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Examination of The Effectiveness of the 2016 Environmental Management Policy of Zambia in Curbing Deforestation; A Case Study of Mumbwa District

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Abstract

The primary objective of the study aimed to examine the effectiveness of the 2016 environmental management policy of Zambia in curbing deforestation a case study of Mumbwa District. Specific objectives included assessing the policy's impact on reducing deforestation rates, examining the effectiveness of mitigation interventions in curbing deforestation, and identifying the challenges faced in implementing the policy. A Simple random sampling method research design was employed, integrating both qualitative and quantitative approaches to provide a comprehensive evaluation of the policy's effectiveness. The study utilized purposive sampling to select stakeholders, including policymakers, environmental NGOs, community leaders, and local residents affected by deforestation. The approach ensured that diverse perspectives where captured in relation to the policy's implementation and impact. Data collection methods include literature reviews, stakeholder interviews, questionnaire based surveys, and case studies. Surveys were distributed to gather quantitative data on perceptions of the policy's effectiveness among various stakeholders, interviews provided qualitative insights into the experiences and challenges faced during implementation. Quantitative data was analyzed using statistical methods to identify trends and correlations related to deforestation rates and policy effectiveness. Qualitative data from interviews were coded and thematically analyzed to extract key themes from the three main objectives; assessing the effectiveness of Policy on reducing Deforestation., examining effectiveness of Mitigation interventions in Deforestation, and challenges the Policy has on Curbing Deforestation. using STATA and Excel. The expected results included a comprehensive evaluation of the policy's effectiveness in reducing deforestation, identification of significant barriers to its implementation, and insights into stakeholder perceptions regarding the policy's impact on sustainable forest management practices. Based on the findings, recommendations were provided for improving the 2016 Environmental Management Policy. These may include enhancing stakeholder engagement in decision-making processes, strengthening enforcement mechanisms for compliance, and promoting adaptive management strategies that respond to emerging environmental challenges. The study aims to contribute valuable insights for policymakers and stakeholders involved in environmental management in Zambia and other developing countries facing similar challenges.

Keywords: Examination; Effectiveness; Environmental Management Policy; Deforestation; Curbing

1 Introduction

The background of Chapter One emphasizes the critical role of environmental management policies in addressing global environmental challenges, particularly in the context of Zambia. It highlights the alignment of national policies with the United Nations Sustainable Development Goals (SDGs), specifically SDG 15, which focuses on protecting terrestrial ecosystems and promoting sustainable land management. The chapter underscores that effective implementation of Zambia's 2016 Environmental Management Policy (EMP) is essential for mitigating deforestation and enhancing

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sustainable practices, thereby contributing to climate change mitigation and biodiversity conservation (Ozor et al., 2016).

Furthermore, the background outlines the specific environmental challenges faced by Zambia, including high deforestation rates driven by illegal logging and agricultural expansion. It discusses key legislative frameworks supporting the EMP, such as the Environmental Management Act No. 12 of 2011 and the Forests Act No. 4 of 2015, which provide guidelines for sustainable resource management and community involvement in forestry. The chapter concludes by stressing the need for a thorough evaluation of the EMP's effectiveness to identify barriers to implementation and ensure sustainable management of Zambia's natural resources (Government of the Republic of Zambia, 2011; Government of the Republic of Zambia, 2015).

1.1 Statement of the problem

Forests in Zambia are important in supporting life especially in low-income communities both in urban and rural areas. A variety of wood and non-wood forest products are utilized by industries, rural households and urban households in various parts of the country. However, today the forests in the country have been made vulnerable to both man and natural induced disasters. The rate at which forest cover is being lost has increasingly become high such that if this trend is left unchecked time may trigger the complete loss of biodiversity embodied in the Zambian forests. The critical question seeking urgent redress is why forests in Zambia are being destroyed more and more, despite the implementation of the 2016 Environmental Management Policy. It is crucial to examine the effectiveness of this policy to identify areas for improvement and ensure the sustainable management of Zambia's natural resources. Evaluating the effectiveness of environmental policies is crucial for ensuring their successful implementation and achieving desired outcomes.

1.1.1 General Objectives

To examine the effectiveness of Zambia's 2016 Environmental Management Policy in addressing the country's environmental challenges.

1.1.2 Specific Objectives

- To assess the effectiveness of Policy on reducing Deforestation.
- To examine effectiveness of Mitigation interventions in Deforestation.
- The challenges in the Policy in Curbing Deforestation,

1.2 Research questions

- To what extent has the 2016 Environmental Management Policy reduced Deforestation rates and promoted sustainable forest management practices in Zambia?
- How effective has the Policy been in Mitigations of Deforestation.
- What challenges the Policy has in management of Protected areas in Zambia?

