the authority to deny urbanisation to happen in certain parts of the land of which is the natural habitant of the medicinal plants.

On the consequences that the experience when medicinal plants come to an extinct owing to urbanisation, 04 participants expressed their verbatim points as follows:

> *"The unfortunate part about all of this, is that when we do not have the medicinal plants nearby it become a problem when patients/clients come and their condition require particular medicinal plants that are extinct in our area. In cases like that it means to help the client is going to be a bit expensive either because we need to travel to get the medicine or we need to buy them, or even both. Unfortunately, some clients come in critical conditions and end up losing their lives. And this reflect bad on us as THP, we end up being called useless or that we do not know what we are doing, when in actual case it is not our fault that urbanisation is destroying our medicinal planta"* **(2:14:1-Mphambo village, In-depth interview-THP)**
>
> *"The consequences that we face when medicinal plants become extinct in our area are that we that spending more money on plants that we could have gotten in our area if it was not because of urbanisation. We are left with no choice but to travel far to harvest the medicine or even buy in places like Faredale in Gauteng which is still very far from us"* **(6:18:2-Xithlelani village, In-depth interview-THP)**
>
> *"First of all is that our clients end up not getting the help that they need. In addition, for us to be able to help our clients we need to travel long distances to find the plants or buy. This makes it difficult for us to work because for some of us this is also a business in as much as we are helping people we should also be able to make end meet"* **(3:15:3-Mavambe village, In-depth interview-THP)**
>
> *"As community members, the consequences that we witness are that we our indigenous way of living. We are now forced to use western medicine even in disease that could heal ourselves through medicinal plants"* **(1:7:4-Xigalo village, In-depth interview-community member)**

Due to the loss of medicinal plants in Malamulele communities, and do not have the medicinal plants nearby it become a problem when patients/clients come and their condition require particular medicinal plants that are extinct in our area. In cases like that it means to help the client is going to be a bit expensive which causes financial strain to the client or even the THP, either because they need to travel to get the medicine or they need to buy them, or even both. Unfortunately, some clients consult when they are in critical conditions and end up losing their lives.

Marshall *et al.,* (1995) proved that medicinal plants trade at local, regional and international levels has had an increase, as the subsistence consumer has distanced from harvesting areas because of urbanisation as indicated in section 2.10 of chapter two of this study. Mander (1997) in section 2.5 of chapter 2 of this study states that it has been estimated that in 1996, about 20 000 loads of medical plants were spent annually. Botha, Witkowski and Shackleton (2004) in paragraph 2.5 of chapter 2 of this study confirmed that this large amount has massively increased pressure on habitats, resulting in numerous local extinct. Cunning (1998) in section 2.5 of chapter 2 of this study also reported that several medicinal plants have been exploited to such an extent that they are rarely found outside unprotected areas in SA. Summarily, Table 2 indicates collated views of various selected participants, as they reached consensus on a question asked regarding some notable medicinal plants that are still available but facing high possibilities of extinction due to urbanisation at Malamulele area.

Table 2: The notable medicinal plants that are still available but with a higher possibility of extinction due to urbanisation

Common names	**Diseases cued**
1. Mavapfuka	Heal people from death beds
2. *Ximahlwamahlwani*	Eyes
3. *Mgobo*	Stomach ache
4. *Xibaha*	Stomach ache
5. *Potsa*	Tooth ache
6. *Sasavafi*	Body pains
7. *Xikhundla*	Body pains
8. *Nandela*	General diseases
9. *Xikukutsi*	Body pains and stomach ache
10. *Petswa*	Cleansing

Source: Researcher's emphasis (2022-2023)

[**Keys:** 1:13:1-Xigali village, In-depth interview-THP; 5:17:2- Roodhuis village, In-depth interview-THP; 3:15:3-Mavambe village, In-depth interview-THP; 2:14:4-Mphambo village, In-depth interview-THP].

4.3.4 Alternative Strategic Management Methods to Safeguard Medicinal Plants in the Malamulele area of Limpopo Province, South Africa

All the selected participants were asked the following questions and their verbatim expressions were shared herewith:

- *Which methods are being used to safeguard medicinal plants that are still available?*
- *What could have been done to preserve the plant species that have come to an extinct owing to urbanisation?*
- *What do you think the land allocators are being negligent in preventing the extinction of medicinal plants?*
- *How can medicinal plants be managed to remain available for future use?*
- *Are the current strategies employed by relevant stakeholders to protect medicinal plants in your area? (Please elaborate on your answer)*

The researcher also posed a question on the methods that are being used to safeguard medicinal plants that are still available and some participants expressed their verbatim opinions as follows:

> *"For the plants that are still in the field there's not much that is being done so safeguard the medicinal plants, however, what I do is that I harvest as much medicinal plants as I can so that they can sustain me for a bit longer, and I store these medicinal plants in my hunt, I personally call I surgery. In that way I know that I have enough medicinal plants in my position that can sustain me until we discover another area where can get the medicinal plants. Due to urbanisation processes we are forced to work three times as hard to harvest medicinal plants, so that we do not suffer for at least some time after deforestation"* **(4:16:1-Madonsi village, In-depth interview-community member)**

"There is hardly anything that is being done to safeguard medicinal plants in cases of urbanisation. Except that we just need to harvest as many plants as we can that will only last us a while, but from there we need to come up with plant of where we can find the plants that we need. It becomes much better if the kind of the plants can be grown in another area, then we are able to plant them in our backyards" **(2:14:2-Mphambo village, In-depth interview-THP)**

"What we do as THP, is that we harvest as many plants as we can, dry them and store them in our huts. In that way we know that it will last us for a while until we at least discover another place where we can find those particular plants or even alternatives" **(1:13:3-Xigalo village, In-depth interview-THP)**

"Methods to safeguard medicinal plants considering urbanisation are very limited in our community, I say this because lots of medicinal plants are being destroyed during the processes of urbanisation with a possibility of extinction, however, some people who largely depend on medicinal plants for their primary healthcare purposes take some measures such as uprooting some of these plants to plant them in areas that they believe they will be secured such as their backyards, and also harvest as many plants as they possibly can so that they have enough medicine to last them for a long time" **(5:11:4-Roodhuis village, In-depth interview-community member)**

According to the selected participants' there is not much that is being done so safeguard the medicinal plants that still exist in Malamulele communities. Majority of the participants stated that methods to safeguard medicinal plants considering urbanisation are very limited in our community; I say this because many medicinal plants are being destroyed during the processes of urbanisation with a possibility of extinction. However, the THP they collect as much medicinal plants as they possibly can so that they can sustain them for a bit longer and store these medicinal plants in hunt. The THP and some community members who largely depend on medicinal plants for their primary healthcare purposes take some measures such as uprooting some of these plants to plant them in areas that they believe they will be secured such as their backyards.

The DST (2004) in section 2.5 of chapter two of this study revealed that indigenous knowledge still plays an important role in sustainable livelihood of a significant proportion of the SA population of medicinal plants. Essentially, Magoro (2008) in section 2.5 of chapter two of this study 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 SA. However, the knowledge system of local communities played an important role in managing natural resources. Moreover, the indigenous knowledge of the THPs pertaining to medicinal plants and their environments sustained their practices; thus, this 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 THPs, these factors can be more effective.

Steenkamp (2002) in paragraph 1.1 of chapter one of this study 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. The researcher asked the participants what could have been done to preserve the plant species that have come to an extinct owing to urbanisation and 02 participants expressed their verbatim thoughts as follows:

> *"The government can build more nature reserves where all these plants will be store and be secured and only allow experienced people to harvest the plants for their sustainability, in this way urbanisation will have less effect on the availability of medicinal plants"* **(3:9:1-Mavambe village, In-depth interview-community member)**

> *"Reserve banks or nature reserves can be of great help when in come to preservation of medicinal plants from being cleared during the processes of urbanisation. However, that will require a lot of engagement with the government or even sponsors"* **(1:19:2-Xigalo village, In-depth interview-community member)**

The participants both THPs and community members believes and hope that the government can take initiative in introducing different effective conservative measures that can be used to protect medicinal plants in situations where they are threatened by urbanisation or even other factors that contribute to the extinction an loss of medicinal plants. They proposed that reserve banks and nature reserved to protect medicinal plants should be established.

Cunningham (1991) in section 2.5 of chapter two of this study 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 variably of germplasm are necessary. He continues so state that, although not 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 section 2.5 of chapter two of this study.

In paragraph 1.1. of chapter one of this study VDM IDPR (2019) outlined that in terms of the land cover/ Flora and Fauna, Vhembe [Including the CCLM was established by the amalgamation of portions of Thulamela Local Municipality (TLM) and Makhado Local Municipality on 3 August 2016, SA, 2012-2020:1] Biosphere reserve in Makhado municipality is declared conservation area by United Nations Educational, Scientific and Cultural Organisation (UNESCO). The Biosphere Reserve (BR) provides a habitat to a diverse number of species including those that are on the brink of extinction. The Biodiversity of the VDM 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*.

Correspondingly, participants were asked why they think the land allocators are being negligent in preventing the extinction of medicinal plants and they expressed their verbatim thereof:

> *"I think they are being negligent because they do not even bother to engage us on whether we use any of the plants in the areas that they use for urbanisation purposes. For them it is about the development of the area and not the biodiversity"* **(5:5:1-Roodhuis village, In-depth interview-community member)**
>
> *"The land allocators are in business, so they do not really care the survival of medicinal plants and how it affects the livelihoods of the community members at large and how our jobs become more difficult because of the scarcity of medicinal plants"* **(2:8:2-Mphambo village, In-depth interview-community member)**
>
> *"The land allocators become negligent when it comes to extinction of medicinal plants due to urbanisation because they do not see the importance of medicinal plants while we have western medicine, therefore, they prioritise economic growth and benefits rather than medicinal plants"* **(3:15:3-Mavambe village, In-depth interview-THP)**

It is evident that THPs and community members believe that the land allocators are negligent when it comes to the protection of medicinal plants because of the economic benefits that comes with urbanisation. Urbanisation creates jobs for the residents and better services. Because there is free western medicine that can be accessed by the residence through public hospitals and clinics, the land allocators tend to disregard the importance of availability of medicinal plants in the rural communities.

Notably, Stern (2000) in paragraph 1.1 of chapter one of this study 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.

The selected participants were further asked how medicinal plants can be managed to remain available for future use and 03 participants expressed their verbatim thereof:

> *"As mentioned before that reserve banks and nature reserves will be of great help when it comes to preservation of medicinal plants against the processes of urbanisation. But as people who use medicinal plants, when we harvest the surviving medicinal plants, after digging and cutting the roots we must cover up with soil for them not to die for future use"* **(1:13:1-Xigalo village, In-depth interview-THP)**
>
> *"The surviving medicinal plants can be managed for future use if experts and people who uses medicinal plants more often are given an opportunity to make means and preserve medicinal plants before they are killed during urbanisation"* **(4:16:2-Madonsi village, In-depth interview-community member)**
>
> *"If the government can be more involved in African Medicine more ways to preserve medicinal plants will be discovered, such as reserve banks and nature reserves*" **(3:9:3-Mavambe village, In-depth interview-community member)**

The participants emphasised that it is important to have place or space where medicinal plants can be preserved, places such as nature reserve and reserve banks will be of great help when it comes to the preservation of medicinal plants. Also, they stated that surviving medicinal plants can be managed for future use if experts and people who uses medicinal plants more often are given an opportunity to make means and preserve medicinal plants before they are killed during urbanisation.

The plant species are no longer protected by the community people as well as the indigenous health practitioners of Malamulele area, and some plants in the community are being threatened by the development of the communities and have no longer have space to grow. The researcher of this study discovered that 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.

Particularly, there exists a cloud of no confidence in the CCLM 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.

Cunningham (1991) in section 2.5 of chapter two of this study 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. Moeng (2010) in paragraph 2.5 of chapter two of this study highlighted a role played by traditional medicine shops and street vendor on the trade of indigenous medicinal plants in Limpopo Province was investigated to develop strategies that will prevent further loss of medicinal plants. Mander (1997) in paragraph 2.5 of chapter two of this study stated that at the provincial level there are nature conservation ordinances, which have strict limit on the access of the plants.

Specifically, Mander (1997) states that the Limpopo Environmental Management Act, 2003 forbid any individual who has no permit to access the protected plants or specially protected plant in the province. Miller and Hobbs (2002) in section 2.3.3 of chapter two of this study 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) in paragraph 2.5 of chapter two of this study also indicated that CBNRM has been established as one of the mechanisms for plant conservation.

Damn (2002) in section 2.5 of chapter two of this study 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) in section 2.5 of chapter two of this study also stated that for this to happen, conservation authorises, tribal authorities and local communities must form a partnership. An agreement should be established, which decreases that benefits from proper management of the permit system would flow commensurately to all partners.

4.4. Study Findings on Afrocentric Theory and Dependency Theory

Based on section 2.6 provided narrations on the historical developments of the adopted theory (Afrocentric Theory). The following study findings indicated measures applied to respond to the noted criticisms and lasting values of this theory, guided by the gathered cultural perceptions on the effects of urbanisation on the sustainability of medicinal plants in Malamulele area of Limpopo Province. Therefore, the questioned asked to the selected participants stemmed from the *'strategic management methods to safeguard medicinal plants'* category [Objective 3 of this study] and they were designed as follows:

- *Which methods are being used to safeguard medicinal plants that are still available?*
- *How can medicinal plants be managed to remain available for future use?*

To respond to the posed Two (02) questions above, the request from the selected participants on *'any other comments you would like to make, regarding the effects of urbanisation on the sustainability of medicinal plants at the Malamulele area,'* was also used to provide answers to the employed theoretical frameworks: Afrocentric Theory and Dependency Theory. Overall, the 03 questions reflect the following study findings and discussions.

