



Student's Journal of Health Research Africa

e-ISSN: 2709-9997, p-ISSN: 3006-1059

Vol.6 No. 12 (2025): December 2025 Issue

<https://doi.org/10.51168/sjhrafrica.v6i12.2217>

Original Article

An analysis of how South African legislation National Environmental Management Biodiversity Act (NEMBA), regulates the use of indigenous medicinal plants: A desktop-based qualitative review design.

Sibonelo Thanda Mbanjwa

Mangosuthu University of Technology P.O. Box 12363 Jacobs 4026 Durban, South Africa

Page | 1

ABSTRACT

Background

Indigenous medicinal plants are widely used in South Africa for traditional healing, pharmaceutical research, and commercial trade. Their increasing demand has raised concerns over biodiversity loss, bioprospecting, and the protection of traditional knowledge. To safeguard these resources, the National Environmental Management: Biodiversity Act (NEMBA) and the Biodiversity Act provide legal mechanisms for sustainable use, conservation, and benefit-sharing. This study analyses how South African legislation regulates the collection, trade, and commercialization of indigenous medicinal plants.

Methods

A qualitative desktop review design was adopted. Relevant documents were sourced from government legislation, South African National Biodiversity Institute (SANBI) reports, peer-reviewed articles, policy briefs, and legal case studies. Data were thematically analysed to identify regulatory measures, compliance requirements, and enforcement challenges related to the use of indigenous medicinal plants.

Results

Findings revealed that NEMBA regulates indigenous plant harvesting through permit systems, biodiversity management plans, and restricted species lists. The Biodiversity Act reinforces compliance by ensuring equitable benefit-sharing with indigenous knowledge holders, consistent with the Nagoya Protocol. However, challenges exist, including illegal harvesting, limited awareness among traditional healers, weak enforcement capacity, and slow processing of bioprospecting permits. Successful examples of benefit-sharing agreements demonstrate the potential for fair compensation, conservation funding, and research partnerships.

Conclusion

South Africa has strong legal frameworks governing the use of indigenous medicinal plants, balancing cultural practices, commercialization, and conservation. Despite this, gaps in enforcement and community awareness limit effective implementation, resulting in ongoing illegal harvesting and biodiversity threats.

Recommendations

The study recommends increased community education on permit requirements, improved enforcement capacity, streamlined bioprospecting procedures, and stronger partnerships between government, traditional healers, and research institutions. Expanding benefit-sharing agreements could incentivize conservation and ensure that indigenous communities receive fair economic and cultural benefits.

Keywords: *Indigenous medicinal plants; National Environmental Management: Biodiversity Act (NEMBA); Biodiversity Act; South Africa; bioprospecting; benefit-sharing; traditional knowledge; conservation; sustainable use; legislation; Nagoya Protocol; regulatory framework.*

Submitted: November 05, 2025 **Accepted:** November 29, 2025 **Published:** December 13, 2025

Corresponding Author: *Sibonelo Thanda Mbanjwa*

Email: mbanjwa.sibonelo@mut.ac.za

Mangosuthu University of Technology P.O. Box 12363 Jacobs 4026 Durban, South Africa

Background

Indigenous medicinal plants play a central role in traditional healing systems across South Africa, with over 27 million citizens depending on herbal medicines for

primary healthcare (Bhat, R. & Jacobs, T., 2021). These plants are also important for research, pharmaceutical development, cultural identity, and livelihood support within rural communities. However, increasing commercial demand, habitat loss, overharvesting, and



illegal trade have intensified pressure on naturally occurring species, raising concerns about biodiversity decline and the exploitation of traditional knowledge. Botha, J., Witkowski, E.T.F. & Shackleton, C.M. (2004). To address these challenges, the South African government established strong conservation and legal frameworks. The National Environmental Management: Biodiversity Act (NEMBA) lays out rules for sustainable plant harvesting, trade permits, threatened species lists, and management plans. The Biodiversity Act strengthens regulatory compliance, ensuring that commercial users who benefit from indigenous knowledge enter into agreements that provide fair compensation to knowledge holders and communities, in line with the Convention on Biological Diversity and Nagoya Protocol, Cunningham, A.B. & Dullo, M.E. (2020). Together, these policies aim to prevent exploitation, promote conservation, and ensure that traditional knowledge systems remain protected and respected. Despite these frameworks, gaps remain, especially in compliance monitoring, community awareness, and enforcement capacity. Illegal harvesting continues, and some traditional healers and small-scale harvesters lack information about permit requirements or legal processes. This creates tension between cultural practices, conservation policies, and commercial interests, Department of Environmental Affairs (DEA). (2008).

