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The Effects of Livelihood Assets and Livelihood Strategies on the Welfare Level of Community Forestry Farmers in Alam Lestari, West Lombok

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Abstract: This study aims to analyze the relationship between livelihood strategies and the level of household welfare among farmers in The Alam Lestari Community Forestry. A total of 93 respondents were purposively selected and collected through questionnaires, interviews, and observations. Descriptive analysis was employed to depict the variation in livelihood assets and strategies, while the relationship between variables was examined using Spearman's Rank Correlation. The results reveal that livelihood strategies are primarily dominated by intensification and diversification, with migration not being a common strategy. Physical capital and social capital are the most significant assets supporting the diversity of strategy, while human capital and financial capital are relatively limited. Household welfare is moderate, with social indicators being the lowest component. Correlation tests show a positive and significant relationship between livelihood strategies and welfare ($r = 0.407$; $p < 0.01$), as well as a substantial relationship between livelihood assets and the variation in livelihood strategies. These findings emphasize that strengthening livelihood assets, particularly the physical and social aspects, plays a crucial role in fostering more adaptive livelihood strategies, which, in turn, contribute to improved household welfare among Community Forestry Farmers, and to the sustainability of community-based forest resource management.

Keywords: Community forestry; Household welfare; Livelihood strategies

Introduction

Indonesia is one of the countries with abundant natural resources, including the forestry sector with a forest area of approximately 125.5 million hectares (Forestry Statistics 2024). Forests play a strategic role in providing environmental services, preserving biodiversity, and as a source of livelihood for surrounding communities. To promote equitable access and community involvement in forest management, the government has developed a Social Forestry program through various schemes, including Community Forestry. The scheme aims to provide local communities with legal access to manage forests sustainably, thereby improving their socioeconomic welfare.

The Community Forestry (CF) plays an important role in promoting the optimization of forest resources through various productive activities such as agroforestry, utilization of Non-Timber Forest Products (NTFPs), and environmental services. Research by Wiyono et al. (2020) shows that granting management access through the CF scheme can increase income, create employment, and strengthen communities' capacity and skills to manage forest resources. Thus, legal access granted through CF not only supports

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productive forest utilization but also strengthens community livelihoods and contributes to sustainable welfare improvement.

The Sustainable Livelihood Framework (SLF) developed Scoones (1998) emphasizes that household livelihoods are influenced by the ability to manage five types of capital: natural, human, physical, social, and financial. The combination of access and the ability to manage these assets determines the livelihood strategies chosen by households to survive and improve their welfare(Ellis, 2000). According to Dharmawan (2007), *livelihood asset* household livelihood assets are diverse because households cannot meet their needs from a single source of income. The diversity of assets owned will influence the livelihood strategies implemented; the more assets owned, the more diverse the strategies chosen, while limited assets encourage households to implement survival strategies (Ayu et al. 2022).

The Alam Lestari Community Forestry in West Lombok Regency is an interesting Social Forestry implementation to study due to its relatively good management performance. This is supported by the findings of Ananda et al. (2023) which state that the Alam Lestari Community Forestry evaluation received a success score of 75%, with social aspects in the good category and ecological and economic aspects in the moderate category. However, farmer welfare remains dominated by the moderate category, and land access inequality persists, so management effectiveness is not yet fully optimal. This Community Forestry obtained a Community Forest Utilization Permit under Decree No.5341/MENLHK-PSKL/PKPS/PSL.0/2018, covering a total area of ±830 hectares. The community has developed agroforestry patterns and utilizes various non-timber forest products, including aren, candlenut, durian, rambutan, cocoa, porang, taro, and avocado, as well as providing environmental services through Timponan Waterfall ecotourism. The diversity of these commodities indicates income diversification across the on-farm, off-farm, and non-farm sectors, which is expected to contribute positively to household income.