The researcher further questions the participants if there are any current strategies employed by relevant stakeholders to protect medicinal plants in your area and some participants expressed their verbatim:

> *"For now there is nothing to show, but we are given promises that we are going to get a place where we will be able to preserve medicinal plants. We are patiently waiting for that"* **(3:15:1-Mavambe village, In-depth interview-THP)**
>
> *"Not really, I say this because for now we have not seen anything tangible that we can show that the relevant stakeholder did to help us preserve medicinal plants in cases of urbanisation. It has always been a promise"* **(6:6:2-Xitlhelani village, In-depth interview-community member)**
>
> *"In our area no strategies have been employed to preserve medicinal plants. All we have been getting is promises that there will be measure that will be taken in order to preserve medicinal plants, but for now nothing has been done yet, except our traditional ways of preserving which is harvesting and drying the plants and save them for future use, and plant some of the medicinal plants in our backyards. However, this is rare and only a few plants can be planted in those environment"* **(3:15:3-Mavambe village, In-depth interview-THP)**

Many promises have been given to the community members and traditional healers that there will be initiatives from the government to protect medicinal plants, however, for now nothing tangible has been done by the relevant stakeholder to help preserve medicinal plants in cases of urbanisation. Schiele (2000) mention in section 2.6.2 of this study that, there are four existing criticisms of Afrocentric theory, focusing on the first one, he stated that, the Afrocentric theory is incomplete in that it does not contribute to a critical tradition. It is also argued by Mazama (2001) in section 2.6.2 of this study that, despite its limitations, this theory still offers the importance of protecting and preserving the conventional methods of utilising medicinal plants for the benefit of rural citizens. As a result, the researcher supports this notion in section 2.6.2 by stating that, the study of this nature can add to the identified vacuum in the body of knowledge.

The researcher further asked the participants on how medicinal plants can be managed to remain available for future use, their verbatim were shared herewith:

> *"There are various ways that can be used to manage the availability of medicinal plants. These methods include proper harvesting of medicinal plants by using the cultural or traditional way of harvesting. For example if a person need roots, they can cut some parts of the roots and leave some and then cover up with soil, by so doing the availability of medicinal plants is well manage. However, this becomes a challenge when because we are not given an opportunity to use the traditional preservation methods to protect medicinal plants before the processes of urbanisation starts"* **(5:17:1-Roodhuis village, In-depth interview-THP)**

> *"As a traditional healer, from my side I believe that if the opportunity to protect and preserve medicinal plants can be given to traditional healers and indigenous people medicinal plants especially those that are scarce, we can do a better job for the sustainability of medicinal plants, in that way factors like urbanisation and poor harvesting will not have an impact on the availability of medicinal plants. Also, if the land developers can give us the opportunity to inspect the area to see if there are any medicinal plants that we will need before they start with their developments, medicinal plants can be managed for future use"* **(1:13:2-xigalo village, In-depth interview-THP)**

> *"In rural areas most people who have knowledge on how to protect medicinal plants are traditional healers and indigenous people; these are the people that should be in the forefront when it comes to managing available medicinal plants for future use. If the land allocator and developers can work with these people for the betterment of medicinal plants, then we will not have major impact on the availability of these plants caused by urbanisation and deforestation"* **(4:10:3-Madonsi village, In-depth interview-community member)**

The community members and THPs tries to put protective measures towards the survival of medicinal plants such as cutting only the part of the plant that they want to use, instead of uprooting the entire plant. Unfortunately, when there is urbanisation there is not much that they can do because they do not have the resources and support from the land allocators. The only prominent thing that they can do is to uproot the plants and replant them at their backyards or dry them, so that they last them for a bit long until they find alternative plants to use or alternative places where they can harvest these plants.

According to Welsh-Asante (1993) in section 2.6.1 of this study, Afrocentricity seeks to re-locate the African person as an agent in human history in an effort to eliminate the illusion of the fringes. Pellerin (2012) in section 2.6.1 of this study stated that, the institutionalisation of organising principles generates a basis for methodological approaches that are rooted in Africana people's realities. Chawane (2016) in section 2.6.1 of this study indicates that, Afrocentricity is also known as an intellectual program, a political approach, and a historical evolution that influences the African culture and achievements of Africans.

The researcher further asked the participants if they had any other comments that they would like to make, regarding the effects of urbanisation on the sustainability of medicinal plants at the Malamulele area, and their verbatim were shared herewith:

> *"From everything that I have mentioned, I will add by saying that the available medicinal plants in our area are under great threat of extinction. It is evident that that most of the medicinal plants that are still available in our area are becoming scarce because of urbanisation and the poor management of these plants. In as much as we need the development of our communities, the sustainability of medicinal plants should be prioritised for future use"* **(2:20:1-Mphambo village, In-depth interview-community member)**

"For effective sustainability of medicinal plants against urbanisation and other factors that contribute to the scarcity and extinction of medicinal plants, we need to understand the importance and necessity of having medicinal plants at a close range, unlike having to go miles to get the medicinal plants or even buy. By understanding this people will take it upon themselves to prioritise preservation of medicinal plants" **(6:18:2-Xitlhelani village, In-depth interview-THP)**

"What I can say is that for sustainability of medicinal plants for future use extreme conservation measures need to be implemented, either traditionally or western. Most people think that traditional medicine or medicinal plants are not important because we have the western health care service (i.e. clinics and hospitals), when in actual sense these plants should be protected at all cost because they hold important aspect of culture and traditions. That is organic medicine that can be used to cue various diseases" **(5:5:3-Roodhuis village, In-depth interview-community member)**

The residents appreciate and acknowledge urbanisation and the opportunities that comes with it, such as, economic benefits and better services. However, they are also worried about the availability of medicinal plants, in a sense that medicinal plants are being destroyed during the processes of urbanisation and no one seems to care except for the people that uses them like THPs and indigenous people. It is evident that that most of the medicinal plants that are still available in our area are becoming scarce because of urbanisation and the poor management of these plants.

According to Pellerin (2012) in section 2.6.3 of this study, Afrocentricity serves as a foundation for exploratory, explanatory, and descriptive research. Concurrently to this the researcher stated in section 2.6.3 of this study that, to effectively respond to the noted limitations, the Afrocentric theory is applied in this study to explore and analyse how urbanisation impact the sustainability of available medicinal plants in the Malamulele area, only untapped African perspectives and discoveries on this subject will be gathered during this process.

4.5. Identified Study Themes

4.5.1 Study Aim: The Effects of Urbanisation on the Availability of Medicinal Plants at Malamulele, Limpopo Province, South Africa

Table 3: Identified Study Themes on the Effects of Urbanisation on the Availability of Medicinal Plants at Malamulele, Limpopo Province, South Africa

Study themes and challenges	**Study findings and researcher's comments**
Expansion of urban areas	It is evident from the verbatim given by the participants that urban expansion is on the rise on the selected areas in Malamulele. These urban expansions involve the building of stadium, filling stations, and recreational centres among others. Therefore, due to these urban expansion medicinal plants are under threat in these areas.
Uncontrolled development activities	Many participants have expressed in their verbatim that there are uncontrolled development activities in their areas and as a result medicinal plants are destroyed and some of the plants are already facing extinction. The participants stated that with the rate at which development activities are being done medicinal plants are no longer safe.

Source: Researcher's illustrations (2023)

In paragraph 4.3.1 of chapter four of this study multiple researchers, Czech *et al.,* (2000) and McKinney (2008) agreed that that all group of species, they tend to reduce in areas with extreme Urbanisation where large number of lands is consumed by the expansion of urban areas, for example, in central urban core areas where medicinal plants are destroyed and not protected or preserved for future medical use. To this end, in paragraph 4.3.1 of chapter four of this study many researchers, such as McKinney (2008) and VDM IDPR (2019) agreed that 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.

4.5.2 Study Theme 2: Perceptions of Traditional Health Practioners and Community Members Based on the Effects of Urbanisation on Medicinal Plants in the Malamulele area of Limpopo Province, South Africa

Table 4: Identified Study Themes on Perceptions of THPs and Community Members Based on the Effects of Urbanisation on Medicinal Plants in the Malamulele area of Limpopo Province, South Africa

Study themes and challenges	**Study findings and researcher's comments**
The removal of vegetation	Due to the urbanisation processes, a huge quantity of vegetation is removed from the forest or the allocated areas due to urbanisation processes have put a huge strain on the availability of medicinal plants and are under threat. The contractors do not prioritise protecting medicinal plants when doing their development, and deforestation is done without taking medicinal plants into consideration.

Source: Researcher's illustrations (2023)

As in indicated in paragraph 4.3.2.1 of chapter four of this study multiple researchers, Van Wyk *et al.,* (2002) and Magoro (2008) agreed that removal of vegetation from its roots and burning of the entire land is mostly done during the process of urbanisation and it leads to plants being scars and extinction of medicinal plants.

4.5.3 Study Theme 3: Contributory Factors to the Scarcity of Medicinal Plants in the Malamulele area of Limpopo Province, South Africa

Table 5: Identified Study Theme on Contributory Factors to the Scarcity of Medicinal Plants in the Malamulele area of Limpopo Province, South Africa

Study themes and challenges	Study findings and researcher's comments
High demand of medicinal plants	Beside the effects that are done by urbanisation on the availability of medicinal plants, there are other factors that contribute to the threat of medicinal plants. High demand of medicinal plants by the THPs, community members and the traditional herbal market also make a huge contribution to the scarcity of medicinal plants. High demand of medicinal plants leads to illegal harvesting and even improper harvesting which results in putting medicinal plants under a threat.

Source: Researcher's illustrations (2023)

Researchers like, Cunningham (1991) and Mander (1997), in chapter 4.3.2.2 of paragraph four of this study agreed that medicinal plants that are coming to an extinct are a result of high demand and due to high demand most medicinal plants are not harvested properly and it leads to extinction of medicinal plants.

4.5.4 Study Theme 4: Alternative Strategic Management Methods to Safeguard Medicinal Plants in the Malamulele area of Limpopo Province, South Africa

Table 6: Study Themes on Alternative Strategic Management Methods to Safeguard Medicinal Plants in the Malamulele area of Limpopo Province, South Africa

Study themes and challenges	Study findings and researcher's comments
Indigenous knowledge	The participants presented that indigenous people with indigenous knowledge about medicinal plants in their communities are very important
Strict limited access	Areas that have medicinal plants are not protected. There is no strict limited access to these places. Medicinal plants are exposed and are under threat of different factors including urbanisation. Due to lack of strict limited access during urbanisation processes medicinal plants are destroyed.

Source: Researcher's illustrations (2023)

As showcased in paragraph 4.3.2.3 of chapter four of this study multiple researchers, such as the DST (2004) and Magoro (2008) respectively agreed that indigenous knowledge still plays an important role in sustainable livelihood of a significant proportion of the SAn population of medicinal plants. Equally, as showcased in paragraph 4.3.2.3 of chapter four of 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.

4.5.5 Study Themes on Afrocentric Theory and Dependency Theory

Table 7: Identified Study Themes on Afrocentric Theory

Study themes	Study findings and researcher's comments
Lack of traditional preservation methods	The traditional preservation methods are not properly practiced in most of the communities. This is due to that community members and THP are not involved when urbanisation processes are being done and medicinal plants are destroyed. People who have knowledge about traditional preservation methods are not given a chance to preserve medicinal plants before the urbanisation processes begin.
Limited communication between land allocators and traditional/indigenous people	Land allocators does not communicate with the community members and THP before the urbanisation processes. And they do deforestation without consulting or communicating with the community members and THP to see if they have way to preserve medicinal plants.

Source: Researcher's illustrations (2023)

Table 8: Identified Study Themes on Dependency Theory

Study themes	Study findings and researcher's comments
Lack of consideration for economic development and cultural heritage safeguarding	The developments of local government rarely consider the protection of medicinal plants in rural areas close to the developing township. The community members and THPs are unlikely to be consulted when development emerges, despite the essentiality of the medicinal plants for health purpose
Political will and partisanship	The local counsellors within the local government sphere often ignore the significance of medicinal plants for the betterment of rural residents. The development of the inner city and surrounding

	areas is often made without considering the use of medicinal plants by the THPs and community members for various positive factors related to human health, negatively affecting the preservation of this sector in relation to commercialisation.

Source: Researcher's illustrations (2023)

To better understand the lack of traditional preservation methods**:'** this study presents as stated by the participants in section 4 of this study that, this becomes a challenge when because we are not given an opportunity to use the traditional preservation methods to protect medicinal plants before the processes of urbanisation starts. Concurrently, it is also argued by Mazama (2001) in section 4.5 of this study that, despite its limitations, this theory still offers the importance of protecting and preserving the conventional methods of utilising medicinal plants for the benefit of rural citizens.

The participants also agreed that, if the land developers can give us the opportunity to inspect the area to see if there are any medicinal plants that we will need before they start with their developments, medicinal plants can be managed for future use. They also mentioned that, if the land allocator and developers can work with these people for the betterment of medicinal plants, then we will not have major impact on the availability of these plants caused by urbanisation and deforestation.

As section 2.6.2 of this study refers the Dependency Theory relate to the under-development, which mainly caused by the peripheral position of affected countries, a developing country like SA in this context to the world economy. The disadvantaged rural communities offer cheap labour and raw materials [Medicinal plants in this regard] to the world market or affluent township, while paying little attention to the effects of urbanisation on the availability of medicinal plants, as this study affirms, using Malamulele area of Limpopo Province, SA as a crux of this study, leading to a possible extinction or getting destroyed due to developments.

