



Beyond the Blame: Understanding Community Agency in the Conservation and Restoration of Mangroves in Dar es Salaam, Tanzania

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Abstract

Local communities across the World have been held responsible for the degradation of mangrove forests. However, little attention has been paid to the vital role local communities play in mangrove conservation and restoration. This study explored community agency in the preservation and restoration of mangroves in Kigamboni, Tanzania. A qualitative approach was employed using a case study of a mangrove conservation group. Data collection was conducted using interviews, focus group discussions, and observation. A total of fourteen (14) interviews and two focus groups were conducted. Findings indicate that knowledge of mangrove benefits to the environment and community motivated the group to engage in mangrove restoration and conservation through a beekeeping project. Further results show that the group achieved mangrove restoration and conservation. Additionally, the well-being of the group members improved through the beekeeping project. This study calls for the government to recognise and support local communities' initiatives to conserve and restore mangrove forests. This would encourage other communities to take action to protect and restore mangroves.

Introduction

Mangroves offer essential ecological benefits by providing suitable habitats for breeding, shelter, and feeding. These species also deliver additional services, such as pollutant absorption, coastal storm protection, and stabilisation of riverbanks against erosion (Hamad et al. 2014). Recently, their significance in climate change mitigation has increased due to their remarkable ability for carbon sequestration and storage (de Lacerda and Ferreira, 2025). Moreover, mangroves support community livelihoods by supplying timber, fish, poles, fuelwood, and herbs (Gayo, 2022).

Despite the potential of mangroves, their sustainability faces threats from various factors. Human activities are responsible for major changes in mangrove distribution worldwide (de Lacerda & Ferreira, 2025). These activities include overexploitation, agriculture, infrastructure development, and aquaculture (de Lacerda et al., 2021). For example, globally, aquaculture and agriculture are identified as the leading drivers of mangrove deforestation, accounting for approximately 47% of the total mangrove loss (de Lacerda et al., 2021).



Local communities have been primarily blamed for mangrove degradation (Walter 2004; Haji 2013; Nyangoko et al. 2020; Qurniati et al. 2024). In their study of causes of mangrove loss, Hagger et al. (2022) found that over the past 20 years, agriculture and aquaculture, often taking place in protected areas, contributed to the highest mangrove loss. Their analysis of mangrove degradation from 1981 to 2021 identified aquaculture and agriculture as the main drivers of global mangrove deforestation. Overall, local communities worldwide have been held chiefly responsible for mangrove degradation.

Therefore, emphasising communities as the sole drivers of mangrove degradation overlooks other significant causes. These include government policies, market influences, and commodification (Onyena & Sam, 2020; Haji, 2013; Gayo, 2022). For instance, Mohamed et al. (2023) discovered in their study of mangrove loss in Zanzibar that current policy and legal frameworks hinder effective conservation and management of mangrove forests. Additionally, conservation policies have been less inclusive and do not recognise the rights of neighbouring communities. This has undermined social acceptance and prevented the achievement of conservation goals (Haji, 2013; Gayo, 2022). Research has also indicated that land policies have contributed to threats to mangroves in the Gulf of Guayaquil, Ecuador (Velástegui-Montoya et al., 2025).

In Tanzania, studies have linked mangrove loss to human activities, especially involving local communities (Mwansasu, 2016; Mangora et al., 2018; Mohamed et al., 2023; Mwanja et al., 2024). These studies describe local communities as heavily reliant on mangrove products for building materials, fuel, timber for fishing boats, and converting mangrove areas into farmland and settlements. The research shows that these communities have few alternative sources of income. A recent example occurred on 17 December 2024, when *The Citizen*, a Tanzanian newspaper, reported that over 7,000 hectares had been cleared from 53,255 hectares in the Kibiti Rufiji Delta, mainly for agriculture (*The Citizen*, 17 December 2024). It was reported that villagers were blamed for causing mangrove loss through cutting, bail gathering, and farming. Even in Tanzania, where local communities are vital to mangrove conservation and restoration, researchers have given little focus to this aspect. Most studies have explored the role of communities in mangrove degradation, and some have examined local perceptions of mangrove forests.

In this study, we examine community agency in mangrove conservation and restoration through a case study. By community agency, we mean "the capacity of the individual to plan and initiate action" (Onyx & Bullen, 2000). Guided by a community agency theory (Clever, 2001), this study investigates the collective capacity of a community to act intentionally and make choices that influence outcomes. It includes decision-making power, the ability to act, and autonomy in shaping one's environment. In contrast to the view that local communities are more interested in exploiting mangroves and are blamed for this (as shown above), we present a case study from Tanzania that demonstrates that some communities are more concerned with mangroves and are capable of conserving and restoring them.

