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An Investigation of the Factors Influencing Community Participation in Forest Management: A Case of Balaka District, Malawi

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Abstract

Forests are vital for the environment through the support which they provide to biodiversity. They also provide cultural, social and economic support to human welfare. Forest degradation is attributed to multiple land uses which include agriculture, human settlement, the use of trees as the main source of energy and other infrastructure development. The main objective of the study was to assess factors that influence community participation in forest management in Kangankundi village forest area in Balaka District, Southern Malawi. Simple random sampling was used to select 100 community members who were interviewed in the study. Data were analyzed in SPSS version 22. The results showed positive significant relationship between community awareness and community participation (p = 0.015), and also between economic benefits and community involvement (p = 0.003). Involvement was not affected by income-generating activity which showed that (p = 0.781) and level of education (p = 0.535). Community awareness and economic benefits appear to be the main factors influencing community participation. Firewood and bamboos were noted to be the most resource obtained from the forest and beekeeping was also the income-generating activity in the study which is being promoted. It is concluded that community participation is influenced by many factors. The study recommends that youth must be deliberately involved in forest management as opposed to the current participation which is dominated by elderly people.

Keywords

Forest Management, Community Participation, Natural Resources, Deforestation

1. Introduction

The world's forests and woodlands are increasingly under pressure from the growing human population and many are shrinking as a result of human-induced deforestation (McDowell et al., 2020; Ross et al., 2021; Cheţan et al., 2021). There is a need for teamwork to protect forests where Participatory forest management is involved. Participatory approach involves forest adjacent communities and stakeholders in management of forests within a framework that contributes to community's livelihood (Nandigama, 2020; Kabir et al., 2021; Ofoegbu & Speranza, 2021). Local communities can be effective conservation agents most especially when communities have secure land tenure rights (Gonzales Tovar et al., 2021; Baulenas et al., 2021). Furthermore, forest products resulting from both plants and animals help in sustaining the earth in many ways like food, fodder, fiber traditional medicine, agricultural amenities, domestic materials, construction materials, and many more (Ernawati et al., 2021; Talukdar et al., 2021).

Regarding forest management, a study was conducted in Ethiopia to identify and examine factors that determine the participation of household heads in participatory forest management (PFM) (Bakala et al., 2021). Households that had access to forest-related extension services participated in participatory forest management more than the others. PFM staff should offer forest-related extension services to notify household heads about the role, benefits, and implementation mechanisms of participatory forest management (Bakala et al., 2021). The study also noted that the majority of the household heads had low formal education levels hence a recommendation for use of simple and easy-to-follow demonstrations to ensure that household heads understand the goals of participatory forest management (Bakala et al., 2021). Benefits resulting from forest resources also increased the probability of household heads' participation. Finally, the study recommended that participatory forest management should target married household heads (Bakala et al., 2021).

In Nepal, the emergency of community forestry was a response to the growing concern on environmental degradation in the regions of Nepal. The programme sought to bring patches of forest lands under control of local communities with the goal of meeting local forest product needs and combating degradation (Rijal, Subedi, Chhetri et al., 2021). In Zambia, the forest Act of 1999 provides legal framework for joint forest management (JFM) which allowed participation of local communities, traditional institutions, non-governmental organizations and other stakeholders in sustainable forest management and the establishment of joint forest management areas (Maxwell, 2009).

In Malawi, the Standard and Guidelines for Participatory Forestry provides excellent guidance on how to ensure that relevant actors and authorities at village level are included in community-based forest management (FAO, 2017). The enactment of Malawi Forestry Act of 2017 incorporated participatory forestry, forest management, forestry research, forestry education, forest industries, protection and rehabilitation of environmentally fragile areas and international

cooperation in forestry (FAO, 2017). Despite the promotion of local community participation in afforestation and general forestry management activities, there is low participation of communities in protection of the forest. In addition, it is not clearly indicated the factors that influence community involvement in afforestation and forest management. The study was pre-determined to understand how economic factors community awareness and education influence community participation in forest management in Kangankundi village forest area in Balaka District, Southern Malawi.