4.6. Chapter Summary

This chapter presented, interpreted and discussed the findings of this study based on the study aim and objectives. The emerged study themes and challenges were also presented and discussed based on the highlighted literature studies and the collected empirical data through the semi-structured IDIs with the THPs and community members, while applying the non-probability: Purposive and snowball sampling. In addition, the next chapter (Five) presents the general summary, conclusion and recommendations.

CHAPTER FIVE

GENERAL SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

The aim of this study was to ‘explore the effects of urbanisation on the sustainability of medicinal plants in the Malamulele area of Limpopo Province, South Africa.’ This was prompted by several negative factors contributing to the extinction of these [Medicinal] plants, demarcated to habitat loss, population increase, urbanisation and threats brought by climatic change, amongst others. To this end, the untapped discoveries on this subject were shared in chapter 04, looking at the past and contemporary discussions to reveal unbiased study findings and related implications.

Subsequently, the end goal of this chapter was to ensure that future researchers offer suitable findings based on the study aim and objectives, as well as the study theme and sub-themes to provide efficient recommendations to enable future studies conduct similar study or present criticisms with this study in mind to aid strategies of rural areas facing the similar problem and the offered recommendations are not only for other researchers, as the anthropology researchers interested in medical anthropology can become aware of the effects that urbanisation have in the availability of medicinal plant and how to protect against urbanisation for future usage.

The result of this study proves that the availability of medicinal plants in the study area were threatened by urban development, leading to their extinction. All the selected participants reached consensus that the ‘indigenous medicinal plants’ suffer great loss resulting to urbanisation. They went on to state that available conservation methods to prevent them from possible extinctions are either not implemented properly or neglected at all costs. Therefore, the discovered rapid loss of these plants might affect future preservations and protections. The urban or city expansions due to urbanisation contributes to the witnessed decreases of natural resources (Medicinal plants included).

5.2. General Summary

The aim of this study was to explore the effects of urbanisation on the sustainability of medicinal plants around Malamulele area in Limpopo Province of SA. Not only did the effects of urbanisation were investigated but also how the medicinal plants can be preserved and protected against such, and how they can be documented for future generations and researchers to have good and relevant references.

Interest in this topic came from the extinction of medicinal plants around Malamulele area. Medicinal plants are becoming scarce because of the development of cities and other infrastructure. The motivation to use Malamulele area in Limpopo Province of SA was because the researcher was from that area and has seen how people around, more especially traditional healers and indigenous people suffer to find medicinal plants and the areas that they used to find them because of the implementation of urbanisation.

In summation, it can be started that urban activities affect the availability of medicinal plants, these activities including development of urban settlement, development of mall and shopping centres and others. It went on to show how show how these activities affect the availability of medicinal plants and also how the identified effects can be avoided. This shows how medicinal plants can be preserved and protected from urbanisation practices.

5.3. Conclusion

The aim of this study was to explore literature of the effects of urbanisation on the sustainability of medicinal plants at Limpopo Province, SA, and from this study aim; it is established that indeed urbanisation have major impact on the loss of medicinal plants in this area. Furthermore, the objectives of this study were to identify medicinal plants viewed as being scarce, to document medicinal plants that are coming to an extinct, and to outline strategic management methods to safeguard medicinal plants, along with the aim to explore the effects of urbanisation on the sustainability of medicinal plants at Malamulele, Limpopo Province, SA.

In addition, to explore ways in which medicinal plants can be protected against threat of urbanisation and other factors. The findings were that indeed the extinction of medicinal plants in Malamulele area was because of urbanisation. According to the findings of this research 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 villages around or next to Malamulele 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 CBNRM 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 paragraph 2.5 of chapter two of this study. As stated by McKinney (2008) in paragraph 2.2.1 of chapter two of this study, the researcher 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, and 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 Malamulele area since the residents who use them now needs to travel long distance 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. Recommendations were given in this final chapter for the purposes of readers regardless of their personal status.

5.4. Study Recommendations

The researcher's recommendation goes to the reader as a layman, 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 could be done in other 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. 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 that:

5.4.1 Recommendations to improve Theme 1: The Effects of Urbanisation on the Availability of Medicinal Plants at Limpopo Province, South Africa

Table 9: Recommendations to improve Theme 1 - The Effects of Urbanisation on the Availability of Medicinal Plants at Limpopo Province, South Africa

Identified study themes	Recommendations
Expansion of urban areas	According to this study it is recommended that, although it is impossible to stop urban expansion, all that have medical applications that are found in those areas of the urban expansion should be well preserved and protected in a safe space which will be an area where they can be found when needed.
Uncontrolled development activities	It is recommended by this study that during the process of development activities, most people, particularly traditional healers who are in need of medicinal plants on regular basis should be consulted and be given a platform where they will be able to come up with ideas on how these medicinal plants could be preserved for future use.

Source: Researcher's illustrations (2023)

5.4.2 Recommendations to improve Theme 2 - Perceptions of Traditional Health Practioners and Community Members based on the Effects of Urbanisation on Medicinal Plants in the Malamulele area of Limpopo Province, South Africa

Table 10: Recommendations to Improve Perceptions of Traditional Health Practioners and Community Members based on the Effects of Urbanisation on Medicinal Plants in the Malamulele area of Limpopo Province, South Africa

Identified study theme	Recommendations
Removal of vegetation	It is recommended that during urbanisation in which medical plants are uprooted, people should not destroy them but plant them in another area where they can be protected.

Source: Researcher's illustrations (2023)

5.4.3 Recommendations to Improve Theme 3 - Contributory Factors to the Scarcity of Medicinal Plants in the Malamulele Area of Limpopo Province, South Africa

Table 11: Recommendations to Improve Contributory Factors to the Scarcity of Medicinal Plants in the Malamulele Area of Limpopo Province, South Africa

Identified study theme	Recommendations
High demand of medicinal plants	This research suggests that, due to high demand of medicinal plants and the effects that urbanisation has on medicinal plants, conservation places such as nature reserves must be established for medicinal plants to be always available.

Source: Researcher's illustrations (2023)

5.4.4 Recommendations to Improve Theme 4 - Alternative Strategic Management Methods to Safeguard Medicinal Plants in the Malamulele Area of Limpopo Province, South Africa

Table 12: Recommendations to Improve Alternative Strategic Management Methods to Safeguard Medicinal Plants in the Malamulele Area of Limpopo Province, South Africa

Identified study themes	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 research recommends that, nature reserves that have strict limited access are better option that can be used to document the medicinal plants.

Source: Researcher's illustrations (2023)

5.5. Recommendations on Afrocentric Theory and Dependency Theory

Table 13: Recommendations on Afrocentric Theory applications

Identified study themes and challenges	Recommendations
Lack of traditional preservation methods	This study recommend that traditional preservation methods should be given an opportunity to protect and preserve the availability medicinal plants before the processes of begin. Also, Indigenous people should be given an opportunity to implement their knowledge on how to preserve the available medicinal plants.
Limited communication between land allocators and traditional/indigenous people	It is recommended by this study that the land allocators and developers should communicate with the traditional/indigenous people and give them an opportunity to save the existing medicinal plants before they start with the with the processes of urbanisation and deforestation.

Source: Researcher's illustrations (2023)

Table 14: Recommendations on Dependency Theory applications

Identified study themes and challenges	Recommendations
The economic developments and cultural heritage protection	This study recommend that the Dependency Theory should be applied, while considering the importance of medicinal plants to accomplish the pharmaceutical methods for herbalism and medicinal activities for the enhancement of health lifestyle. Moreover, the rural residents should be given opportunities to access and monitor their surroundings prior establishments of local developments, such as shopping centres, residential development, clinics, stadiums, and recreational centres, amongst others. This should be influenced by respecting cultural heritage and norms
Political will and associated local developments practices	It is recommended by this study that the local politicians should consults with the native residents and the THPs for any development in rural areas, adjacent to the city/township. The local Councillors should ensure that the results of the envisaged consultations reach relevant departments for proper implementations, while considering tolerance over the local development and preservations of medicinal plants

Source: Researcher's illustrations (2023)

5.6. Future Research Studies

In future, an empirical in-depth research studies about the effects of urbanisation on the sustainability of medicinal plants. Different types of Interviews, including structured, semi-structured and unstructured, IDIs, face-to-face, Key Informant Interviews (KIIs) and FGDs can be conducted in future to enhance this study. Therefore, future research studies are recommended to be based on the following aspects:

- The attainment of the other aims and objectives of understanding the effects of urbanisation on the sustainability of medicinal plants nationwide and elsewhere.

- Conducting research studies in other districts of SA relating to the effects of urbanisation on the sustainability of medicinal plants across SA and other countries to solicit international best practices.
- Gather more opinions and experiences of the effects of urbanisation on the sustainability of medicinal plants and other supporting structures.

Other areas of another possible research on this subject exist as follows:

- Empirical and longitudinal studies focusing on this subject, this can be conducted across the country.
- Other single longitudinal studies based on this subject using mixed-methods approach remains a strong possibility.
- The systematic studies about the effects of urbanisation on the sustainability of medicinal plants of Malamulele is a case to consider. Therefore, it will be essential to establish causative factors behind the extinction of these medicinal plants around Malamulele and suggest possible measures that may be used to curb this problem from a local perspective.

LIST OF REFERENCES

Abdulai IA, Ahmed A, Kuusaana ED. 2022. Secondary cities under siege: examining peri-urbanisation and farmer households' livelihood diversification practices in Ghana. *Heliyon,* 8 (9), 1-13.

Abdulai, IA & Osumanu, IK. 2023. How urbanisation shapes availability of provisioning ecosystem services in peri-urban Ghana. *International Journal of Urban Sustainable Development*, 1 (2), 282-298.

African Development Bank [Online]. 2022. Africa's urbanisation dynamics 2022 - The economic power of Africa's cities. Available from: https://www.afdb.org/en/documents/africas-urbanisation-dynamics-2022-economic-power-africas-cities. [Accessed: 2023/11/30].

Aguilar AG., Flores MA & Lara, LF 2022. Peri-urbanisation and land use fragmentation in Mexico City. Informality, environmental deterioration, and ineffective urban policy. *Frontiers in Sustainable Cities*, 4 (7), 1-19.

Akerlof, K., Maibach, E.W., Fitzgerald, D., Cedeno, A.Y & Neuman, A. 2013. Do people "personally experience" global warming, and if so how, and does it matter? *Global Environmental Change*, 23(1), 81-91.

Akinola, A.O. 2021. Urbanisation, poverty and the paradox of land reform in South Africa, In: *The new political economy of land reform in South Africa*. Edited by Akinola, A.O., Kaseeram, I & Jili, N.N (Eds). Palgrave Macmillan, Cham:

Al-Snafi, A.E., 2021. International Journal of Biological and Pharmaceutical Sciences Archive. *International Journal of Biological and Pharmaceutical Sciences Archive*, *2*(1), 22-41.

Amoo, E.O., Wuraola, A. and Adebanke, O.I., 2013. Internal migration of young persons and street trading activities in urban areas of Nigeria. *IFE PsychologIA: An International Journal*, *21*(2), 113-122.

Arjona-García, C., Blancas, J., Beltrán-Rodríguez, L., López Binnqüist, C., Colín Bahena, H., Moreno-Calles, A.I & López-Medellín, X. 2021. How does urbanisation

affect perceptions and traditional knowledge of medicinal plants? *Journal of Ethnobiology and Ethnomedicine*, *17*(1), 1-26.

Arndt, C., Davies, R. and Thurlow, J., 2018. Urbanisation, structural transformation, and rural-urban linkages in South Africa. *South African Urbanisation Review, Cities Support Programme of the National Treasury*.

Armstrong, A. and Stedman, R.C., 2019. Understanding local environmental concern: the importance of place. *Rural Sociology*, *84*(1), 93-122.

Asante, K.W. ed., 1993. The African aesthetic: Keeper of the traditions. Greenwood Press.

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

Ateş, H., Es, M., & Bayraktar, Y. 2005. *Dependency Theory: Still an appropriate tool for understanding the political economy of the Middle-East?* Available from: https://www.semanticscholar.org/paper/dependency-theory% ... [Accessed: 2024/03/21].

Attwairi, A. 2017. *The patterns and trends of African urbanisation*. Available from: https://www.researchgate.net/publication/320567484_The_Patterns_and_Trends_of_African_Urbanisation [Accessed: 2024/03/21].

Average, C. 2020. Contestations for urban space: informality and institutions of disenfranchisement in Zimbabwe - The case of Masvingo City. *GeoJournal,* 85, 1277-1289.

Ayres, C. 2020. *Advantages and disadvantages of qualitative research*. Available from: http://vittana.org/?s=Advantages+and+disadvantages+ … [Accessed: 20/03/2024].

Bachman, R & Schult, R.K. 2014. *The practice of research in criminology and criminal justice.* London: Sage.

Banks, J.A., 1992. African American scholarship and the evolution of multicultural education. *The Journal of Negro Education*, 61(3), 273-286.

Bareetseng, S. 2015. *Community Involvement in the Commercialisation of Medicinal Plant Species. The Case Studies: Lippia javanica and Elephantorrhiza elephantine.* A Council for Scientific and Industrial Research Presentation, Pretoria, Gauteng, South Africa. Available from: https://www.dffe.gov.za/sites/default/files/docs/ ... [Accessed: 28/09/2020].

