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Understanding income inequality in rural southwest Nigeria: A decomposition analysis of population subgroups and household welfare

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Abstract

The study looked at how income inequality affects household welfare in forest-dependent communities. The research was broken into income differences in various population subgroups, including age, gender, education, marital status, household size, credit access, asset ownership, land acquisition, and forest dependence. Data were collected from households in Ogun, Osun and Ondo states, which have high concentrations of forests. The findings showed that income inequality was more pronounced within certain subgroups, such as those defined by gender, age, marital status, education level and household size, rather than between them. The key driver of inequality within these subgroups included limited access to credit, assets and land acquisition. The study also found significant disparities between different forest-dependent income classes, highlighting the need to support low-and moderate-income forest households. The research recommended policies that target income generation within specific population subgroups, promote access to credit and productive assets, and support livelihood diversification to reduce inequality and improve household welfare.

Keywords: Gini coefficient, income inequality, forest-dependent households, decomposition analysis, household welfare

INTRODUCTION

The widening gap in income inequality is a global concern, impacting everyone, posing a challenge that requires immediate attention worldwide due to its far-reaching consequences on political and economic stability (Anandan, 2023). Economists and policy experts have long been concerned of income inequality, recognizing it as a significant obstacle to national development (Spyromitros & Panagiotidis, 2022). Equality, similarly to the fairness, is an important value in most societies.

Despite being Africa's largest economy, Nigeria faces a stark contrast: over 40% of its population lives in poverty, while a small group

of high-income earners holds a disproportionate amount of wealth, which continues to grow, and is constantly increasing wealth (Adedigba et al., 2025). This stark contrast highlights the country's significant income inequality challenge.

This indicates significant income inequality in Nigeria. Such disparities can erode democratic institutions, fuel social unrest, and lead to policies that benefit a select few at the expense of the broader population (Krokeyi & Obayori, 2020). Given that a significant portion of Nigeria's population lives in rural areas, addressing rural income disparities is crucial to reducing overall income inequality. High income inequality hinders economic growth and

development, creating an unfavourable environment for prosperity (World Bank, 2020).

Forests play a vital and crucial role in improving the living standard of poor households by augmenting their income (Bolaji et al., 2021; Adedigba et al., 2025). The forest ecosystem, by virtue of its location and the many services it provides, is highly dependent upon for productive inputs and consumption goods, daily sustenance and livelihood (Ahmad & Nosiru, 2020; Ahmed et al., 2021). However, the contribution of forest products to household total income depends largely on the availability of the resources and access to markets, as well as such socio-economic variables as wealth, gender and migration status (Krokeyi & Obayori, 2020).

Nigeria's population is over 140 million (National Population Commission [NPC], 2010), with over 70% living in rural areas, directly or indirectly depending on the forest (Anokwuru et al., 2024). Nigeria's rural communities are characterized by poverty, hunger, lack of amenities and small land holdings (Mukaila et al., 2022; Ahmed et al., 2024). There is a long-standing concern about persistently low welfare in the forest areas. The prospect of more than 300 million people around the world depending substantially on forest resources for daily subsistence and survival cannot be a matter of policy indifference (Singh et al., 2022; Mishra, 2024).

The current forest management practices have failed to harness the full benefit of Nigeria's forest estate. Poor management practices have compromised the ability of the forestry sector to contribute optimally to the overall welfare of the Nigerian populace (Mukaila et al., 2022). This challenge led to a high rate of deforestation and forest degradation in the country. The valuable forest resources are frequently being overexploited and endangered by various economic and political stakeholders, among which are elites, forest officials and tree takers (Musa et al., 2024). The access of poor people to forest resources became limited since

they did not have an adequate share of forest benefits. Forest resources, especially timber products, which are more capital-intensive, are controlled by the rich. Literature revealed that both the poor and the rich are forest dependent; the level of dependence is determined by differential socio-economic characteristics of the two groups (Cuni-Sanchez et al., 2019). Income inequality from different sources was decomposed into subgroups such as gender, age, education and forest-dependent groups.