Objectives

This study aims to:

- Examine how NEMBA and the Biodiversity Act regulate the harvesting, trade, and commercialization of indigenous medicinal plants in South Africa.
- Identify key challenges affecting enforcement, compliance, and stakeholder participation.
- Assess the extent to which the legislation protects biodiversity and traditional knowledge.
- Recommend strategies to strengthen sustainable use, conservation, and fair benefit-sharing with indigenous communities.

Problem Statement

South Africa has some of the richest medicinal plant diversity in the world, yet many of these species are under growing pressure from commercial harvesting, unsustainable use, and illegal trade. Although national legislation, such as the National Environmental Management: Biodiversity Act (NEMBA) and the Biodiversity Act, provides legal mechanisms to regulate access, bioprospecting, and benefit-sharing, gaps remain in practical enforcement and community-level compliance. Many traditional healers, small-scale harvesters, and rural users lack awareness of the permit

system and legal requirements, leading to continued unregulated harvesting. At the same time, delays in processing permits and limited monitoring capacity make it difficult for authorities to effectively control the use of threatened species. As a result, biodiversity loss continues while indigenous knowledge holders often do not receive fair compensation for the commercial use of their knowledge. This study, therefore, seeks to analyse how existing legislation regulates the use of indigenous medicinal plants and to identify the challenges that hinder effective implementation and sustainability.

Research Question

- How do NEMBA and the Biodiversity Act regulate the harvesting, trade, and commercialization of indigenous medicinal plants in South Africa?

Significance of the Study

This study contributes to environmental governance, biodiversity conservation, and traditional medicine research in South Africa. By analysing how NEMBA and the Biodiversity Act regulate indigenous medicinal plants, the study provides insights into whether current laws are effectively protecting threatened species while supporting cultural practices and community livelihoods. The findings will benefit policymakers, conservation agencies, traditional healer councils, researchers, and local communities by identifying gaps in enforcement, areas requiring policy strengthening, and opportunities to expand fair benefit-sharing agreements. Ultimately, this research promotes the sustainable use of indigenous medicinal plants and protects traditional knowledge systems for future generations.

Hypotheses

Although this is a qualitative desktop review, the following assumptions (hypotheses) guide the study:

- H1: South African legislation provides adequate legal frameworks for regulating the use of indigenous medicinal plants, but implementation is weak due to insufficient monitoring and enforcement.
- H2: Limited awareness among traditional healers and small-scale harvesters contributes to non-compliance with permit and access requirements.
- H3: Strengthened benefit-sharing agreements and community partnerships can improve biodiversity conservation while ensuring economic and cultural benefits for indigenous knowledge holders.