However, several studies show that limited financial capital, savings, and access to capital are serious obstacles for communities living near forests in optimizing their livelihood strategies (Kurniawan et al. 2022). Variations in asset ownership between households affect their ability to develop adaptive and productive livelihood strategies which ultimately impact their level of welfare. Household welfare is measured using indicators from the Central Statistics Agency, which include income levels, expenditure, access to education, access to health care, and housing conditions.

Based on this background, this study aims to analyze the relationship between livelihood strategies and the household welfare level of community forestry farming househodls in the Alam Lestari. This analysis is expected to provide an understanding of the variations in livelihood assets, the livelihood strategies chosen, and their impact on household welfare as well as provide stakeholders with input for formulating more effective policies and community empowerment interventions to support sustainable community-based forest management.

Method

This research was conducted in July 2025 in the Alam Lestari Community Forestry area, located in Batu Mekar Village, Lingsar District, West Lombok Regency. This location was chosen purposefully based on the availability of data and information. A map of the Alam Lestari Community Forestry research location is presented in Figure 1.

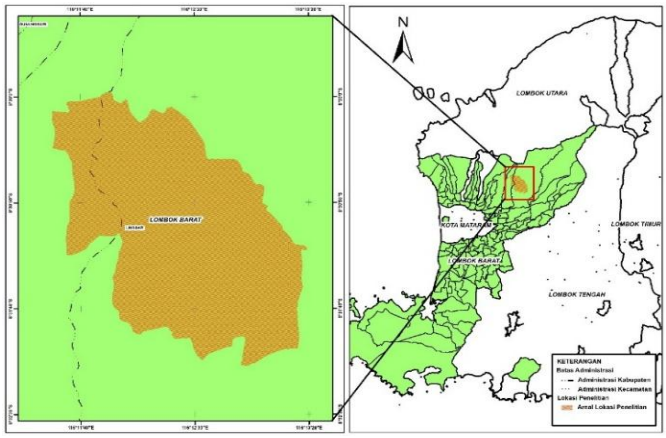

Figure 1. Research Map of Alam Lestari Community Forestry (Source: Primary Data Processed in 2025)

The study used a quantitative approach supported by qualitative data to analyze the relationship between livelihood strategies and the welfare level of farming households. The study population consisted of 1,279 households that were members of the Alam Lestari Community Forestry. The sample size was determined using the Slovin formula with a 10% margin of error, resulting in 93 samples of households. The respondents were selected purposively with the criteria that they were active members of the Community Forestry group, having managed land for at least five years. In addition, snowball sampling was used to determine key informants for in-depth interviews to obtain additional relevant information.

The data consists of primary data collected through Likert-scale questionnaires, structured interviews, and field observations, as well as secondary

data from academic literature and other official sources. The research measurement variables focused on three main aspects: livelihood assets, livelihood strategies, and welfare levels. Livelihood assets were identified into five components according to the Sustainable Livelihood Framework (SLF): natural, physical, financial, human, and social capital. These were categorized as low, medium, or high based on total indicator scores.

Livelihood strategies are measured by the frequency and types of strategies implemented by households, including intensification, extensification, diversification, and migration. The categories of low, medium, and high are determined based on the number of livelihood strategies implemented. The level of welfare is measured using seven indicators from the Central Statistics Agency (BPS 2023) that cover population, education, health, expenditure, housing conditions, poverty, and social conditions. Welfare values are then classified into three categories: low, medium, or high, based on their total scores

A descriptive analysis was conducted to describe variations in livelihood assets, livelihood strategies, and welfare. Furthermore, the relationship among the three variables was analyzed using Spearman's rank correlation test with a significance level of 1% ($\alpha = 0.01$), and the relationship was considered significant if the p-value was < 0.01. The analysis was performed using Microsoft Excel and IBM SPSS. The results were interpreted to explain the relationships among livelihood assets, livelihood strategies, and farmers' welfare in the Alam Lestari Community Forestry.