This study aimed to examine the effect of income distribution from different sources on the total household income distribution of socioeconomic subgroups in forest areas in southwest Nigeria. Household income was decomposed into gender, age, education status, marital status, household size, formal credit facility and forest income classes, asset ownership, land acquisition income distribution and inequality contribution within and between the subgroups were analyzed, subsequently affecting their welfare. Few studies have examined quantitative relationships among forest income, welfare and income inequality among forest dwellers (Obayelu & Edewor, 2022; Mukaila et al., 2022). Most studies on household income distribution and inequality control to improve welfare have ignored forest income. This study, therefore, examined rural household socioeconomic characteristics, total household income and the contribution of the subgroup population to rural income inequality.

MATERIALS AND METHODS

Study Area

The study was conducted in the forest areas in rural southwestern Nigeria. Southwestern Nigeria represents a geographical area spreading between latitudes 20 to the North and 60 to the south. It is marked by longitude 40 to the west and 60 to the east. It has a land area of 114,271km² representing 12% of the country's land mass and comprises six states, namely Oyo, Osun, Ondo, Ekiti, Ogun and

Lagos. It has a total population of 35.2 million (Central Intelligence Agency, CIA, 2012; Tokede & Ahmed, 2021) and is predominantly agrarian, with more than 96% of the population belonging to the Yoruba tribe. The zone is characterized by a typically equatorial climate with distinct dry and wet seasons. The main growing season lasts nine months, with two peaks in July and September. Rainfall ranges between 2600mm in the coastal areas of Lagos and Ogun states to nearly 1200 mm in the northern areas of Ondo, Ekiti, Oyo and Osun states. The average zone rainfall is 1480 mm, with a mean monthly temperature range of 24 °C during the rainy season and 35 °C during the dry season (Gbadebo et al., 2022).

Method of data collection

The study was carried out in selected forest reserve areas, in southwestern Nigeria with the highest concentration of forest. These are Omo and Olokemeji forest reserves in Ogun State; Akure (Aponmu) and Idanre forest reserves in Ondo State with Shasha and Ago-Owu forest reserves in Osun State. Primary data were generated with a structured questionnaire administered on heads of households living within and around the forests. The questionnaires were on income, consumption and expenditure (ICE) patterns of respondents, demographic characteristics and other household information relevant to the study.

Sampling procedure and sample size

A four-stage sampling procedure was used. The first stage was the purposive selection of Ogun, Osun and Ondo States with the highest concentration density of forest in southwestern Nigeria. The second stage involved the random selection of two forest reserves in each state. These are Omo and Olokemeji forest reserves in Ogun State; Akure (Aponmu) and Idanre forest reserves in Ondo State, with Shasha and Ago-Owu forest reserves in Osun State. This was necessary to get a diversity of forest resources and forest activities. The third stage was the

random sampling of villages in and around the reserves proportionate to size.

Twelve (12) villages were randomly selected from Omo Forest Reserve; three (3) from Olokemeji Forest Reserve; three (3) from Akure Forest Reserve; two (2) from Idanre Forest Reserve; three (3) from Shasha, and two (2) from Ago-Owu Forest Reserve, making up 25 villages altogether. The fourth stage was the random selection of household heads proportionate to size. The information on names and the number of households was supplied by community leaders. Of the 450 household heads proposed for the study, 430 were valid and used for the analysis: 213 from Omo Forest Reserve, 59 from Olokemeji Forest Reserve, 37 from Shasha Forest Reserve, 32 from Ago-Owu Forest Reserve, 57 from Idanre Forest Reserve and 32 from Akure Forest Reserve.

$$S = \frac{n}{N} \times q = 25 \tag{1}$$

where: S = number of villages to be selected, n = total number of villages in a particular forest reserve (FR), N = total number of villages around the six (6) FR selected, q = Number of villages to be sampled (25)

$$S = \frac{n}{N} \times q = 450 \tag{2}$$

where: S = number of respondents to be selected, n = total number of villages around one FR, N = total number of villages around the six (6) FR selected, q = sample size (total number of respondents needed for the work, that is, 450

Model specification

Yitzhaki (1983) introduced a generalization of the Gini coefficient, called the extended Gini coefficient. The new index accommodates differing aversions to inequality. Empirical estimation of the extended index has been limited to the covariance formula suggested by Lerman & Yitzhaki (1989). Different methods have been developed to decompose inequality (Ma et al., 2022).