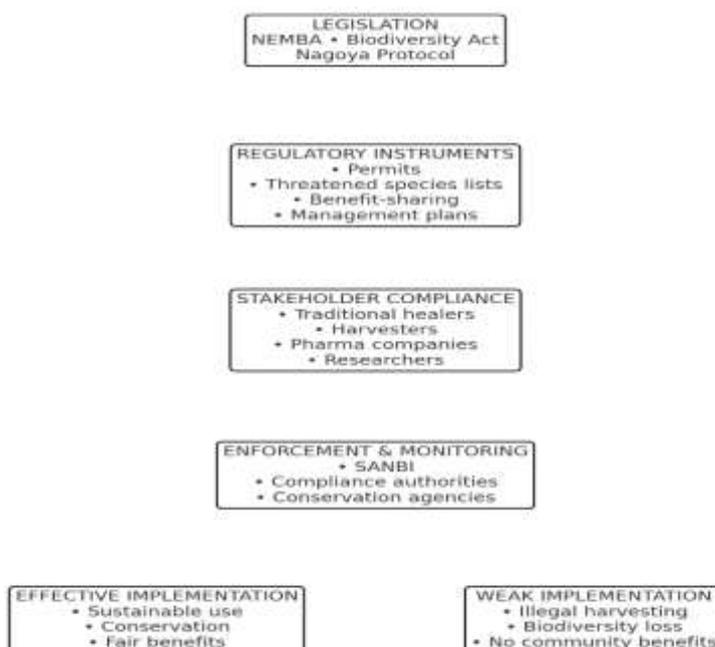


Figure 1: Conceptual Framework Diagram

Methodology

Study Design

This study adopted a desktop-based qualitative review design. The approach was selected because it allows for a systematic examination of legislation, policy frameworks, and published literature relevant to the regulation of indigenous medicinal plants in South Africa. This design enables an in-depth analysis of how the National Environmental Management: Biodiversity Act (NEMBA) and the Biodiversity Act operate in practice, particularly regarding conservation measures, sustainable utilisation, benefit-sharing mechanisms, and the commercial use of biological resources. The desktop review was conducted from January to April 2025, drawing on publicly available documents, government databases, academic publications, SANBI resources, and relevant legal texts. The review process was carried out remotely, using digital repositories, online libraries, and official departmental websites to ensure comprehensive coverage of current policy developments and regulatory frameworks.

Data Sources

Data were collected from secondary sources, including:

- National legislation and government regulations (NEMBA, Biodiversity Act, Regulations on Bioprospecting, Access and Benefit-Sharing)

- South African National Biodiversity Institute (SANBI) policy documents and reports
- Peer-reviewed journal articles
- Online academic databases (Google Scholar, ScienceDirect, Scopus, PubMed)
- Convention on Biological Diversity (CBD) and Nagoya Protocol documents
- Case studies involving traditional healers, research institutions, and bioprospecting companies

Inclusion Criteria

- Sources published between 2004 and 2025 (after implementation of NEMBA)
- Documents addressing the regulation, conservation, or commercial use of indigenous plants
- Literature focusing on South African legal and biodiversity contexts
- Peer-reviewed studies, government publications, and legislation

Exclusion Criteria

- Sources unrelated to medicinal plants or traditional knowledge

- Studies outside the South African legal context
- Unverified online content without academic or institutional credibility

Data Analysis

A thematic content analysis was employed. Gathered documents were read, coded, and grouped into themes such as:

- Legal requirements for harvesting and trade
- Bioprospecting permits and benefit-sharing
- Conservation of threatened medicinal species
- Compliance and enforcement challenges
- Community participation and awareness

Patterns, similarities, and gaps in policy implementation were identified and compared with international best practices under the Nagoya Protocol.

Ethical Considerations

As a desktop study relying on publicly available documents, ethical approval was not required. However, all sources were properly acknowledged, and data were interpreted objectively to avoid bias.

Results/Findings

The stacked bar chart shows that South Africa's legislative regulation of indigenous medicinal plants has both strengths and weaknesses across all five major themes. In each area, permit systems, benefit-sharing, conservation, enforcement, and community participation, the positive outcomes are matched by equally significant challenges, indicating that although legislation such as NEMBA and the Biodiversity Act provide a strong legal foundation, practical implementation remains limited. For example, while permit systems and benefit-sharing agreements exist, compliance is low due to slow administrative processes and limited awareness among traditional healers. Conservation strategies are supported by threatened species lists and management plans, yet illegal harvesting persists because enforcement capacity is weak. Similarly, partnerships with communities show potential, but many local users still lack knowledge of legal requirements. The graph demonstrates that regulatory frameworks are effective on paper, but enforcement gaps, poor communication, and limited monitoring continue to hinder sustainability and equitable benefits.

