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# Management of the Community Forests of Rogho and Boala in Central-West Burkina Faso: Balancing Access to Information and Peasant Participation

## ABSTRACT

In a dual context characterized, on the one hand, by the proliferation of forest areas made possible by initiatives such as "one department, one forest", and on the other hand, by the devolution of the management of these forest areas to local populations through decentralization, it is necessary and opportune to investigate the management of these forest resources. Thus, the objective of this study was to analyze the management of two community forests by examining the access of local residents to information related to these forests and their participation in their management. To this end, quantitative data were collected from 201 households living near these forests. The Likert scale, consisting of four possible options, was used to assess the level of access of local residents to information related to the forests and the extent of their participation in forest management. The results of this analysis revealed respective overall mean scores of 3.59 for information access and 2.89 for participation in management, indicating a high level of information access and a moderate degree of peasant participation in forest management. These farmers should be encouraged to maximize their participation in the management of the forests to which they are adjacent.

*Keywords: Burkina Faso, forest resources, information access, peasant participation*

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## INTRODUCTION

The current economic development is leading to an unprecedented deterioration of our environment (Patocskai, 2011), including natural resources. As a result, the management of natural resources has become a common concern (Zachar, 2019). This management of natural resources, in general, and forest resources, in particular, has evolved over time and across space. In French West Africa, specifically in Burkina Faso (formerly Haute-Volta), before colonization, forest resources were managed by local communities. Forests were thus subject to community management, in which each community member played a specific role in resource protection. During this period, forest resources were considered collective assets (Lompo, 2015). This management approach was replaced by centralized management in 1896 with the arrival of the colonizers. Under this centralized management, the colonial administration took control of resource management, considering itself the sole owner and guardian. Not only did this exclude local communities from managing their „ressource,” but it also led to campaigns of repression against them, as they were seen as potential threats to forest protection (Ouédraogo, 2009, p.1). This was the ultimate purpose of the first forest code in Africa, developed by the colonial administration in 1900, to which the forest resources of the colonies (including present-day Burkina Faso) had to adhere (Bouda, 2008). Indigenous people were only granted the right to collect non-commercial forest products or products of little interest to the forestry administration under this forest code (Ribot, 2001). However, this right could be rendered null if the central government decided to direct industries into the forests where indigenous people resided (Ribot, 1998). Meanwhile, the colonial state held exclusive control over the allocation of permits for the exploitation of high-value commercial products and concessions (Bouda, 2008). In 1935, a second forest code was elaborated by the colonial administration, but there were no significant changes compared to the previous one. The management remained centralized and non-inclusive. In the 1970s, the work of anthropologists exposing the social consequences of the creation and exclusive management of protected areas on local populations undermined this forest management system (Saleh, 2012). This practice was believed to be the cause of multiple conflicts fueled by a sense of resource confiscation by the state (Brou, 2005; Kouassi, 2021). Nguinguiri (1999) previously supported this thesis by highlighting that practices aimed at excluding communities in order to preserve forest resources proved ineffective and were widely condemned. He argued that such practices often led to conflicts and misunderstandings, as they created the impression that the state was confiscating forest resources. Therefore, to achieve the goals of forest ecosystem management, it is necessary to adopt a different perspective. The „participatory model” is presented as an approach that could establish new regulations based on collaboration, information sharing, co-decision-making, and co-management dynamics. As a result, French West African states, particularly Sahelian countries, will rewrite their forest codes, emphasizing the participatory approach.

In Burkina Faso, this dynamic has been manifested, among other things, through the adoption of Law No. 006/97/ADP of January 31, 1997, on the Forest Code. This code was revised in 2011 with the adoption of Law No. 003-2011/AN of April 5, 2011, on the Forest Code in Burkina Faso. This new framework for the management of forest, wildlife, and fisheries resources establishes the essential

principles related to the sustainable preservation and management of natural resources. The objective is to achieve harmony between the necessary protection of resources and the satisfaction of the economic, cultural, and social needs of the population (Article 2). The Code mentions the promotion of participatory and sustainable resource management as a measure associated with the development of the relevant sub-sectors (Article 3). However, the right to information in the field of forestry is a prerequisite for the participatory management advocated by this framework (Patrice & Djédjé, 2013). In a dual context marked, on the one hand, by the proliferation of forest areas made possible by initiatives such as "one department, one forest" (Yanogo et al., 2023; Tiamiyu et al., 2023), and on the other hand, by the devolution of the management of these forest areas to local populations through decentralization (Tiamiyu et al., 2023), it is necessary and opportune to investigate the management of these forest resources. Therefore, the objectives of this study are (i) to examine the access of local populations to information related to the forests they inhabit and (ii) to analyze their participation in forest management. In relation to these objectives, hypotheses have been formulated: (i) local populations are well-informed about forest-related issues and actively participate in their management.

## LITERATURE REVIEW

According to Patrice and Djédjé (2013), public participation, in general, can be defined as a tool aimed at facilitating the involvement or the right to be involved in decision-making processes for those who may be affected by a decision. It can be understood as an instrument to promote the involvement of all stakeholders in the decision-making process. Public participation refers to a process that involves individuals, regardless of their social, demographic, economic, or political characteristics, in decision-making related to interventions that affect or interest them (Pierre et al., 2013). „Public participation can be defined as the involvement of individuals and groups, positively or negatively affected or interested in a proposed intervention (e.g., a project, a program, a plan, a policy) subject to a decision-making process” (Pierre et al., 2006, p.1). According to Ilo (2000) cited by Tardif et al. (2017), public participation can be defined as a mechanism in which individuals or groups of people exchange information, express viewpoints, and define interests that can potentially influence the outcomes of a process.

In the forestry sector, public participation, according to FAO/CEE/OIT 2000, refers to the opportunity for local populations to exchange information, express their individual or collective viewpoints, or influence decisions on specific forest-related issues. Martineau (2013) defines public participation in the field of forests as any process that aims, on the one hand, to directly or indirectly involve various actors and values in collective decisions regarding forest management, and on the other hand, to involve other participating actors beyond traditional managers, such as the state and forest industries.

Public participation remains one of the most effective means of encouraging local populations to engage in forest protection (Patrice & Djédjé, 2013; Magali et al., 2018). Moreover, Principle 10 of the Rio Declaration makes public participation an essential aspect of the sustainable management of environmental issues and, by extension, forest resources (Annex I, p. 4). Thus, several countries

place it at the core of their forest legislation, including Bolivia, Indonesia, Tanzania, the Democratic Republic of Congo, Cameroon, Benin and Burkina Faso, among others. However, public participation cannot be effective without the right to information.

The right to information in the field of forestry is a prerequisite for assessing the quality of community participation in the decision-making process (Patrice & Djédjé, 2013) related to forest management. According to Principle 10 of the Rio Declaration, states must make environmental management information accessible to the relevant public to enable their participation in the decision-making process (Annex I, p. 4). This public participation is based on basic principles of information, consultation, involvement, collaboration, and delegation (Sarno, 2013).