Inequality is decomposed by sub-groups, income sources, and causal factors and by other socio-demographic characteristics. Inequality can also be decomposed at different levels of aggregation. At the national level, it can be decomposed into within-subgroup and between-subgroup components. In a similar way, at the international level, it can be decomposed into within-country and between-country components. Some measures, such as the Generalized Entropy class, can be decomposed into within-between inequalities:

$$I_{total} = I_{within} + I_{between}$$

Atkinson class of inequality can also be decomposed into within - between groups but the sum total is not equal to total in equality. The *Gini* is only decomposable if the sub-group of the population does not overlap in the vector of income. *Gini* decompositions by population subgroups aim at explaining income inequality in terms of the income of different population subgroups.

Decomposition by subgroups allows for the impact of the contribution to overall inequality within and between different subgroups of the population to be assessed. In this case, total inequality in the distribution can be separated into a component of inequality between the chosen groups and the remaining within-group inequality. This type of decomposition can only be conducted for one variable at a time. Using this technique, total inequality is decomposed by population subgroups, and the Generalized Entropy class can be expressed as the sum of within-group inequality and between-group inequalities. Within-group inequality is defined as,

$$I_w = \sum_{j=1}^k w_j I_{\alpha,j}^{GE} \quad (3)$$

where: k = number of subgroups,
 $I_{\alpha,j}^{GE}$ = GE index computed within group j

$w_j = \frac{n_j}{n} \left(\frac{\mu_j}{\mu}\right)^\alpha$ α total number of villages around the six (6) FR selected

with: n_j = population size of subgroup,
 μ_j = mean income of subgroup

In practical terms, the inequality of income within each sub-group is calculated, and then these are summed using weights of population share, relative incomes, or a combination of these two, depending on the particular measure used. Between-group inequality is measured by assigning the mean income of each partition.

RESULTS AND DISCUSSION

Socioeconomic characteristics of rural household heads

The study describes the socioeconomic characteristics of the rural households living in forest areas in southwestern Nigeria. The distribution of the respondents gender revealed that the proportion of male headed households was higher than that of female headed households. The male headed household constituted 92% while female headed household were 7.90% (Figure 1). This corroborates with (Firat & Mehmet, 2023) study in Southern lowland Ethiopia, where 90.7% of the household heads were males and 9.3% were females. Majority of the household heads were married, constituting 89.5%, about 5.6% were single, 3.5% were widowed and 1.4% were divorced. The distribution of household heads according to age shows that 33.0% of the respondents were in the age group between 46 and 55 years of age and 22.8% were equal and above 56 years old, only 3.0% were less/equal to 25 years. The average household head age in the study area was 47.63 years \pm 11.65, indicating that household heads were in the economically active age and can perform forest activities quite easily.

About 19.5% had no formal education, 35.3% and 34.9% had primary and secondary education respectively, while 10.2 % had tertiary education. Education in agricultural production will enhance the ability to make accurate decisions on the management of the

farm. The years of residency distribution shows that 32.80% of the household heads had been resident in the study area between 1 and 10 years, 31.90 % had been there for between 11 and 20 years, as a result of migration or seeking livelihoods, while about 35.30% had been there for more than 21 years. Either due to the fact that they were born there or by inheritance. The average year of residence in the area was 19.89 ± 14.86 years, which is in line with Garekae et al. (2017) while working on the socioeconomic factors influencing household forest dependency in Botswana, where the average years of residency were 40.26 ± 20.73 .

The distribution of primary occupation in the study area shows that farming was the major occupation of the household heads (65.30%). These households specialized in planting food and cash crops. About 17.90% took forest resources extraction as their primary occupation, 5.6% were artisanal workers, 2.80% were only wage/salary, and trading was just 8.40%. It could be seen that few people took to artisanal, wage/salary and trading as primary occupations in the rural areas.

More people engaged in forest activities as their secondary occupation (40.70%). This confirms the fact that forest resources serve as economic safety nets during periods of economic hardship, drought, seasonal food shortfalls, off-farming season and a source of regular subsistence (Azeez, 2017). About 28.10% practised agriculture as their secondary occupation, 21.60% were into trading of agricultural and non-agricultural products, while artisanal activity (8.60%) and wage/salary (0.90%) were very low (Figure 1).

Figure 2 indicated that 38.1% acquired the land by inheritance, 19.30% rented the farmland with cash crops such as cocoa, palm trees, kolanut, bitter cola, and crop plants such as oranges, plantains and bananas. About 12.3% leased the farmland, and 21.4% acquired the land by purchase, agroforestry system, planting on degraded land and open lands around the forest. The average farm size was 2.4 ± 3.57 hectares. It shows land holdings in subsistence agriculture. Farmers with more than 10 hectares were just 2.79%.

