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Original Article

Community Forest Associations as Pathways to Forest Landscape Restoration: A Mediational Analysis of Defining Factors in the Kakamega Forest Landscape, Kenya

Kaua Caxton Gitonga[1*] *& Muhanga Leonard Likhotio*[1]

[1] Homegrown Sustainability Solutions, P. O. Box 10718-00200, Nairobi, Kenya.
[*] Author for Correspondence Email: Caxtonk2008@gmail.com

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ABSTRACT

Forest landscape restoration needs to involve local people and other stakeholders to be successful. The adoption of forest landscape restoration could thus be augmented through community-based institutions such as community forest associations. The role of community forest associations in the adoption of forest landscape restoration is, however, influenced by various mediating factors. Understanding these mediating factors is thus key to enhancing the adoption of forest landscape restoration. However, no studies have done a mediational analysis of the factors that mediate the relationship between membership in community forest associations and the adoption of forest landscape restoration. This study, therefore, aims to analyse the factors that mediate the relationship between membership in community forest associations and the adoption of forest landscape restoration. The study used a descriptive study design and a multistage sampling design. Data collection was done using Key Informant Interviews, Focus Group Discussions, and a household questionnaire survey. Mediational analysis was done using Sobel's Test. The study found that various factors had a positive mediating effect on the relationship between membership in community forest associations and the adoption of forest landscape restoration, including involvement in off-farm income-generating activities, household size, forest dependency, and the suitability of forest management laws and bylaws. Other factors had a negative mediating effect on the relationship between membership in community forest associations and the adoption of forest landscape restoration, including perception of climate change and occurrence of conflicts over forest resources. The results of the study will help in the development of policies, strategies, and actions meant to promote forest landscape restoration practices by improving the effectiveness of community forest associations as pathways for their adoption and scale-up.

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INTRODUCTION

Land degradation and climate change are two major processes that affect the capacity of the land to sustainably provide the ecosystem services needed for the survival and well-being of living things (Sannigrahi et al., 2020; Sutton et al., 2016). Land degradation also increases the exposure and sensitivity to climate change, and negatively affects the adaptive capacity to its impacts (Webb et al., 2017). According to IPBES (2018), at least 40 percent of the world's population is negatively impacted by land degradation and the escalating impacts of climate change.

Landscape restoration is one of the most sustainable strategies for addressing land degradation to improve biodiversity, recover lost ecosystem services, and thus improve livelihoods (Abera et al., 2020; Mekuria et al., 2011; Araya et al., 2015; Desta et al., 2021). Landscape restoration includes forest landscape restoration, which addresses the human dimensions of restoration which have often been neglected in restoration activities (Wortley et al. 2013). Forest landscape restoration (FLR) entails different approaches, including natural regeneration, tree planting, plantation establishment, and agroforestry systems (Chazdon & Uriarte 2016). It is a powerful approach to recovering ecological functionality and improving human well-being in deforested and degraded landscapes (Cesar et al. 2021).

To be successful, forest landscape restoration needs to actively involve local people and other stakeholders (Viani et al., 2019). According to Ren et al. (2023), involving farmers in the decision-making processes of restoration projects plays a crucial role in their implementation and management by increasing their sense of ownership and responsibility. Due to this, the use of community-based institutions such as community forest associations (CFA) in forest landscape restoration under the participatory forest management approach (PFM) has been widely adopted in many developing countries (Koech et al., 2009). The role of community forest associations has been highlighted as core in the management of forest resources in Sub-Saharan Africa (Okumu & Muchapondwa, 2020) and ensuring sustainability in the utilisation of forest resources (Lefèvre et al., 2020). Community forest associations enable community-based forest governance, which involves the principles of inclusion, equity, and democratisation (Koech et al. 2009), leading to the achievement of sustainable forest and livelihoods improvement (Kallert et al. 2000).