2. Problem Statement

According to Malawi's population and housing (census report of 2018), the population of Malawi is 17,563,749 people at the increasing rate of 2.9%. The increase in population is demanding land for settlement, agriculture and efforts to meet basic needs under such situations is attainable resulting in depleting existing forest without being involved in the management of forest resource. There has been paradigm shift on participatory forest management (PFM) in a devolved and decentralized strategy aiming on production of multiple forest goods and services. The government of Malawi identified the gaps in the 1996 National Forestry Policy especially in the area relating to the involvement of the wider Malawian society in the entire range of activities relating to the sustainable management of the country's forest resource base. The adjacent local communities to forest resources need to be involved in decision making allow and encouraged them to be responsible for the natural resources existing in their jurisdiction and have benefits shared for their effort. However, despite the promotion of local community participation in afforestation and general forestry management activities, there is low participation while at the same time it is not clear as to which factors influence community involvement in afforestation and forest management. Therefore quest of this study was to fill this gap by investigating factors which influence community involvement in forest management.

3. Conceptual Framework

The conceptual framework (**Figure 1**) aimed at addressing the research questions. It illustrated the variables involved in the study which include dependent and independent variables. The independent variables included community awareness, economic factors and education level while dependent variable was community participation (**Figure 1**).

4. Materials and Methods

The study employed descriptive quantitative research design. Generally, descriptive survey research intends to produce statistical information about various aspects of an existing phenomenon. The choice of a descriptive research design in this study was made based on the fact that, the study focused on already existing phenomenon in this case forest management. In order to explain community

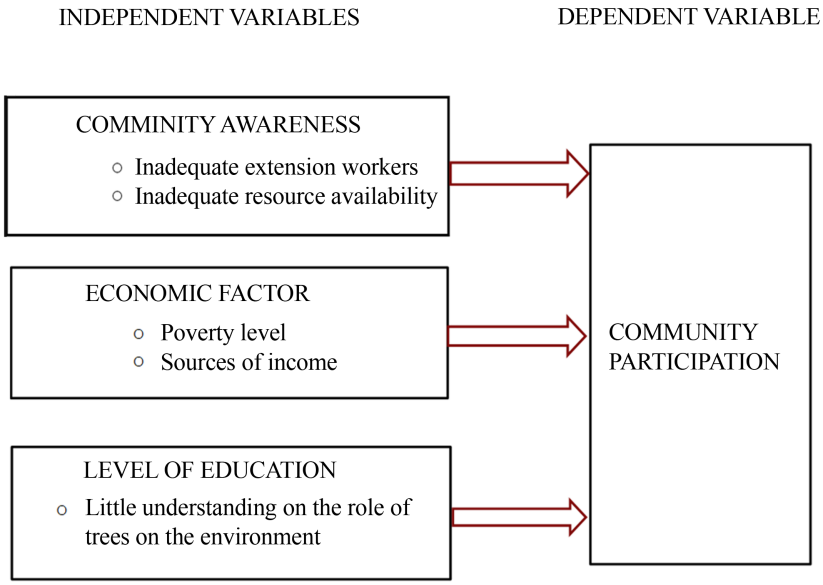

Figure 1. Study conceptual framework.

participation in the study area, a logistic regression model was used. Community participation as dependent variable and community awareness, economic factors, and level of education as independent variables. A logistic regression was used because the specification of the dependent variable was binary in nature and in outcome.

This study used probability sampling (simple random sampling technique) to get the sample size for the respondents. The sample size was 100 household. Primary data was collected using questionnaires. The questionnaire was divided into two parts. The first part was discussing information about the respondents while the second section was based on the variables of the study. The questionnaire was tested on pilot basis before actual data collection to check its reliability. Secondary data was obtained from published books, newspapers, journals and online portals. Data were analyzed using regression analysis in SPSS to establish relationship between dependent variables and independent variables.

5. Results and Discussion

Female respondents were found to be many with 65 percent and males were 35 this indicated that more women were involved in the study (**Figure 2**). These results agree with a study that was conducted in South Western Kenya on new forest management approaches where more women were involved and actively participate than men (Bitange, Sirmah, & Matonyei, 2021).

The age of the respondents was found to be between 20 and above 50 years (**Figure 3**). The highest percentage was 47 in the age group between 31 - 40 years seconded by 38 percent in the age between 41 - 50, 10 percent was between 20 - 30 years and finally, 5 percent was for above 50 years (**Figure 3**). These results show that younger people (below 30 years) were not involved in forest management.

