Assessing Conflicts in Forest Management Among Different User Groups: A Case Study of Mwekera Forest Reserve

Ackim Phiri

Zambia Forestry College, Kitwe, Copperbelt Province, Zambia

*Corresponding author: ackimphiri2020@yahoo.com

Abstract: Conflict resolution is a vital component of effective forest resource management, attracting the attention of various stakeholders in many protected forest areas in Zambia. Challenges in achieving peaceful resolutions, disputes over land control, over-exploitation of forests for charcoal production, and agricultural expansion have led to the shrinkage of forest areas. Effective conflict resolution strategies, institutional arrangements, and a thorough understanding of conflict sources are essential for maintaining healthy forests, fostering a peaceful society, and combating the impacts of climate change. While several researchers have studied conflict management in some protected areas across the country, few studies have focused specifically on conflict resolution and management in Mwekera Forest Reserve. This study aimed to understand conflicts in forest management among different user groups. A random sampling technique was employed, with one of the five communities in the area—Mabote—randomly selected for the study. Data was collected using a structured survey questionnaire, which included questions on the socio-demographic status of respondents, causes of conflicts, institutional arrangements in conflict management, and control measures in practice. Additionally, in-depth interviews with key informants were conducted to gather data not captured by the questionnaires. A total of 70 respondents from Mabote community participated in this study. The findings indicated that nearly half (46%) of respondents identified equitable benefit-sharing as crucial for conflict management in the forest reserve. This was followed by equal access to forest areas and products (28.4%), stakeholder engagement and participation (14.3%), and enhanced forest monitoring (9.2%). A smaller portion of respondents (2.1%) pointed to the need for improving laws and policies. The results suggest that current conflict management practices in the forest reserve are insufficient (46%) to ensure effective forest management, despite the increasing sources of conflict and forest degradation. The Forest Department emerged as the primary stakeholder in Mwekera Forest Reserve's management, exercising total control, which has led to the exclusion of local communities from accessing the forest and its resources. Therefore, effective conflict resolution measures are essential to enable equitable resource access, sustainable forest management, and conflict mitigation in the reserve.

Keywords: Biodiversity, Conflict resolution, Ecology, Livelihoods, Mwekera, Renewable

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1. Introduction

According to 2014 remote sensing data, Zambia has approximately 46 million hectares of forest, covering about 61% of the country's total land area (Cerutti, 2018). These forests support the livelihoods of 1.5 million people, representing about 21% of the labor force of 6.5 million in 2015 (World Bank, 2019). However, conflicts over natural resource management are common globally (Ayling & Kelly, 1997; Hellstrom, 2001). In the forestry sector, national and regional government priorities often clash over jurisdictional control and compete with local communities over livelihood needs (Koning et al., 2008; Harwell, 2011). Zambia's predominantly forested land, covering over 50 million hectares (66% of the country's land mass), is integral to Zambian livelihoods, supporting nearly 1.5 million jobs and benefiting over 60% of rural households (FAO, Forest Department, 2016; UNEP, 2015).

Forest and land-use conflicts are particularly intense in developing countries with rich natural resources but weak governance systems and economic pressures that drive resource exploitation (Koning et al., 2008). In many tropical nations, forest degradation is primarily driven by non-compliance with forest-related regulations and ineffective governance (Miah et al., 2022). This is

especially evident in Zambia's Copperbelt region, where the Mwekera Forest Reserve faces significant challenges due to increasing illegal settlements, largely by former miners affected by recent global economic downturns and Structural Adjustment Programs (SAP) that led to widespread job losses. Many of these individuals, unable to afford housing in urban areas, have migrated to the nearby Mwekera Forest Reserve.