Methodology

Study design

This is an explorative study. We applied a qualitative approach to explore the local community's initiatives to conserve mangroves. This approach enables assessment of everyday community life from participants' perspectives (Berg, 2001). Data were generated in two months, from March to April 2025. The researcher relied heavily on in-depth interviews, focus group discussions, and observation for all data collection.

Study site

This study was conducted in the Vijibweni suburb of Kigamboni District, Dar es Salaam Region. Kigamboni is one of the districts in Dar es Salaam with dense mangrove cover (Mwanja et al., 2024).



This study explores the local community's initiatives to conserve mangroves. Vijibweni is a key area in Kigamboni, home to mangrove forests. Thus, these communities are considered the most salient locations for providing a rich and vital understanding of mangroves.

Study population

The study was a case study of a community group involved in mangrove conservation through beekeeping. The group is called VIWAKA. VIWAKA is a short form of "*Vijana wa Kazi*," which literally means "hard-working youth." This group was chosen for its unique efforts to protect mangroves in the Kigamboni district. The Kigamboni district identified this group as a representative of grassroots initiatives to conserve mangroves. The group was the most successful in mangrove conservation and restoration. The researchers believed this group could offer vital knowledge and experience, acting as a catalyst for mangrove conservation in other communities. We interviewed adults aged 18 years and above.

Sampling and sample size

This study employed purposive sampling. Informants were deliberately selected for the research. Researchers targeted community members with direct experience in these areas. Consequently, individuals who had resided in the areas for five years or more and were members of VIWAKA were included. It was assumed that such individuals possessed knowledge of the area and could offer valuable insights. Although purposive sampling is appropriate, the findings cannot be generalised to the broader population. In qualitative research, sample size is determined by saturation (Berg, 2001). Data saturation occurs when no new insights emerge from additional data collection. Researchers initially anticipated including 20 informants. By the end of the interviews, saturation was reached with 14 informants.

Data collection

Fourteen (14) interviews were conducted in the three study communities over two months, March and April 2025. Two Focus Group Discussions (FGDs) were conducted, one with women and one with men. Each focus group comprised 5-7 members. FGDs were conducted during the second phase of fieldwork. Participants for each focus group were selected from individuals who participated in interview sessions. Focus group discussions aimed to explore the shared experiences of VIWAKA members.

Observation was also utilised throughout the data collection process. Observation focused on major livelihood activities, how people interacted with the mangroves, and beekeeping-related activities.

Data analysis

Data were analysed manually using a content analysis approach (Patton, 2015). Content analysis was chosen for its clear coding and theming steps and its interpretive focus, making it a valuable method for data interpretation. A grounded theory approach to data analysis enabled open coding and the constant comparative method. The process involved thoroughly reading the data to gain an in-depth understanding, then identifying key concepts and emerging themes (Hammersley and Atkinson). This was followed by utilising the "constant comparative method" (Glaser & Strauss 1967), which involves identifying meanings and exploring relationships within and between data categories. Data were compared and contrasted to examine similarities and differences in how community members perceived mangrove ecosystems and their utilisation.

Results

This section presents the themes and subthemes that emerged during data collection on community initiatives for mangrove conservation. Our analysis revealed several themes. The themes include



motivation for conservation, determinants of group solidarity, achievement, and challenges in mangrove conservation.

Motivation for conservation

This study examined the VIWAKA beekeeping group's efforts in mangrove conservation. Researchers aimed to understand the reasons that motivated VIWAKA members to participate in the mangrove beekeeping project. During discussions with group members, it became evident that this was a small group of youth whom politicians used during election campaigns to support their wins at various levels, including local government and the general election. Later, they concluded that this was not the right direction for them, as Haji had made it.

We, members of this group since 2005, were used heavily by politicians during elections. Then we realised that we are treated like coconut trees: people climb, pick coconuts, and leave – once they have picked the coconuts, they don't contact us anymore. We had no specific economic activities of our own. Then we said no – we need to have our own activity we can rely on, instead of being used by politicians. (IDI/members/ March 2025)

This quote suggests that a genuine need to change the ways these youths used to lead their lives originated within themselves. As will be shown, this resulted in a decision that had a long-term impact on their lives. During interactions with group members, it became clear that they needed time to explore how they could improve their lives. Several options were proposed, but they ultimately decided to follow the path John had suggested.

In our search for a project to engage with, initially, we thought about horticulture. But we said no. Horticulture indeed brings quick money (mradi huu ni pesa za haraka haraka), but it is not sustainable. We wanted a project that would last and have a lasting impact beyond this group. We were wondering what kind of project we could take on that would also benefit our community. Then we decided to engage ourselves in beekeeping in mangroves (IDI/members/April 2025).