## METHODS

### Study Area

The research work for this study was conducted in two distinct sites located in the Center-West region of Burkina Faso. The first site, called Sourgou, is home to the Rogho community forest, situated between the latitude coordinates of North 12°00'05'' and 12°10'01'', and the longitude coordinates of West 2°16'06'' and 2°19'41''. It is bordered to the north and northwest by the Ramongo municipality, to the east and southeast by the Sabou municipality, to the west by the Tenado municipality, and to the southwest by the Pouni municipality. The second site, named Bieha, hosts the Boala community forest, and is located between the longitude coordinates of West 1°25' and 2°03', and the latitude coordinates of North 10°58' and 11°23'. It shares its northern boundaries with the Cassou and Sapouy municipalities (Ziro province), to the east with the Guiaro and Po municipalities (Nahouri province), to the west with the Léo and To municipalities (Sissili province), and to the south with the Republic of Ghana. These two forests are of savanna type dominated by the shrub layer. The study forests are located in areas with altitudes ranging from 270 to 389 meters (Figure 2).

### Data Collection

The data used in this study were collected from households residing near the two forests under study using a specifically designed questionnaire. The questionnaire was divided into two main sections, namely access to information and participation in forest management. It consisted of six questions related to access to information and eight questions concerning participation in forest management. For questionnaire validation, an exploratory survey was conducted specifically for this purpose. It was through this survey that an open-ended question on the reasons for participating in forest management was introduced. The selection of surveyed households was based on two criteria, proximity to the forest and use of forest resources (Ali et al., 2014), following convenience sampling. Convenience sampling is a non-probability sampling technique where participants are chosen based on their accessibility and proximity to the researcher. While this sampling technique is convenient and allows

for exploring relationships between different phenomena, it is often criticized for not facilitating the generalization of results due to the bias associated with the non-representativeness of the surveyed subjects compared to the total population. To address this bias issue and obtain reliable and accurate results, it was decided to survey a large number of households.

To this end, the formula proposed by Bruno and Jean Pierre (2003) was used for both study sites, as it is suitable for small-sized samples with a 5% margin of error. The formula is as follows:  $n' = N \times n / (N + n)$  Where  $n'$  is the corrected sample,  $N$  is the population size,  $n$  is the sample size, which is the inverse of the square of the error. Thus,  $n = 1/E^2$   $n = 1/0.5^2 = 400$

Preliminary surveys conducted in the study sites revealed the presence of 105 households near the Rogho community forest and 167 households near the Boala community forest. By applying the formula, we obtain: For the Rogho site:  $n' = 105 \times 400 / (105 + 400) = 83.16 \approx 83$  households For the Boala site:  $n' = 167 \times 400 / (167 + 400) = 117.81 \approx 118$  households

The total number of households surveyed is 201 households. 94.53% of these households have agriculture as their main activity. The remaining households are divided between livestock farming and commerce.