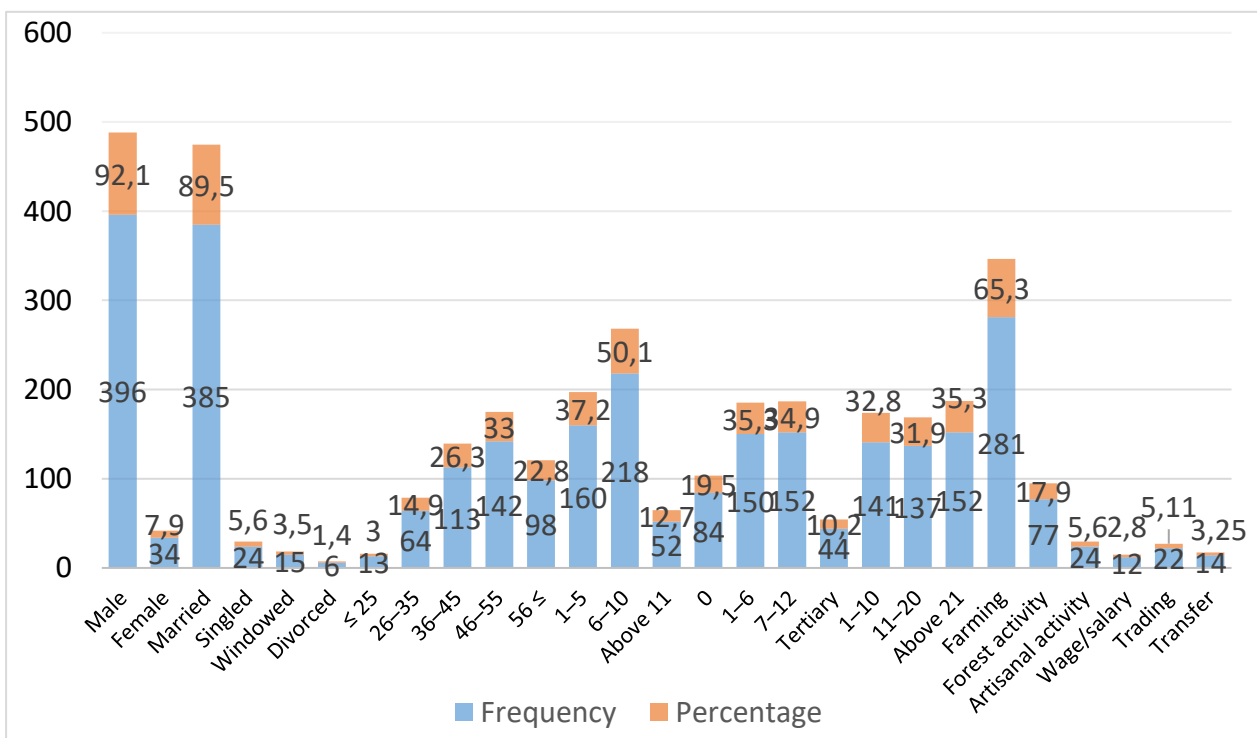


Figure 1. Socio-economic characteristics of the household heads in southwestern Nigeria