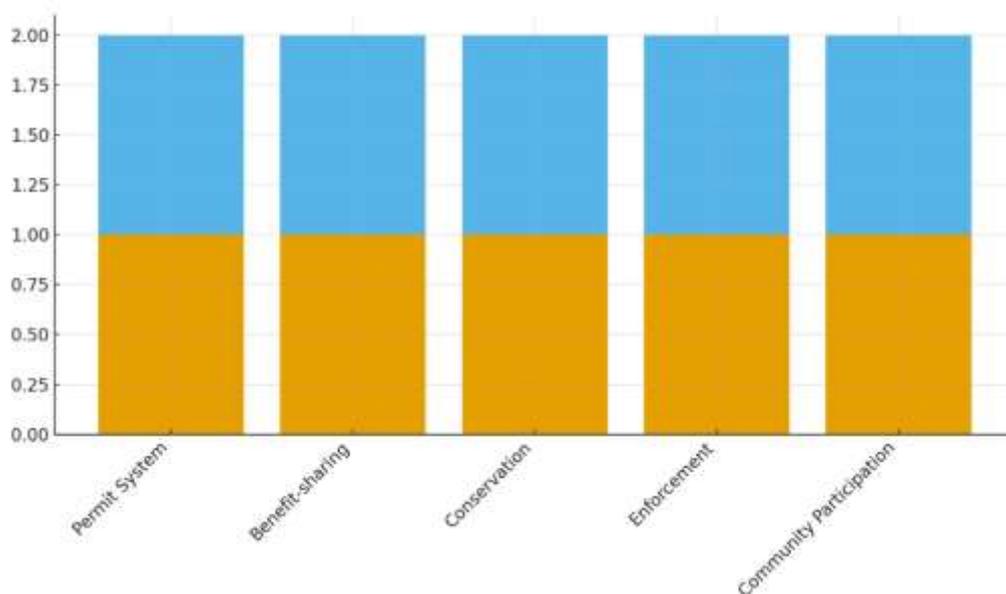


Figure 2: A bar chart visually comparing positive outcomes vs. challenges for each theme

Table: Regulation of Indigenous Medicinal Plants under NEMA & Biodiversity Act

Theme	Positive Legislative Outcomes	Key Challenges Identified
Permit System	Legal permits control harvesting, transport, and trade of protected species	Slow processing, limited awareness among traditional species



Benefit-Sharing	Agreements ensure communities receive compensation for Indigenous Knowledge used commercially.	healers, and continued illegal collection. Few communities benefit, with weak monitoring and enforcement.
Conservation	Threatened species lists and management plans protect endangered medicinal plants.	High demand leads to illegal harvesting, limited monitoring capacity.
Enforcement	Clear regulations and penalties under NEMBA & Biodiversity Act	Shortage of compliance officers, weak enforcement in rural areas
Community Participation	Success with collaborative projects and community nurseries	Low awareness of legislation and weak communication with authorities

Discussion

1. Key Findings of the Study

The study found that South Africa has established a comprehensive legislative framework governing the use of indigenous medicinal plants, primarily through the National Environmental Management: Biodiversity Act (NEMBA) and the Biodiversity Act. These laws are strongly aligned with international frameworks, including the Convention on Biological Diversity (CBD) and the Nagoya Protocol. However, despite the strength of the policy framework, implementation challenges remain persistent. The findings reveal five major patterns:

- A well-defined but inconsistently implemented permit system.
- Persistent illegal harvesting and trade of threatened medicinal species.
- Limited community awareness of regulatory requirements.
- Uneven progress in benefit-sharing agreements.
- Weak enforcement capacity in rural harvesting zones.

Overall, the results indicate that legislation alone cannot ensure sustainable use of medicinal plants without corresponding improvements in enforcement, community participation, and administrative systems.

2. Interpretation of Findings

The findings suggest a clear mismatch between policy intention and policy practice. Although NEMBA and the Biodiversity Act provide detailed regulations for species protection, sustainable utilisation, and benefit-sharing, the practical implementation is hindered by structural, administrative, and socio-economic barriers. The study's interpretation is that the permit system, although essential for legal regulation, does not adequately reach traditional healers, rural harvesters, or informal traders who form the majority of the medicinal plant sector. Slow permit processing and limited access to information reduce

compliance and inadvertently push harvesters towards illegal trade. Furthermore, the limited success of benefit-sharing agreements reflects a gap between policy provisions and the real empowerment of traditional knowledge holders. Many communities lack negotiation capacity, legal literacy, and institutional support to secure fair agreements, despite the strong intellectual property protections offered under South African law. The weak enforcement mechanisms, particularly the shortage of compliance officers and inadequate monitoring in remote areas, allow illegal harvesting to continue largely unchecked. The study also interprets that community participation is central to the effectiveness of conservation efforts. Where harvesters, traditional healers, and local leaders were involved in joint conservation initiatives, sustainability outcomes improved significantly.