Figure 1. Map of the study area

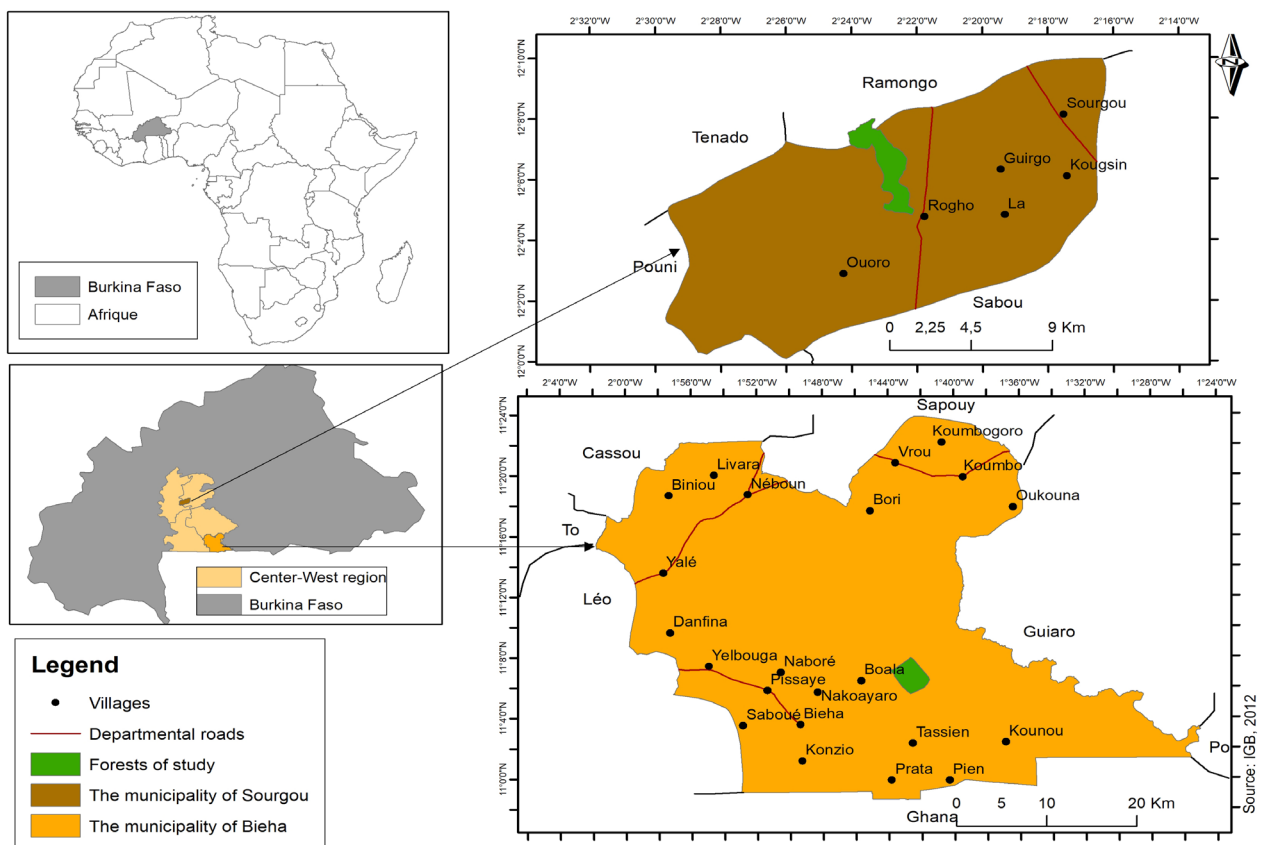


Figure 2. Topography of the forests area and their environment

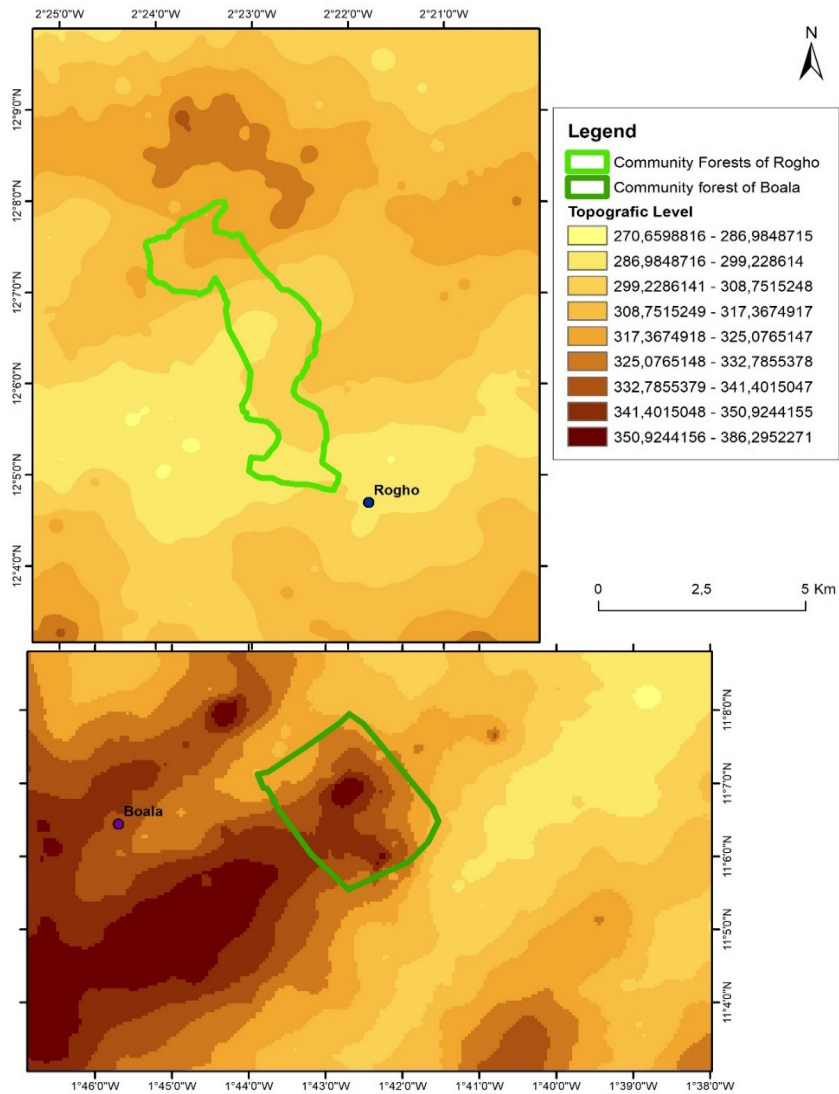
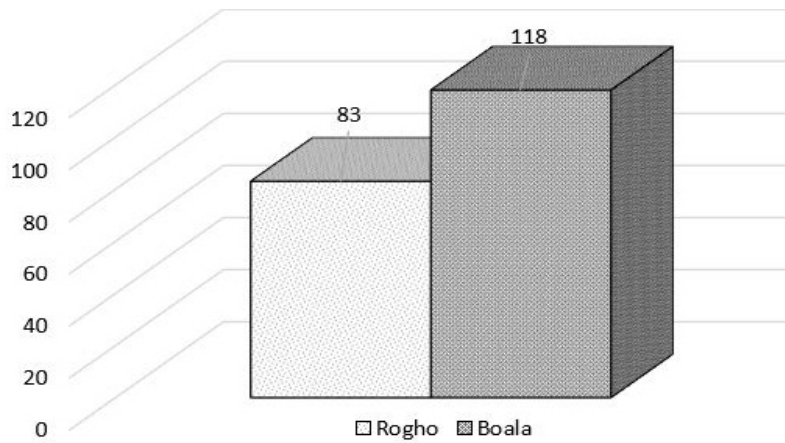


Figure 3. Number of surveyed households per site



Source: Author's work, Tihamiyu K.



## Data processing and analysis

The Likert scale was used to assess the level of access to information and the degree of participation of the local residents in meetings and activities related to the forest. This scale was developed in the 1930s by American psychologist Rensis Likert, after whom it is named. Initially used primarily in psychological and management analyses, this attitude scale was used to gather respondents' preferences. Nowadays, it is increasingly employed in the field of management sciences, particularly in marketing (M. Gadant), and more recently in the field of humanities and social sciences (Yaméogo et al., 2022). For this study, respondents were asked to provide a score on a 4-point Likert scale for questions addressing these two variables (Table 1).

Table 1. Likert Scale developed for this study

Likert Scale	Score 1	Score 2	Score 3	Score 4
Information	Not informed	Rarely informed	Often informed	Always informed
Participation	Does not participate	Participates rarely	Participates often	Always participates

Source: Author's work, Tiamiyu, 2023

The analysis of the gathered information consisted of determining the total scores on the Likert scale, followed by calculating the mean scores. In the next step, the level of information access and degree of participation were assessed by comparing the mean scores (Mean Score) to the interpretation range of the mean score on the Likert scale as defined by M. Anthony et al. (2021): 1.0–2.4 (negative attitude), 2.5–3.4 (neutral attitude), and 3.5–5.0 (positive attitude). By adopting this range (established for a 5-point Likert scale) to the context of this study (a 4-point Likert scale), the interpretation range is as follows: Mean Score € [1.0-2.0] indicates a low level/degree Mean Score € [2.1–3.0] indicates a moderate level/degree Mean Score € [3.1–4.0] indicates a high level/degree

Total scores are determined by summing the products of the frequency of each response option and its corresponding score on the Likert scale. Mean scores are obtained by dividing the total scores by the total number of respondents.

$$\text{Total scores} = \sum (f_i \times \text{Likert scale score})$$

$$\text{Mean score} = \text{Total scores} \div \text{Total number of respondents}$$

## RESULTS

### Access to information

The information related to forests was divided into two categories: information about forest meetings and information about activities benefiting the forest. Residents living near the two forests were surveyed about their access to these two categories of information.

### Access to information about forest meetings and activities

According to the field surveys, 91.5% (or 108 households) of the households in Boala are informed about forest-related meetings, 5.93% (or 7 households) are frequently informed, and 2.54% (or 3 households) are not informed at all. Regarding activities related to the forest, 89.8% (or 106 households) of the respondents are informed, 5.9% (or 7 households) are frequently informed, 1.7% (or 2 households) are rarely informed, and 2.5% (or 3 households) are not informed at all (Table 2).

Table 2. Access to information for residents of Boala Forest

Statement	Score 1	Score 2	Score 3	Score 4	Total Score	Mean Score	Interpretation
Access-MeetingInfo	3	0	7	108	456	<b>3.86</b>	<b>High level</b>
Percentage	2.54%	0%	5.93%	91.5%			
Access-ActivitiesInfo	3	2	7	106	452	<b>3.83</b>	<b>High level</b>
Percentage	2.5%	1.7%	5.9%	89.8%			

Source: Field data analysis, Tihamiyu, 2023

Table 2 shows that the level of access to information about forest meetings and activities for the residents of FCmB is high, with respective mean scores of 3.86 and 3.83. The table also indicates a higher total score for meeting information access compared to activity information access, suggesting that households are more informed about meetings than activities.