During conversations with group members, it became clear that, while searching for a project to engage in, these youth were also considering the wider society – what they could contribute to it through their economic activity. Informants reported conducting surveys across various areas of Kigamboni and found that mangroves had degraded in most. The question then was: what kind of project could serve both mangrove conservation and income generation? In an interview with the chairperson of VIWAKA, the following was said.

I had heard about beekeeping in mangroves. I shared the idea with the group. The group supported the idea. Later on, we contacted the ward offices to request beekeeping in the mangrove forest. We were then linked to the district office. The district supported our ideas and granted permission. This is how we started our project. (IDI/Leaders/ March 2025)

During interactions with informants, it was also observed that most group members had some knowledge of the benefits mangroves provide to society. Thus, they believed the mangrove restoration project could benefit the group and, more importantly, the community. It was revealed that group members were aware of several ecological and economic benefits that mangroves provide, as Hassan comments:

Having been raised in this place, some of our parents were fishers, so we have some knowledge about the benefits of mangroves. Mangroves serve as homes for many species, as sources of food for fish, and as protectors against erosion from sea waves. Other uses of mangroves include timber and poles for building, and as a good source of firewood. So we



decided to focus on mangrove restoration to help society realise broader benefits beyond what we can get as a group. As we talk, there is a significant improvement in the crab fishery in the restored area. We have our colleagues who catch crabs; they told us that their catch has improved since we restored mangroves in this area. This makes us very happy. (IDI/members/April 2025)

To understand the condition of mangroves during the introduction of mangrove conservation and beekeeping in the area. Informants were asked to explain the condition of the mangrove before the commencement of the project. During interviews, it was reported that a large area of mangrove forest was cleared, as Mwajuma noted:

We started our project in 2016. During this time, this place was like a desert (ilikuwa kama jangwa), a large area of mangrove was cleared. We started planting mangroves, believing that the place would improve with time and that there could be many benefits. We also agreed that while we plant mangroves, we should also make some beehives and place them in the upper area (beyond the shoreline – in an open area where mangroves cannot grow, but where other tree species can). Our idea was that once the mangroves have grown up enough, we could then shift our beehives to the mangroves. (IDI/members/ April 2025)

The above quote implies that group members were determined to conserve the mangroves despite a substantial portion of the mangrove forest having been cleared; the group did not give up. The idea of restoring mangroves and temporarily placing their beehives in the non-mangrove area implies a commitment to improving the mangrove area. In an interview with the district forest officer, it was confirmed that the area where VIWAKA was implementing its beekeeping project had previously been cleared of mangroves.

Determinants of group solidarity

By the time this study was conducted, it was nine (9) years after the formation of the group. This study examined the factors that have kept the group members together. Informants were asked to explain how the group has managed to survive for all that time. Informants express several factors that have been binding the group together. One factor was a common interest and shared goal.

The group's secretary noted that informants mentioned capital generation by group members as another factor influencing group solidarity.

When we started, we were fourteen (14) members, eight men and six women. So, we agreed that everyone should contribute to the capital (lazima kila mmoja atoe pesa zake) if we want to value the project and build a unit. As a starting point, everyone contributed 50,000/Tsh. (about 25 USD). Our idea was that if we received funds from other sources, it could be challenging to value this project compared to when we contribute from our own pockets. You know, in most cases, people tend to misuse the money they receive from others, but they are careful with the money they earn themselves. (Tukaamini kwamba ukiwa umetoa pesa yako utakuwa na uchungu na utakuwa unahudhuria kazi). So, we agreed to contribute to the project's costs regularly. I can assure you this has helped to keep us together as for now. (IDI/ group secretary/ April 2025)

This indicates that raising capital from their own resources helped establish the unit and fostered a commitment to the project. Informants also stated that each member was involved in all activities (... we usually agreed on activities to be conducted and took part in them... we purchased materials at market prices... we repaired beehives ourselves... the little money we had was used judiciously). Overall, informants saw this as a crucial factor in the group's survival.

Informants also mentioned that they had established strict bylaws requiring members to comply. It was noted that severe measures were taken against any group member who broke the agreed-upon bylaws. During the focus group discussion, Mjuni made the following comments regarding the bylaws.