The contribution of community forest associations towards community participation in forest landscape restoration is, however, subject to various mediating factors, such as the adopted implementation processes (Koech et al. 2009). This is attested by previous studies that showed that the effect of one factor on another is mediated by other factors that are intermediate in the causal sequence of the relationship (Thakur and Srivastava 2018; Schaaijk et al. 2020; MacKinnon 2001). A good understanding of the factors that mediate the effect of community forest associations on the adoption of forest landscape restoration is thus imperative in improving its adoption. However, no studies have done a mediational analysis of the factors that mediate

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the effect of membership in community forest associations on the adoption of forest landscape restoration.

This study therefore aimed to undertake a mediational analysis of the factors that mediate the relationship between participation in community forest associations and the adoption of forest landscape restoration. The results of the study will not only help unpack the underlying factors that influence the relationship, but they will also improve the role of community forest associations as pathways to the adoption of forest landscape restoration activities. Moreover, the study will improve the design and implementation of forest landscape restoration policies, strategies, and programs.

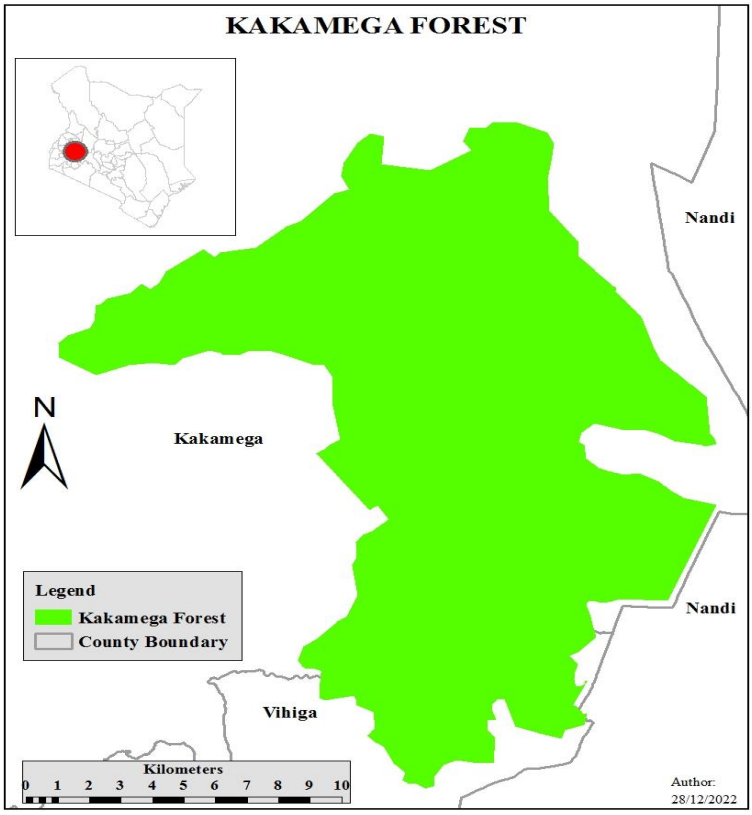
METHODOLOGY

Study Area

Kakamega forest lies in Western Kenya, mainly in the Kakamega and Vihiga Counties of Kenya (Figure 2.1). The forest covers an area of about 230 KM^2. Less than half of this area currently comprises an indigenous forest. Kakamega Forest lies between latitudes 00° 08′ 30.5″ N (41 236 in UTM 36 N) and 00° 22′ 12.5″ N (15 984) and longitude 34 46’08.0’’ E (696 777) and 34 57’ 26.5’’ E (717 761). It falls on a lowland of relatively flat topography with the altitude ranging between 1500 Metres and 1600 Metres above sea level and up to 2060 Metres atop a few scattered forested hills such as Bunyala and Lirhanda. The forest ecosystem is part of the Nyanza Low Plateau and the Lake Victoria basin.

Kakamega Forest is recognised as the easternmost relic of the fragmented Guineo-Congolian lowland rainforest belt (KIFCON 1994). Kakamega forest is thus floristically strongly related to the Central and West African lowland rainforest. However, it is also enriched by the Afromontane Forest elements from the Rift Valley escarpment, resulting in a remarkable inter-mix of plant diversity. The forest is part of the Kakamega-Nandi Hills Forest complex (Kokwaro, 1988). Fischer et al. (2010) describe the forest as a multi-story, dry, peripheral semi-evergreen Guineo-Congolian transitional rainforest.