Result and Discussion

Livelihood Asset of household Community Forestry farmers

Livelihood asset analysis is important for understanding the socioeconomic conditions of farming households in the context of *Community Forestry*. According to Scoones (1998), there are five main types of capital that influence livelihood strategies, namely natural capital, physical capital, financial capital, human capital, and social capital. Natural capital includes land availability, while physical capital includes productive and non-productive assets; financial capital relates to asset ownership, savings, and loans. Next, human capital links to education and skills, while social capital relates to networks, trust, and norms. The diversity of these types of capital can determine a household's ability to choose livelihood strategies to meet its needs and improve its welfare. The livelihood assets of Alam Lestary Community Forestry farmers are presented in Table 1.

Table 1. The livelihood assets of Alam Lestari Community Forestry Farmers

Pentagonal Asset		
Livelihood Assets	Kategories	Score
Natural Capital	Moderate	2.07
Physical Capital	Moderate	1.9
Financial Capital	Low	1.47
Human Capital	Low	1.42
Social Capital	High	2.72

Table 1 shows that social capital are relatively high levels compared to other types of capital, confirming the importance role of groups in supporting community livelihoods. This finding shows that the strength of social networks, trust and norms is the main factor supporting the limitation of other capital in the livelihood system of community forest farmers. On the other hand, human capital and financial capital are lower, which indicates limitations in education, skills, workforce participation among family members, and access to savings and financing. Scientifically, this condition suggests structural vulnerabilities that could limit farming households' adaptive capacity to respond to economic pressures and environmental changes. Meanwhile, natural and physical capitals are in the moderate category, reflecting farmers' continued strong dependence on land and forest resources. However, the availability of production facilities and infrastructure is not yet optimal to support sustainable increases in productivity. This condition aligns with the findings of Wulandari & Inoue (2018) who state that the balance among natural resource utilization, community capacity, and institutional support largely determines the success of community-based forest management.

The variation in the control over these five capitals indicates analysis needs for each component of livelihood assets to understand their contribution to supporting community livelihoods. The scientific implications of these findings confirm that imbalances between livelihood assets can affect the effectiveness of livelihood strategies and the sustainability of farmer household welfare, despite relatively strong social support. A component that plays a fundamental role is natural capital, which has become the primary resource for agricultural activities and the utilization of forest resources by Community Forestry household farmers. Natural capital is one of the main components of the livelihood assets of Community Forestry household farmers. In this study, natural capital is measured based on land tenure, both inside and outside Community Forestry. The number and percentage of natural capital tenure by Community Forestry farmers are presented in Table 2.

Table 2. The Number and Percentage of Natural Capital Control Levels of Community Forestry Farmers

Community Forestry (CF) Land		
CF Land Ownership (ha)	Numbers (n)	Percentage (%)
<0.50	5	5.38
0.50-1.24	72	77.42
>1.14	16	17.20
Total	93	100.00
Non-Community Forestry (CF) Land		
Non-CF Land Ownership (ha)	Numbers (n)	Percentage (%)
<0.32	85	91.40
0.32-0.66	6	6.45
>0.66	2	2.15
Total	93	100.00

Table 2 shows that Community Forestry Land tenure is the most important natural capital for Community Forestry farming households. Most respondents own Community Forestry land in the 0.50–1.24 ha category, namely 72 people. This area represents a relatively adequate level of land ownership to support agricultural activities, as Community Forestry land is the main resource accessed by the community through the social forestry scheme. Meanwhile, five respondents had Community Forestry land area < 0.50 ha, indicating limited natural capital among a small number of households. On the other hand, 16 people had Community Forestry land >1.14 ha, suggesting a group of farmers with greater natural asset capacity than the others.