As Bwalya & Vedeld (2012) observed, conflicts in such areas often go unresolved for extended periods. The lack of clear sanction systems and the absence of visible punishments for forest offenses exacerbate the issue. The increase in population and migration into regions with agricultural potential has raised concerns in tropical areas, as it leads to deforestation and loss of valuable ecosystems. Given Zambia's 2.5% annual population growth rate and 3.2% urbanization rate, charcoal consumption and demand in urban areas are expected to keep rising (Ingram, Gregory, & Brklacich, 2005). This situation underscores the relevance of Sustainable Development Goals (SDG) 13 and 15, which call for urgent action to combat climate change and for the protection and restoration of terrestrial ecosystems, promoting sustainable forestry (Ghimire et al., 2024).

Human activities significantly impact species composition, biodiversity, and forest cover changes. In Zambia, where 96% of rural households engage in crop production (CSO, 2011), agricultural expansion contributes to forest conflicts. At independence in 1964, Zambia was one of the wealthiest and most urbanized countries in Africa (Bigsten, Mulenga, & Olsson, 2010), but economic challenges have led to significant forest dependency among rural communities. Residents extract forest products for subsistence—such as food, fodder, and fuelwood—and also engage in commercial extraction of various non-wood forest products (NWFPs), which contributes to conflicts between local users and the institutions mandated to protect these areas.

The challenges include failed agreements among user groups, ineffective conflict resolution mechanisms, and overlapping authority, where different agents with varying interests compete to control resources. Makiko Yamauchi's report on conflict resolution in sustainable forest management in Thailand, Indonesia, and Malaysia highlights that improper forest management practices that exclude indigenous participation can lead to conflicts.

To address these issues, the Zambian government has increased budget allocations for forest management, introduced policy changes, and implemented empowerment programs to foster entrepreneurship and reduce forest pressure. The government is also partnering with stakeholders to support local communities. The Forest Policy of 2014 and Forest Act of 2015 provide a framework for sustainable forest management that seeks to include communities and non-state actors, addressing some limitations of previous policies that were outdated and highly centralized. However, these initiatives have yet to fully translate into effective conservation or sustainable use of forest resources in Zambia.

Some Non-Governmental Organizations (NGOs) are supporting reforestation programs in the region. While many community members appreciate these efforts, others resist, creating obstacles to project success. Key stakeholders, including the Forest Department, NGOs, and the community, play essential roles in maintaining peace in forest areas. Other countries have implemented Joint Forest Management (JFM) and Community-Based Natural Resource Management (CBNRM), approaches slowly being adopted in parts of Zambia but not yet in Mwekera Forest Reserve, leaving it vulnerable to degradation.

This study aims to assess the conflict resolution strategies in place in Mwekera Forest Reserve, examine the institutional arrangements managing conflicts, and analyze the causes of these conflicts. Understanding these factors is critical for developing appropriate measures to address forest management challenges and to maximize the forest's potential in providing ecosystem services. The study's outcomes offer valuable insights for policymakers, the government, and NGOs to develop effective, sustainable land management strategies and policies.

2. Materials and methods

2.1. Study site

Zambia is located in Sub-Saharan Africa between latitudes 8 and 18 degrees south of the Equator and longitudes 22 and 34 degrees east of the Greenwich Meridian. With a mean altitude of 1200 meters above sea level, the country has a total area of 752,614 square kilometers. Mwekera forest reserve is located on the Copperbelt Province. The forest is about 17000 ha in extent it is located at a gentle sloping 3% - 5% at 120 55'' S and 280 20'' E at an altitude of about 1300 meters above sea level Fanshawe, (1971) (Figure 1).
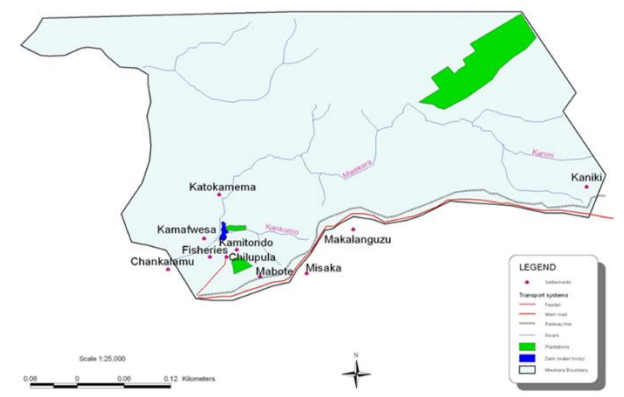