Figure 2.1: The Study Area in the Kakamega Forest Landscape



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Research and Sampling Design

The study used a descriptive study design. Multi-stage sampling design was used to select the households involved in the study. This first involved a proportional distribution of respondents within the study sub-locations based on their population sizes. The respondents for the study within the selected sub-locations were then chosen using a systematic sampling method.

The number of respondents for the study was determined using Cochran's method (Cochran 1963). Based on this method, the number of respondents for the study was 385. These respondents will be distributed proportionately to the study sub-locations as per the study methodology. This is shown in Table 2.1.

Table 1: Distributions of Respondents in the Study Sub-locations

Distributions of respondents in the study sub-locations			
#	**Sub-location**	**No. of households**	**No. of respondents**
1	Virhembe	2385	172
2	Mukangu	1583	114
3	Shasava	1371	99
Total		**5339**	**385**

Data Collection

Data collection was done using various methods. Firstly, a household questionnaire survey was done using a semi-structured questionnaire. Secondly, focus group discussions (FGD) and key informant interviews (KII) were conducted to collect and gather in-depth information and to gain a better understanding of observations made from other data collection methods. Data was also collected through observation.

Data Analysis

The mediational analysis was done using Sobel's Test. In doing this, linear regression analysis was first used to establish the relationship between the independent variable and the mediator. Secondly, linear regression analysis was used to find the relationship between the mediator and the independent variables. The t statistic of the two relationships was then used to calculate the test statistic and P-value using the Sobel's Test calculator. This established the significance of the effect of the mediating variable on the relationship between the independent and the dependent variables. A significant test indicated that the mediating variable influenced the relationship between the independent and the dependent variables. Dummy coding was also used to convert the categorical variables to act as continuous variables.

Calculation of the Forest Landscape Restoration Adoption Index

The forest landscape restoration adoption index was calculated using inductive and hierarchical approaches. In calculating the index, the indicators were first normalised to ensure comparability of indicators bearing different measurement units and scales. This was done using the Min-Max normalisation to yield standard index values with relative positions in the range of zero to one for each variable, i.e.

$$Zi = xi - \min(x)/\max(x) - \min(x)$$

Where:

Zi = Normalised value of xi

Min (x) = Minimum value of x

Max (x) = Maximum value of x

The indicators were weighted to avoid the uncertainty of equal weights given their diversity. The weighting of the variables was done using Principal Component Analysis (PCA). In doing this, the weight of each composite index indicator was derived using the first component factor loadings.

The forest landscape restoration adoption index composite index was then calculated using the formula:

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$CI=\sum (wi\ zi)/n$

Where:

CI = Composite index

wi = Weight of variable

zi = Variable index value

n = Number of variables

The forest landscape restoration adoption index composite index was tested for accuracy and robustness using uncertainty and sensitivity analysis. Uncertainty analysis was done using the propagation of standard errors approach, i.e., based on uncertainties of index components. This involved adding their standard errors as a weighted sum in quadrature (squared, weighted, added, and then square rooted) as in Kirchner (2001), that is.

$U= \sqrt{\sum} (wiSi)\ 2$

Where:

U = Uncertainty

wi = Variable weight

Si = Standard error of variable index value

Sensitivity analysis was done using multiple regression analysis to determine how components constituting the composite index influence it, as in Hamby (1995). In doing this, the coefficient of determination (R2) indicated the amount of variation in the composite index which can be explained by the model's components.

The Forest landscape restoration adoption index was calculated based on the indicators shown in Table 2.

Table 2: Indicators Used in the Calculation of the Forest Landscape Restoration Adoption Index

#	Composite index	Indicators	Weights	Composite index certainty	Composite index sensitivity
1	Adoption of the forest landscape restoration index	Use of agroforestry	0.428	1.00	0.0164
		Conservation of riparian land	0.787		
		Tree seedlings production	0.484		
		Conservation of forests	0.653		

The composite index had a sensitivity of 1, indicating very high sensitivity. Moreover, the composite index had a very low uncertainty, which is 0.0164.