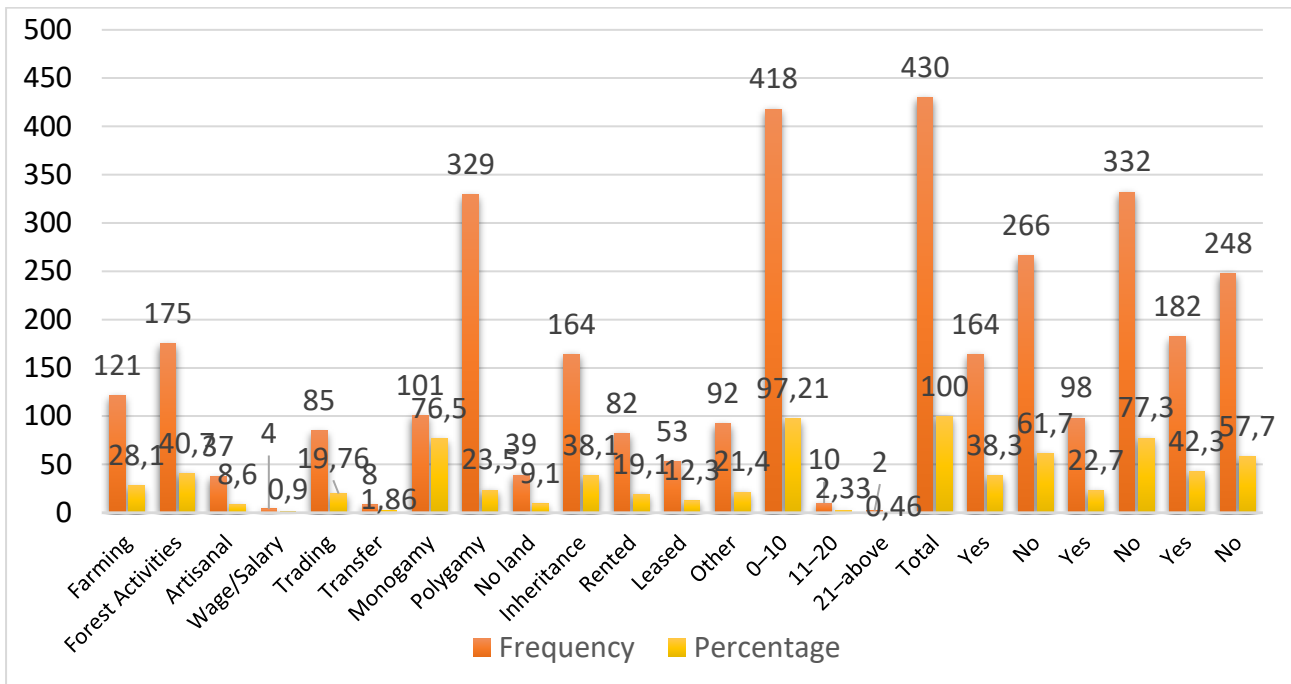


Figure 2. Additional socio-economic characteristics of rural household head in southwestern Nigeria

Some of the people have converted the forest land for the planting of cash crops such as cocoa, palms and kolanut because there is a limitation of access to forest trees. The distribution of household heads based on being a member of an association/village group shows that 38.30% belonged to a group/association, while 61.70% did not join any group. Membership of a group in the rural areas helps people to work together, financially supporting each other, sharing labour, harvesting forest resources, hunting at night, and fighting their cause at the local, state and federal level. Furthermore, about 22.70 % of the household heads have access to formal credit, while 42.30% accessed informal credit. This implies that having high access to credit will make them diversify, finding alternative sources of income and not depending on forest resources alone.

Decomposition of income inequality into population subgroups

Income inequality from different sources were decomposed into subgroups such as gender, age education and forest dependent groups using the *Gini* decomposition. It is to

assess whether the presence of the income of a subgroup increases or decreases overall income inequality invariably affects household welfare. The aim of the analysis is to verify the extent to which inequality in different subpopulations contributes to the overall income inequality and welfare in forest areas of southwestern Nigeria and to what extent their members form distinct segments or strata.

To provide the decomposition of the *Gini* index, the population of households was partitioned into several socio-economic subgroups. This will examine the variation in income within and between the groups, and the overlap, which is the residual, as the case may be. Decomposability of inequality measures requires a consistent relation between overall inequality and its parts. More specifically, when dealing with decomposability, differences between within inequality (w) and between inequalities (b) should be established. The within inequality element captures the inequality due to the variability of income within each group, while the between inequality captures the inequality due to the variability of income across different groups

Income inequality decomposition by gender

Table 1 shows inequality decomposition by gender. The within-group inequality component accounted for 46.24% of the total inequality. This explained the inequality due to the variability of income within the groups, males and females. This implies that the inequality within the group was a greater problem than the inequality experienced between the groups, which was 4.58%. Male-headed households had an income share (96.68%) and a population share (92.09%) higher than those of their female counterparts. The inequality index for males was 0.52, while for females it was 0.39. The greater within-group inequality among male-headed households indicates that men engage in a wider range of income-generating activities, from high-value timber extraction to subsistence farming. Female-headed households, with fewer opportunities for lucrative forest activities, contribute less to overall income but remain

economically vulnerable. This suggests that gendered access to forest resources and labour markets is a key driver of income disparity.