Beinart, W & Dubow, S (Eds). 2023. *Segregation and apartheid in Twentieth-century South Africa*. Routledge: London and New York

Bent-Goodley, T., Fairfax, CN & Carlton-LaNey, I. 2017. The significance of African-centered social work for social work practice. *Journal of Human Behaviour in the Social Environment,* 27 (2), 1-6.

Bolund, P & Hunhammar S. 1999. Ecosystem services in urban areas. *Ecological Economics*, 29 (2), 293-301.

Bongaarts, J., 1995. Population and food in the early twenty first century: meeting future demand of an increasing population. *International food policy research institute,* 8(4), 7-16.

Botha, J., Witkowski, E.T.F & Shackleton CM. 2004. 'Market profiles and trade in medicinal plants in the Lowveld. *Environmental Conservatio*n, 31 (1), 38-46.

Braun, V. and Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101.

Birks, M. and Mills, J., 2014. Qualitative methodology: A practical guide. *Qualitative Methodology*, 6(2), 1-288.

Brower, V. 2008. Back to nature: Extinction of medicinal plants threatens drug discovery. *Journal of the National Cancer Institute,* 100 (12), 838-839.

CallUP Blog [Online]. 2023. New urbanisation measure covers more of the world in 2022. Available from: https://news.gallup.com/opinion/gallup/505067/new-urbanisation-measure-covers-world-2022.aspx [Accessed: 2023/11/30].

Cambridge Dictionary [Online]. 2023. Urbanisation. Available from: https://dictionary.cambridge.org/dictionary/english/urbanisation. [Accessed: 2023/11/30].

Cavaliere, C., 2009. The effects of climate change on medicinal and aromatic plants. *Herbal Gram*, *81*, 44-57.

Centeno, M.A. 2017. 9. Dependency Theory today, In: *Dialogues on development, Volume I: On dependency*. Edited by Kufakurinani, U, Kvangraven, I.H, Santana, F & Styve, M.D. Economic Development Working Group of the Young Scholars Initiative (YSI), Institute for New Economic Thinking: New York City, United States.

Chawane, M., 2016. The development of Afrocentricity: A historical survey. *Yesterday and Today*, 5 (16), 78-99.

Christopher, A.J. 2005. The slow pace of desegregation in South African cities, 1996-2001. *Urban Studies,* 42(12):2305-2320

Christopher, A.J. 2021. Urban Segregation in Post-apartheid South Africa. *Urban Studies,* 38(3):449-466

Collins Chabane Local Municipality Integrated Development Plan. 2021/2022. *Final reviewed Integrated Development Plan*. Collins Chabane Local Municipality: Malamulele.

Cox, D.T., Shanahan, D.F., Hudson, H.L., Fuller, R.A. and Gaston, K.J., 2018. The impact of urbanisation on nature dose and the implications for human health. *Landscape and Urban Planning*, 1 (179), 2-80.

Creswell, J.W. 2007. *Qualitative inquiry and research design: Choosing among five approaches.* Los Angeles: Sage.

Creswell, J.W. 2013*. Qualitative inquiry and research design: Choosing among five approaches*. Sage: New York.

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

Czech, B., Krausman, PR & Devers, P.K. 2000. The relationship of gender to species conservation attitudes. *Wild Society Bulletin*, 50 (2), 593-601.

Damn, G.R. 2002. *The conservation game: saving Africa's biodiversity*. Safari Club International African Chapter: Centurion.

Davenport, R.J., 2020. Urbanisation and mortality in Britain, c. 1800–50. *The Economic History Review*, *73*(2), 455-485.

Davis, K., 1965. The urbanisation of the human population. *Scientific American*, 213(3), 40-53.

De Wet, H., Nciki, S & van Vuuren, S.F. 2013. Medicinal plants used for the treatment of various skin disorders by a rural community in northern Maputaland, South Africa. *Journal of Ethnobiology and Ethnomedicine*, 9(1), 1-10.

Denscombe, M. 2002. *Ground rules for good research: A ten-point guide for social researchers.* Buckingham: Open University Press.

Denscombe, M. 2017. *eBook: The good research guide: For small-scale social research projects*. McGraw-Hill Education: United Kingdom.

Du Toit, M.J. 2015. Temporal change. An urban ecological synthesis of socio-economical systems dynamics in South Africa. *Environmental Science*, 6 (1), 76-93.

Dylewski, L., Banaszak-Cibicka, W., Maćkowiak, L & Dyderski, MK. 2023. How do urbanisation and alien species affect the plant taxonomic, functional, and phylogenetic diversity in different types of urban green areas? *Environmental Science and Pollution Research,* 30, 92391- 92403.

Eckart, K. 2022. Urbanisation is driving evolution of plants globally, study finds. March 18, *UW News [Online]*. Available from: https://www.washington.edu/news/2022/03/18/urbanisation-is-driving-evolution-of-plants-globally-study-finds/. [Accessed: 2023/11/30].

Egamberdieva, D., Wirth, S., Behrendt, U., Ahmad, P. and Berg, G., 2017. Antimicrobial activity of medicinal plants correlates with the proportion of antagonistic endophytes. *Frontiers in microbiology*, *8 (1)*, 199-212.

Emeh, I.E.J. 2013. Dependency Theory and Africa's underdevelopment: A paradigm shift from pseudo-intellectualism: The Nigerian perspective. *International Journal of African and Asian Studies - An Open Access International Journal,* 1, 116-128.

EPA United States Environmental Protection Agency [Online]. 2023. Urbanisation – Overview. Available from: https://www.epa.gov/caddis-vol2/urbanisation-overview [Accessed: 2023/11/30].

Escobar, A. 1995. *Encountering development: Making and unmaking of the Third World.* Princeton University Press: Princeton.

Etikan, I, Musa, S.A. & Alkassim, R. 2016. Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics* 5(1): 1-4.

European Environment Agency [Online]. 2023. Urbanisation. Available from: Available from: https://www.eea.europa.eu/help/glossary/eea-glossary/urbanisation#:~:text=TERM-,urbanisation,-Urbanisation%20is%20the [Accessed: 2023/11/30].

Eze, C., 2016. We, Afropolitans. *Journal of African Cultural Studies*, *28*(1), 114-119.

Fick, J & Mentzel, C. 1995. *The rural metropolis: South African reality and challenge*. Available from: https://journals.co.za/doi/pdf/10.10520/AJA10212019_19195 [Accessed: 2024/03/21].

Gaille, L. 2017. *Advantages and disadvantages of qualitative research*. Available from: https://vittana.org/23-advantages-and-disadvantages-of-qualitative-research [Accessed: 2024/03/20].

Gambe T.R., Turok, I & Visagie, J. 2023. The trajectories of urbanisation in Southern Africa: A comparative analysis. *Habitat International,* 132, 1-19.

Ganeshaiah, K.N., Shaanker, R.U., Murali, K.S., Shankar, U & Bawa, K.S. 1998. Extraction of non-timber forest products in the forests of Biligiri Rangan Hills, India. *Economic Botany*, 52(3), 316-319.

Geyer Jr, HS., Geyer, H.S., du Plessis, D.J & van Eeden, A. 2012. Differential urbanisation trends in South Africa regional and local equivalents. *Environment and Planning,* 44, 2940 – 2956

Ghebreyesus, T.A., 2019. Progress in beating the tobacco epidemic. *The Lancet*, *394*(10198), 548-549.

Giraut, F & Vacchiani-marcuzzo, C. (Ed). 2009. Part III. The spatial and territorial dimensions of urbanisation In: *Territories and urbanisation in South Africa: Atlas and geo-historical information system (DYSTURB)*. Marseille: IRD Éditions, 46-64

Giraut, F., & Vacchiani-Marcuzzo, C. 2009. Introduction: A georeferenced database covering one century of demographic and administrative follow-up of all South-African localities and territories. In *Territories and urbanisation in South Africa: Atlas and geo-historical information system (DYSTURB).* Edited by Giraut, F & Vacchiani-marcuzzo, C. Marseille: IRD Éditions, 3-9

George, T. 2022. *Exploratory research: definition, guide and examples*. Available from: https://www.scribbr.com/methodology/exploratory-research/ [Accessed: 2024/03/20].

Greenwell, M. and Rahman, P.K.S.M., 2015. Medicinal plants: their use in anticancer treatment. *International journal of pharmaceutical sciences and research*, *6*(10), 4103-4112.

Haile, Z.T. 2023. Power analysis and exploratory research. *Journal of Human Lactation*, 39(4):579-583

Hassan, F.M., Hadi, R.A., Kassim, T.I. and Al-Hassany, J.S., 2012. Systematic study of epiphytic algal after restoration of Al-Hawizah marshes, southern of Iraq. *International Journal of Aquatic Science*, *3*(1), 37-57.

Hawkins, R.P., Kreuter, M., Resnicow, K., Fishbein, M & Dijkstra, A. 2008. Understanding tailoring in communicating about health. *Health Education Research,* 23(3), 454-466.

Holloway, I. 2005. *Qualitative research for Nurses*. Blackwell Science: Cambridge, Massachusetts.

Horn, A. 2018. The history of urban growth management in South Africa: Tracking the origin and current status of urban edge policies in three metropolitan municipalities. *Planning Perspectives,* 34(2):1-19.

Hou, Y., Li, J., Li, G & Qi, W. 2023. Negative effects of urbanisation on plants: A global meta-analysis. *Journal of Ecology and Evolution*, 13 (1), 1-9.

Huan, L, Yong-Deng, H, Panagiotis, T & Chun-Feng, Y. 2023. The effects of urbanisation on pollinators and pollination: A meta-analysis. *Ecology Letters,* 26, 1629-1642.

Hussain, M. and Imitiyaz, I., 2018. Urbanisation concepts, dimensions and factors. *International Journal of Recent Scientific Research*, *9*(1), 23513-23523.

IGI Global [Online]. 2023. What is urbanisation? Available from: https://www.igi-global.com/dictionary/sense-and-sensibility-in-housing-tourism/77760 [Accessed: 2023/11/30].

Jain, S.K. 2016. *Medicinal plants*. National Book Trust: India.

Jebb, A.T., Parrigon, S & Woo, S.E. 2017. Exploratory data analysis as a foundation of inductive research. *Human Resource Management Review*, 27(2):265-276.

Jili, N.N., Masuku, M.M. and Selepe, B.M., 2017. SMMEs promoting Local Economic Development (LED) in UMlalazi Local Municipality, KwaZulu-Natal. *African Journal of Hospitality, Tourism and Leisure*, *6*(1), 1-10.

Johnston, B.F & Mellor, J.W. 1961. The role of agriculture in economic development. *American Economic Review,* 1, 126-142.

Kabir, S.M.S. 2016. *Basic guidelines for research*. Book Zone Publication: Bangladesh.

Kaky, E. and Gilbert, F., 2019. Assessment of the extinction risks of medicinal plants in Egypt under climate change by integrating species distribution models and IUCN Red List criteria. *Journal of Arid Environments*, 170 (1), 103988-104001.

Kasagana, V.N. and Karumuri, S.S., 2011. Conservation of medicinal plants (past, present & future trends). *Journal of Pharmaceutical Sciences and Research*, *3*(8), 1378-1386.

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.

Keskin, C. 2018. Medicinal plants and their traditional uses. *Journal of Advances in Plant Biology*, *1*(2), 8-12.

Khumalo, G.P., Van Wyk, B.E., Feng, Y. and Cock, I.E., 2022. A review of the traditional use of southern African medicinal plants for the treatment of inflammation and inflammatory pain. *Journal of Ethnopharmacology*, 283 (3), 114436-114446.

Krueger, A.O (Ed). 2000. *Economic policy reform: The second stage*. University of Chicago Press. Chicago.

Kuddus, M.A., Tynan, E. and McBryde, E., 2020. Urbanisation: A problem for the rich and the poor?.*Public health reviews*, 41 (1), 1-4.

Kumar, A, Mitra, M, Adhikari, B.S & Rawat, G.S. 2018. *Depleting indigenous knowledge of medicinal plants in cold-arid region of Nanda Devi Biosphere Reserve*. Medicinal and Aromatic Plants: India.

Kumar, S., Paul, S., Walia, YK., Kumar, A & Singha, P. 2015. Therapeutic potential of medicinal plants: A review. *Journal of Biological and chemical Chronicles*, 1(1), 46-54.

Kustoni, T. and Rostiwati, T., 2020. Dynamics of urban concepts and its implications on analysis of population urbanisation. *Jurnal Ilmiah Sintesis Ilmu Administrasi*, 5(1), 1-8.

Lampard, E.E., 1966. Population redistribution and economic growth. *The American Historical Review*, 71(4), 1457-1465.

Leedy, P.D & Ormrod, J.E. 2013. *Practical research: Planning and desig*n. Edition: Emerita: Pearson Publishers.

Leedy, P.D. & Ormrod, J.E. 2019. *Practical research: Planning and design*. Essex: Pearson.

Lewis, W.A. 1954. Economic development with unlimited supplies of labour. *Manchester School of Social and Economic Studies,* 20 (2), 139-192.

Li, X., Stringer, LC.; Dallimer, M. 2022. The impacts of urbanisation and climate change on the urban thermal environment in Africa. *Climate,* 10 (164), 1-21.

Lincoln, Y.S & Tierney, W.G. 2005. Qualitative research and institutional review boards. *Qualitative Inquiry*, 10(2): 219-234.

Liu, F., Vind, J., Promchote, P. and Ly, P., 2007. Medicinal plants, its condition and Socio Economic Impacts - A Case Study in Makomereng and Pepela, South Africa. *Interdisciplinary Land Use and Natural Resource Management. Faculty of Life Sciences*.