RESULTS

In undertaking the mediational analysis using Sobel's test. Linear regression analysis was first used to find out the significance of the relationship between membership in a community forest association and the adoption of forest landscape restoration. A significant relationship was found ($\beta = 0.099$, $P = 0.000 < 0.005$). This indicated that Sobel's Test could be used to undertake an analysis of the factors that mediated the relationship between membership in community forest associations and the adoption of forest landscape restoration.

The results of the mediational analysis of the various factors that could be mediators of the relationship between membership of community forest associations and the adoption of forest landscape restoration were as shown in Table 3.

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Table 3: Results of the Mediation Analysis of the Relationship between Membership in Community Forest Associations and the Adoption of Forest Landscape Restoration

#	Mediator	Correlation between X and Y		Correlation between XM and Y		Sobel's test results	
		A	Sa	b	Sb	Test statistic	P-Value
1	Gender	0.099	0.025	0.07	0.015	3.019	0.003
2	Age	0.099	0.025	0.001	0.001	0.970	0.332
3	Marital status	0.099	0.025	-0.007	0.03	-0.233	0.816
4	Education	0.099	0.025	-0.002	-0.002	-0.970	0.332
5	HH Size	0.099	0.025	0.009	0.003	2.391	0.017
6	Off-farm income-generating activities	0.099	0.025	0.047	0.016	2.359	0.018
7	Income level	0.099	0.025	-0.003	0.012	-0.250	0.803
8	Land adequacy	0.099	0.025	-0.016	0.012	-1.264	0.206
9	Land tenure	0.099	0.025	0.013	0.026	0.496	0.620
10	Forest dependency	0.099	0.025	0.042	0.007	3.305	0.001
11	The trend in agricultural production	0.099	0.025	0.002	0.006	0.332	0.740
12	The trend in land degradation	0.099	0.025	-0.001	0.011	-0.091	0.928
13	Household food security	0.099	0.025	-0.011	0.013	-0.827	0.408
14	Training on FLR	0.099	0.025	0.010	0.008	1.188	0.235
15	Trend in household farm tree cover	0.099	0.025	0.027	0.008	2.569	0.010
16	Perception of the ecological state of Kakamega forest	0.099	0.025	0.056	0.013	2.915	0.004
17	Perception of the level of community involvement in forest management	0.099	0.025	0.062	0.01	3.337	0.001
18	Perception of CFA effectiveness in forest management	0.099	0.025	0.053	0.011	3.059	0.002
19	Perception of the suitability of forest management laws and bylaws	0.099	0.025	0.048	0.013	2.701	0.007
20	Perception of equitability in the sharing of forest resources	0.099	0.025	0.022	0.012	1.664	0.096
21	Perception of frequency of occurrence of conflicts over forest resources	0.099	0.025	-0.023	0.01	-1.989	0.047
22	Perception of the adequacy of household farms in providing firewood needs	0.099	0.025	-0.011	0.012	-0.893	0.372
23	Perception of climate change and variability	0.099	0.025	-0.017	0.006	-2.304	0.021
24	Membership in CBOs	0.099	0.025	0.044	0.018	2.080	0.038
25	Women's Empowerment in decision making	0.099	0.025	0.024	0.013	1.673	0.094
26	Perception of availability of forest resources	0.099	0.025	0.033	0.006	3.214	0.001

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The results of the analysis show that various factors are mediators of the relationship between membership in community forest associations and the adoption of forest landscape restoration. The gender of the household head was found to have a significant positive effect (t = 3.019, P = 0.00253 < 0.05) on the relationship between membership in community forest associations and the adoption of forest landscape restoration. Also, involvement in off-farm income-generating activities had a significant positive effect (t = 2.359, P = 0.0183 < .005) on the relationship between membership in community forest associations and the adoption of forest landscape restoration. The mediational effect of household size on the relationship between membership in community forest associations and the adoption of forest landscape restoration was also found positive and significant (t = 2.391, P = 0.0168 < .005).