Figure 1: Map of Mwekera forest; Source: Forest Extension Report, ZFC, 2009

2.2. Population and sampling

This data was collected between September and October in 2015. A total of 70 households were interviewed in this study from a total of 213. This consisted of forty-five

women representing 64.3% and twenty-five men making up for the remainder of (35.7%). To come up with this sample size simple random sampling technique was used, to come up with the one village that was considered for the study.

2.3. Statistical methods

Both primary and secondary data were collected. Primary data was collected through face-to-face interviews and administering of questionnaires. Secondary data was obtained from the books and research publications. Both, questionnaires and interviews were used to collect different kind of data about the targeted community. These questionnaires provided information on different causes of conflicts, institutional arrangements, and strategies of managing them. There were different sections in the questionnaires to collect the required information. This method was used because of such advantages as highlighted by Milne, (1999). They can be completed easily and quickly. However, they should be simple and quick for the respondent to complete effectively. The data was analyzed using excel spreadsheets, tables, charts for descriptive data analysis.

3. Results and discussion

3.1. Causes of conflicts

From the analysis, 45% of respondents identified alienation as the primary cause of conflicts, followed by 28.4% who indicated that unequal benefit-sharing was a significant challenge needing attention. Additionally, 14.3% cited poor stakeholder engagement and participation as a conflict that should be addressed, while 8.2% noted boundary disputes as a contributing factor. A smaller proportion (4.1%) attributed conflicts to weak laws and policies (Figure 1). When asked why alienation was perceived as the biggest issue, respondents explained that they were denied access to the resources they helped to protect as a community. Some expressed frustration, noting the pain of living near and safeguarding forest resources without receiving any benefits. This finding aligns with Blench's (1996) observation that resource conflict has become increasingly common and is not simply an artifact of more research.

Forest resources and non-timber products, which the community expected to benefit from, are at the center of these conflicts. Palmer & Engel (2008) support this view, stating that conflicts often arise over access and control of forest resources due to weak property rights. The findings also agree with Kaimowitz (2003), who noted that most forest-dwelling and forest-dependent households face poverty, lack access to public services, and are poorly integrated into national democratic institutions, often feeling resentment as outsiders capture the majority of forest resource benefits. Price (2003) also confirms that inequitable distribution of benefits can disrupt local communal structures, contributing to broader political,

social, and economic instability. Disregard for local or traditional communities has particularly led to a lack of recognition of their traditional rights.

Additionally, 8.2% of respondents cited boundary disputes as another source of conflict. This aligns with McCarthy (2004), who found that conflicts in some societies stemmed from unclear boundaries between state and communal forests. These disputes may also occur between individuals and communities, as shared by some respondents. Although conflicts often have negative outcomes, they may also have positive effects, as some scholars, such as Buckles (1999) and FAO (2000), have observed. Social conflict can foster improvements in resource governance and open new avenues for collaboration.