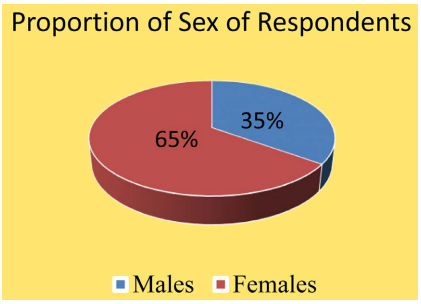

Figure 2. Sex of respondents.

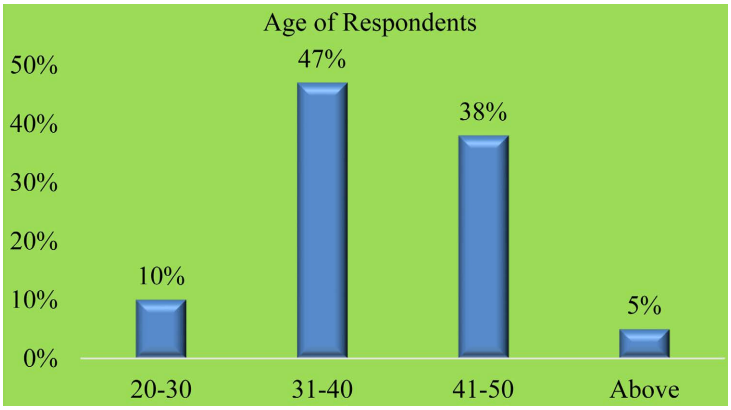

Figure 3. Age of respondents.

The study showed that out of the 100 respondents 19 were single (Figure 4). The highest number was 63 which were married people while 12 respondents were widows and 6 were divorced in marriage (Figure 4). This has indicated that many respondents were married people who were involved in the survey (Figure 4).

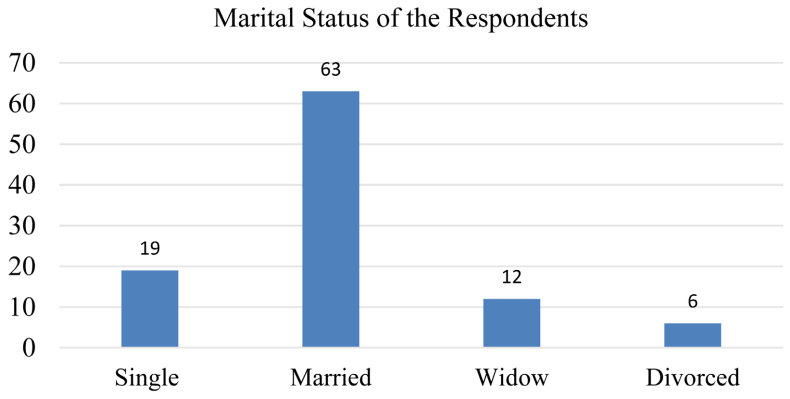

Figure 4. Marital status of the respondents.

Out of the 100 respondents, 83 have primary school leaving certificate (Figure 5), 14 have junior certificate of education while 3 have Malawi school certificate of education (Figure 5). A larger number that participated have low level of education (Figure 5).

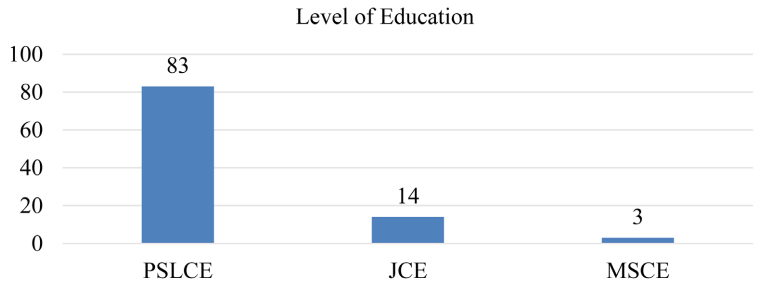

Figure 5. Level of education.

The results indicated that 9% were greatly satisfied with economic benefit, 51% moderately satisfied and 41% with low satisfaction and provided reasons that are involved in management of the forest resource. Respondents indicated that there is less availability of the resource as of now however they are satisfied with what they have like trees, thatch grass and medicinal plants found in their forest.

On benefit-sharing, it is indicated that 85% of the benefits are shared depending on members' participation (**Figure 6**). The reason was that when the members get involved much in the management are able to realize the much-needed forestry benefits 7% said equally shared and 8% did not know how it is shared (**Figure 6**).