Mabin, A. 2021. 1: Dispossession, exploitation and struggle: An historical overview of South African urbanisation, In: *The apartheid city and beyond urbanisation and social change in South Africa*. Edited by Smit, D.M. Routledge and Witwatersrand University Press: London and New York and Johannesburg, 12-23.

Mabogo, D.E.N. 1990. *The ethnobotany of the Vhavenda*. Unpublished Master of Science Dissertation. University of Pretoria: Hartfield.

Magoro, M.D. 2008. Traditional health practitioners and the sustainability of extinction-prone traditional medicinal plants. *International Journal of African Renaissance Studies - Multi-Inter-and Transdisciplinary*, 3(6), 146-158.

Magoro, M.D., Masoga, M.A & Mearns, M.A. 2010. Traditional health practitioners' practices and the sustainability of extinction-prone traditional medicinal plants. *International Journal of African Renaissance Studies*, 5(2), 229-241.

Maguire, M. and Delahunt, B., 2017. Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. *All Ireland Journal of Higher Education*, *9*(3), 3351-3365

Maluleke, S.G. 2024. *Mayor welcome foreword*. Available from: https://www.collinschabane.gov.za/ [Accessed: 2024/03/22].

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

Maluleke, W & Shibambu, N.F., 2021. Exploring illegal harvesting and theft of the selected South African endangered indigenous plants on the Red data list: Case studies of rural areas. *ADRRI Journal of Arts and Social Sciences*, *18*(3), 244-295.

Mander, M. 1997. *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: Bushbuckridge.

Mander, M., Ntuli, L., Diederichs, N & Mavundla, K. 2007. Economics of the traditional medicine trade in South Africa care delivery. *South African Health Review*, (1), 189-196.

Maroyi, A. 2013. Traditional use of medicinal plants in south-central Zimbabwe: review and perspectives. *Journal of Ethnobiology and Ethnomedicine*, *9*(1), 1-18.

Marshall, M., Lockwood, A. and Gath, D., 1995. Social services case-management for long-term mental disorders: a randomised controlled trial. *The Lancet*, *345*(8947), 409-412.

Martin, G.J. 1995. *Ethnobotany: A methods manual - People and Plants International Conservation Series Volume 1 of People and plants conservation series*. United Kingdom: Earthscan.

Marzluff, J.M. and Ewing, K., 2008. Restoration of fragmented landscapes for the conservation of birds: a general framework and specific recommendations for urbanising landscapes. *Urban Ecology: An International Perspective on the Interaction Between Humans and Nature*, 1 (9), 739-740.

Mathibela, K.M., 2013. *An investigation into aspects of medicinal plant use by traditional healers from Blouberg Mountain, Limpopo Province, South Africa*. Unpublished Master of Science: Botany Dissertation. Sovenga: University of Limpopo.

Matzopoulos, R., Bloch, K., Lloyd, S., Berens, C., Bowman, B., Myers, J. and Thompson, M.L., 2020. Urban upgrading and levels of interpersonal violence in Cape Town, South Africa: The violence prevention through urban upgrading programme. *Social Science and Medicine*, 255 (1), 112978-112389.

Mavi, S & Shava, S. 1997. Trad0itional methods of conserving medicinal plants in Zimbabwe. *Botanic Gardens Conservation News*, 2(8), 36-37.

Maylam, P. 1990. The rise and decline of urban apartheid. *African Affairs*, 89, 57-84.

Mazama, A., 2001. The Afrocentric paradigm: Contours and definitions. *Journal of Black Studies*, *31*(4), 387-405.

Mbaka, N & Isiramen, O.M., 2021. The changing role of an exploratory research in modern organisation. *GPH-International Journal of Business Management*, 4(12):27-36.

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

McKinney, M.L., 2008. Effects of urbanisation on species richness: a review of plants and animals. *Urban Ecosystems,* 11(2), 161-176.

Mears, C.L., 2012. In-Depth Interviews. *Research methods and methodologies in education*, *19(1)*, 170-176.

Miike, Y., 2006. Non-Western theory in Western research? An Asiacentric agenda for Asian communication studies. *The Review of Communication*, *6*(2), 4-31.

Miller, J.R & Hobbs R.J. 2002. Conservation biology: Conservation where people live and work. *Conservation Biology*, 16 (2), 330-337.

Mitchell, K.J., 1956. Growth of pasture species under controlled environment. 1. Growth at various levels of constant temperature. *New Zealand Journal of Science and Technology, Section A*, *38*(2), 203-215.

Mlambo, V., 2018. An overview of rural-urban migration in South Africa: its causes and implications. *Archives of Business Research*, 6(4), 1-8.

Modupe, D.S., 2003. The Afrocentric philosophical perspective: A narrative outline. *The Afrocentric paradigm*, 2 (1), 55-72.

Moeng, T.E. 2010. *An investigation into the trade of medicinal plants by muthi shops and street vendors in the Limpopo province.* Unpublished Masters of Art Dissertation. University of Limpopo: Sovenga.

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), 558-564.

Mohâ, L. and Al-Uzaizi, S.F., 2016. Farmers knowledge level and training needs toward the production and conservation of medicinal herbal plants in Jordan. *Journal of Medicinal Plants Research*, *10*(24), 351-359.

Mohajan, H. K. 2018. Qualitative research methodology in social science and related subjects. *Journal of Economic Development, Environment and People*, 7(1): 23-48.

Mohammad, N., Majumder, M.S., Rashed-al-Qayum, K.M., Bhattacharjee, S & Kar, A, 2013. Phytochemical screening of medicinal plant-mikania cordifolia and determination of its characteristics. *Mintage Journal of Pharmacy and Medical Sciences*, *2*(1), 14-17.

Mthiyane, D.B., Wissink, H. and Chiwawa, N., 2022. The impact of rural–urban migration in South Africa: A case of KwaDukuza municipality. *Journal of Local Government Research and Innovation*, *3*, p.9.

Munro, A. 2024. Dependency Theory. January 26, *Encyclopedia Britannica [Online]*. Available from: https://www.britannica.com/topic/dependency-theory [Accessed: 2024/03/21].

National Geographic [Online]. 2023. Urbanisation. Available from: https://education.nationalgeographic.org/resource/urbanisation/ [Accessed: 2023/11/30].

Nattrass, J., 1983. *The dynamics of urbanisation in South Africa*. University of Natal, Centre for Applied Social Sciences: Kwazulu Natal (Durban).

Nattrass, J. 1983. *The dynamics of urbanisation in South Africa*. Development Studies Unit. Centre for Applied Social Sciences Working Paper, No. 2. University of Natal: Durban.

Neuman, Y., 2011. *Reviving the living: Meaning making in living systems*. Elsevier: Israel.

Ngcamu, BS. 2022. The effects of urbanisation on food security in Africa: An overview and synthesis of the literature. *Environmental and Socio-economic Studies,* 10 (2), 40-48.

Ntara, C & Cloud, D. 2023. *Dependency Theory in Sociology | Definition, problems and examples.* Available from: https://study.com/learn/lesson/dependency-theory-in-sociology-overview-examples.html [Accessed: 2024/03/21].

Nwafor, C., 2020. Cultivation of Medicinal Plants by Smallholder Farmers in South Africa: Constraints to Commercialisation.

O'Reilly, M & Kiyimba, N. 2015. *Advanced qualitative research: A guide to using theory*. London: Sage.

Oliver, E & Oliver, W.H. 2017. The Colonisation of South Africa: A unique cas*. HTS Teologiese Studies/ Theological Studies,* 73(3), 1-8.

Olukoshi, A.O. 2017. 2. Dependency Theory: Its enduring relevance, In: *Dialogues on development, Volume I: On dependency*. Edited by Kufakurinani, U, Kvangraven, I.H, Santana, F & Styve, M.D. Economic Development Working Group of the Young Scholars Initiative (YSI), Institute for New Economic Thinking: New York City, United States.

Okaiyeto, K & Oguntibeju, O.O., 2021. African herbal medicines: Adverse effects and cytotoxic potentials with different therapeutic applications. *International Journal of Environmental Research and Public Health*, *18*(11), 1-20.

Organisation for Economic Co-operation and Development. 2020. *Cities in the World: A new perspective on urbanisation*. Available from: https://www.oecd.org/publications/cities-in-the-world-d0efcbda-en.htm [Accessed: 2023/06/25].

Parker, C., Scott, S & Geddes, A. 2019. *Snowball sampling*. London: Sage.

Parnell, T., & Robinson, J. 2012. Retheorising cities from the global South; Looking beyond neoliberalism. *Urban Geography*, 33(4), 593-613.

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.

Persaud, S.C., 2010. *Price Volatility in Afghanistan's Wheat Market*. US Department of Agriculture, Economic Research Service: United States.

Posey, D.A. 2000. Biodiversity, genetic resources and indigenous peoples in Amazonia: (Re) discovering the wealth of traditional resources of Native Amazonians. *Amazonia at the Crossroads*, 1 (1), 188-204.

Pratiwi WD, Widyaningsih A & Rani MS. 2022. Ecosystem services and green infrastructure planning of peri-urban lakes: the multifunctionality of Situ Jatijajar and Situ Pengasinan in Depok, Indonesia. *Landscape Research*, 47 (3) ,414-433.

Qualitative Research Guidelines Project. 2018. *Semi-structured interviews*. Available from: http://www.qualres.org/HomeSemi-3629.html. [Accessed: 2023/05/09].

Rahman, M.S. 2016. The Advantages and disadvantages of using qualitative and quantitative approaches and methods in language “testing and assessment” research: A literature review. *Journal of Education and Learning,* 6, 102-112.

Rahman, M.S. 2020. The advantages and disadvantages of using qualitative and quantitative approaches and methods in language “testing and assessment” research: A literature review. *Journal of Education and Learning*, 6(1):102-112.

Rajput, M & Kumar, N. 2020. Medicinal plants: A potential source of novel bioactive compounds showing antimicrobial efficacy against pathogens infecting hair and scalp. *Gene Reports*, 21, 1-20.

Ramírez-Rosas, MB., Perales-Torres, AL & Santiago-Adame, R (Eds). 2020. The therapeutic potential of ethnobotanical plants in the treatment of different diseases, In: *Ethnomedicinal plant use and practice in traditional medicine*. IGI Global: Pennsylvania, United States.

Rankoana, S.A. 2000. *Aspects of the Ethnobotaby of the Dikgale Community in the Northern Province*. Unpublished Master of Arts Dissertation. University of the North: Sovenga.

Rankoana, S.A. 2001. Plant-based medicines of the Dikgale of the Northern Province. *South African Journal of Ethnology*, 24 (3): 99-104.

Rankoana, S.A., 2016. Sustainable use and management of indigenous plant resources: a case of Mantheding community in Limpopo Province, South Africa. *Sustainability*, 8(3), 1-13.

Rasethe, M.T., Semenya, S.S & Maroyi, A. 2019. Medicinal plants traded in informal herbal medicine markets of the Limpopo Province, South Africa. *Evidence-Based Complementary and Alternative Medicine*, 1 (1), 1-11.

Rasool H.B. 2012. Medicinal Plants (Importance and uses). *Pharmaceutica Analytica Acta*, 3(10), 139-155.

Rasool Hassan, B.A., 2012. Medicinal plants (importance and uses). *Pharmaceut Anal Acta*, *3*(10), 2153.

Raven, P.H. 2021. Plants make our existence possible. *Plants, People, Planet*, *3*(1), 2-6.

Reddy, P.S., 2016. The politics of service delivery in South Africa: The local government sphere in context. *TD: The Journal for Transdisciplinary Research in Southern Africa*, 12(1), 1-8.

Regoli, N. 2019. *16 key advantages and disadvantages of qualitative research methods*. Available from: https://connectusfund.org/16-key-advantages-and-disadvantages-of-qualitative-research-methods [Accessed: 20/03/2024].

Regoli, F., d'Errico, G., Nardi, A., Mezzelani, M., Fattorini, D., Benedetti, M., Di Carlo, M., Pellegrini, D & Gorbi, S. 2019. Application of a weight of evidence approach for monitoring complex environmental scenarios: The case-study of off-shore platforms. *Frontiers in Marine Science,* 6:377, 1-15.

Reyes, G.E. 2002. *The Argentinean crisis and the theory of economic and social development*. The New Paradigms of International Cooperation, No. 64, January-April.

Reyes, G.E. 2001. *Four main theories of development: Modernisation, dependency, word-system, and globalisation*. Nomadas: Critical Review of Social and Juridical Sciences, July-December 2.

Riaz, M., Khalid, R., Afzal, M., Anjum, F., Fatima, H., Zia, S., Rasool, G., Egbuna, C., Mtewa, AG., Uche, CZ & Aslam, MA. 2023. Phytobioactive compounds as therapeutic agents for human diseases: A review. Food Science and Nutrition, 11 (6), 2500-2526.

Ringwood, F., 2016. Urban solutions for clean cities: Hazardous waste. *ReSource*, 18(3), 17-18.

Roberson, E. 2008. *Nature's pharmacy, our treasure chest: Why we must conserve our natural heritage: A native plant conservation campaign report*. Center for Biological Diversity: Tucson.

Ruhiiga, TM. 2014. Urbanisation in South Africa: A critical review of policy, planning and practice. *Suppl on Population Issues in South Africa*, 28 (1), 610-622.

Sakketa, TG. 2022. *Urbanisation and rural development in developing countries: A review of pathways and impacts*. *Research in Globalisation,* 6, 1-15.