3. Comparison With Previous Studies

The findings are consistent with earlier research conducted in South Africa and other African countries. Studies by both SANBI and various scholars highlight similar challenges in regulating medicinal plant use, including limited enforcement capacity, insufficient community outreach, and a complicated permit system that often excludes traditional users. Comparable studies in Zimbabwe, Kenya, and Tanzania have also reported that although legislative frameworks exist, compliance is low due to inadequate communication, weak institutional capacity, and economic pressures that drive illegal harvesting. Previous literature further supports the finding that benefit-sharing agreements remain underutilised across Africa, despite their importance in protecting indigenous knowledge from commercial exploitation. Therefore, the present study aligns with regional trends showing that strong legal frameworks do not automatically translate into effective conservation outcomes without strong enforcement and community engagement mechanisms.



4. Possible Explanations for the Findings

Several factors may explain the gaps identified between policy and practice:

a. Administrative Limitations

The complexity of the permit system and delays in issuing permits discourage legal harvesting. Rural communities may lack internet access, transport, or legal assistance to navigate regulatory procedures.

b. Socio-economic Pressures

Many harvesters rely on medicinal plant collection for income. High demand for species such as *Warburgia salutaris* and *Siphonochilus aethiopicus* creates financial incentives that overshadow compliance with regulation.

c. Insufficient Enforcement Capacity

The shortage of environmental compliance officers and monitoring personnel limits the ability of authorities to patrol remote harvesting areas, creating opportunities for illegal trade.

d. Limited Community Awareness

Traditional healers and harvesters often have limited exposure to formal conservation laws. Without culturally appropriate education and outreach, legislation remains inaccessible to those it regulates.

e. Inadequate Support for Benefit-Sharing

Although the legal framework provides for Access and Benefit-Sharing (ABS), many communities lack the institutional backing required to negotiate equitable contracts.

Generalizability

The findings of this desktop-based qualitative review have moderate generalizability, primarily within the South African context and to countries with similar regulatory, socio-economic, and cultural characteristics. Because the study focuses on South Africa's legislative framework, specifically NEMBA, the Biodiversity Act, and related national policies, the results are most applicable to nations that share comparable biodiversity governance systems, reliance on traditional medicinal plants, and dual knowledge systems involving both scientific and indigenous practices. However, the themes identified, such as enforcement challenges, limited community awareness, and gaps in benefit-sharing, reflect broader trends observed across several African countries and other regions where traditional medicinal plant use is prevalent. While the findings cannot be universally applied to contexts with different legal structures or socio-political conditions, they provide transferable insights into regulatory effectiveness, community participation, and the implementation barriers common to biodiversity governance in the Global South. Therefore, the study offers useful lessons for policymakers, researchers, and conservation practitioners in similar settings, but caution should be exercised when extrapolating results to

countries with fundamentally different legal, cultural, or institutional environments.

Conclusion

This study concludes that South Africa has developed a comprehensive and well-structured legislative foundation for regulating the use of indigenous medicinal plants, primarily through NEMBA and the Biodiversity Act. These laws provide mechanisms to control harvesting, protect endangered species, ensure fair benefit-sharing, and safeguard indigenous knowledge systems. However, despite the strength of the legislative framework, practical implementation remains inconsistent. Enforcement capacity is limited, compliance is low, and many traditional healers and small-scale harvesters lack awareness of legal requirements. Illegal harvesting continues, particularly for high-value medicinal species, and benefit-sharing agreements have reached only a small number of communities. Therefore, while the legislation is robust on paper, its full impact is constrained by weak enforcement, administrative delays, and limited community engagement. To achieve sustainable use and equitable benefits, legal systems must be supported by stronger operational strategies, improved communication, and greater collaboration between government and local stakeholders.