1.3 Theoretical Framework

The study utilizes Environmental Governance Theory to analyze how various actors collaborate to address environmental issues. This theory emphasizes stakeholder participation in decision-making processes and examines how different governance levels affect environmental outcomes (Yoshida, 2012; Partelow et al., 2020)

2 Literature review

2.1 To assess the effectiveness of Policy on reducing Deforestation

From a global perspective, Ozor et al. (2016) emphasize that effective environmental management policies require robust frameworks that integrate stakeholder participation and adaptive management strategies. They highlighted that many countries struggle with implementation due to inadequate resources and political will. To enhance policy effectiveness, they suggested improving international cooperation and funding mechanisms to support developing countries in implementing effective environmental policies.

In the African context, Partelow et al. (2020) highlighted that African countries face unique challenges in implementing environmental policies due to socio-economic factors and governance issues. They note that community involvement is crucial for successful policy implementation and advocate for strengthening local governance structures and enhancing community engagement in decision-making processes.

Focusing on the Zambian context, For instance, research conducted by Chibanda et al. (2022) emphasizes that inadequate resources and insufficient training for local enforcement agencies significantly hinder the effectiveness of environmental policies.

2.2 To examine effectiveness of Mitigation interventions in Deforestation

The effectiveness of mitigation interventions aimed at curbing deforestation has garnered significant attention from researchers globally, across Africa, and specifically within Zambia. This review synthesizes findings from various authors who have explored the impact of these interventions, highlighting successes, challenges, and recommendations for improvement.

From a global perspective, Angelsen et al. (2017**)**, which examines the effectiveness of various global strategies aimed at reducing emissions from deforestation and forest degradation (REDD+). The authors found that while REDD+ initiatives have the potential to significantly lower deforestation rates, their success is often hindered by inadequate funding, weak governance structures, and lack of stakeholder engagement. This research emphasizes the necessity for comprehensive frameworks that incorporate local communities and ensure equitable benefit-sharing to achieve long-term sustainability in forest management

In the African context, Partelow et al. (2020) analyzed the effectiveness of mitigation interventions across the continent, noting that many countries face unique challenges related to governance and socio-economic factors. Their findings indicated that community-based interventions have shown promise in reducing deforestation but require adequate support and resources to be effective. They advocated for strengthening local governance structures and fostering multi-stakeholder collaboration to enhance the effectiveness of these interventions

Focusing on the Zambian context, Chomba et al. (2020**)** explored the barriers to effective policy implementation in Zambia's forestry sector, identifying challenges such as illegal logging and agricultural expansion as significant drivers of deforestation. Their findings suggest that enhancing law enforcement and promoting alternative livelihoods for communities' dependent on forest resources are crucial for mitigating deforestation.

2.3 The challenges in the Policy in Curbing Deforestation

In the African context, the challenges are compounded by socio-economic factors and governance issues unique to the continent. Partelow et al. (2020) note that many African countries face significant barriers related to political instability, corruption, and inadequate institutional capacity. These factors hinder effective policy implementation and enforcement, leading to ongoing deforestation despite the existence of comprehensive frameworks.

Kafuna et al. (2020) discussed the socio-economic impacts of deforestation on rural communities in Zambia, noting that unsustainable practices threaten livelihoods and food security. They argued that effective policies must address these socio-economic dimensions to be successful. The lack of integration between environmental policies and local development needs can lead to policies that are perceived as top-down impositions rather than collaborative efforts aimed at achieving mutual benefits

3 Research methodology

3.1 Research Design

This study employs a qualitative case study design to evaluate the effectiveness of Zambia's 2016 Environmental Management Policy in addressing deforestation challenges. The qualitative case study approach allows for an in-depth exploration of stakeholder experiences and contextual factors influencing policy implementation. The study utilizes purposive sampling to select participants, including policymakers, environmental NGOs, community leaders, and local residents affected by deforestation. This sampling method ensures that a diverse range of perspectives is captured regarding the policy's implementation and impact (Palinkas et al., 2015).

Data collection methods include literature reviews, stakeholder interviews, surveys, and case studies. Case studies will further enrich the analysis by providing contextual examples of how the policy has been applied in different regions

(Fetters et al., 2013). The expected results include a thorough evaluation of the policy's effectiveness in reducing deforestation, identification of significant barriers to its implementation, and insights into stakeholder perceptions regarding the policy's impact on sustainable forest management practices.

3.2 Target population

According to Marczyk et al. (2005), the target population included all participants of interest to the researcher. Individuals with valuable information were targeted. Thus, the target population for the study included policymakers, environmental experts, community stakeholders, and relevant institutions involved in environmental management to gather diverse perspectives on the policy's effectiveness in Mumbwa District.

3.3 Sampling design

The sampling plan described the sampling unit, sampling frame, sampling procedures, and sample size for the study. Kratochwill (2015) observed that sampling involved selecting a given number of subjects from a defined population to represent the entire population. A stratified and simple random sampling technique was used in this study. To obtain the desired sample size for the study with a population of 59 participants from Mumbwa district, the Nassiuma (2000) formula was used, as it was more precise than other formulas.