Moreover, forest dependency had a significant positive mediation effect (t = 3.305, P = 0.00095 < .005) on the relationship between membership of community forest associations and the adoption of forest landscape restoration while the trend in tree cover on household farms also had a similar effect (t = 2.569, P = 0.0102 < .005). The ecological state of Kakamega Forest had a significant positive mediating effect (t = 2.915, P = 0.0036 < .005) on the relationship between membership in community forest associations and the adoption of forest landscape restoration. A similar significant positive effect was observed in the case of the level of community involvement in forest management (t = 3.337, P = 0.00085 < .005), the effectiveness of the CFA in forest management (t = 3.059, P = 0.0022 < .005), and the suitability of forest management laws and bylaws (t = 2.701, P = 0.0069 < .005).

Further, the frequency of occurrence of conflicts over forest resources had a significant negative mediating effect (t = -1.989, P = 0.0467 < .005) on the relationship between membership to community forest associations and the adoption of forest landscape restoration while the perception of climate change and variability had a similar effect (t = -2.304, P = 0.0212 < .005). In addition, a significant positive mediating on the relationship between membership to community forest associations and the adoption of forest landscape restoration was observed in the case of membership to community-based organizations (t = 2.0801, P = 0.0375 < .005) and the availability of forest resources (t = 3.214, P = 0.00131 < .005).

DISCUSSION

The study found that membership in community forest associations had a significant positive relationship with the adoption of forest landscape restoration practices. This relationship is mediated by several factors. Firstly, household size had a significant positive mediating effect on the relationship between membership in community forest associations and the adoption of forest landscape restoration practices. This could be because community forest association members from larger households have greater access to labour, which makes them better able to undertake forest landscape restoration activities. Larger households could also translate into a greater diversity of skills and more people having skills in forest landscape restoration, hence better adoption. The larger households could also have a greater income-earning capacity, allowing them more resources to invest in conservation activities. This finding is in line with Coulibaly-Lingani et al. (2011); Jumbe and Angelsen (2007); Neitzel et al. (2014); Kassie et al. (2009); Ndiritu et al. (2014); Apio et al. (2023); Adimassu et al. (2012); Yirga (2007); Croppenstedt et al. (2003). However, Amsalu and De Graaff (2007); Belachew et al. (2020) observed a negative relationship between household size and the adoption behaviour of farmers.

Besides, the study found membership in a community-based organisation had a positive mediating effect on the adoption of forest and landscape restoration practices. Members of community forest associations who also belong to community-based organisations thus have greater adoption of forest landscape restoration activities. This could be because community-based organisations allow better access to information through shared learning as members exchange information and ideas, and share and discuss best

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practices and success stories. This shared learning could thus encourage members to undertake forest landscape restoration activities. Also, these groups act as entry points for the dissemination of knowledge and provision of support by extension officers and other development agents, which could lead to greater access to knowledge and enhanced capacity to undertake forest landscape restoration activities. Since the groups engage in joint activities guided by a set of rules and inspired by peer pressure, the members could be coerced to engage in group-led forest landscape restoration activities. The groups also enhance collective action, hence giving people a greater voice in decision-making, which enhances participation, and hence the adoption of forest landscape restoration activities. The social capital offered by the groups also increases members' capacity to undertake forest landscape restorations, for example, as they encourage and give each other support. These findings are in line with Iglesias et al (2009); Segnestam (2009); Tsegamariam (2023); Ren et al (2023); Ullah et al (2023). However, according to Bouma et al. (2008), very large organisations or networks can have a negative effect on adoption due to delays in access to benefits and complexities in management.

The study found that effectiveness in the management of the CFA and suitable forest laws and bylaws had a positive mediating effect on the relationship between membership in community forest associations and the adoption of forest landscape restoration activities. Members of well-managed community forest associations and where there are good forest laws and bylaws, could thus better adopt forest landscape restoration activities. This could be because when people perceive that forest management activities are being managed well, they will be more willing and comfortable to participate in conservation activities. Suitable laws and bylaws also mean that there is a sense of community ownership of governance processes and effective management, which motivates people to participate more in conservation activities. This concurs with Binal et al. (2017); Kimutai and Watanabe (2016); Mansourian (2016); Adimassu et al (2012); Djenontin et al. (2018), who found a positive correlation between the existence of suitable forest laws and the governance of forests.