Saunders, M.N.K., Lewis, P & Thornhill, A. 2012. *Research methods for business students*. Available from: https://www.researchgate.net/publication/240218229 ... [Accessed: 2020/11/23].

Sayigh, Y. A. 1991. *Elusive development: From dependence to self-Reliance in the Arab region*. Routledge: London

Schiele, J.H. 2000. Human services and the Afrocentric paradigm. *Contemporary Sociology,* 32(4), 433.

Seale, C. 2012. *Researching society and culture.* London: Sage.

Sharif, M.M. 2020. Executive Director's Introduction, In: *World Cities Report 2020 - The value of sustainable urbanisation*. United Nations Human Settlements Programme (UN-Habitat), United Nations Human Settlements Programme: Nairobi, Kenya.

Shinwari, Z.K. 2010. Medicinal plants research in Pakistan. *Journal of Medicinal Plants Research,* 4(3), 161-176.

Shumba, E., Carlson, A, Kojwang, A., 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 (Formerly World Wildlife Fund): Harare, Zimbabwe.

Silva, N.C.C. and Fernandes-Júnior, A. 2010. Biological properties of medicinal plants: a review of their antimicrobial activity. *Journal of Enormous Animals and Toxins Including Tropical Diseases*, 16(3), 402-413.

Singh, A. 2021. *An introduction to experimental and exploratory research*. Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3789360 [Accessed: 2024/03/20].

Smith, D.M (Ed). 2001. *The apartheid city and beyond Urbanisation and Social Change in South Africa.* Routledge and Witwatersrand University Press: London and New York and Johannesburg.

Solène Baffi, S., Turok, V & Vacchiani-Marcuzzo, C. 2018. The South African urban system, In: *International and transnational perspectives on urban systems.* Edited by Rozenblat, C., Pumain, D & VelasquezE.Springer: London, 285-314,

Sonntag, H.R. 2021. *Dependency Theory*. International Encyclopedia of the Social and Behavioural Sciences: United States of America, 3501-3505

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].

South African History Online, 1913, *South African history online towards people's history: The Native Land Act is passed*, Available from: https://www.sahistory.org.za/dated-event/native-land-act-passed, [Accessed: 2023/06/23].

South African National Space Agency*.,* 2019*, Policy brief the role of satellite-based remote sensing technologies in support of urban spatial planning.* Available from: https://www.sansa.org.za/wp-content/uploads/2019/12/Policy-on-Remote-sensing-technologies-for-urban-spatial-planning.pdf, [Accessed: 2023/06/23].

Spinks, C. 2021. *A new apartheid? Urban spatiality, (Fear of) crime, and segregation in Cape Town, South Africa*. Development Studies Institute, London School of Economics and Political Science: United Kingdom.

Statistics South Africa, 2012. Census 2011. Statistical Release (Revised) No. P0301.4. Statistics South Africa: Pretoria.

Statistic South Africa. 2021. *Gross Domestic Product rises in the first quarter of 2021*. Available from: https://www.statssa.gov.za/?p=14423, [Accessed: 2023/06/20].

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

Stern, KR, Bidlack, J.E, Jansky, S & Uno, G. 2000. *Introductory plant Biology*. California State University-Chico: New York.

Strauss, M. 2017. *A right to the city for South Africa's urban poor*. Unpublished Doctor of Laws in the Faculty of Law. Stellenbosch University: Stellenbosch.

Strauss, M. 2019. A historical exposition of spatial injustice and segregated urban settlement in South Africa. *Fundamina,* 25, 2, 135-168.

Street, R.A & Prinsloo, G. 2013. Commercially important medicinal plants of South Africa: A review. *Journal of Chemistry*, 2 (4), 1-16.

Tacoli, C., 2020. Food (in) security in rapidly urbanising, low-income contexts. *Handbook on Urban Food Security in the Global South*, 2 (1), 23-33.

Tertius, Chandler & Tarver, J.D. 1993. *Urbanisation in colonial Africa*. Available form: https://journals.co.za/doi/pdf/10.10520/AJA02562804_649 [Accessed: 2024/03/21].

The University of Warwick [Online]. 2019. Chapter 3: Colonialism and Urbanisation. Available from: https://warwick.ac.uk/fac/arts/history/students/modules/hi3k7/syllabus/term1week8/freund_colonialism_and_urbanisation.pdf [Accessed: 2024/03/21].

Thillaivanan, S & Samraj, K., 2014. Challenges, constraints and opportunities in herbal medicines-a review. *International Journal of Herbal Medicine*, *2*(1), 21-24.

Thomas, O.O. & Lawal, O.R. 2020. Exploratory Research Design in Management Sciences: An X-Ray of Literature. *Annals of the University Dunarea de Jos of Galati: Fascicle: I, Economics and Applied Informatics*, 26(2):79-84.

Tetzner, R. 2020. *Affect or effect? A Question for academic and scientific authors.* Available from: https://www.proof-reading-service.com/en/blog/correct-use-english-words-affect-effect/ [Accessed: 2021/10/25].

Tight, M., 2019. *Documentary research in the social sciences*. Sage.

Thompson, P. and Wissink, H., 2018. Recalibrating South Africa's Political Economy: Challenges in Building a Developmental and Competition State. *African Studies Quarterly*, *18*(1), 1-15.

Todes, A. & Turok, I. 2017. Spatial inequalities and policies in South Africa: Place-based or people-centred? Progress in planning. *Progress in Planning,* 123, 1-31.

Turok, I. 2012. *Urbanisation and development in South Africa: Economic Imperatives, spatial distortions and strategic responses*. Urbanisation and emerging population issues, Working Paper No. 8. International Institute for Environment and Development: Cape Town.

Turok, I. 2014. South Africa's tortured urbanisation and the complications of reconstruction, In: *Urban Growth in emerging economies: Lessons from the BRICS*. Edited by Martine, G & McGranahan, G. Routledge: London, 288.

United Nations. 2022. *The critical role of water in achieving the sustainable development goals: Synthesis of knowledge and recommendations for effective framing, monitoring, and capacity development*. https://sustainabledevelopment.un.org/content/documents/6185Role%20of%20Water%20in%20SD%20Draft%20Version%20February%202015.pdf [Accessed: 2023/04/11].

Universal teacher. 2023. *Advantage of exploratory research design*. Available from: https://universalteacher.com/1/advantages-of-exploratory-research-design/ [Accessed: 2024/03/20].

University of New South Wales [Online]. 2023. Primary and secondary sources. Available from: https://www.library.unsw.edu.au/using-the-library/information-resources/primary-and-secondary-sources [Accessed: 2023/04/11].

Uttara, S., Bhuvandas, N & Aggarwal, V. 2012. Impacts of urbanisation on environment. *International Journal of Research in Engineering and Applied Sciences,* 2(2), 1637-1645.

Vaidya, H & Chatterji, T., 2020. SDG 11 Sustainable Cities and Communities: SDG 11 and the New Urban Agenda: Global Sustainability Frameworks for Local Action. *Actioning the Global Goals for Local Impact: Towards Sustainability Science, Policy, Education and Practice*, 6(3), 173-185.

Van Staden, M., Khaile, FT., October, KR., Human-Hendricks, A & Roman, N.V. 2023. Exploring the role of race in social cohesion in two rural communities of South Africa. *African Journal of Governance and Development,* 12 (1), 138-161.

Van Wyk, B.E, Oudtshorn, B & Gericke, N. 2002. *Medicinal plants of South Africa*. Briza Publication: Pretoria.

Van Wyk, A.S. and Prinsloo, G., 2018. Medicinal plant harvesting, sustainability and cultivation in South Africa. *Biological Conservation*, 227 (1), 335-342.

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

Wang, Z., Liang, L., Sun, Z & Wang, X. 2019. Spatiotemporal differentiation and the factors influencing urbanisation and ecological environment synergistic effects within the Beijing-Tianjin-Hebei urban agglomeration. *Journal of environmental management*, *243*, 227-239.

Wang, M., Li, J., Kuang, S., He, Y., Chen, G., Huang, Y & Łowicki, D. 2020. Plant diversity along the urban-rural gradient and its relationship with urbanisation degree in Shanghai, China. *Forests*, 11(2), 171-188.

Warfield-Coppock, N., 1995. Toward a theory of Afrocentric organisations. *Journal of Black Psychology*, *21*(1), 30-48.

Williams, V.L., Victor, J. E & Crouch, N.R. 2013. Red listed medicinal plants of South Africa: status, trends, and assessment challenges. *South African Journal of Botany*, 86 (1), 23-35.

Wilson, F. 1972. *Labour in the South African Gold Mines, 1911-1969.* Cambridge University Press, Cambridge.

Wiersum, K.F., Dold, A. P., Husselman, M & Cocks, M. 2006. Chapter 3: *Cultivation of medicinal plants as a tool for biodiversity conservation and poverty alleviation in the Amatola region, South Africa*. Available from: https://www.researchgate.net/publication/4010 ... [Accessed: 2021/10/26].

World Bank. 2021. *Urbanisation reviews*. Available from: https://www.worldbank.org/en/topic/urbandevelopment/publication/urbanisation-reviews ... [Accessed: 27/12/2019.

World Health Organisation [Online]. 2021. African Traditional Medicine Day 2021. Available from: https://www.afro.who.int/regional-director/ … [Accessed: 2021/10/26].

World Health Organisation [Online]. 2020. WHO supports scientifically proven traditional medicine. Available from: https://www.afro.who.int/news/who-supports-scientifically-proven-traditional-medicine [Accessed: 2021/10/26].

Xego, S., Kambizi, L & Nchu, F. 2016. Threatened medicinal plants of South Africa: case of the family Hyacinthaceae. *African Journal of traditional, complementary and alternative medicines*, 13(3), 169-180.

Young Jr, G.K., 1967. Finding reservoir operating rules. *Journal of the Hydraulics Division*, 93(6), 297-322.

Yudelman, D. 1984. *The emergence of modern South Africa: State, capital, and the incorporation of organised labour on the South African gold fields, 1902-1939*. David Philip, Cape Town.

Zhang, Z., 2000. A flexible new technique for camera calibration. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 22(11), 1330-1334.

Annexure A: Interview Schedule Guide

1.1. THE EFFECTS OF URBANISATION ON THE AVAILABILITY OF MEDICINAL PLANTS:

- How is development of Malamulele affecting the availability of medicinal plants in the area?
- Which plants species are specifically affected?
- Which of these plant species are still available, but scarce due to urbanisation?
- In which places are medicinal plants still available in your area, despite urbanisation?

1.2. DETERMINING THE CONTRIBUTORY FACTORS TO THE SCARCITY OF MEDICINAL PLANTS:

- What kinds of medicinal plants can still be found in your area, with a higher possibility of extinction due to urbanisation?
- What kinds of diseases are cured by these medicinal plants, with likely extinction?
- What are the contributory factors to medicinal plants extinction in your area, urbanisation included?
- What are the existing challenges faced by the local residents in preserving medicinal plants in your area, urbanisation considered?
- What are the consequences when medicinal plants come to an extinct owing to urbanisation?

1.3. STRATEGIC MANAGEMENT METHODS TO SAFEGUARD MEDICINAL PLANTS:

- Which methods are being used to safeguard medicinal plants that are still available?
- What could have been done to preserve the plant species that have come to an extinct owing to urbanisation?

- What do you think the land allocators are being negligent in preventing the extinction of medicinal plants?
- How can medicinal plants be managed to remain available for future use?
- Are the current strategies employed by relevant stakeholders to protect medicinal plants in your area? (Please elaborate on your answer)
- Any other comments you would like to make, regarding the effects of urbanisation on the availability of medicinal plants at the Malamulele area:

……
……
……...

Xiyenge xa A1: Nongonoko wa Nkambelovutivi (Interview):

1.1. KU XIYISISA SWIMILANA LESWI VURIWEKE LESWAKU SWA KAYIVELA:

- Xana xiyimo xa nhluvuko eka ndhawu leyi u tshamaka eka yona xi yimile njhani ku fika mpimo wa ku mitsembyana yi kayivela?
- Hi swihi swimudyana leswi a swi tirhisiwa tanihi mitsembyana ekarhini wa khale?
- Eka swimudyana leswi, hi swihi leswi swingahariki kona hikwalaho ka nhluvuko wa vutshamo etindhawini ta ka n'wina?
- I tindhawu tihi ta ka Malamulele leti swimudyana leswi tirhisiwaka tanihi mitsembyana swi kumekaka eka tona kambe swi kayivelaka hikwalaho ka nhluvuko wa vutshamo?

1.2. NTSARISO WA SWIMUDYNANA LESWI SWI NGA HA KAYIVELAKA.

- I muxaka wihi wa swimudyana leswi tirhisiwaka tanihi mitsembyana swi nga tala etindhawini ta ka n'wina kambe ku nga na ntshembho wukulukumba swinene wa leswaku swi nga ha kayivela hikwalaho ka nhluvukiso wa vutshamo?
- I muxaka wihi wa mavabyi lawa ma tshunguriwaka hi mitsembyana leyi vuriwaka leswaku ya kayivela?
- Hi swihi swiave leswi tindhawu ta ka n'wina ti nga na swona eka ku nyamalala ka swimudyana leswi tanihi ndlela yo hluvukisa vutshamo?
- Hi yihi mitlhotlho leyi vaaki va hlanganaka na yona loko va ri karhi va susetela swimudyana swa mitsembyana emugangeni wa ka n'wina?
- Hi swihi switandzhaku leswi nga kona loko swimudyana leswi tirhisiwaka tanihi mitsembyana swi nyamalala hikwalaho ka nhluvukiso wa vutshamo?