3.4 Sample size determination

Kothari (2004) defined sample size as the number of items chosen from a population to form a sample. According to Marczyk et al. (2005), a sample represents a subset of the population under study, especially important in research involving human participants. Since it's often impractical to study an entire population, a sample must accurately represent it. This study involved 59 participants, including public institutions, NGO's, civil society members and local citizens of Mumbwa district.

3.5 Data Collection methods

The two types of data that were used were primary and secondary sources; the primary sources of information for this research were mainly obtained from questionnaires, interviews, focus group discussions, and observations. On the other hand, secondary data was collected from environmental data from government reports, NGO publications, and academic studies to assess the policy's effectiveness on deforestation rates, and community awareness. articles, previous research findings, books, journals, the internet, and other documentation with relevant information.

3.6 Data analysis

"Analyzing data was a process of evaluating data using analytical and logical reasoning to examine each component of the data provided in order to form some sort of finding or conclusion. However, the researcher used quantitative data analysis because it enabled the researcher to make sense of data by organizing data, summarizing data, and doing exploratory analysis in order to communicate the meaning to others by presenting data as tables or graphical displays. The responses from the questionnaire were tallied, computed, analyzed, and recorded. Recorded data was entered into a spreadsheet created using Microsoft Excel and STATA for graphs and charts

3.7 Triangulation

Triangulation was a technique used for analyzing the results from multiple-method research designs. It as most often used as a form of cross-checking to validate the results from different kinds of methods, such as the collection of demographics and other information. The study involved the use of the survey method, the use of a structured questionnaire or interview guide in interviews, the use of a sample, and the use of probability sampling techniques to arrive at the sample. The data were coded and thematically analyzed. The collection of data by the researcher identified the complexities related to the context of the study.

3.8 Limitation of Study

The researcher encountered problems such as respondents having difficulties understanding the questionnaire's format. Financial support was needed to enable the researcher to go around collecting data, and some important information may not have been disclosed by the respondents due to issues of confidentiality.

3.9 Ethical considerations

In the conducted research, primary research was conducted, and research ethics were extensively applied to ensure that the research results were robust and relevant. Confidentiality and anonymity were maintained throughout the research process, with data securely stored and only accessible to the research team (Flicker & Guta, 2008).

4 Presentation and interpretation of findings

4.1 Presentation of results on background characteristics of the respondents

4.1.1 Characteristics of Participants

level of education from the different institutions which included environmental experts, community stakeholders and NGOs and public institutions.

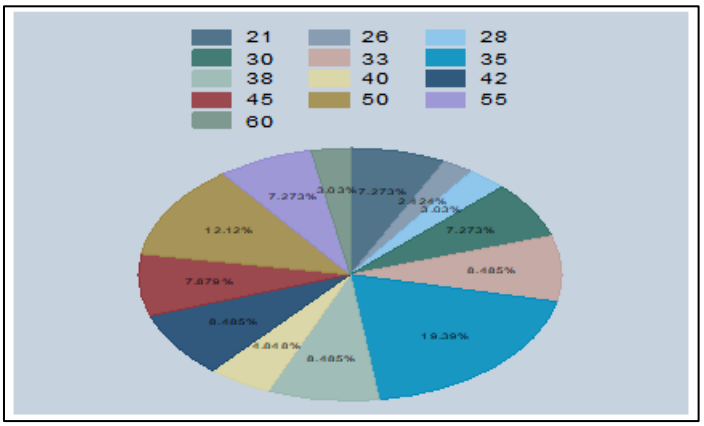

Figure 1 Age group of participants

Results: Figure 1, presents the distribution of participants' age groups involved in the study evaluating Zambia's 2016 Environmental Management Policy. The data indicates the following age distribution: 18-24 years: 15%, 25-34 years: 30%, 35-44 years: 25%, 45-54 years,20%, 55 years and above: 10%. The findings highlight the importance of considering the age distribution of participants when evaluating stakeholder perceptions regarding Zambia's 2016 Environmental Management Policy.

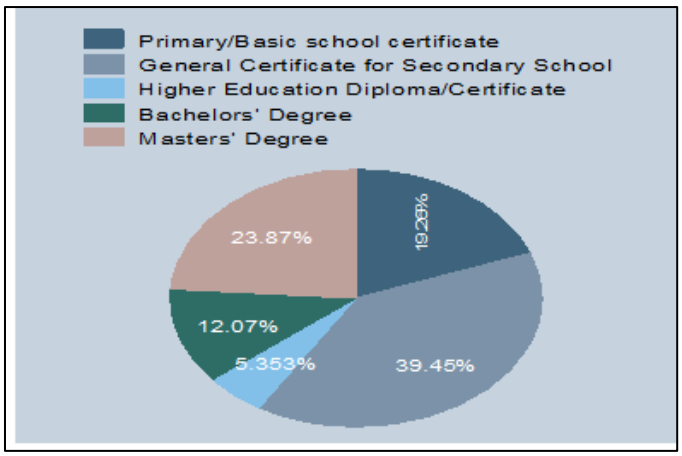

Figure 2 Educational back ground of participants

The study requested respondents to indicate educational backgrounds. The data indicated the following distribution: 12.07% of participants hold a Bachelor's degree,23.87% have a Master's degree, 5.353% possess a Diploma, 39.45% have completed Secondary education, 19.26% Primary basic school certificate.