Income inequality decomposition by age

The inequality decomposition by age (Table 2) shows that the within-group inequality component accounted for 13.23% of total inequality (52.47%) within various age groups. The inequality between age subgroups contributed 8.78% of the total income inequality. Income variation is most evident within middle-aged household heads, who are in their prime working years and can pursue diverse income opportunities. Younger groups often lack land or capital, while older groups may be less active physically, limiting their earnings. The overlap across age brackets reflects shared dependence on forest resources, but the concentration of income among middle-aged households underscores their economic dominance.

Table 1. Income inequality decomposition by gender

Group	Gini Index	Population share	Income share	Absolute contribution	Relative Contribution
Male	0.5182	0.9209	0.9668	0.4614	0.8793
Female	0.3880	0.0791	0.0332	0.0010	0.0019
Inequality within subgroup	–	–	–	0.4624	0.8812
Inequality between subgroup	–	–	–	0.0458	0.0873
Overlapping	–	–	–	0.0165	0.0315
Total Inequality	–	–	1.0000	0.5247	100.00

Source: data analysis, 2024

Table 2. Income inequality decomposition by age

Household Head Age Groups	Gini index	Population share	Income share	Absolute contribution	Relative Contribution
Less 25	0.3973	0.0302	0.0270	0.0003	0.0006
26–35	0.6118	0.1482	0.1507	0.0137	0.0261
36–45	0.5610	0.2628	0.2410	0.0355	0.0677
46–55	0.5008	0.3256	0.3942	0.0643	0.1225
Above 55	0.4246	0.2326	0.1871	0.0185	0.0352
Inequality within subgroup	–	–	–	0.1323	25.22
Inequality between subgroup	–	–	–	0.0878	16.72
Overlapping	–	–	–	0.3046	58.06
Total Inequality	–	–	–	0.5247	100.00

Source: data analysis, 2024

Income inequality decomposition by educational status

Education is one of the most important social and economic foundations in Nigeria. Differences in educational achievements imply differences in the ability to earn income and, consequently, disparities in expenditure. Inequality within the group accounted for 15.67% of income inequality (Table 3). Inequality between levels of education attained contributed 4.85% of the income inequality in the sample. Primary education had the highest population share and income share of 35% and 39% respectively, with the highest concentration index of 0.55. Households with primary education levels contributed most to inequality, reflecting their predominance in rural communities and their limited ability to access high-paying opportunities outside farming or forest use. More educated individuals are likely to migrate to urban centres, leaving lower-educated groups to compete for scarce local resources. This pattern highlights how educational attainment shapes both livelihood options and income distribution in forest-dependent areas.

Inequality decomposition by forest dependent income classes

Table 4 presents inequality decomposition by forest income and shows that the between forest income inequality group accounted for

36.66% of the total inequality of 0.5247, which implies that there was high inequality between the forest income classes: low, medium and high forest classes. The sharp differences between low-, moderate-, and high-income forest users suggest that certain forest activities, such as timber harvesting or charcoal production, are far more profitable than gathering non-timber products. Limited access to equipment, capital, or permits constrains poorer households to low-yield activities, reinforcing economic stratification among forest dwellers.

Income inequality decomposition by marital status

From the inequality decomposition by marital status (Table 5), the within-group inequality component accounted for 57.85% of the variation in total income inequality. The variation in income between marital status subgroups accounted for 4.35% of the income inequality. Married household heads dominate income contributions due to their larger family networks, which provide more labour and opportunities for income diversification (Firat & Mehmet, 2023). Single, widowed, or divorced individuals may lack similar support systems, limiting their participation in profitable forest activities. The results suggest that family structure influences economic resilience and income generation.

Table 3. Income inequality decomposition by education

Group	Gini Index	Population share	Income share	Absolute contribution	Relative Contribution
No schooling	0.5114	0.2070	0.1899	0.0201	0.0383
Primary	0.5454	0.3465	0.3905	0.0738	0.1406
Secondary	0.5221	0.3442	0.3275	0.0538	0.1121
Tertiary	0.4195	0.1023	0.0922	0.0040	0.0075
Inequality Within the educational Group	–	–	–	0.1567	0.2986
Inequality Between the Educational Group	–	–	–	0.0485	0.0925
Overlapping	–	–	–	0.3195	0.6089
Total Inequality	–	–	–	0.5247	100.00