Another conflict source identified by 4.1% of respondents was weak laws and policies, exemplified by cases where individuals arrested for illegal activities in the forest are released shortly after paying a small fee, only to return to similar activities. Forest measurements are very crucial in the development of forest policies for sustainable forest management in the North-East sub region of Nigeria (Omijeh, 2022). According to Konning & Capistrano (2007), addressing conflicts in forest areas can mitigate local resentment and prevent the escalation of tensions stemming from the deprivation of forest-dependent communities. If left unaddressed, these conflicts may lead to physical altercations and forest resource degradation. Conflicts may also arise from forest concession rights granted by the government, as the location of concessions sometimes overlaps with business, residential, or traditional community areas, exacerbating conflicts in forest reserves nationwide.
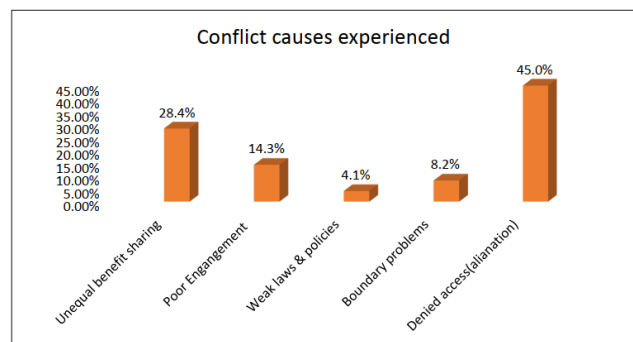

Figure 1: Showing causes of conflicts experienced

3.2. Institutional arrangement

The assessment on the institutional arrangements in the study area indicated the Forest Department with 54.3% of respondents. This was followed by the local community with 37.2% and finally, the lowest number of respondents went to the Non-Governmental Organizations (NGOs) with 8.5% (Figure 2). Basically, the interest in institutional arrangement for effective forest resource management has been identified as key. According to the results of the assessment Forest Department came out top with 54.3% respondents. This was the institution in-charge of the affairs

of managing forests in the country. Being the major stakeholder, it can't work alone, but needed other stakeholders to be on board to effectively manage the forest resources in the protected areas across the country. This would according to Haller, Accioli, & Rist, (2016) translates to forest management outcomes which could be ecological, socio-economic and even politically sound. The prevailing institutional framework shows how countries organize the protection and sustainable use of forests. Any change done to the frameworks means changes in political goals as well as culture. However, there is some debate on what type of institutional arrangement in a given context is most appropriate and aspects of these arrangements include property rights structures as well as organizational structures as observed by Hobley & Shal, (1996). Further, Konning & Capistrano, (2007) hinted that some institutional arrangements may lead to local populations often being alienated from their land and state administrations. This finding is in line with the findings of Andersen, (1995) who stated that institutional framework, governs the distribution of rights in resources that is important for long-term ecological and social sustainability. However, there is some debate on what type of institutional arrangement in a given context is most appropriate and aspects of these arrangements include property rights structures as well as organizational structures as observed by Hobley & Shal, (1996).

The prevailing institutional framework shows how countries organize the protection and sustainable use of forests. Any change done to the frameworks means changes in political goals, as well as culture. Since, stakeholders have a voice that need to be respected in order to realize effective forest resource management. However, the powers of traditional authorities to administer land and the security of customary land rights were diminished in many Africa countries during the colonial and post-independence eras as observed by North, (2005). Weak control by related agencies makes conflicts difficult to be solved. Settlement process occasionally involves people or institutions as a mediator which have no relevancy with the case. Government's response is late, even many conflicts have been neglected, in this way of handling conflicts. This finding confirms with McCarthy, (2004); Tacconi, Silagian, & Syam, (2006) who pointed out of legal frameworks being weak and sometimes inconsistent due to decentralization processes being done without sufficient care. It has been revealed from the analysis that conflict could encourage collaboration, and improvements on outdated policies. Further, this is supported by Mack & Snyder, (1957) who argued that conflict also provided disputants with a learning opportunity, for example one's reflection on some situations that should be improved on in terms of forest management as well as negotiation abilities. This has clearly shown that the lessons to be picked is the ability to address conflicts as early as possible before they get out of hand. The moment they do, it may be difficult to address them as it may require more resources, thereby becoming expensive.