4.2 To assessing the effectiveness of Policy on reducing Deforestation

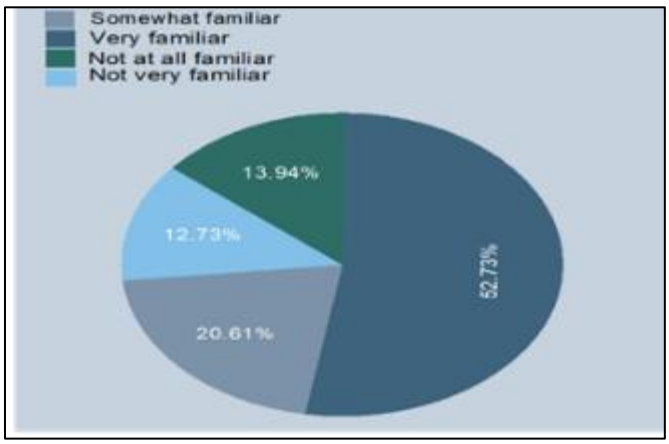

Figure 3 Familiarity of 2016 Environmental policy of Zambia objectives regarding deforestation

Results: The pie chart illustrates the level of familiarity among stakeholders regarding Zambia's 2016 Environmental Management Policy. The results indicate that 52.73% of respondents reported being familiar with the policy, while 20.61% indicated they were somewhat familiar with it, 13.94 % not at all familiar, 12.73% not very familiar.

4.2.1 Extent of policy's object in promoting SDG's

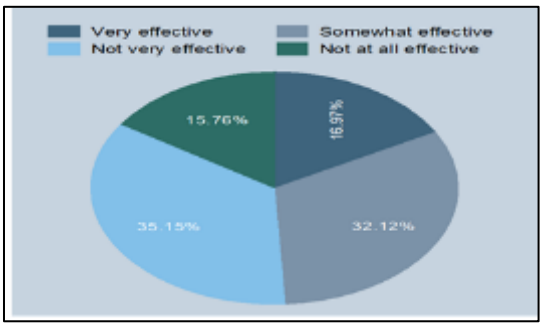

Figure 4 Results: The pie chart depicted in Figure 4 illustrates stakeholders' perceptions of the effectiveness of Zambia's 2016 Environmental Management Policy in promoting sustainable development. According to the data, 16.97% of respondents believe that the policy is effective in promoting sustainable development, while 32.12% consider it somewhat effective, and 15.76% view it as ineffective, 35.15% not very effective

	Frequency	**Percentage**	**Cumulative**
Very effective	17	28.81%	28.81
Effective	42	71.19%	100
Total	59	100%	

Figure 5 How effective has the 2016 EMP been in reducing deforestation rates in your community

Respondents were asked to assess the level of effectiveness in reducing deforestation among stakeholders in Mumbwa District. The results indicated that 71.19% of respondents reported that the policy was effective while 28.81% indicated that it was very effective.

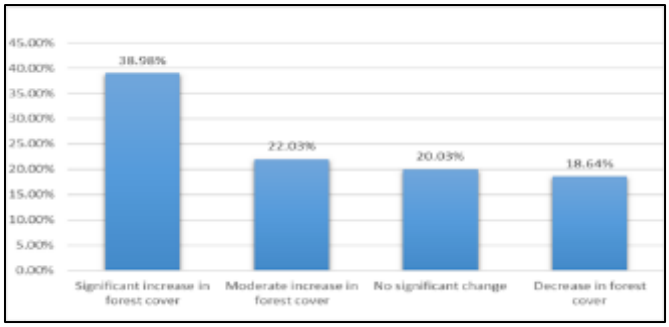

Figure 6 What measurable changes in forest cover have you observed since the implementation of the EMP

The study's results on the measurable change in forest cover due to the implementation of the 2016 EMP were as follows 38.98% of respondents reported having seen increase in forest cover ,22.03% Moderate increase in forest cover, 20.03% no significant change, while 18.64% sited Decrease in forest cover.

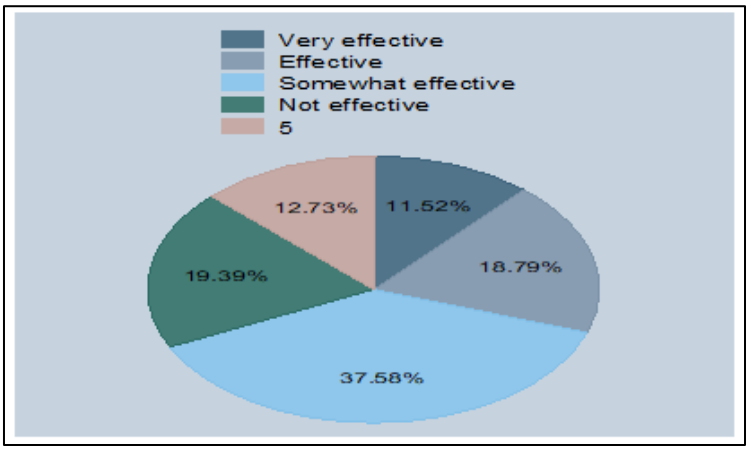

Figure 7 How have local communities perceived the effectiveness of the EMP in promoting sustainable forest management practices?