For the case of Rogho, 69.9% (58 households) of the respondents are informed about forest meetings, 13.3% (11 households) are frequently informed, and 16.9% (14 households) are not informed at all. Regarding forest activities, 62.7% (52 households) of the respondents are informed, 19.3% (16 households) are frequently informed, 6% (5 households) are rarely informed, and 12% (10 households) are not informed at all about the activities related to this forest (Table 3).

Table 3. Access to information for residents of Rogho forest

Enoncé	Score 1	Score 2	Score 3	Score 4	Total Score	Mean Score	Interpretation
Access-MeetingInfo	14	0	11	58	279	<b>3.36</b>	<b>High level</b>
Percentage	16.9%	0%	13.3%	69.9%			
Access-ActivitiesInfo	10	5	16	52	276	<b>3.32</b>	<b>High level</b>
Percentage	12%	6%	19.3%	62.7%			

Source: Field data analysis, Tihamiyu, 2023

Table 3 reveals a high level of access to information for residents of FCmR regarding forest meetings and activities, with nearly identical mean scores of 3.36 and 3.32, respectively. Furthermore, the table highlights a higher total score for meeting information access compared to activity information access, indicating that households are more informed about meetings than activities.

The analysis of the mean scores of information access for surveyed households reveals a high level of access to information for both meetings and activities. This reflects the effectiveness of the information dissemination mechanism implemented by forest management stakeholders. In fact,



information related to the management of these forests is relayed in areas of high human concentration by all members of the management committee. They also take advantage of large-scale events such as market days and Friday prayer gatherings, specifically in the case of Boala.

### Demographic variables and information access

The surveys indicate that 74.6% of young individuals are informed about forest meetings, 11.11% are frequently informed, 3.17% are rarely informed, and 11.11% are not informed. As for adults, 83.76% are informed about these meetings, 7.69% are frequently informed, 2.56% are rarely informed, and 5.98% are not informed. Regarding the elderly, 75.43% among them are informed about these meetings, and 19.05% are frequently informed. The proportion of elderly individuals who are rarely informed and those who are not informed is the same, accounting for 4.76%. Taking into account the gender of the respondents, 87.14% of women are informed about forest meetings, 13.11% are frequently informed, and 1.43% are not informed. As for men, 75.57% are informed about these meetings, 7.63% are frequently informed, 4.58% are rarely informed, and 12.21% are not informed (Table 4).

Table 4. Household access to information about forest meetings by age group and gender

Variables	Score 1	Score 2	Score 3	Score 4	Total Score	Mean Score	Interpretation
Youth	7	4	21	188	220	<b>3.49</b>	High Level
$f_i$	7	2	7	47			
Adults	7	6	27	392	432	<b>3.69</b>	High Level
$f_i$	7	3	9	98			
Elderly	1	2	12	60	75	<b>3.57</b>	High Level
$f_i$	1	1	4	15			
Women	1	0	24	244	269	<b>3.84</b>	High Level
$f_i$	1	0	8	61			
Men	16	12	30	394	454	<b>3.47</b>	High Level
$f_i$	16	6	10	99			

Source: Field data analysis, Tiamiyu, 2023

Table 4 demonstrates a high level of access to information regarding forest-related meetings for all socio-demographic groups, with mean scores ranging from 3.47 to 3.84. The table indicates that adults have greater access to this information compared to youth and elderly individuals, while women are more informed about these meetings than men.

According to the conducted surveys, 76.19% of youth are informed about forest-related activities, 11.11% are frequently informed, 3.17% are rarely informed, and 9.52% are not informed. As for adults, 82.05% are aware of these activities, 11.11% are frequently informed, 1.71% are rarely informed, and 5.13% are not informed. Among the elderly, 66.67% are informed about these meetings. The proportion of elderly individuals who are frequently and rarely informed about these activities is the same, at 14.27%. The percentage of those who are not informed is 4.76%. Taking gender into account, 82.86% of women are informed about activities related to forests, 12.86% are frequently informed, 2.86% are rarely informed, and 1.43% are not informed. Regarding men, 76.34% are informed about these

activities, 10.69% are frequently informed, 3.82% are rarely informed, and 9.16% are not informed (Table 5).

Table 5. Household access to information on forest-related activities by age group and gender

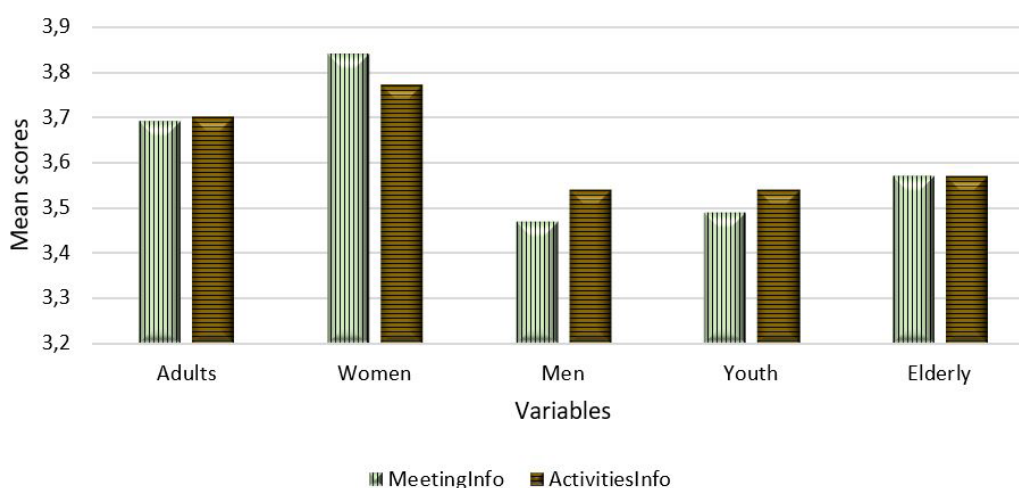
Variables	Score 1	Score 2	Score 3	Score 4	Total Score	Mean Score	Interpretation
Youth	6	4	21	192	223	<b>3.54</b>	High Level
$f_i$	6	2	7	48			
Adults	6	4	39	384	433	<b>3.7</b>	High Level
$f_i$	6	2	13	96			
Elderly	1	6	12	56	75	<b>3.57</b>	High Level
$f_i$	1	3	3	14			
Women	1	4	27	232	264	<b>3.77</b>	High Level
$f_i$	1	2	9	58			
Men	12	10	42	400	464	<b>3.54</b>	High Level
$f_i$	12	5	14	100			

Source: Field data analysis, Tiamiyu, 2023

Similar to Table 4, Table 5 reveals a high level of access to information on forest-related activities for all socio-demographic groups, with mean scores ranging from 3.54 to 3.77. The table indicates that adults have greater access to this information compared to youth and elderly individuals, while women are more informed about these activities than men.