Local community: The local community had 37.2% respondents and was the second highest number as shown in Figure 2. This composed the local people found in the community and their leadership. Being, stakeholders they had a voice that needed to be heard as well for effective forest resource management. Sexana, (1999) observed that chiefs and other traditional authorities are the principal administrators of customary tenure across Africa. North, (2005) stated that unclearly defined property rights system, failure of the decentralization reform, inadequate benefit sharing system could be some of the challenges experienced due to weak institutional arrangements. It has been revealed from the analysis that effective engagement of communities in sustainable forest management approaches is cardinal in addressing challenges of deforestation and land degradation. Sexana, (1999) further gave an example from India's Joint Forest Management (JFM) program which provides a remarkable illustration of this kind of institutional arrangements. To further support this there is now a growing body of evidence which suggests that forests can be protected effectively through cooperative action taken by Forest Department and other stakeholders like rural communities Poffenberger, (1990); Raju, Vaghda, & Raju, (1993); Dhar, (1994) Both community and government concerned do not recognize the importance of neutral and independent mediator in conflict resolution process. A neutral third party with skill and capacity to settle conflicts have high influence on settlement process.

NGOs: The findings on institutional arrangement found Non-Governmental Organizations (NGOs) with 8.5%. These were also important players in the management of forest resources. A number of NGOs support government in the afforestation programs by providing funds. The results showed that setting aside of forest areas for conservation and protection may not succeed if there are no adequate funds and institutions capable of managing forest areas. This is supported by Cleaver, (2017) stating that the role of institutions is vital in enhancing or constraining factors in determining forest resources access, use and management. Anderson & Ostrom, (2006) argued that institutional arrangements operating at larger or smaller governance scales, such as national government agencies, international organizations, NGOs at multiples scales, and private associations also have a critical role to play in natural resources governance regimes, including self-organized regimes. This finding is in line with the findings of Andersen, (1995) who stated that institutional framework, governs the distribution of rights in resources that is important for long-term ecological and social sustainability. According to North, (1986) the development of credible commitment to the forest management planning process, equally integrating the stakeholders is a necessary condition for successful planning and implementation, Kaimowitz1 (2005). These views showed the need for a new approach to the integration of institutional problems within the planning framework, for example there is need for collective effort between different stakeholders to work together in order to effectively manage the forest resources. Hence, these institutional arrangements can either have a positive or negative effect on the management of forest

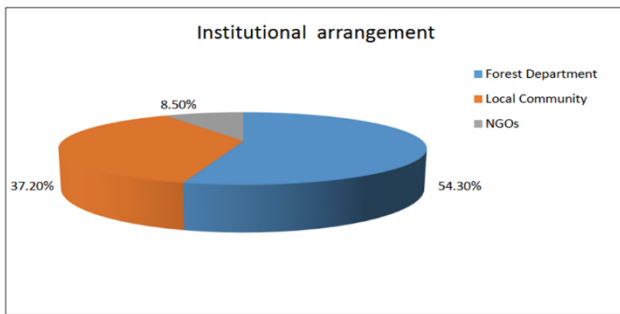resources. All in all, peace is key in effective natural resource management.

Figure 2: Institutional arrangements

3.3. Conflicts management strategies

From the analysis, 46% of respondents indicated that equitable benefit sharing was key to managing forest conflicts. Another 28.4% stated that equal access to forest areas and products was an important issue that needed attention. Additionally, 14.3% of respondents emphasized the need for improved stakeholder engagement and participation, while 9.2% highlighted enhanced forest monitoring as a vital measure in managing conflicts. However, a smaller number of respondents (2.1%) identified improving laws and policies as an issue (Figure 3).

When asked why they considered equitable benefit sharing essential for conflict management, respondents explained that natural resources should be protected but also benefit local people. Since these communities live near protected areas and help care for the resources, they felt they should share in the benefits. They argued that this approach is crucial for effective natural resource protection. This finding aligns with Konning & Capistrano (2007), who noted that some countries have provisions for benefit-sharing among stakeholders.