Staying together as a group is never easy, we agreed to make strict bylaws and follow them. Penalties could be imposed on anyone, regardless of your status – whether you are a leader or not. This was also coupled with commitments that each of us had. This helped to monitor the behaviour of each one of us and take appropriate and timely measures once we realised that one of us was not acting according to group expectations" (FGD/members/ March 2025)

Achievements

This study aimed to determine whether the group had achieved its objective. Interviews with informants revealed that VIWAKA has achieved numerous successes since its establishment. This includes improving the conditions of the mangrove forest. It was reported that, three years after the start of the mangrove restoration project, the area had been successfully restored and the mangroves had grown sufficiently. Beehives were then moved to the mangrove area. During the period when this study was conducted (nine years later), mangroves were restored, and the area appeared attractive.



Plate 1: Mangrove restoration by VIWAKA beekeeping group at Vijibweni area, Dar es Salaam

An increase in the number of beehives was mentioned as another achievement of the group. Informants reported that the group began with 50 beehives. With time, they managed to increase the number, as Muya puts it:

"When we started, we made our contributions and managed to make 50 beehives. We continued increasing the number as funds became available. Currently, we have 300 beehives. This is not a small achievement; for us, it is a huge one. On average, one beehive costs about 200,000 TSH. So, we have made a step (...a smile)" (IDI/members/ March 2025)



VIWAKA members were grateful for an increase in honey production. During group interactions, production was initially low due to limited beekeeping knowledge. However, with time, they gained more knowledge about beekeeping, as Pili says,

Beekeeping requires some knowledge. When we started, we had little understanding of beekeeping. With time, we receive more training and improve. You know, beekeeping requires close follow-ups. For example, when we install a beehive, we record the date, and each beehive is assigned a number. In this way, we know that beehive X was installed on a certain date. We also record the date when bees entered a certain beehive. Again, we are supposed to visit the beehive at least twice a week to see what is happening. Generally, in the first three years, our annual production averaged 200 litres. Currently, our production has gone up. For example, in the first half of this year, we have already produced 800 litres" (IDI/ members/ March 2025)

The above quotation indicates that honey production has increased significantly. This increase was also associated with an increase in the number of beehives. As indicated above, the number of beehives has risen considerably.

The rise in honey production was reported not only to benefit the group (in terms of increased capital) but also to contribute to personal development. It was revealed that the well-being of group members improved significantly as Huruma remarked:

What I can say is that, beekeeping pays (ufugaji wa nyuki unalipa sana). Since we started, we have witnessed several benefits. Apart from increasing our capital and investing in other projects, our members' living standards have also improved. For example, when we started, a few of us had houses, but as we talked, every member had his/her own house, and most of the money for building such a house came from this project. We are also able to pay school fees for our children and meet other daily needs. (IDI/members/ March 2025)

It was reported that the group produced high-quality honey, which was sold at a higher price (40,000/ tsh) than that of other producers. The quality of the honey they produced was reported to attract customers, thereby facilitating the group's market access. Informants also noted that the group has started other projects, such as pepper farming (pilipili za mwendo kasi).

Challenges in Mangrove Conservation

Informants reported that mangrove conservation is not a simple task; several challenges were identified. One of the main challenges reported was mangrove cutting by some community members, as Mbiti reported:

Mangroves in this place are preferred for various uses such as charcoal, building material, and building fishing boats. When we started the conservation and restoration project, mangroves in this area were severely cleared. This area, where restoration has been done, was a path used by people to reach the inner area, where larger mangroves grew. So we blocked their entrance. So we had to do patrols, too. We did this for three consecutive months, and the destroyers stopped as they realised that we were there day and night. Since then, cutting of mangroves in this place has been halted (DGD/viwaka/ April 2025)

The quote above implies that the VIWAKA group was committed to protecting the mangroves. It was also revealed that, in addition to patrolling, beehives were used to protect mangroves. This was done by distributing beehives across various parts of the protected areas. Bees typically sting anyone who attempts to fell trees, particularly during the day.



During interviews, it was also reported that the VIWAKA group receives some support from crab fishers. Informants noted that mangrove restoration improved crabs and therefore attracted crab fishers to the protected area. Crab fishers were reported to support VIWAKA and to inform them of any individuals they suspected. Crab fishers supported the initiative because they benefited from mangroves through crab fishing. Support from crab fishers was considered valuable and elicited a positive response from other community members towards protecting the mangroves.

As part of efforts to expand mangrove protection, informants reported providing community members with education on the value of protecting mangroves. In interviews, Asha had the following to comment:

As a group, we are educating community members about the value of mangroves. We are encouraging them to engage in beekeeping in mangroves. We do because we know that if mangrove protection is sustainable, people around us must take part in it. So we are encouraging them to start beekeeping by promising to provide education on beekeeping. We see a positive response on this, there are more than ten people now who have their own beehives". (IDI/members/ April 2025)

This quote indicates that the VIWAKA group is focused on mangrove sustainability through community involvement. This is noteworthy, as greater participation may increase the project's sustainability. It was also observed that, aside from some individuals being willing to engage in mangrove beekeeping, others had decided to establish a beekeeping group.