Recommendations

Based on the findings, several recommendations emerge to strengthen the regulation of indigenous medicinal plants in South Africa. First, enforcement capacity needs improvement through the appointment of additional compliance officers and increased on-the-ground monitoring of harvesting areas and informal markets. The permit system should also be streamlined by reducing processing delays and simplifying administrative procedures to encourage legal compliance. Awareness campaigns and training workshops are essential to inform traditional healers and rural harvesters about legal requirements, conservation goals, and the importance of sustainable harvesting practices. Traditional knowledge holders should receive institutional support when negotiating benefit-sharing agreements to ensure they are fairly compensated when their knowledge is used commercially. Furthermore, community-based conservation projects, such as nurseries and species propagation programmes, have proven effective and should be expanded nationwide. Finally, greater collaboration between government agencies, SANBI, universities, and traditional healer councils is required to build trust, enhance compliance, and promote long-term biodiversity protection.



Limitations of the Study

This study was conducted as a desktop-based qualitative review, meaning all findings were drawn from secondary sources such as legislation, government reports, and academic literature. As a result, primary perspectives from traditional healers, harvesters, or enforcement officials were not collected directly, which may limit the depth of practical insights. The availability of documented case studies, especially involving benefit-sharing agreements, was limited, making it difficult to generalize outcomes across all communities. In addition, differences in enforcement practices and permit administration between provinces are not always clearly described in published sources, creating gaps in comparative understanding. Policy frameworks in South Africa are also dynamic and continue to evolve, which means some existing studies may become outdated as new amendments and regulations are introduced. Despite these limitations, the study provides meaningful insights into legislative strengths, implementation challenges, and opportunities for supporting sustainable and equitable use of indigenous medicinal plants.

Biography

Dr. Sibonelo Thanda Mbanjwa is a dedicated lecturer in the Department of Nature Conservation at Mangosuthu University of Technology (MUT), South Africa. He holds a Ph.D. in Environmental Science and specializes in biodiversity conservation, sustainable development, and environmental education. Dr. Mbanjwa is deeply committed to community engagement, student mentorship, and the integration of indigenous knowledge systems into conservation practices. His work bridges academia and practical application, empowering students and communities through innovative teaching, research, and outreach initiatives.

Acknowledgements

I acknowledge the moral support and encouragement from the Deans and HOD of the Department of Nature Conservation, Faculty of Natural Science, Mangosuthu University of Technology.

Funding

This work was not supported by any grant. The author did not receive research support from any company. The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Author Contributions

I, the author, contributed to the study conception and design. Material preparation, data collection, and research were performed by Mbanjwa S.T. The first draft was written by Mbanjwa S.T.

Data Availability

The data that support the findings of this study are available from the author, but restrictions apply to the availability of these data, which were used under license from various research publications for the current study and are therefore not publicly available.

Conflict of interest

The author declares no conflict of interest.

List of Abbreviations

NEMBA - Legislation National Environmental Management Biodiversity Act ()
SANBI - South African National Biodiversity Institute
CBD - Convention on Biological Diversity

References

1. Bhat, R. & Jacobs, T. (2021). *Commercialisation of African Medicinal Plants: Challenges and Opportunities*. South African Journal of Botany, 137, pp. 210-218.
2. Botha, J., Witkowski, E.T.F. & Shackleton, C.M. (2004). *The impact of commercial harvesting on Warburgia salutaris (pepper-bark tree) in South Africa*. Forest Ecology and Management, 187(2-3), pp. 201-213. <https://doi.org/10.1023/B:BIOC.0000029333.72945.b0>
3. Cunningham, A.B. & Dullo, M.E. (2020). *Sustainable management of medicinal plant harvesting in southern Africa*. Journal of Ethnopharmacology, 259, 112-945.
4. Department of Environmental Affairs (DEA). (2008). *National Environmental Management: Biodiversity Act (NEMBA) – Regulations on Bioprospecting, Access and Benefit-Sharing*. Pretoria: Government Printer.



Student's Journal of Health Research Africa

e-ISSN: 2709-9997, p-ISSN: 3006-1059

Vol.6 No. 12 (2025): December 2025 Issue

<https://doi.org/10.51168/sjhrafrica.v6i12.2217>

Original Article

PUBLISHER DETAILS:

Student's Journal of Health Research (SJHR)

(ISSN 2709-9997) Online

(ISSN 3006-1059) Print

Category: Non-Governmental & Non-profit Organization

Email: studentsjournal2020@gmail.com

WhatsApp: +256 775 434 261

Location: Scholar's Summit Nakigalala, P. O. Box 701432,
Entebbe Uganda, East Africa