Source: Data Analysis 2016

Table 4. Inequality decomposition by forest dependent income classes

Group	Gini Index	Population share	Income share	Absolute contribution	Relative Contribution
Low income	0.2565	0.3012	0.0433	0.0103	0.0196
Mid income	0.0121	0.1694	0.0863	0.0013	0.0025
High income	0.1672	0.5294	0.8704	0.1466	0.2704
Inequality Within the forest dependent Class	–	–	–	0.1582	30.14
Inequality Between the forest dependent Class	–	–	–	0.3666	69.86
Overlap	–	–	–	0.0000	0.0000
Total Inequality	–	–	–	0.5247	100.00

Source: data analysis, 2024

Table 5. Income inequality decomposition by marital status

Sub Group	Inequality Index	Population Share	Absolute Contribution	Relative Contribution
Married	0.6770	0.5521	0.3360	0.5405
Singled	0.5183	0.3081	0.1597	0.2587
Widowed	0.6043	0.1137	0.0770	0.0397
Divorced	0.3141	0.0261	0.0082	0.0132
Inequality Within	–	–	0.5785	0.9371
Inequality Between	–	–	0.0435	0.0706
Overlap	–	–	0.0000	0.0000
Total equality	–	–	0.6173	1.0000

Source: data analysis, 2024

Income inequality decomposition by household size

Table 6 presents income inequality decomposition by household size, and shows that income variation within the household size groups accounted for 58.93 of percentage inequality among the households. While variation in income between the groups accounted for 3.94% of total inequality. The subgroup of household size between 6 and 10 had the highest inequality index (0.62) and the highest population share (62%). Thus, larger households generate more income overall because they can deploy more labour across farming, forest extraction, and off-farm work. However, the unequal distribution of income among them suggests that household size alone does not guarantee prosperity; management of resources and access to opportunities are equally important. Smaller households face

different constraints, such as a limited workforce and higher vulnerability to shocks.

Income inequality decomposition by formal credit

Table 7 presents income inequality decomposition by access to credit, and shows that income variation within the household group that had access to credit accounted for 61.01% of total income inequality. While variation in income between the groups accounted for 0.72% of total income inequality. This implies that policy makers should look inward to within income variation to reduce inequality. The subgroup of households with credit facilities had the higher inequality index (0.61) and lower population share (22%). This showed that few households had access to credit and could be involved in other entrepreneurships.

Table 6. Income inequality decomposition by household size

Sub group	Inequality Index	Population Share	Absolute contribution	Relative Contribution
1–5	0.5782	0.2607	0.1507	0.2442
6–10	0.6167	0.6161	0.3800	0.6156
Above 11	0.4169	0.1232	0.0593	0.09547
Within	–	–	0.5893	0.9547
Between	–	–	0.0314	0.0509
Overlap	–	–	0.0000	0.0000
Total inequality	–	–	0.6176	1.0000

Source: data analysis, 2024

Table 7. Income inequality decomposition by formal credit

Group	Inequality Index	Population share	Absolute contribution	Relative Contribution
Ye	0.6107	0.2275	0.1389	0.2250
No	0.6098	0.7725	0.4711	0.7632
Within	–	–	0.6101	0.9883
Between	–	–	0.0072	0.0116
Overlap	–	–	0.0000	0.0000
Total	–	–	0.6173	1.0000

Source: data analysis, 2024

Accessibility to formal credit could help in business diversification, finding alternative sources of income and not depending on forest resources alone (Chama et al., 2023). The positive relationship between credit access and inequality suggests that wealthier households obtain formal loans more easily, using them to diversify income sources or invest in profitable ventures. Poorer households, excluded from formal credit systems, remain dependent on low-return forest activities, widening income gaps. This underscores the importance of inclusive financial services.

Income inequality decomposition by asset ownership

Table 8 presents income inequality decomposition by asset ownership, and shows that income variation within the household group that had some assets accounted for 59.07% of total inequality. The variation in income between the groups accounted for 0.24% of total inequality. The subgroup of households with assets had the higher inequality index (0.56) and even though the population

share is very small (0.09%). Households with productive assets such as chainsaws, tractors, or transport vehicles can engage in more profitable activities like timber felling or bulk trading. Asset-poor households are confined to less rewarding tasks, which increases income disparities. Hence, policies that promote equitable access to productive assets could help balance income opportunities.