When comparing the mean scores of access to information on meetings with those of access to information on activities, a slight difference is observed between the two. Figure 4 compares the mean scores of access to information on meetings and activities across socio-demographic variables.

Figure 4. Mean scores of access to information on meetings and activities based on socio-demographic variables



Source: Field data analysis, Tiamiyu, 2023

This figure highlights a higher level of access to information on activities compared to access to information on meetings for adults, youth, and men. This indicates that these socio-demographic categories are more informed about forest-related activities than meetings.

### Level of education and access to information

The surveys revealed that 82.3% of the non-literate individuals are informed about forest-related meetings, with 9.5% being informed often, 5.03% being informed rarely, and 8.2% not being informed. Regarding those with a primary education level, 86.7% are made aware of these meetings, with 3.3% being informed often, 0% being informed rarely, and 10% not being informed. As for those with a post-primary education level, 75% (4) of them are informed about these meetings, while 25% are not informed. The proportion of those with a secondary education level who are informed about these meetings is equal to those who are often and rarely informed, amounting to 33.33%. Those with a higher education level are often informed at 100% (Table 6).

Table 6. Household access to information about forest-related meetings by level of education

Variables	Score 1	Score 2	Score 3	Score 4	ScTot	ScMoy	Interpretation
Non-literate	13	10	45	520	588	<b>3.6</b>	<b>High Level</b>
$f_i$	13	5	15	130			
Primary	3	0	3	104	110	<b>3.66</b>	<b>High Level</b>
$f_i$	3	0	1	26			
Post-primary	1	0	0	12	13	<b>3.25</b>	<b>High Level</b>
$f_i$	1	0	0	3			
Secondary	0	2	3	4	9	<b>3</b>	<b>Average level</b>
$f_i$	0	1	1	1			
Higher	0	0	3	0	3	<b>3</b>	<b>Average level</b>
$f_i$	0	0	1	0			

Source: Field data analysis, Tiamiyu, 2023

Table 6 shows a high level of information access for the non-literate individuals, those with a primary education level, and those with a post-primary education level. However, the level of information access for those with a secondary education level and a higher education level is average. This table indicates that individuals with a primary education level have greater access to this information compared to others.

Regarding access to information about forest-related activities, the surveys revealed that 79.8% of the non-literate individuals are informed, with 10.4% being informed often, 3.7% being informed rarely, and 6.1% not being informed. As for those with a primary education level, 80% are made aware of these activities, with 13.3% being informed often, 0% being informed rarely, and 6.7% not being informed. In terms of those with a post-primary education level, 75% of them are informed about these activities, while 25% are not informed. The proportion of those with a secondary education level who are informed about these activities is equal to those who are often and rarely informed, amounting to 33.33%. Those with a higher education level are often informed at 100% (Table 7).

Table 7. Household access to information about forest-related activities by level of education

Variables	Score 1	Score 2	Score 3	Score 4	ScTot	ScMoy	Interpretation
Non-literate	10	12	51	520	593	<b>3.64</b>	<b>High Level</b>
$f_i$	10	6	17	130			
Primary	2	0	12	96	110	<b>3.66</b>	<b>High Level</b>
$f_i$	2	0	4	24			
Post-primary	1	0	0	12	13	<b>3.25</b>	<b>High Level</b>
$f_i$	1	0	0	3			
Secondary	0	2	3	4	9	<b>3</b>	<b>Average level</b>
$f_i$	0	1	1	1			
Higher	0	0	3	0	3	<b>3</b>	<b>Average level</b>
$f_i$	0	0	1	0			

Source: Field data analysis, Tihamiyu, 2023

Similar to Table 6, Table 7 reveals a high level of information access for the non-literate individuals, those with a primary education level, and those with a post-primary education level. However, the level of information access for those with a secondary education level and a higher education level is average. This table also shows that individuals with a primary education level have greater access to this information compared to others.

## Peasant participation in forest management

### Participation in meetings

The surveys reveal that 36.4% (43) of the residents of FCmB participate in meetings related to their forest, with 42.4% (50) frequently participating, 9.3% (11) participating infrequently, and 11.9% (14) not participating at all. As for the residents of FCmR, 32.5% (27) of them attend meetings related to their forest, with 26.5% (22) frequently participating, 19.3% (16) participating infrequently, and 21.7% (18) not attending at all (Table 8).

Table 8. Household participation in meetings related to forests by village

Villages	Score 1	Score 2	Score 3	Score 4	Total Score	Mean Score	Interpretation
Boala	14	11	50	43	358	<b>3.03</b>	<b>Average degree</b>
Percentages	11.9%	9.3%	42.4%	36.4%			
Rogho	18	16	22	27	224	<b>2.70</b>	<b>Average degree</b>
Percentages	21.7%	19.3%	26.5%	32.5%			

Source: Field data analysis, Tihamiyu, 2023

According to Table 8, the degree of household participation in forest-related meetings is moderate for both villages, with average scores of 3.03 for Boala and 2.70 for Rogho. These scores indicate a higher level of engagement in meetings by residents of FCmB compared to those of FCmR.

### *Demographic Variables and Respondents' Participation in Meetings*

The surveys show that 33.33% (21 households) of young respondents participate in forest-related meetings, 39.68% (25 households) attend them frequently, 7.94% (5 households) attend them rarely, and 19.05% (12 households) do not participate. As for adults, 38.46% (45 households) of them participate, 39.32% (46 households) attend frequently. The proportion of adults who participate rarely in meetings is the same as those who do not participate, at 11.11% (13 households). Regarding the elderly, 19.05% (4 households) always attend meetings, 4.76% (1 household) attend frequently, 42.86% (9 households) attend rarely, and 33.33% (7 households) do not attend at all. In terms of gender, the proportion of women who participate and those who participate frequently is 41.43% each (29 households). Those who participate rarely account for 12.86% (9 households), and 4.29% (3 households) do not participate. As for men, the respective proportions of those who participate frequently and often in forest-related meetings are 31.3% (41 households) and 32.83% (43 households). The proportions of those who participate rarely and those who do not attend at all are 13.74% (18 households) and 22.14% (29 households), respectively. (Table 9).