Regarding Non-community Forestry land ownership, 85 respondents owned only <0.32 ha of land outside Community Forestry, showing that most households did not own additional land beyond Community Forestry cultivated land. This condition shows the community's high dependence on Community Forestry land as its main source of livelihood. Meanwhile, only six respondents owned Non-community Forestry land measuring 0.32–0.66 ha, and two respondents owned land measuring >0.66 ha. Households with access to larger areas of Non-community Forestry land generally came from more established socioeconomic groups, such as retired civil servants, teachers, traders, or farmers with relatively large areas of Community Forestry land. These findings indicate that land ownership outside forest areas is possible only for a small portion of the community, who can utilize additional land as a basis for production. The total number and percentage of Community Forestry and Non-community Forestry land are presented in Table 3.

Table 3. Total Number and Percentage of Community Forestry and Non-community Forestry Land

Natural Capital Level	Numbers (n)	Percentage (%)
Low (<0,46 ha)	12	13.95
Moderate (0,46–1,39 ha)	65	75.58
High (>1,39 ha)	9	10.47
Total	93	100.00

Most farming households in the Alam Lestari Community Forestry have moderate land tenure, indicating that access to land is generally adequate to support agricultural activities and forest-based livelihoods. This condition confirms the role of land as the main natural capital in the Community Forestry scheme, in line with Scoones (1998), who asserts that natural capital is a fundamental element in the livelihoods of rural communities, because the availability and control of land greatly determine production capacity and the sustainability of forest resource management. This finding is also consistent with Sabar et al. (2023), which shows that land use in social forestry schemes is generally at a moderate level of sustainability. Sabar et al. (2023), who found that natural capital, as measured by land area indicators, is at a moderate level of sustainability.

However, the results of this study indicate that equitable access to land among Community Forestry group members has not yet been fully achieved. The existence of households with low land ownership reflects the uneven distribution of natural capital, especially among households with limited economic and social capacity. This condition is in line with the findings of Mustikaningrum & Lestari (2023), which reveals that land ownership inequality in the Social Forestry scheme is influenced by differences in the economic and social capabilities and levels of involvement of group members. Households with lower bargaining power tend to have limited access to land, making their livelihoods more vulnerable.

These findings indicate that although land is an important natural resource, the sustainability of Community Forestry farmers' welfare is not determined solely by land area. Access to other supporting assets, particularly physical capital, is an important factor in increasing productivity and the effective use of land. Ellis (2000), is a vital component of livelihood assets because it directly supports agricultural activities and helps households meet their needs. Therefore, strengthening physical capital is a key element in optimising the use of natural capital and supporting the sustainability of Community Forestry farmers' livelihoods. The amount and percentage of Community Forestry farmers' physical capital ownership are presented in Table 4.

Table 4. The Numbers and Percentages of Community Forestry Farmers' Physical Capital Mastery Levels

Production Assets		
Asset Ownership	Numbers (n)	Percentage (%)
Low (1)	2	2.15
Moderate (2-3)	90	96.77
High (>3)	1	1.08
Total	93	100
Production Assets		
Asset Ownership	Numbers (n)	Percentage (%)
Low (2)	5	5.38
Moderate (3)	87	93.55
High (>3)	1	1.08
Total	93	100

The level of physical capital ownership among Community Forestry Alam Lestari farmer households is generally moderate, both for production and non-production assets. This condition indicates that most households have sufficient basic physical facilities to support farming activities and daily economic activities. Physical capital in this context serves as an operational foundation that enables households to utilise Community Forestry land access more effectively.

The relatively even distribution of production asset ownership indicates that the majority of farmers have the minimum means to carry out agricultural activities, such as agricultural tools and basic inputs. This result is consistent with Yanuartati et al. (2024) emphasize that production assets are essential livelihood assets that contribute to farmers' strategies to enhance productivity.

In addition to productive assets, ownership of non-productive assets such as houses, means of transport, and communication devices reflects a relatively stable level of fulfilment of basic household needs. This result is consistent with Sabar et al. (2023), who assert that physical capital is generally reflected in home ownership, transportation means such as motorcycles, and access to communication through mobile phones and televisions. Adequate village infrastructure, such as concrete roads and basic public facilities, further strengthens the role of physical capital in supporting farmers' livelihoods.