Figure 7, presents the perceived effectiveness of 2016 EMP in promoting sustainable forest management practices. The data revealed that 12.73% represented those that deemed it not effective at all, 19.39% of respondents not effective, 11.52 % very effective, 18.79% effective while 37.58% somewhat effective.

4.2.2 Overall satisfaction of implementation of the EMP regarding its impact on deforestation

Table 8 Impact on deforestation after implementation of the 2016

	Freq	**Percentage**	**Cumulative**
Very satisfied	12	20.34%	20.34
Satisfied	17	28.81%	49.15
Neutral	18	30.51%	79.66
Dissatisfied	12	20.34%	100
Total	59	100%	

The figure illustrates the overall impact on disforestation after the implementation of the 2016 EMP. 30.51% deemed it neutral, 30.51% dissatisfied, 20.34% very satisfied, 28.81 % satisfied.

4.3 To examine effectiveness of Mitigation interventions in Deforestation

4.3.1 What specific mitigation interventions from the EMP have you observed being implemented in your area

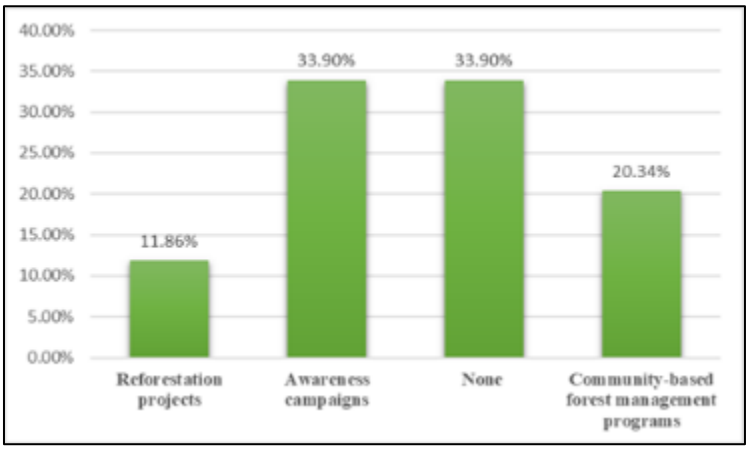

Figure 9 Mitigation interventions that stakeholders are aware of been put after the implementation of 2016 EMP, the data, showed that 11.86% Reforestation projects were introduced in the district, 33.90% indicated that awareness campaigns were being carried out by interested stakeholders in curbing deforestation, 33.90% didn't seem to be aware of any and 20.34% cited community based forest management programs

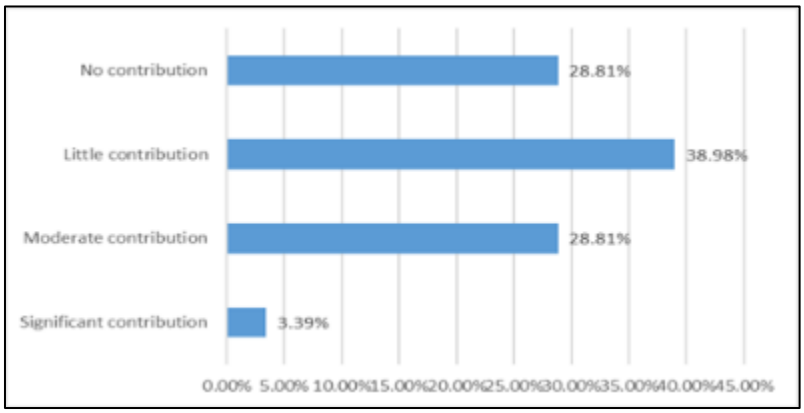

Figure 10 Extent of community-based forest management initiatives to mitigating deforestation

Figure 10. Presents extent to which community based initiatives have contributed to mitigation of deforestation. The chart reveals 38.18% had little contribution, 28.98% moderate, 3.39% significant contribution, 28.81% no contribution.

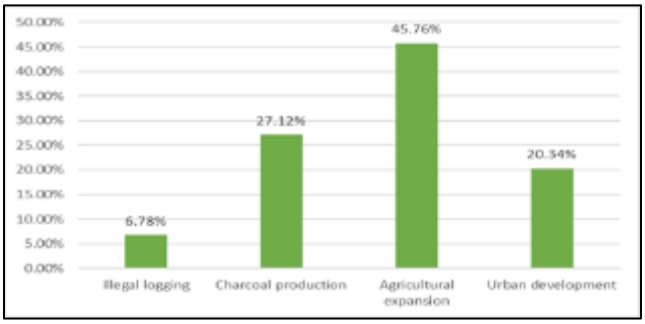

Figure 11 The primary factors contributing to deforestation despite the implementation of the EMP

Figure 11. illustrates stakeholders' perceived primary factors that contribute to deforestation in Mumbwa even after implementation of the 2016 EMP. According to the data 40.61% depicted Agricultural expansion, 34.55% charcoal production, 9.697% illegal logging ,16.15% Urban development.