Table 9. Household participation in forest-related meetings by age group and gender

Variables	Score 1	Score 2	Score 3	Score 4	Total Score	Mean Score	Interpretation
Youth	12	5	25	21	181	<b>2.87</b>	<b>Average degree</b>
Percentages	27.07%	7.94%	39.68%	33.33%			
Adults	13	13	46	45	370	<b>3.16</b>	<b>Hight degree</b>
Percentages	11.11%	11.11%	39.32%	38.46%			
Elderly	7	9	1	4	44	<b>2.1</b>	<b>Average degree</b>
Percentages	33.33%	42.86%	4.76%	19.05%			
Women	3	9	29	29	224	<b>3.2</b>	<b>Hight degree</b>
Percentages	41.43%	41.43%	12.86%	4.29%			
Men	29	18	43	41	358	<b>2.73</b>	<b>Average degree</b>
Percentages	31.3%	32.83%	13.74%	22.14%			

Source: Field Data Processing, Tiamiyu, 2023

Table 9 reveals a high level of participation by adults in forest-related meetings, with an average score of 3.16. On the other hand, the level of participation by young people and the elderly in these meetings is moderate, with respective average scores of 2.87 and 2.1. The table also shows a higher level of participation by women in forest-related meetings compared to men, whose level of participation remains moderate.

### *Level of education and participation in forest-related meetings*

The surveys revealed that 35.6% of the non-literate individuals participate in forest-related meetings, with 35% participating often, 15.3% participating rarely, and 14.1% not participating. As for those with a primary education level, 36.7% participate in these meetings, with 40% participating often, 0% participating rarely, and 23.3% not participating. Regarding those with a post-primary education level, the proportion of those who participate and those who do not participate is equal to 25%.

Meanwhile, the proportion of those who participate often is 50%. The proportion of those with a secondary education level who participate in these meetings is equal to those who participate often and rarely, and it is 33.33%. Those with a higher education level often participate at 100% (Table 10).

Table 10. Household participation in forest-related meetings by level of education

Variables	Score 1	Score 2	Score 3	Score 4	ScTot	ScMoy	Interpretation
Non-literate	23	50	171	232	476	<b>2.92</b>	<b>Average degree</b>
$f_i$	23	25	57	58			
Primary	7	0	36	44	87	<b>2.9</b>	<b>Average degree</b>
$f_i$	7	0	12	11			
Post-primary	1	0	4	4	9	<b>2.25</b>	<b>Average degree</b>
$f_i$	1	0	2	1			
Secondary	0	2	3	4	9	<b>3</b>	<b>Average degree</b>
$f_i$	0	1	1	1			
Higher	0	0	3	0	3	<b>3</b>	<b>Average degree</b>
$f_i$	0	0	1	0			

Source: Field Data Processing, Tiamiyu, 2023

This table demonstrates a moderate level of participation in forest-related meetings across all levels of education, with average scores ranging from 2.25 to 3. However, those with a secondary and higher education level have a higher average score compared to other levels, indicating more active participation in forest-related meetings among the more educated individuals compared to the less educated ones.

### Participation in Activities

The survey results indicate that 43.2% of residents in the FCmB actively participate in activities related to their forest, with 34.7% participating frequently, 6.8% participating infrequently, and 15.3% not participating at all. These figures correspond to 51, 41, 8, and 18 households, respectively. As for residents in the FCmR, 28.9% of them actively engage in activities related to their forest, with 28.9% participating frequently, 24.1% participating infrequently, and 18.1% not participating at all. This corresponds to 24, 24, 20, and 15 households, respectively (Table 11).

Table 11. Household participation in forest-related activities by village

Enoncé	Score 1	Score 2	Score 3	Score 4	Total Score	Mean Score	Interpretation
Boala	18	8	41	51	361	<b>3.06</b>	<b>Average degree</b>
Taux	15.3%	6.8%	34.7%	43.2%			
Rogho	15	20	24	24	223	<b>2.68</b>	<b>Average degree</b>
Taux	18.1%	24.1%	28.9%	28.9%			

Source: Field data analysis, Tiamiyu, 2023



Table 11 reveals that the level of household participation in forest-related activities is moderate for both villages, with average scores of 3.06 for Boala and 2.68 for Rogho. These scores indicate a higher level of engagement in activities by residents of FCmB compared to those of FCmR.

*Demographic variables and respondents' participation in activities*

The surveys show that 36.5% of young individuals participate in forest-related activities, with 39.7% participating frequently, 11.1% participating occasionally, and 12.7% not participating at all. These percentages correspond to 23, 25, 7, and 8 young individuals, respectively. Regarding adults, 43.6% of them participate frequently in these activities, while 30.8% participate occasionally, corresponding to 51 and 36 adults, respectively. The proportion of adults who participate rarely and those who do not participate at all is 14.5% and 11.1%, respectively. These percentages correspond to 17 and 13 adults, respectively. As for the elderly, 4.8% of them always participate in activities, 19% participate frequently, 19% participate occasionally, and 57.1% do not participate at all. These percentages correspond to 1, 4, 4, and 12 elderly individuals, respectively. Taking into account the gender of the respondents, the proportion of women who participate, and those who participate frequently, is 45.7% and 34.3% respectively, equivalent to 32 and 24 women. Those who participate occasionally account for 12.9%, while the proportion of women who do not participate is 7.1%, corresponding to 9 and 5 women respectively. In terms of men, the respective proportions of those who participate frequently in forest-related activities and those who participate occasionally are 32.8% and 31.3%. The proportions of men who participate rarely and those who do not participate at all are 14.5% and 21.4% respectively. These percentages correspond to 43, 41, 19, and 28 men (Table 12).

Table 12. Household participation in forest-related activities by age group and gender

Variables	Score 1	Score 2	Score 3	Score 4	Total Score	Mean Score	Interpretation
Youth	8	7	25	23	189	<b>3.00</b>	<b>Average degree</b>
Percentages	12.7%	11.1%	39.7%	36.5%			
Adults	13	17	36	51	359	<b>3.07</b>	<b>Average degree</b>
Percentages	11.1%	14.5%	30.8%	43.6%			
Elderly	12	4	4	1	36	<b>1.71</b>	<b>Low degree</b>
Percentages	57.71%	19%	19%	4.8%			
Women	5	9	24	32	223	<b>3.19</b>	<b>Hight degree</b>
Percentages	7.1%	12.9%	34.3%	45.7%			
Men	28	19	41	43	361	<b>2.76</b>	<b>Average degree</b>
Percentages	21.4%	14.5%	31.3%	32.8%			

Source: Field data analysis, Tiamiyu, 2023

Table 12 indicates a moderate level of participation in forest-related activities for both young individuals and adults, with average scores of 3.00 and 3.07 respectively. However, the level of participation for elderly individuals is low, with an average score of 1.71. This table also reveals a high level of participation by women in forest-related activities, with a score of 3.19, compared to men whose participation level remains moderate with an average score of 2.76.

*Level of education and participation in forest-related activities*

The surveys revealed that 38% of non-literate individuals participate in forest-related activities, with 30.1% participating often, 15.3% participating rarely, and 16.6% not participating. As for those with a primary education level, 40% participate in these activities, with 40% participating often, 3.3% participating rarely, and 16.7% not participating. Regarding those with a post-primary education level, the proportion of those who participate and those who do not participate is equal at 25%. Meanwhile, the proportion of those who participate often is 50%. Among those with a secondary education level, 66.7% frequently participate in these activities, while 33.33% participate rarely. Those with a higher education level participate rarely at 100% in these activities (Table 13).