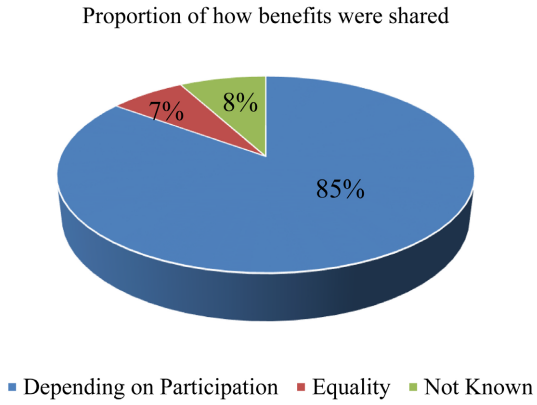

Figure 6. Sharing of benefits among members.

On Involvement in income-generating activities, 84% showed were involved, the reason being to use the forest dependent income-generating activity as source of livelihood (**Figure 7**). While 16% showed that they were not involved because of distance to access the area and this makes them unaware if the income-generating activities (IGAs) taking place (**Figure 7**).

Results in this study have shown that gender, age of people, marital status, level of education and income-generating activities have some effect on the participation of people in forest management where more women were involved than men (**Figures 1-7** respectively). These results agreed with some studies which showed that marital status, level of education and income from the forest

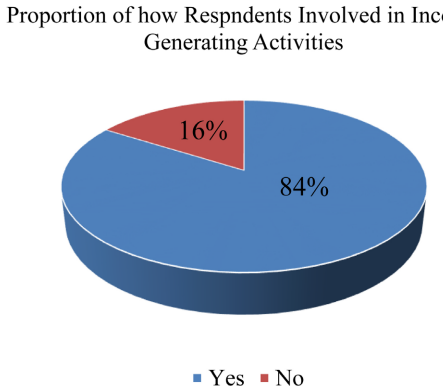

Figure 7. Proportion of respondents involved in income-generating activity.

have shown some impact on participation of respondents in management of community forests (Tadesse et al., 2017; Killian & Hyle, 2020; Mbeche et al., 2021). For example, a study that examined the level of forest users' participation in forest management (PFM) program in the Gebradima forest, southwest Ethiopia indicated that gender, family size, education level, income from the forest and lack of incentives were some of the factors that influence participation of people in forest management ($p < 0.05$) (Tadesse et al., 2017).

Regarding satisfaction with expected economic benefits from forest management, results show that there is significant impact of economic benefits and community participation in forest management activities. The respondents satisfaction of the economic benefits from trees and forest management shows p-value = 0.003, $p > 0.05$. The majority of the respondents reported to have participated in forest management activities to obtain multiple forest products such as firewood, bamboos, poles and medicine which can be converted to economic benefits in terms of income at household level. This shows that local communities will participate in forest management only if they are sure of the economic benefits that they can obtain from the forest through their participation. Our results agree with the results obtained from the study which was conducted in Thailand (Apipoonyanon et al., 2020). The study was analyzing on the factors that influence household participation in community forest management. The results revealed that economic benefit also contribute in the participation of people in forest management. These results also agree with Njera (2016) who conducted a study in Lilongwe, Malawi. Njera (2016) found that there was positive correlation between local community participation in afforestation activities and the respondent expected benefits. Therefore, it was concluded that communities participate in afforestation activities following the forest benefits obtained. This in line with (Bhandari, 2010) who found that in Nepal community forest has been a source of income and employment for rural community especially through intercropping of cash crop, cultivation of non-timber forest products and medicinal plants.

However, the other factor that was looked at on economic benefits was the involvement of communities in income-generating activities, the results indi-

cated that $p = 0.781$, $p < 0.05$ (Figure 6). This shows that there is insignificant impact of the involvement in income-generating activities and community participation in forest management though it indicated positive relationship ($p = 0.036$) between income-generating activities and forest management but it does not have impact on community participation in forest management.

The study showed that 85% of the communities are aware and have access to the benefits obtained from the forest (Figure 8). While as 15% indicated that are not aware and do not have access to the benefits (Figure 8). For those who responded that are aware they listed the benefits they obtain from the village forest area and these are: Firewood, thatch grass, bamboos, poles, medicinal plants and utmost they are involved in beekeeping a forest dependent income-generating activity. For those who said they are not aware provided reasons of staying in far places from the village forest area and therefore information sharing if difficult to be shared in terms of the management activities and access to the associated benefits from the Village Forest Area (VFA) (Figure 8).