Another 14.3% of respondents suggested improved stakeholder engagement and participation as necessary for reducing conflicts within the forest reserve. Promoting equal access, noted by 28.4% of respondents, was also identified as essential. Recognizing local traditions, customs, and policies related to forest access, use, and management could contribute to sustainable forest-based livelihoods and foster peace and stability in forested areas. Besides promoting community ownership and political benefits, local control of forest resources can positively impact economic growth and investment, potentially reducing conflicts born out of deprivation. Increasing local ownership is also associated with more sustainable forest use, as highlighted by Muam (1999) and White & Martin (2002).

Improved stakeholder engagement and participation (14.3%) was emphasized as critical in addressing conflicts in the area, along with fostering collaboration in protecting forest resources. Effective mediation requires the presence and representation of all concerned stakeholders in these discussions, ensuring active participation. Enhanced forest

inventories (9.2%) were also identified as important for managing conflicts, especially for monitoring boundary disputes and illegal activities. Forest monitoring is crucial in curbing these issues, though challenging in remote and resource-limited areas, as noted by Kaimowitz (2003). This finding aligns with the observed challenges of insufficient monitoring due to limited funding and the vastness of the forest.

A smaller percentage (2.1%) of respondents pointed to the need for strengthening laws and policies, such as imposing stricter penalties for offenders. Konning & Capistrano (2007) highlighted the role of improved forest policies in preventing conflicts and promoting sustainable forest management, which could enhance forest-based livelihoods. The analysis reveals that, in regions with lower-intensity conflicts, effective forest policies play a critical role in conflict prevention and mitigation, supporting more sustainable management. Kaimowitz (2005) suggested that granting forest management rights to local community groups could be essential for fostering peace in the area. He further argued that clarifying and redistributing rights over forest resources are important for social stability and sustainable management.

In summary, addressing conflicts requires including all legitimate stakeholders with interests in the contested forest resources. Conflicts over natural resources are often challenging to resolve and can reemerge in different forms. These conflicts can be mitigated with approaches that strengthen institutions and other stakeholders. Failing to address the root causes of forest conflicts will likely result in continued disputes, forest loss, and land degradation. Thus, it is evident that multiple causes of these conflicts can have detrimental effects on communities and natural resource management, underscoring the need for communities to benefit from forest resources to promote peace.
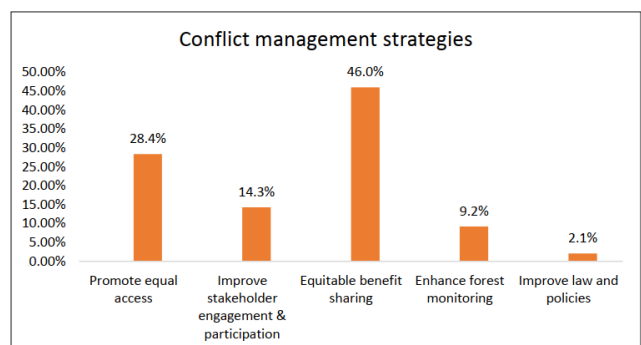

Figure 3: Showing conflict management strategies being practiced.

4. Conclusion

Efforts to resolve conflicts in the forest reserve have been limited, which poses a challenge to achieving sustainable forest resource management. Various measures were suggested as essential to conflict resolution and improving forest management. These measures include

improved stakeholder engagement and participation, although a significant gap between the government and other stakeholders makes collaboration challenging. Equitable benefit sharing was also recommended as a key component for effective conflict resolution. Additional measures, such as enhanced monitoring and improved laws and policies, were identified as necessary for addressing conflicts effectively.

The findings indicate that these conflicts stem from multiple factors, with a lack of equitable benefit sharing being a primary cause. Results further show that conflict management in the forest reserve is still below average, falling short of ensuring effective forest management, even as cases of conflict and forest loss continue to rise. Therefore, implementing effective conflict resolution measures is essential to ensure the responsible use and management of forest resources. This approach will provide valuable insights for policymakers and decision-makers for future forest management improvements.

Acknowledgements

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