Table 13. Household participation in forest-related activities by level of education

Variables	Score 1	Score 2	Score 3	Score 4	ScTot	ScMoy	Interpretation
Non-literate	27	50	147	248	472	<b>2.9</b>	<b>Average degree</b>
$f_i$	27	25	49	62			
Primary	5	2	36	48	91	<b>3.03</b>	<b>Average degree</b>
$f_i$	5	1	12	12			
Post-primary	1	0	4	4	9	<b>2.25</b>	<b>Average degree</b>
$f_i$	1	0	2	1			
Secondary	0	2	6	0	8	<b>2.66</b>	<b>Average degree</b>
$f_i$	0	1	2	0			
Higher	0	2	0	0	2	<b>2</b>	<b>Low degree</b>
$f_i$	0	1	0	0			

Source: Field data analysis, Tiamiyu, 2023

This table shows a moderate level of participation in forest-related activities among all levels of education, except for those with a higher education level, who have a low level of participation. However, individuals with a primary education level and the non-literate individuals have higher average scores compared to other levels, indicating a stronger participation in forest-related activities among the less educated individuals compared to the more educated ones.

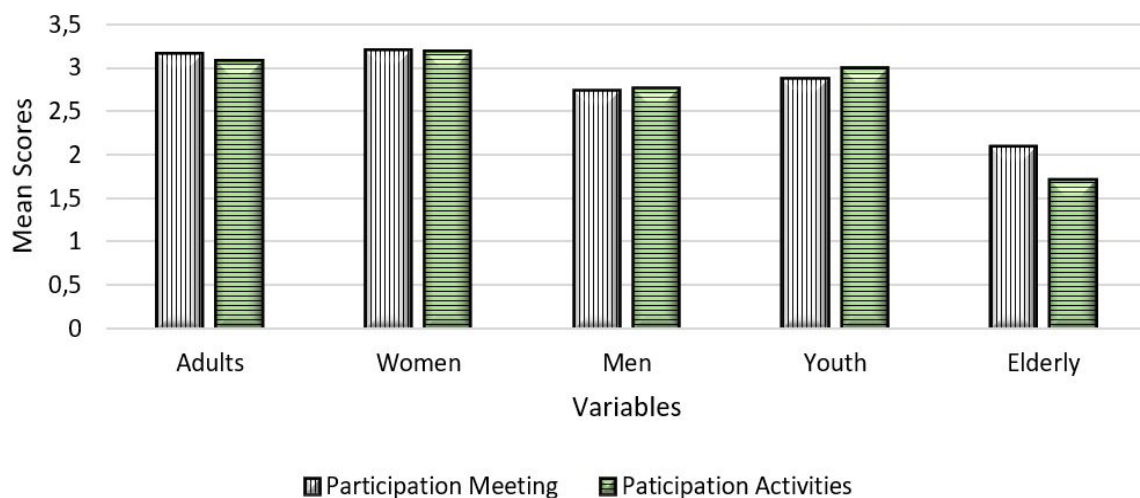
By comparing the different average scores based on the respondents' level of education, it is evident that less educated individuals are more informed about forest-related meetings and activities compared to the more educated ones. This can be attributed to the fact that the less educated individuals may have more direct access to information about forest-related meetings and activities through their local social networks and community interactions. In the current context, information about forest-related meetings and activities is primarily transmitted orally. Therefore, the less educated individuals have more direct access to these channels of oral knowledge transmission, which makes them more informed about forest-related meetings and activities. Additionally, it is noteworthy that the more educated individuals participate more in discussions compared to the less educated ones. This can be justified by the fact that the more educated individuals have a better understanding of the issues related to forestry and actively engage in proposing enriching ideas for more effective management.

Their level of education enables them to grasp more complex concepts and challenges, making them more inclined to actively participate in discussions.

Furthermore, the less educated individuals participate more in activities compared to the more educated ones. Economic dependency can explain this phenomenon. The less educated individuals, mainly composed of farmers and livestock breeders, rely more on natural resources, including forest resources, for their livelihoods. This can motivate them to participate more in forest-related activities. Local knowledge and practical experiences can also be contributing factors. The less educated individuals in the study area have practical knowledge of forests based on their experience and daily interaction with the forest environment. This makes them more inclined to actively participate in forest-related activities.

When comparing the average scores of participation in meetings with those of participation in activities, there is a slight difference in the engagement of households depending on whether it is meetings or activities. Figure 5 compares the average scores of participation in meetings with those of participation in activities.

Figure 5. Average scores of participation in meetings and activities according to sociodemographic variables.



Source: Field data analysis, Tiamiyu, 2023

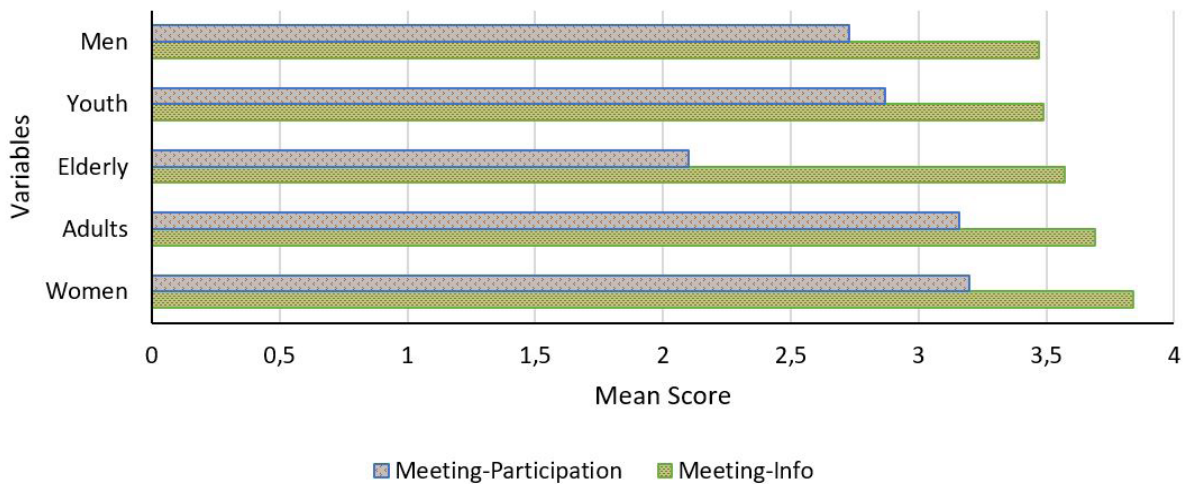
This figure highlights a strong engagement of men and young individuals in activities compared to meetings. However, when it comes to women, adults, and elderly individuals, engagement is more prominent during meetings than activities. Several factors explain the high rate of women’s participation in forest management. First, traditional roles and knowledge. In the cultural contexts of the study area, women have traditionally played active roles in forest-related activities, such as gathering fuelwood, collecting non-timber forest products, and practicing agroforestry. Their knowledge and experience in these areas contribute to their active involvement in forest management. Indeed, Zorlu and Luttrell (2006) argue that women would indeed be astute managers of forests due to their proximity and frequent interaction with this ecosystem. Additionally, this reality facilitates their access to information

about activities and meetings related to the studied forests, which contributes to increasing their level of participation in the management of these forests.