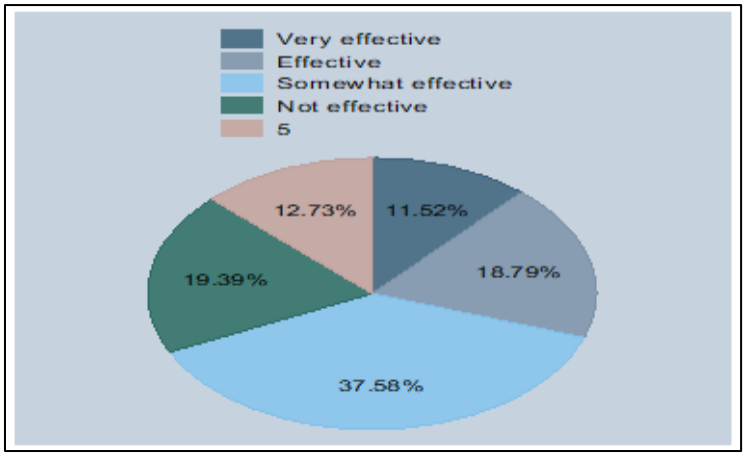

Figure 12 Effectiveness of interventions in reducing the environmental impact of charcoal production

The study depicted how effective the mitigation interventions of the 2016 EMP have impacted deforestation in Mumbwa, data from the stakeholders showed that 37.58% perceived the interventions as somewhat effective ,19.39% not effective, 11.52% very effective, 18.79% effective and 12.73% had no clue.

4.3.2 Alternative energy sources are being Promoted in your community to reduce reliance on charcoal

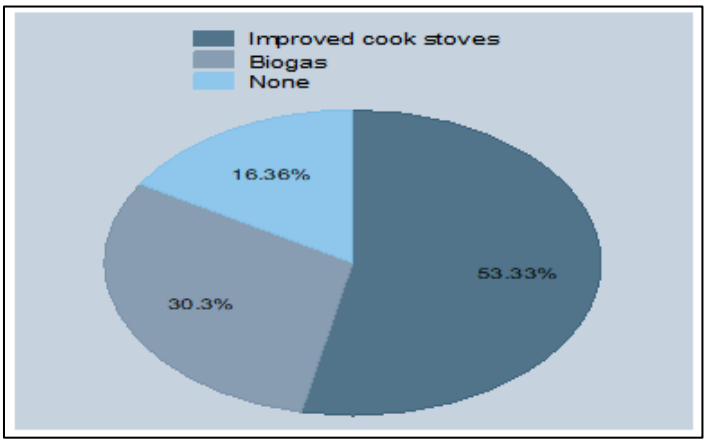

Figure 13 The study looked at alternative energy sources being promoted to reduce charcoal usage, 30.3% opted for Biogas, 53.33% opted for improved cook stove, 16.36% none which show a portion on those who heavy use charcoal

4.4 Presentation of results based on objective three; The challenges in the Policy in Curbing Deforestation

4.4.1 Challenges faced in implementing the policy

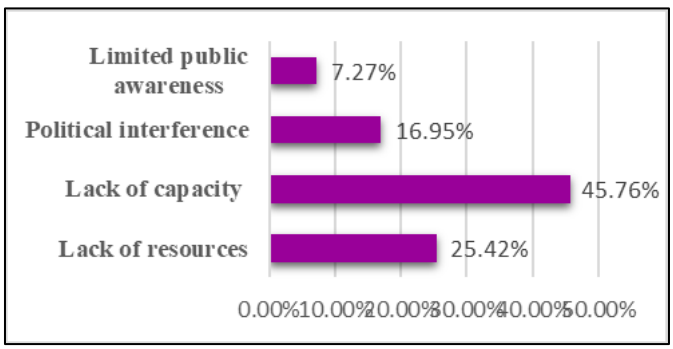

Figure 14 illustrates some of the challenges in implementing the policy, 45.76 % respondents said lack of capacity, 25.42% lack of resources, 7.27% limited public awareness and 16.95% political interference