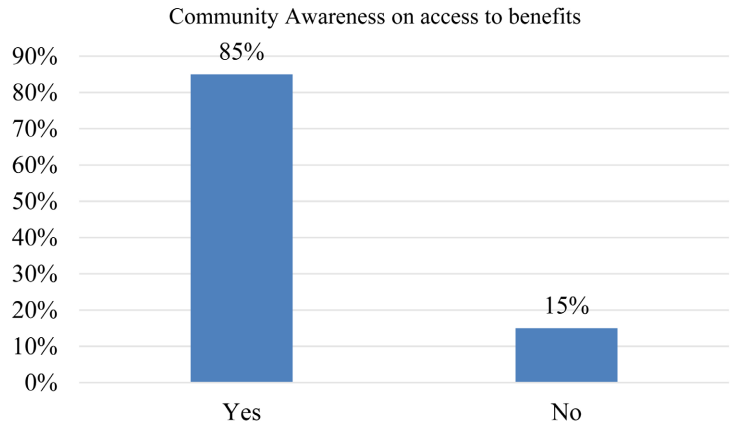

Figure 8. Community awareness on access to benefits.

The households were also asked about their involvement in management of the forest before the training, 69% indicated that did not participate in forestry activities (Figure 9), but after knowing about how to manage and protect the forest resource. Reasons for not managing the forest was that communities had no idea on how to do activities for tree planting such as nursery establishment and how to promote natural regeneration in degraded areas. While as 31% said they were involved in the management before training obtained the information from the other media on tree management such as radios (Figure 9).

The results on assessment for the community awareness on access to forest resources or benefits defined the interaction between forest management and the adjacent communities. The results on influence of community awareness in participation of members showed that p-value = 0.015, where $p < 0.05$. This implies that influence of community awareness on access to forest benefits has a significant impact in participation of communities in forest management. This shows that the increase in awareness about the accessibility to the forest benefits also

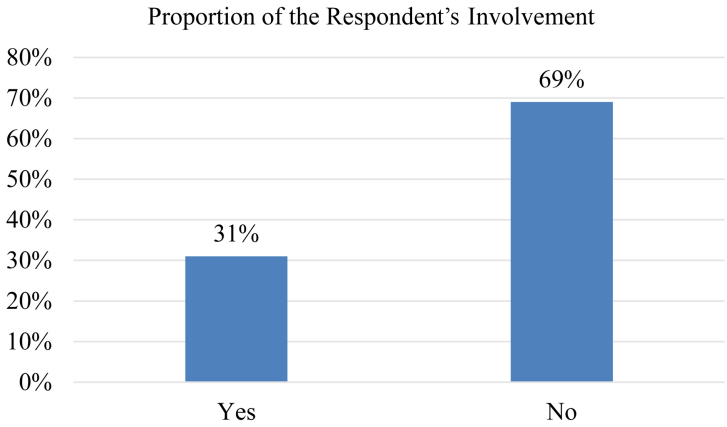

Figure 9. The proportion of the respondents' involvement.

increase community participation in forest management. These results agree with the results obtained in a study which was conducted in Indonesia (Anggraini & Gunawan, 2021). The results showed that community awareness of people on benefit of participation on forest management motivated a lot of people to start getting involved in the management of their forests (Anggraini & Gunawan, 2021).

The results show that the respondent's higher percentage has primary level of education 76% (**Figure 10**). The respondents indicated that they participate in the forest management even though they did not go further with their studies.

The research wanted to understand if education enhances the members to participate in forest management, it showed that 76% did not agree that education can motivated them to participate while as 24% of them recommended that education of a person has a direct impact in ensuring that members participation (**Figure 10**).