### Access to information and peasant participation in forest management

By comparing the average scores of households’ access to information on meetings and activities related to the forests they reside in, with their participation in these meetings and activities, a mismatch between the residents’ access to information and their participation in forest management becomes evident (Figure 6–7).

Figure 6. Average scores of access to information on meetings and participation in meetings according to sociodemographic variables

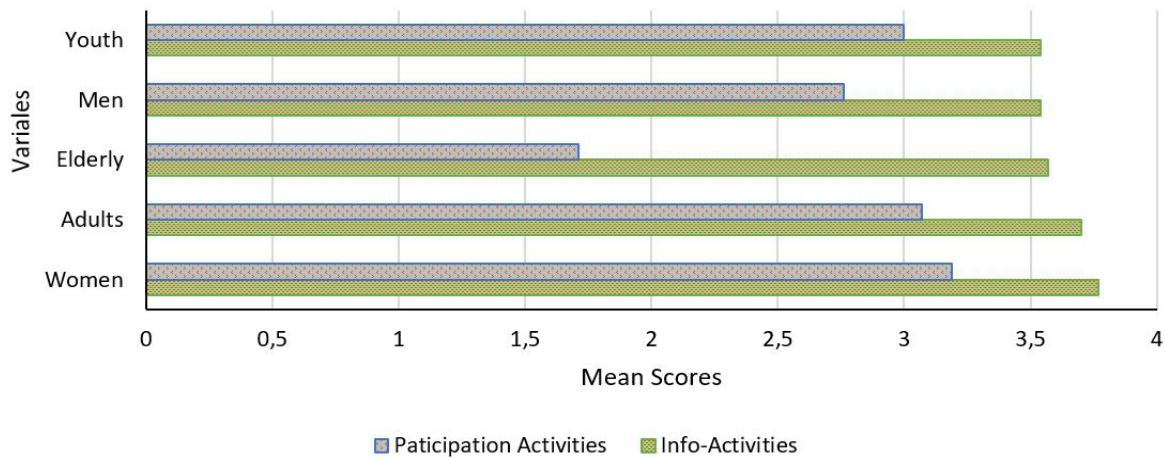


Source: Field data analysis, Tihamiyu, 2023

Figure 6 demonstrates that the more informed the various sociodemographic categories are about meetings, the more they participate in them, except for elderly individuals. Although the elderly are informed about the meetings, their participation is lower compared to others. Furthermore, the figure reveals a higher level of access to information among forest residents regarding meetings than the degree of their participation in these meetings.

Just like Figure 6, the current figure reveals a connection between the access of forest residents to information about forest-related activities and their participation in these activities. The more they are informed about the activities, the more they engage in them. However, the figure highlights an exception regarding elderly individuals who participate less in these activities, even though they are informed.

Figure 7. Average scores of access to information on activities and participation in activities according to sociodemographic variables.



Source: Field data analysis, Tiamiyu, 2023

All the figures have demonstrated a relatively low level of participation of elderly individuals in meetings and activities related to the forests compared to their level of access to information about these meetings and activities. The high level of their information access despite their level of participation in meetings and activities takes into account the respect given to the elderly in African culture. In Africa, in general, and in the Nuni and Mossi customs in particular, elderly individuals are regarded as wise members of society, and their blessings are considered necessary for the success of any activity. The relatively low level of their participation in meetings and activities could be attributed to the burden of age. Physically less robust and susceptible to health issues, these elderly individuals may be unable to actively take part in these meetings and activities, especially those that require a high level of dynamism.

### **Participation in forest management: what are the determinants?**

The surveys have revealed that several factors contribute to the participation or non-participation of households in meetings and activities related to the forests they reside in. Among these factors, five of them have varying influences on household participation in forest management: the sense of responsibility of households in the protection and conservation of forest areas, the burden of age, delayed information, lack of information, and other commitments.

#### **Responsibility of households in the protection and conservation of forest areas: a driving force for peasant participation in forest management**

Households demonstrate a strong sense of responsibility when it comes to the protection of forest areas, which motivates them to actively engage in meetings and activities related to the forests. As a result, 84.5% and 90.71% of the participants, respectively, are mobilized for these events. Although some households face obstacles that hinder their participation in forest management, their sense

of responsibility leads them to take part. Among the 95 households participating in forest-related meetings, 3.16% are affected by the burden of age, 32.63% receive delayed information, and 62.11% have other commitments. For activities, 83 households participate, of which 6.02% are hindered by the burden of age, 31.33% receive delayed information, and 62.65% have other commitments. The obstacles to household participation in forest-related meetings and activities include the burden of age, delayed information, lack of information, and other commitments.

### **The burden of age, delayed information, lack of information, and other commitments: factors limiting peasant participation in forest management**

According to the conducted surveys, it was found that 29.4% (59 households) and 30.4% (61 households) of households do not participate in forest-related meetings and activities, respectively. Among the households that do not participate in meetings, 22.03% (13 households) are affected by the burden of age, of which 76.92% (10 respondents) are aged 60 or above and consider their health condition to be unsuitable for prolonged participation in meetings. The other respondents (aged between 20 and 21 years) feel too young to join the adults and the elderly. Furthermore, 20.34% (12 households) are not informed about the meetings, 25.42% (15 households) receive delayed information, and 32.2% (19 households) have other commitments preventing their participation. Among those who miss meetings due to delayed information, 80% (12 households) receive the information after the meeting has taken place, and 20% (3 households) receive it on the day before.

The proportion of households not participating in forest-related activities is 30.4% (61 households), among which 31.15% (19) are individuals aged 60 and above, who state a lack of physical strength and energy to participate. On the other hand, 16.39% (10) of households are not informed about these activities, 31.15% (19) receive delayed information, and 21.31% (13) are occupied with other activities. Among those who receive delayed information, 47.37% (9) receive it after the activity, while 31.58% (6) receive it the day before, and 21.05% (4) on the same day. Furthermore, some households are occupied with agricultural work such as harvesting cowpeas for 7 households, harvesting corn and peanuts for 11 households, harvesting sesame for 6 households, and plowing and sowing for 11 households, which prevents their participation in forest activities.

## **CONCLUSIONS**

This study highlights a high level of access of local residents to information related to forests, with an overall average score of 3.59 on a four-option Likert scale. It also reveals a moderate level of participation of these residents in the management of their forests. By comparing the average scores of information access to participation in forest management, this study has shown that the more households are informed about the meetings and activities related to the forests they reside in, the more they participate. Therefore, it is necessary to further improve the information dissemination system regarding forests to achieve a high degree of household participation in the management of the forest resources they reside in.



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