Honey raiding in beehives was reported as another challenge the group faced. It was noted that, since honey is marketable in Dar es Salaam, some community members began raiding honey. To address this, the group had to make patrols day and night (*ilitulazimu kufanya doria maana wizi ulikuwa mkubwa sana*). It was reported that they apprehended some of these thieves and prosecuted them. This helps to end honey raiding.

Informants also report the expansion of the protected area as one of the threats to mangrove conservation. According to Tanzanian environmental policy, a buffer zone of sixty (60) metres from a water source should be kept open and protected; no human activity is permitted there. However, Budo reports that some community members are expanding beyond these protected zones.

In recent years, residential areas have been expanding into protected areas. Here we have also experienced this. Some people are building houses in the protected area (within 60 metres). This harms our project because beekeeping must be conducted away from people's residences. So, we are afraid that this expansion will threaten our project". (FGD/members/ April 2025)

Discussion

This study aimed to explore community agency in mangrove conservation and restoration through a case study of the VIWAKA group in Kigamboni. Interactions with the group revealed that they had substantial experience in mangrove conservation and restoration. As shown in the findings, the group was motivated by their understanding of the environmental and community benefits of mangroves, and they also recognised that mangrove degradation was taking place in their area. Consequently, they believed it would be advantageous to focus on a project that could benefit both the group and the wider community. This led them to initiate a beekeeping project. Existing studies suggest that people's perceptions of the environment are shaped by their interactions with it, which then influence their willingness to conserve it (Longépée et al., 2021; Jadin & Rousseau, 2022). Therefore, as the evidence indicates, several communities have independently taken measures to improve mangroves,



without government intervention (see Walters, 2004; McLeod et al., 2009; Sathiyamoorthy & Sakurai, 2024).

Findings from this study also indicate that certain conditions influenced group solidarity, which aided the group's existence and growth. It was noted that the group members agreed to contribute their own capital instead of relying on external funding. Additionally, the development and enforcement of bylaws were found to support the group. Studies on determinants of group solidarity show a consistent result. Löhr et al. (2021), for example, observed that communities with high trust are more likely to cooperate in conservation efforts.

Additionally, Ratner et al. (2017) noted that collective decision-making is key in building group solidarity in natural resources management. This is in line with the findings of this study. VIWAKA members ensured collective decision-making, which helped the group survive for years. On the other hand, studies have shown that the existence and effective implementation of group bylaws can help sustain the group. Aipassa et al. (2023), for example, emphasise the integration of local wisdom and by-laws as guiding principles, reinforcing group solidarity in conservation efforts.

Mangrove conservation and restoration are complex efforts. As noted in finding VIWAKA, the group encountered certain difficulties in carrying out conservation and restoration projects. These challenges include mangrove cutting by some community members and honey raiding. Other studies have indicated that mangrove beekeeping and conservation face multiple obstacles. In their research, Kamau et al (2024) discovered that heavy reliance on mangroves, governance and conflict issues, and open-access pressures impacted beekeeping and mangrove conservation.

The application of community agency theory to this study is valuable because this perspective emphasises that communities are active agents of change rather than passive (Onyx & Bullen, 2000; Clever, 2001). Community members are seen as possessing the power and knowledge to identify their own problems and make decisions to influence and change the conditions in which they live. As shown by the study's findings, the VIWAKA motivated themselves to engage in mangrove restoration and conservation through a beekeeping project. Such action not only improved the mangroves but also enhanced their livelihoods.

Although this study offered valuable insights into the community's role in mangrove conservation and restoration, it had certain limitations. As the data were collected through a qualitative approach, generalisation to the wider population is limited. Furthermore, time and financial constraints restricted the opportunity to explore other communities with similar experiences in mangrove conservation.

Conclusion

This study has provided essential insights into community agency in conserving and restoring mangroves. Unlike the common blame placed on communities for the global decline of mangroves, the study's findings show that communities are concerned about mangrove degradation and are capable of taking independent initiatives to address it. The findings also reveal that the government did not influence the VIWAKA group to conserve mangroves; the initiative originated from the community itself. This is not unique to Tanzania; communities elsewhere have also acted to protect mangroves without encouragement from the government or conservation organisations. We conclude that communities interact with mangroves not just to exploit their resources but also to ensure their sustainability. This study urges the government to recognise and support these local efforts, as real progress in mangrove conservation relies on active participation and ownership by local communities.



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