Income inequality decomposition by land acquisition

Table 9 presents income inequality decomposition by land acquisition, and shows that income variation within the household that acquired land through various means accounted for 57.48% inequality. While variation in income between the groups accounted for 2.79% of total inequality. Overall, inherited landholders benefit from stable, productive farmland, while renters and those without land must rely on short-term or less productive arrangements. Those without land may turn to risky or unsustainable forest exploitation to supplement their livelihoods. This pattern

reveals how secure land tenure underpins rural income stability and inequality dynamics.

Income inequality decomposition by member of village group

Table 10 presents income inequality decomposition by being a member of a village group/ association, and shows that income variation within the household belonging to an association accounted for 57.48% of total inequality. While variation in income between the groups accounted for 2.79% of total

inequality. The subgroup of households that did not belong to any group/association had an inequality index of 0.52 but a higher population share of 63%. This indicated that most of the households participating in village groups or associations often share labour, information, and financial support, enabling better access to forest resources or markets. Non-members lack these networks, limiting their economic opportunities. Strengthening local associations could therefore help reduce inequality and improve collective welfare.

Table 8. Income inequality decomposition by asset ownership

Group	Inequality index	Population share	Absolute contribution	Relative contribution
Yes	0.5625	0.0900	0.0507	0.8205
No	0.6278	0.8602	0.5400	0.8749
Inequality Within	–	–	0.5907	0.9569
Inequality Between	–	–	0.0024	0.0039
Overlap	–	–	0.0000	0.0392
Total inequality	–	–	0.6173	1.0000

Source: data analysis, 2024

Table 9. Income inequality decomposition by land acquisition

Group	Inequality Index	Population share	Absolute contribution	Relative contribution
No land	0.5091	0.0900	0.0458	0.0743
Inherited	0.6478	0.3839	0.2487	0.4028
Rented	0.4180	0.1564	0.0654	0.1059
Leased	0.5265	0.1232	0.0649	0.1051
Other	0.7035	0.2132	0.1500	0.2430
Inequality Within	–	–	0.5748	0.9311
Inequality Between	–	–	0.0279	0.0454
Overlap	–	–	0.0000	0.0235
Total equality	–	–	0.6170	1.0000

Source: data analysis, 2024

Table 10. Income inequality decomposition by member of village group

Group	Inequality Index	Population	Absolute contribution	Relative contribution
Yes	0.5258	0.6277	0.3302	0.5349
No	0.7570	0.3720	0.2816	0.4562
Within	–	–	0.5748	0.9311
Between	–	–	0.0279	0.0454
Overlap	–	–	0.0000	0.0235
Total inequality	–	–	0.6170	1.0000

Source: data analysis, 2024

CONCLUSIONS

The empirical study discovered that the majority of household heads were males and married, in their economic active age and can perform forest activities quite easily. Most of the respondents had primary education which could enhance ability to make accurate decisions on the management of the farm. The years of residency distribution showed that most of the household heads had been resident in the study areas for over a decade. Income Inequality decomposition into population subgroups such as gender, age education and forest dependent was analysed using the Generalized Gini decomposition. The study found that inequality was found more pronounced mostly within subgroups of population in gender, age, marital status, education, household size, credit access, association membership, land acquisition and household size. This implies that policy that would focus more on within the subgroups would be promulgated, that is, policy that will favour income generation within each subgroups should be encouraged. But there was pronounced income variation or disparity between the subgroup of forest dependent income classes. This implied that policy would be made to focus more on between the low, moderate and high forest income classes to reduce inequality. To address these imbalances and strengthen household welfare, policies should go beyond broad economic reforms and focus on targeted interventions: (1) **Improve access to productive assets:** Facilitate equitable land distribution, secure tenure rights, and access to essential tools or equipment that enable rural households to engage in higher-value economic activities. (2) **Expand affordable credit programs:** Provide inclusive financial services that reach low-income households, ensuring that credit is not restricted to wealthier groups. This would enable diversification of income sources and reduce reliance on low-return forest activities. (3) **Support education and vocational training:**

Strengthen rural education systems and offer vocational programs tailored to forest-based livelihoods, empowering households to adopt sustainable income-generating practices and improve long-term welfare. (4) **Promote inclusive forest management policies:** Develop participatory forest governance structures that involve local communities, particularly low-income forest users, to ensure equitable access to forest resources and benefits. These targeted measures will not only reduce income disparities but also enhance the sustainability of forest-based livelihoods and improve the overall welfare of rural households.

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