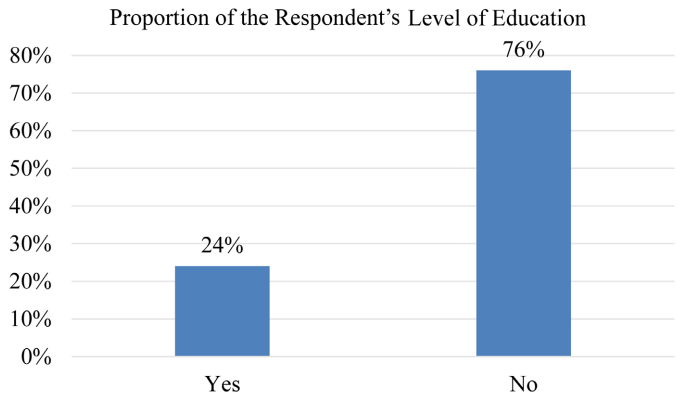

Figure 10. Indicate the proportion of the respondent's level of education.

The model has shown that the two factors economic benefits and community awareness has significant impact in influencing community participation and level of education has no significant impact on community participation (**Table 1**).

Table 1. Logit model for the factors influencing participation in forest management.

Independent Variable	Standardized Coefficient Beta	Standard Error	*p*-Value
Economic benefits	0.036	0.069	0.003
Community awareness	0.033	0.169	0.015
Level of education	0.056	0.095	0.535

The results showed that there is no significant relationship between the level of education and participation in forest management *p*-value = 0.535 ($p > 0.05$) (Table 1). This indicates that education has no significant impact on community participation. The results shows that 83% of the participants in forest management have the primary level of education (Table 1), this implies that despite low level of education a large number of the respondents participate in forest management activities. These result are similar to studies done by (Awuku et al., 2022) who reported that 277 people out of 370 representing 74.9% of the respondents in the study area had low level of education in Ghana. The level of education did not influence community participation in afforestation activities (Awuku et al., 2022).

6. Conclusion and Recommendation

The study has revealed that the two factors economic benefit satisfaction and community awareness have significantly influence on community participation in forest management in the study area. Community awareness has been indicated to be the main factor influencing community participation. This shows that the increase in economic benefits and community awareness will increase influence of community participation in forest management. Level of education was found not to have an impact on community participation in forestry management activities because a large number of the respondents are participating though with little education. However, despite not being significant education has a positive correlation. The challenge which was reported by the community is that there are insufficient beehives in the area as one of the reliable forest-dependent IGA. It was reported that as of now it is proving them with little income.

Following the scenario of low level of education in the study area, training is paramount before and after the commencement of forest management activities. Planners are supposed to involve the youth in forest management activities since the results have shown that the elderly people are the one participating. There is also a need to add on the number of beehives and their capacity, so that beekeeping can become a reliable income-generating activity in the area to benefit a large population

Conflicts of Interest

The authors declare no conflicts of interest.

References

Anggraini, R. I., & Gunawan, B. (2021). Ecotourism Development in National Parks: A New Paradigm of Forest Management in Indonesia. In *E3S Web of Conferences* (Vol. 249, p. 03010). EDP Sciences.

Apipoonyanon, C., Kuwornu, J. K., Szabo, S., & Shrestha, R. P. (2020). Factors Influencing Household Participation in Community Forest Management: Evidence from Udon Thani Province, Thailand. *Journal of Sustainable Forestry, 39,* 184-206. https://doi.org/10.1080/10549811.2019.1632211

Awuku, S. A., Bennadji, A., Muhammad-Sukki, F., & Sellami, N. (2022). Promoting the Solar Industry in Ghana through Effective Public-Private Partnership (PPP): Some Lessons from South Africa and Morocco. *Energies, 15,* Article No. 17. https://doi.org/10.3390/en15010017

Bakala, F., Asfaw, M., & Tadesse, B. (2021). Factors Influencing Household Participation in a Participatory Forest Management Scheme: Bench-Sheko Zone, Southwest Ethiopia. *Journal of Sustainable Forestry,* 1-13. https://doi.org/10.1080/10549811.2020.1867184

Baulenas, E., Baiges, T., Cervera, T., & Pahl-Wostl, C. (2021). How Do Structural and Agent-Based Factors Influence the Effectiveness of Incentive Policies? A Spatially Explicit Agent-Based Model to Optimize Woodland-for-Water PES Policy Design at the Local Level. *Ecology and Society, 26,* 1-6.

Bhandari, K. (2010). Tourism in Nepal: Post-monarchy challenges. *Journal of Tourism and Cultural Change, 8,* 69-83. https://doi.org/10.1080/14766825.2010.491917

Bitange, J., Sirmah, P., & Matonyei, T. (2021). Conservation Activities of Women in Nyangores Forest Station, Mau Conservancy, Kenya. *East African Journal of Forestry and Agroforestry, 3,* 29-39.