1.3. RHENGU RA KU HLAYISA SWIMUDYANA LESWI TIRHISIWAKA TANIHI MITSEMBYANA

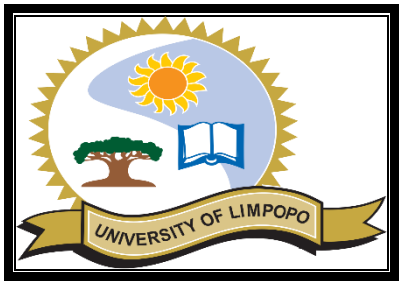
- Hi ti hi tindlela leti xaxemetiwaka ku ri maendlelo yo ringeta ku hlayisa swimudyana leswi nga sala leswi tirhisiwaka tanihi mitsembyana kambe ku ri karhi ku tekeriwa enhlokweni mhaka ya nhluvukiso wa vutshamo?
- A ku fanekele ku endliwile yini ku hlayisa muxaka wa swimudyana leswi tirhisiwaka tanihi mitsembyana leswi vuriwaka leswaku swa kayivela hikwalaho ka nhluvukiso wa vutshamo?
- Xana u ehleketa leswaku vakunguhati va vutshamo (Town planers) va debyisa voko ku vona leswaku swimudyana leswi tirhisiwaka tanihi mitsembyana swa hlayisiwa loko va ri karhi va kunguhata votshamo ke?
- Xana swimudyana leswi tirhisiwaka tanihi mitsembyana swi nga hlayisiwa njhani leswaku swi kota ku tirhisiwa eka nkarhi lowu taka ku ri karhi ku tekeriwa enhlokweni nhluvukiso wa vutshamo bya vaaki?
- Etindhawini ta ka n'wina xana tindlela leti kunguhatiweke hi vatshami va xitulo xa le hehla ta tirha ke ku hlayisa swimudyana leswi swi tirhisisiwaka tanihi mitsembyana? (U komberiwa ku ndlandlamuxa nhlamulo ya wena)
- Mavonelo yan'wana u lavaka ku ma vula mayelana na nkayivelo wa swimudyana leswi tirhirhisiwaka tanihi mitsembyana emugangeni wa ka Malamulele hikwalaho ka nhluvukiso wa vutshamo (u komberiwa ku tslala eka mintila leyi nga laha hansi)

……

……

……

Annexure B: Informed Consent Form



Dear Participant

I, Nyiko Faith Shibambu**,** the Masters candidate, am attached to the Department of Anthropology and Sociology at the University of Limpopo (UL). I am conducting a research entitled: ***"THE EFFECTS OF URBANISATION ON THE AVAILABILITY OF MEDICINAL PLANTS AT LIMPOPO PROVINCE, SOUTH AFRICA,"*** and to make it possible, I will request your participation.

Your co-operation will assist me in ensuring that this study becomes a success. Furthermore, the knowledge and information gained will aid in suggesting recommendations related to dealing with the subject of protection and preservations of extinct species in the Malamulele area. It will also help to inform relevant programs needed in addressing this current challenge and to further gather information needed for future research studies on this subject.

I would like to ask questions relating to the scarcity of the identified plants, extinction of the identified plants, understanding of the methods and management strategies to safeguard medicinal plants.

Please take note of the following:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member's opinion.
- The interview may last for about an hour.
- Any information given by you cannot be used against you, and the collected data will be used for the purposes of this study only.
- Data will be stored in secure storage and destroyed after 5 years.

- You have a choice to participate, not participate, or stop participating at any given time. You will not be penalised for taking such an action.
- In the case where you decide to stop participating, the information that you would have provided will not be used and will be confiscated.
- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded by the following equipment:

Audio equipment / Voice record **(Mark with X)**

Willing	**Not willing**

I can be contacted at: 076 111 4539/ nyikofaith20@gmail.com

Should you require further clarity you can contact my supervisor- Mr. Magoma at this number 082 535 6855, or email him: munyadziwa.magoma@ul.ac.za or my co-supervisor –Prof SA Rankoana at this number 072 443 1321, or email: sejabaledi.rankoana@ul.ac.za.

You can also contact the Research Office:

Ms. Anastasia Ngobe, Turfloop Research Ethics Committee (TREC), Department of Research Administration and Development, during office hours at Tel (015) 268-2306, E-mail: anastasia.ngobe@ul.ac.za

DECLARATION

I…… (Full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project; I consent to participate in this study.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT **DATE**

…….. ……..

Xiyenge xa B1: Papila ro Kombela Mpfumelelo wa ku Hlengeleta Vumbhoni bya Ndzavisiso

Eka Mungheneleri

Mina, Nyiko Faith Shibambu, ndzi endla tidyondzo ta mina ta Masters eYunivhesiti ya Limpopo (University of Limpopo) eka Ndzawulo ya Anthropology na Sociology. Ndzi endla ndzavisiso ehenhla ka nhlokomhaka leyi nge: **"*THE EFFECTS OF URBANISATION ON THE AVAILABILITY OF MEDICINAL PLANTS (RED DATA SPECIES) AT LIMPOPO, SOUTH AFRICA*"** ndzavisiso lowu wu ta humelela ntsena loko wena wo teka xiboho xa ku va xiphemu xa wona.

Hi ku tirhisana swin'we swi ta ndzi pfuna ku tiyisisa leswaku ndzavisiso lowu wu humelela hi ndlela leyi ndzi tsakelaka ha yona. Naswona vutivi lebyi ndzi byi hlengeletaka byi ta pfuneta eka ku nyika mavonelo mayelana na nhlokomhaka leyi na tin'wana tinhlokomhaka leti fambelanaka na nhlayiso wa swimilana leswi nga eku kayiveleni kumbe ku nyamalala etindhawini ta ka Malamulele. Swi ta tlhela swi pfuneta ku tivisa minongonoko leyi lavekaka loko ku hlamuseriwa ntlhotlho lowu nga kona lowu fambelaka na nhlokomhaka ya ndzavisiso lowu, tlhandlakambiri, swi ta tlhela swi pfuna hi tlhelo ra ku hlengeleta vuxokoxoko lebyi yisaka emahlweni ndzavisio hi nhlokomhaka ya muxaka lowu.

Ndzi ta tsakela ku vutisa swivutiso leswi nga ta kongomana ni nkayivelo wa swimilana swo karhi leswi kumekeke swi kayivela etindhawini ta ka Malamulele, ndzi ta tlhela ndzi lava ku twisisa hi laha swimilana swi nga hlayisiwaka no sirheleliwa hakona.

Lemuka leswi landzelaka:

- Ndzi tiyisisa leswaku vuxokoxoko bya wena byi ta sirheleliwa hi ndlela ya ku vuxokoxoko hinkwabyo lebyi u nga byi nyika byi ta vikiwa tanihi vuxokoxko bya ntlawa ku ngari bya wena n'winyi.
- Ku ta tirhisiwa awara yin'we ku endla nkambelovutivi (Interview)
- Vuxokoxoko lebyi u nga ta byi nyika byi nga ka byi nga tirhisiwi ku hlasela kambe byi ta tirhisiwa ntsena eka ndzavisiso lowu.
- Vuxokoxoko byi ta vekiwa endhawini leyi nga hlayiseka naswona byi ta cukumetiwa endhaku ka ntlhanu wa malembe.
- U ni mfanelo yo mpfumela kumbe ku ala ku va xiphemu xa ndzavisiso lowu, kumbe ku tshika exikarhi. U nga ka u nga hehliwi.
- Loko u tshika exikarhi ka ndzavisiso vuxokoxoko hinkwabyo lebyi u nga byi avela na mina ndzi ta byi ta cukumeta naswona a byi nga ha tirhisiwi eka ndzavisiso lowu.
- Ku va xiphemu xa ndzavisiso lowu i swa mhaka ya tidyondzo ntsena naswona a kuna ntsengo wo karhi u nga ta hakeriwa wona.
- Loko u ri ni ku tsakela eka ku nghenelela eka ndzavisiso lowu, u komberiwa ku kombisa (hiku endla xihambano laha swifaneleke) ku kombisa leswaku wa pfumela kumbe ku ala leswaku ithavhiyu leyi vumbhoni bya yona byi kandziyisiwa kumbe e-e.
  Switirhisiwa swo teka nkandziyiso wa marito (kombisa hi xihambano (X)

Ina	e-e

Ku kuma vuxokoxoko byo tala kumbe ku hundzisiwa laha u nga swi twisisangiki u nga ha tihlanganisa na mina eka nomboro ya mina ya rinqingo ra le nyongeni eka 076 111 4539 / nyikofaith20@gmail.com

Ku kuma vuxokoxoko kumbe vumbhoni byi n'wana bya ndzavisiso lowu u ngaha tihlanganisa na mudzaberi wa mina tatana Magoma eka nomboro ya vona ya rinqingho ra le nyongeni eka 082 535 6855, kumbe u rhumela emeli eka munyadziwa.magoma@ul.ac.za

U nga tlhela u tihlanganisa na mudzaberi- kulorhi wa vona tatana Phurofesa SA Rankoana eka nomboro ya vona ya rinqingho ra le nyongeni eka 072 443 1321, kumbe u rhumela emeli eka: sejabaledi.rankoana@ul.ac.za

U ngaha tlhela u rhumela emeli ehofifisini ya vukorhokeri bya mindzavisiso eka manana Ngobe A. Turfloop Research Ethics Committee (TREC), Department of Reseach Administration And Development, ntsena hi tiawara ta ntirho eka nomboro ya hofisi ya 015 268 2306 kumbe u rhumela emeli eka anastaia.ngobe@ul.ac.za

Ku Tiboha

Mina _____ (tsala mavito ya wena ya helerile)

Ndza pfumela leswaku ndza switwisisa leswi phepha leri ri vulavulaka ha swona naswona ndzi twisisa ntumbuluko wa ndzavisiso lowu. Ndza pfumela ku teka xiave eka ndzavisiso lowu.

Ndza switwisisa leswaku ndzi pfumelelekile ku tshika ku va xiphemu xa ndzavisiso lowu hi nkarhi wun'wana na wun'wana lowu ndzi tsakelaka wona.

Nsayino wa mungheneleri **Siku**

_____ _____

Annexure C: Turfloop Research Ethics Committee Certificate of Approval

University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 4713, Fax: (015) 268 2306, Email: moore.hutamo@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE

ETHICS CLEARANCE CERTIFICATE

MEETING: 04 April 2023

PROJECT NUMBER: TREC/94/2023: PG

PROJECT:

Title:	The effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, South Africa.
Researcher:	NF Shibambu
Supervisor:	Mr M Magoma
Co-supervisor:	Prof SA Rankoana
School:	Social Sciences
Degree:	Master of Arts (Anthropology)

PROF D MAPOSA
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: **REC-0310111-031**

Note:

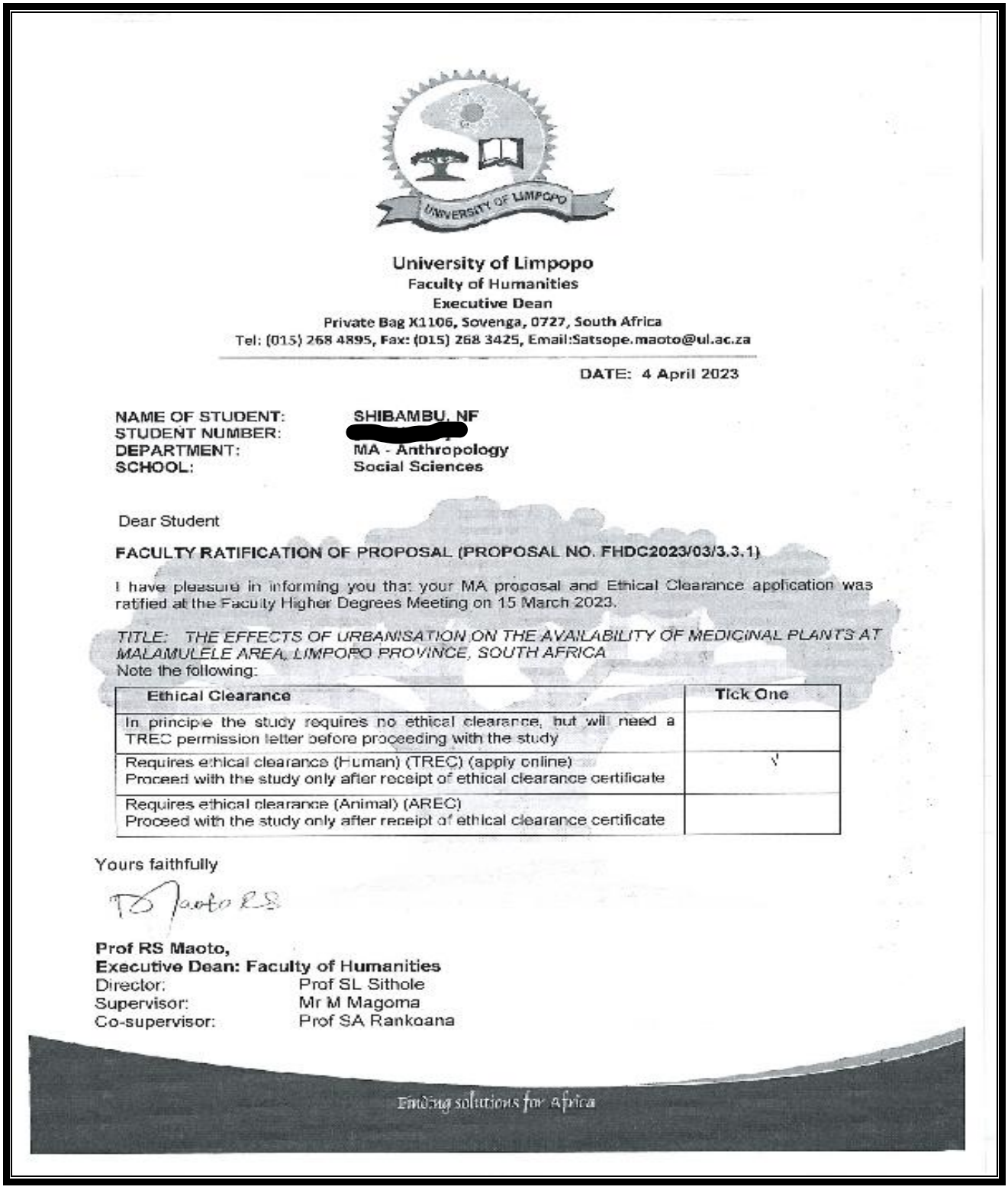
i) **This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.**

ii) **Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.**

iii) **PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.**

Finding solutions for Africa

Annexure D: Faculty Higher and Ethical Degrees Committee approval



University of Limpopo
Faculty of Humanities
Executive Dean
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 4895, Fax: (015) 268 3425, Email:Satsope.maoto@ul.ac.za

DATE: 4 April 2023

NAME OF STUDENT: SHIBAMBU, NF
STUDENT NUMBER: [redacted]
DEPARTMENT: MA - Anthropology
SCHOOL: Social Sciences

Dear Student

FACULTY RATIFICATION OF PROPOSAL (PROPOSAL NO. FHDC2023/03/3.3.1)

I have pleasure in informing you that your MA proposal and Ethical Clearance application was ratified at the Faculty Higher Degrees Meeting on 15 March 2023.