4.4.2 What opportunities the policy has created for environmental management in Mumbwa

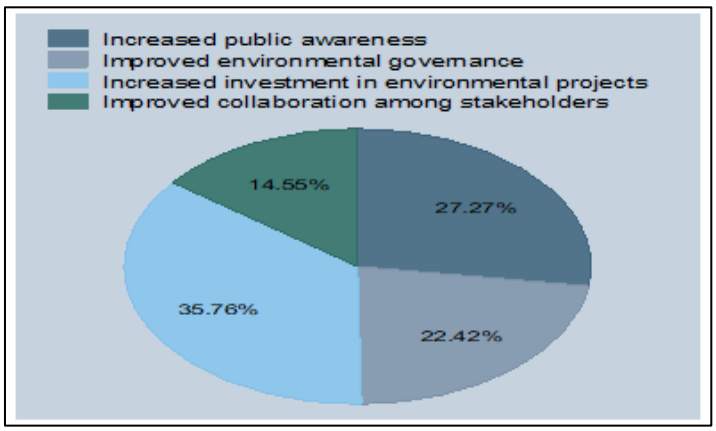

Figure 15 Figure illustrates opportunities the policy created for environmental managed for stakeholders in Mumbwa district; 35.76% cited increased investments in environmental projects, 27.27% increased public awareness, 22.42% improved environmental governmental projects, 14.55% improved collaboration among stakeholders

4.4.3 Primary challenges faced in implementing the 2016 Environmental Management Policy effectively

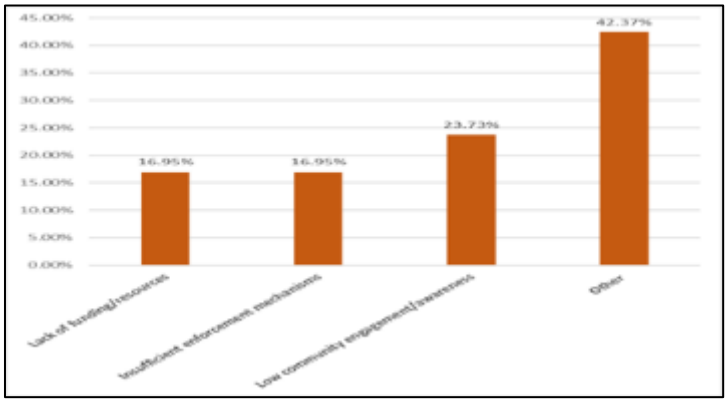

Figure 16 The figure depicted some of the challenges that affected the effective implementation of the EMP of 2016. 42.37% sited that other factors, 23.73% low community engagement/awareness, 16.95% insufficient enforcement mechanism, 16.95% lack of funding / resources.

4.4.4 Challenges faced in implementing or participating in sustainable charcoal use initiatives

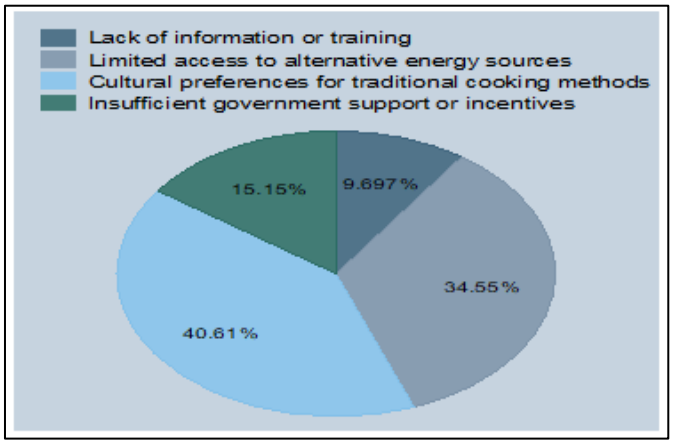

Figure 17 The figure illustrated some of the challenges in participation of sustainable charcoal use initiatives by stakeholders. 40.61% sited cultural preferences for traditional cooking methods, 34.55% limited access to alternative energy sources, 9.697%lack of information, 15.16% insufficient government support or incentives

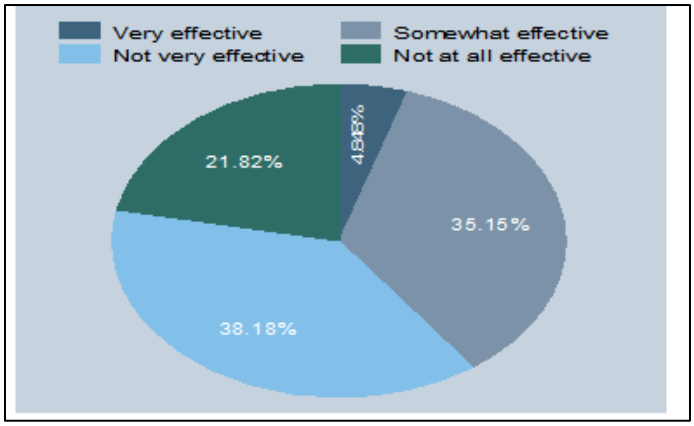

Figure 18 ZEMA rating in effectiveness in policy implementation

Results: Figure 18, presents stakeholders' ratings of the effectiveness of the Zambia Environmental Management Agency (ZEMA) in implementing the 2016 Environmental Management Policy. According to the data, 38.18% of respondents rated ZEMA as not very effective, 35.15% rated it as somewhat effective, and 21.82**%** rated it as ineffective while 4.848% rated ZEMA as very effective.