Cheţan, M. A., & Dornik, A. (2021). 20 Years of Landscape Dynamics within the World's Largest Multinational Network of Protected Areas. *Journal of Environmental Management, 280,* Article ID: 111712.

Ernawati, N. M., Arjana, I. W. B., & Nadra, N. M. (2021). Forest Supports Living on Earth: Awareness of the Youth at Jembrana Regency Bali Province Indonesia. *International Journal of Green Tourism Research and Applications, 3,* 35-39. https://doi.org/10.31940/ijogtra.v3i1.2388

FAO (Food and Agriculture Organization) (2017). *The Malawi Forestry Act.* Government Press.

Gonzales Tovar, J., Sarmiento Barletti, J. P., Larson, A. M., Barnes, G., & Tucker, C. M. (2021). Can Multistakeholder Forums Empower Indigenous and Local Communities and Promote Forest Conservation? A Comparative Analysis of Territorial Planning in Two Brazilian States with Contrasting Contexts. *Conservation Science and Practice, 3,* e326. https://doi.org/10.1111/csp2.326

Kabir, K. H., Knierim, A., & Chowdhury, A. (2021). No Forest, No Dispute: The Rights-Based Approach to Creating an Enabling Environment for Participatory Forest Management Based on a Case from Madhupur Sal Forest, Bangladesh. *Journal of Environmental Planning and Management, 64,* 22-46. https://doi.org/10.1080/09640568.2020.1744430

Killian, B., & Hyle, M. (2020). Women's Marginalization in Participatory Forest Management: Impacts of Responsibilization in Tanzania. *Forest Policy and Economics, 118,* Article ID: 102252.

Maxwell, P. (2009). *Evaluation of the Performance of Joint Forest Management (JFM) Programme: Case of Dambwa Forest Reserve in Livingstone District, Zambia.*

Mbeche, R., Ateka, J., Herrmann, R., & Grote, U. (2021). Understanding Forest Users' Participation in Participatory Forest Management (PFM): Insights from Mt. Elgon Forest Ecosystem, Kenya. *Forest Policy and Economics, 129,* Article ID: 102507.

McDowell, N. G., Allen, C. D., Anderson-Teixeira, K., Aukema, B. H., Bond-Lamberty, B., Chini, L., & Xu, C. (2020). Pervasive Shifts in Forest Dynamics in a Changing World. *Science, 368,* eaaz9463. https://doi.org/10.1126/science.aaz9463

Nandigama, S. (2020). Performance of Success and Failure in Grassroots Conservation and Development Interventions: Gender Dynamics in Participatory Forest Management in India. *Land Use Policy, 97,* Article ID: 103445.

Njera, D., Chonde, C., Kambewa, D., Kaunda, E., & Kayambazinthu, D. (2016). Local Community Perspective about Challenges Affecting Farmer Organizations. Case of Selected Socioeconomic Characteristics of Members in Fish Farmer Organizations in Central Malawi. *International Journal of Research, 1,* 1-8.

Ofoegbu, C., & Speranza, C. I. (2021). Discourses on Sustainable Forest Management and Their Integration into Climate Policies in South Africa. *International Forestry Review, 23,* 168-181. https://doi.org/10.1505/146554821832952762

Rijal, S., Subedi, M., Chhetri, R., & Joshi, R. (2021). Good Governance Assessment in Community Forest of Nepal. *Journal of Forest and Environmental Science, 37,* 251-259.

Ross, C. W., Hanan, N. P., Prihodko, L., Anchang, J., Ji, W., & Yu, Q. (2021). Woody-Biomass Projections and Drivers of Change in Sub-Saharan Africa. *Nature Climate Change, 11,* 449-455.

Tadesse, S., Woldetsadik, M., & Senbeta, F. (2017). Forest Users' Level of Participation in a Participatory Forest Management Program in Southwestern Ethiopia. *Forest Science and Technology, 13,* 164-173. https://doi.org/10.1080/21580103.2017.1387613

Talukdar, N. R., Choudhury, P., Barbhuiya, R. A., & Singh, B. (2021). Importance of Non-Timber Forest Products (NTFPs) in Rural Livelihood: A Study in Patharia Hills Reserve Forest, northeast India. *Trees, Forests and People, 3,* Article ID: 100042.