Further, the study found that community involvement in forest governance and management was a positive mediator of the relationship between membership in community forest associations and the adoption of forest landscape restoration activities. Members of community-based organisations where the community is more involved in decision-making could thus adopt forest and landscape restoration practices better. This could be because the involvement of the community members in decision-making processes leads to the identification of interventions that are locally relevant and owned, hence increasing participation. Involvement of the community also means that they have better access to information and hence are more able to undertake forest and landscape restoration activities. Involvement of more people through community participation also leads to a wider interaction and hence a greater diversity of ideas coming into consideration in decision making, better targeting of forest landscape restoration activities. Also, with greater participation, community members have better access to support resources for forest landscape restoration. This agrees with Volker (2020); Iglesias et al. (2009); Jha et al. (2019), who also found that community involvement leads to better management of forests.

Gender was also found to be a positive mediator of the relationship between membership in community forest associations and the adoption of forest landscape restoration practices. This means that addressing gender issues could lead to greater participation in forest landscape restoration activities. According to Basnett (2017), gender equality and rights must be central in restoration to avoid perpetuating gender inequalities, incentivise women and men to contribute to restoration efforts, and provide greater opportunities and enhanced well-being for women and men alike. This agrees with Covelli-Metcalf et al. (2015); Horlings (2015); Lescourret et al.

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(2015); Basnett (2017); Mukadasi and Nabalegwa (2007); Chhatre et al. (2012), who found that gender equity in forest governance leads to more community participation in forest restoration activities.

Farmer's engagement in off-farm income-generating activities was found to have a positive mediating effect on the relationship between membership in community forest associations and the adoption of forest landscape restoration practices. Members of community forest associations who engage more in off-farm income-generating activities may thus adopt forest and landscape restoration activities more. This could be because farmers who are engaged in off-farm income-generating activities may have greater incomes and resource endowment, and hence are more able to invest in inputs for forest landscape restoration. This is in congruence with Adimassu et al. (2012); Basnett et al. (2017); Diiro (2013). However, the results contract Mwambungu (2019); Asfaw and Neka (2017); De Graaff et al. (2008); Blaikie (2006); Lund and Treue (2008); Asfaw and Neka (2017); Blaikie (2006); Lund and Treue (2008); Waruingi et al. (2022); Waruingi et al. (2021); Okumu and Muchapondwa (2020), who found a negative relationship between farmer's involvement in off-farm income-generating activities and the adoption of conservation practices.

In addition, forest dependence was also found to have a positive mediating effect on the relationship between membership in community forest associations and the adoption of forest landscape restoration practices. Members of community forest associations who were more dependent on forests could thus participate more in forest and landscape restoration activities. This could be because households that depend more on forest resources attach more value to them and have a higher perception of their benefits. Also, households that depend more on forests could be resource-poor and have less access to other livelihood sources, which coerces them to participate more in forest conservation activities. This concurs with Jansen et al (2006); Kazungu et al(2021); Mbeche et al. (2021); Coulibaly-Lingani et al. (2011); Ogada (2012); Adhikari et al. (2014); Mutune and Lund (2016); Musyoki et al. (2016); Waruinge et al. (2021); Lamsal et al. (2015) who also deduced that those who dependence on forest resources increases involvement in forest restoration activities. However, Jumbe and Angelsen (2007) argued that households that depend more on forest resources may participate less in forest conservation programs since they may feel the activities under the programs could be restrictive to their forest resource extraction activities.