TITLE: THE EFFECTS OF URBANISATION ON THE AVAILABILITY OF MEDICINAL PLANTS AT MALAMULELE AREA, LIMPOPO PROVINCE, SOUTH AFRICA

Note the following:

Ethical Clearance	Tick One
In principle the study requires no ethical clearance, but will need a TREC permission letter before proceeding with the study	
Requires ethical clearance (Human) (TREC) (apply online) Proceed with the study only after receipt of ethical clearance certificate	√
Requires ethical clearance (Animal) (AREC) Proceed with the study only after receipt of ethical clearance certificate	

Yours faithfully

TD Maoto RS

Prof RS Maoto,
Executive Dean: Faculty of Humanities
Director: Prof SL Sithole
Supervisor: Mr M Magoma
Co-supervisor: Prof SA Rankoana

Finding solutions for Africa

Annexure E: School of Social Sciences Research Ethics Committee Approval

University of Limpopo
Faculty of Humanities
Office of the Director
School of Social Sciences
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 2683, Fax: (015) 268 2230, Email: sello.sithole@ul.ac.za

21 February 2023

NAME OF STUDENT: Ms NF Shibambu
STUDENT NUMBER: [redacted]
DEPARTMENT: Sociology and Anthropology
SCHOOL: Social Sciences
QUALIFICATION – MA in Anthropology

Dear Student

SCHOOL APPROVAL OF PROPOSAL AND RECOMMENDATION FOR APPROVAL OF ETHICAL CLEARANCE

It is a pleasure to inform you that in its meeting of 12 October 2022, the School of Social Sciences Research & Ethics Committee recommended the approval of your application for ethical clearance. Without delay please apply directly with TREC in order for a certificate to be issued.

Your title was approved as follows:

THE EFFECTS OF URBANISATION ON THE AVAILABILITY OF MEDICINAL PLANTS AT MALAMULELE AREA, LIMPOPO PROVINCE, SOUTH AFRICA

Note the following:

Ethical Clearance	Tick One
In principle the study requires no ethical clearance, but will need a TREC permission letter before proceeding with the study	
Requires ethical clearance (Human) (TREC) (apply online) Proceed with the study only after receipt of ethical clearance certificate	✓
Requires ethical clearance (Animal) (AREC) Proceed with the study only after receipt of ethical clearance certificate	

Annexure F: Collins Chabane Local Municipality Approval

225 Collins Chabane Dr
Old DCO Building
Malamulele
0982

Private Bag X9271
Malamulele
0982
Tel (015) 851 0110
Fax (015) 851 0097

COLLINS CHABANE LOCAL MUNICIPALITY

ENQ: MAPUTLA TMD
CELL: 072 766 0852

01/09/2023

Ref: 10/1/3/3

Ms Shibambu Nyiko Faith
P.O Box 780
Malamulele
0982

COLLINS CHABANE LOCAL MUNICIPALITY
DEPARTMENT OF
CORPORATE SERVICES
11 SEP 2023
PRIVATE BAG X9271 MALAMULELE 0982
TEL: 015 851 0110

Dear Sir/ Madam

SUBJECT: LETTER OF PERMISSION TO CONDUCT RESEARCH FOR MS SHIBAMBU NYIKO FAITH

1. The above matter refers.
2. This serves to confirm that **Ms Shibambu Nyiko Faith of Student No** [redacted] a student at University of Limpopo has been granted a permission to conduct research in Collins Chabane Local Municipality.
3. The research is based on "The effects of urbanisation on the availability of medical plants at Malamulele area, Collins Chabane Local Municipality".
4. Hope you find this in order.

Regards

SHILENGE R.R.
MUNICIPAL MANAGER

Vison: "A spatially integrated and sustainable local economy by 2030"

Annexure G: Editor's Certificate

MPHINYI LANGUAGE
EDITING SERVICES
YOUR IDEAS IN A SIMPLE WAY

16 Apiesdoring Drive, Heuweloord, Centurion
Pretoria 0157
+27(0) 65 660 3839
pmavimele1@gmail.com

Date: 03/12/2023

TO WHOM IT MAY CONCERN

This serves as proof that the Masters Dissertation titled ***THE EFFECTS OF URBANISATION ON THE AVAILABILITY OF MEDICINAL PLANTS IN MALAMULELE AREA, LIMPOPO PROVINCE, SOUTH AFRICA*** by Shibambu Nyiko Faith has been edited.

Regards

Annexure H: Turnitin Report

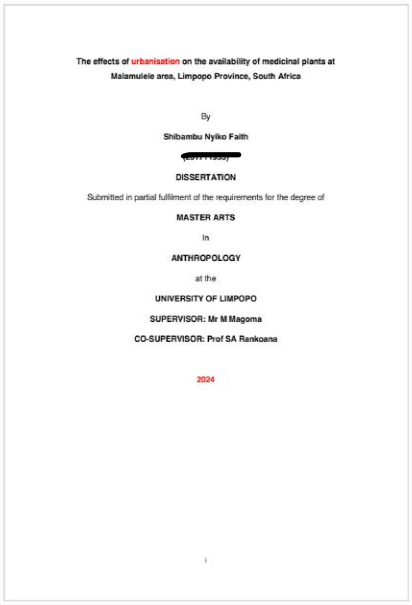
turnitin

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author:	Nyiko Faith Shibambu
Assignment title:	Quick Submit
Submission title:	The effects of urbanisation on the availability of medicinal p...
File name:	FINAL_REVISED_DISSERTATION-26-03-2024.docx
File size:	38.14M
Page count:	186
Word count:	52,865
Character count:	303,157
Submission date:	26-Mar-2024 12:12PM (UTC+0200)
Submission ID:	2331651723



The effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, South Africa

By

Shibambu Nyiko Faith

[redacted]

DISSERTATION

Submitted in partial fulfilment of the requirements for the degree of

MASTER ARTS

In

ANTHROPOLOGY

at the

UNIVERSITY OF LIMPOPO

SUPERVISOR: Mr M Magoma

CO-SUPERVISOR: Prof SA Rankoana

2024

i

The effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, South Africa

ORIGINALITY REPORT

15%	9%	6%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of Limpopo Student Paper	1%
2	Nyiko Faith Shibambu, Witness Maluleke. "A Review Study on Alternative Conservation and Management Methods to Sustain Medicinal Plants in South Africa", E-Journal of Humanities, Arts and Social Sciences, 2023 Publication	1%
3	Malehu K Mathibela, Bronwyn A Egan, Helena J Du Plessis, Martin J Potgieter. "Socio-cultural profile of Bapedi traditional healers as indigenous knowledge custodians and conservation partners in the Blouberg area, Limpopo Province, South Africa", Journal of Ethnobiology and Ethnomedicine, 2015 Publication	<1%
4	archive.org Internet Source	<1%
5	pubmed.ncbi.nlm.nih.gov Internet Source	<1%

Turnitin Originality Report

Processed on: 26-Mar-2024 12:15 SAST
ID: 2331651723
Word Count: 52865
Submitted: 1

The effects of urbanisation on the availability of medicinal plants at Malamulele area, Limpopo Province, South Africa By Nyiko Faith Shibambu

Similarity Index	Similarity by Source	
15%	Internet Sources:	9%
	Publications:	6%
	Student Papers:	7%

1% match (student papers from 25-Jul-2020)
Submitted to University of Limpopo on 2020-07-25

1% match (Nyiko Faith Shibambu, Witness Maluleke. "A Review Study on Alternative Conservation and Management Methods to Sustain Medicinal Plants in South Africa", E-Journal of Humanities, Arts and Social Sciences, 2023)
Nyiko Faith Shibambu, Witness Maluleke. "A Review Study on Alternative Conservation and Management Methods to Sustain Medicinal Plants in South Africa", E-Journal of Humanities, Arts and Social Sciences, 2023

< 1% match (student papers from 14-Sep-2020)
Submitted to University of Limpopo on 2020-09-14

< 1% match (student papers from 25-Jul-2021)
Submitted to University of Limpopo on 2021-07-25

< 1% match (student papers from 26-Feb-2021)
Submitted to University of Limpopo on 2021-02-26

< 1% match (Malehu K Mathibela, Bronwyn A Egan, Helena J Du Plessis, Martin J Potgieter. "Socio-cultural profile of Bapedi traditional healers as indigenous knowledge custodians and conservation partners in the Blouberg area, Limpopo Province, South Africa", Journal of Ethnobiology and Ethnomedicine, 2015)
Malehu K Mathibela, Bronwyn A Egan, Helena J Du Plessis, Martin J Potgieter. "Socio-cultural profile of Bapedi traditional healers as indigenous knowledge custodians and conservation partners in the Blouberg area, Limpopo Province, South Africa", Journal of Ethnobiology and Ethnomedicine, 2015

< 1% match (Internet from 24-Dec-2022)
https://archive.org/stream/plans_2016-17_03_district_municipalities_dc34_vhembe_2016_17_idp_final_draft_review_27_may_2016_pdf/Documents/01.%20Integrated%20Devel
17/03.%20District%20municipalities/DC34%20Vhembe/2016%2017%20%20IDP%20FINAL%20DRAFT%20Review%20%2027%20may%2

< 1% match (Internet from 24-Dec-2022)
https://archive.org/stream/019-20_02_local_municipalities_lim345_collins_chabane_lim345_collins_chabane_adopted_idp_2019-20_pdf/Documents/01.%20Integrated%20Development%20Plans/2019-20/02.%20Local%20municipalities/LIM345%20Collins%20Chabane/LIM345%20Collins%20Chabane%20Adopted%20IDP%202019-20_djvu.txt

< 1% match (Internet from 21-Dec-2022)
https://pubmed.ncbi.nlm.nih.gov/34199632/

< 1% match (Internet from 09-Oct-2022)
https://pubmed.ncbi.nlm.nih.gov/34344391/

< 1% match (Internet from 21-May-2023)
https://ceab-rizoma.com/wp-content/uploads/2021/04/LIBRO-AKERELE-ETAL-1988-Conservacion-de-plantas-medicinales_compressed.pdf

< 1% match (Internet from 19-Dec-2022)
https://www.ajol.info/index.php/ajtcam/article/download/132140/122454

< 1% match (Internet from 10-Dec-2019)
https://www.ajol.info/index.php/as/article/viewFile/182032/171415

< 1% match (Internet from 22-Dec-2022)
http://tutvital.tut.ac.za:8080/vital/access/services/Download/tut:558/DS1

< 1% match (student papers from 14-Mar-2024)
Submitted to Postgraduate Schools - Limkokwing University of Creative Technology on 2024-03-14

< 1% match ()
Polous, Sami Mati.. "Urban growth theories and the urban growth pattern for the Upper Euphrates region of Iraq.", 'University of Sheffield Conference Proceedings', 1983

< 1% match (John Mamokhere. "Understanding the Complex Interplay of Governance, Systematic, and Structural Factors Affecting Service Delivery in South African Municipalities", Commonwealth Youth and Development, 2023)
John Mamokhere. "Understanding the Complex Interplay of Governance, Systematic, and Structural Factors Affecting Service Delivery in South African Municipalities", Commonwealth Youth and Development, 2023

< 1% match (student papers from 05-Oct-2022)
Submitted to Lira University on 2022-10-05

< 1% match (Internet from 08-Aug-2022)
https://pubhtml5.com/ezdr/qjbl/basic

< 1% match (Internet from 02-Oct-2022)
https://wiredspace.wits.ac.za/bitstream/handle/10539/32222/Dissertation%202020%20November%20Sekgobela%20M.A%201771095..pd
isAllowed=y&sequence=2

< 1% match (Internet from 02-Oct-2022)