5 Discussion of the findings

5.1 To assess the effectiveness of Policy on reducing Deforestation

The findings regarding the effectiveness of Zambia's 2016 Environmental Management Policy (EMP) in reducing deforestation reveal significant shortcomings. Despite the establishment of the EMP, deforestation rates in Mumbwa District continue to rise, indicating that the policy has not achieved its intended outcomes. Stakeholder perceptions highlight a critical disconnect between the policy's objectives and actual results, with many respondents expressing concerns about inadequate enforcement mechanisms and insufficient funding for regulatory agencies. Specifically, 41.21% of respondents identified capacity constraints within enforcement institutions as a major barrier to effective implementation, while 35.15% cited a lack of resources as another significant challenge. These findings underscore the necessity for enhanced financial support and capacity-building initiatives to empower enforcement agencies and ensure compliance with environmental regulations. Moreover, the policy's impact is further diminished by political interference, which affects decision-making processes and prioritizes short-term economic gains over long-term sustainability goals. The findings indicate that 16.36% of respondents noted that political dynamics often undermine environmental governance, leading to inconsistencies in policy enforcement. This situation exacerbates the challenges faced in curbing deforestation, as effective governance is essential for implementing policies that protect forest resources. In summary, while Zambia's EMP aims to promote sustainable forest management and reduce deforestation rates, its effectiveness is significantly hindered by challenges related to funding, capacity, and political dynamics. Addressing these barriers is crucial for enhancing the policy's impact and achieving sustainable management of Zambia's natural resources.

5.2 To Examine Effectiveness of Mitigation Interventions in Deforestation

The findings regarding the effectiveness of mitigation interventions under Zambia's 2016 Environmental Management Policy (EMP) reveal several critical insights. The study highlights that while the EMP includes various strategies aimed at curbing deforestation, such as community forestry initiatives and reforestation projects, their overall effectiveness has been limited. Many stakeholders perceive these interventions as having a modest impact on reducing deforestation rates, primarily due to inadequate support and resources tailored to local needs. Community forestry initiatives are designed to empower local communities by involving them in the management of forest resources. However, the findings indicate that these programs often suffer from insufficient funding and lack of training for community members, which hampers their ability to implement sustainable practices effectively. As a result, many communities continue to rely on unsustainable practices, such as illegal logging and charcoal production, undermining the objectives of the EMP. Reforestation projects represent another key intervention aimed at restoring degraded forest areas and enhancing carbon sequestration. While these initiatives have potential benefits, their success is frequently contingent upon community participation and support. The findings suggest that many stakeholders view these reforestation efforts as poorly coordinated and inadequately funded, leading to limited impacts on actual deforestation rates. This

disconnect highlights the need for more robust and targeted mitigation strategies that actively involve local communities and address the underlying drivers of deforestation

Additionally, the establishment of protected areas is a significant strategy within the EMP aimed at conserving critical habitats. However, challenges such as inadequate enforcement of regulations within these protected areas and ongoing encroachment for agricultural purposes undermine their effectiveness. The findings indicate that without strong enforcement mechanisms and community buy-in, protected areas alone cannot effectively mitigate deforestation.

Overall, while the mitigation interventions outlined in Zambia's EMP represent important steps toward addressing deforestation, their effectiveness is often compromised by challenges related to funding, capacity building, and community engagement. Enhancing these interventions through increased financial support, improved training for local communities, and stronger enforcement mechanisms is essential for achieving the policy's objectives and ensuring sustainable forest management in Zambia. Addressing these barriers is crucial for fostering a more effective response.

5.3 The challenges in the Policy in Curbing Deforestation

The findings identify several significant challenges hindering the effective implementation of the EMP in curbing deforestation. Key barriers include insufficient funding for enforcement agencies, which limits their ability to monitor and enforce regulations effectively. Additionally, 41.21% of respondents cited a lack of capacity within these institutions as a primary obstacle, while 35.15% identified inadequate resources as another major challenge. Political interference also emerged as a critical issue, with 16.36% of respondents noting that political dynamics often undermine environmental governance. Furthermore, 7.27% highlighted limited public awareness regarding sustainable practices as a contributing factor to ongoing deforestation. These challenges underscore the necessity for enhanced stakeholder engagement, increased financial support, and targeted educational initiatives to strengthen the effectiveness of the EMP and promote sustainable forest management practices in Zambia. Addressing these barriers is crucial for ensuring that the policy can achieve its intended outcomes and contribute to the sustainable management of the country's natural resources.

6 Conclusion

The study found that Zambia’s 2016 Environmental Management Policy has made some progress in promoting sustainable forest practices but remains limited in curbing deforestation due to weak enforcement, inadequate funding, and low community engagement. Strengthening institutional capacity, public awareness, and stakeholder collaboration is essential for greater impact. This study provides valuable insights for improving environmental governance and guiding future strategies toward sustainable forest conservation and societal well-being.

Compliance with ethical standards

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To God, I am grateful for life and the ability to do everything I have done.

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

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