Conflicts over forest resources were found to have a negative mediating effect on the relationship between membership in community forest associations and the adoption of forest and landscape restoration practices. Members of community forest associations where there are conflicts may thus participate less in forest landscape activities. This could be because conflicts affect the delivery of forest and landscape restoration projects, either through wrangles that cause delays or mismanagement. Conflicts may also cause divisions between farmers and leaders, hence leading to resistance or disinterest in forest landscape restoration interventions. Conflicts distort the enabling environment that is required for the implementation of forest landscape restoration projects and cause the failure of community-based institutions. They also negatively affect mutual and collective actions that are key in encouraging and building the capacity of the farmers for forest and landscape restoration. This concurs with Owusu et al. (2023).

Farmers' perception of land degradation was found to have a positive mediating effect on the adoption of forest and landscape restoration practices. Thus, community forest association members who perceive greater land degradation may adopt more forest land restoration activities. This could be because farmers who are aware that their land is degraded may be more willing to adopt practices such as agroforestry to improve the conditions of their soils. This is in line with Djenontin (2008); Shiferaw and Holden (1998); Mbeche et al. (2021) who noted that those who

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perceived increased perception of forest degradation increase the likelihood of forest restoration activities to address the issue.

Moreover, the study found that community perception of the ecological state of the local forest had a positive mediating effect on the relationship between membership in community forest associations and the adoption of forest and landscape restoration practices. Members of community forest associations who perceive their forest to be in a good ecological state may thus be more willing to participate in forest and landscape restoration projects. This could be because an improvement in the ecological state of the forest is associated with good governance and management practices, which leads to greater adoption of forest and landscape restoration activities. The good ecological status of the forest also translates into more resources and greater benefits that could be derived from the forest, which could thus motivate the community to participate in conservation activities. This finding aligns with Wairunge et al. (2021), who found that households which perceived that forest cover had increased over the years were more likely to participate in conservation activities. However, Bakaki and Bernauer (2016) noted that it is the perception of deforestation that positively influences people's willingness to contribute towards conservation activities.

Besides, farmers' perception of climate change and variability had a negative mediating effect on the relationship between membership in community forest associations and the adoption of forest and landscape restoration practices. Members of community forest associations who had a higher perception of climate may thus have a lower adoption of forest landscape restoration activities. This could be because farmers who are more aware of the effects of climate change and variability may be discouraged from participating in forest and landscape restoration activities due to the uncertainty of success and the expected failure due to related impacts such as drought. This is in line with Jha et al (2019), who found that farmers who have experienced drought or perceive unfavourable climatic conditions such as erratic and inadequate rainfall leading to uncertainty, are less likely to embrace conservation activities. However, the results are contrary to Mbeche et al. (2021); Wairunge et al. (2022); Pham et al. (2018); Leite et al. (2023); Apio et al. (2023), who found that perception and vulnerability to climatic shocks increased the likelihood of participating in conservation activities.

CONCLUSION

The study found that community forest associations positively influence households' adoption of forest landscape restoration. However, this influence is subject to various mediating factors. The identification of these mediating factors and the nature of their influence is key to leveraging community forest associations as pathways for the adoption of forest landscape restoration. Since membership in community groups was found to be a positive mediating factor of community forest association's members in forest landscape restoration, policy makers, and development agents should promote community members' participation in the groups. Moreover, there is a need to enhance effectiveness in the management of community forest associations and formulate suitable laws and bylaws for forest management through participatory processes. Community involvement in forest management should also be increased since it will lead to better adoption of forest landscape restoration activities. This could include better implementation of initiatives that strengthen community involvement in forest management, such as participatory forest management. Efforts to address conflicts over forest resources should also be addressed in a better and more timely manner to increase community forest associations' members' positive perception of forests and their management. Also, there is a need to promote income sources diversification by promoting the adoption of off-farm income-generating activities. This will enhance incomes and resources to invest in undertaking forest landscape restoration activities. Sustainable forest benefits, including non-timber forest products, should be enhanced to

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increase gains that accrue to those who depend on forests, since it will increase their involvement in forest landscape restoration. Besides, community perceptions of various environmental aspects, including climate change, and the status of natural resources should be clearly understood and leveraged to enhance the adoption of forest landscape restoration. The results of this study will assist in the development of policies, strategies, and actions meant to promote forest landscape restoration practices by improving the effectiveness of community forest associations as pathways for their adoption and scale-up.

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