This finding is consistent with Toumbourou et al. (2025), who argue that the benefits of Social Forestry (SF) tend to be unevenly distributed. Households with stronger assets tend to have better opportunities, while low-income households primarily gain benefits in the form of improved access rights to land management and reduced vulnerability to economic risks. Therefore, a closer examination of financial capital as a component of livelihood assets is necessary to fulfill its role in supporting business needs, enhancing investment capacity, and mitigating economic risks.

Thus, physical capital serves as the foundation for livelihoods, but long-term welfare improvement remains highly dependent on households' ability to manage these assets and support from other livelihood assets. In this context, financial capital is a crucial factor that determines households' ability to invest, develop businesses, and cope with economic risks. Therefore, the following discussion focuses on financial capital as one of the important determinants in supporting the sustainability of the livelihoods of households in community forests (Table 5).

Table 5. Number and Percentage of Community Forestry Farmers' Financial Capital Mastery Levels

Financial Capital		
Saving	Numbers (n)	Percentage (%)
Rp. <41.000	58	62.37%
Rp. 41.000 – 115.314	27	29.03%
Rp. >115.314	8	8.60%
Loan	Numbers (n)	Percentage (%)
Rp. 0	87	93.55%
Rp. 0 – Rp. 3.965.035	3	3.23%
Rp. >3.965.035	3	3.23%
Business Capital of Community Forestry	Numbers (n)	Persentase (%)
Rp. 0	0	0%
Rp.0–Rp. 2.565.444	75	80.65%
Rp. >2.565.444	18	19.35
Business Capital of Community Forestry	Numbers (n)	Persentase (%)
Rp. 0	83	89%
Rp.0-Rp. 553.646	2	2.15%
Rp. >553.646	18	8.60%

The financial capital of Alam Lestari Community Forestry farmer households shows considerable variation, particularly in savings, loans and business capital. In general, households' ability to accumulate savings remains limited, reflecting their low income surplus. Savings tend to be seasonal and are formed when harvests are relatively good, while only a small proportion of households have more stable sources of non-agricultural income. This finding is consistent with Saraswati & Dharmawan (2014), who argue that households with substantial savings typically derive their livelihoods from non-farm sources with more stable income streams.

Access to loans is also relatively low, indicating a tendency for Community Forestry farmer households to avoid debt and rely more on income from agricultural activities. Limited control over land and other economic assets results in low household capacity to access formal loans, so that existing loans are mostly sourced from informal social networks. This condition

shows that although loans have the potential to strengthen business capital, the role of financial capital as a buffer against economic risk is still not optimal.

In terms of business capital, most households allocate funds primarily for basic operational activities on Community Forestry land, such as land management and harvesting costs. The amount of business capital allocated is closely related to land area and management intensity, while business activities outside Community Forestry land are relatively limited. The low level of investment in non-Community Forestry land reflects limited opportunities for business diversification and low management intensity, especially for seasonal crops that require relatively low costs.

Overall, these findings indicate that the financial capital of Community Forestry farmers is still heavily influenced by household economic capacity and resource constraints. Financial capital plays an important role in supporting livelihood strategies, but its success in improving welfare does not stand alone. The optimisation of financial capital is highly dependent on the quality of the human resources managing it, particularly in decision-making, business management, and the utilisation of economic opportunities. Therefore, the following discussion focuses on human capital as an important component in strengthening the livelihood capacity and sustainability of the welfare of Community Forestry farmers' households (Table 6).

Table 6. Number and Percentage of Human Capital Mastery Levels of Community Forestry Farmers

Human Capital Levels	Numbers (n)	Percentage (%)
Low	26	27.96
Moderate	57	61.29
High	10	10.75
Total	93	100.00

Criteria: Average score: $x < 3.43$ (Low); $3.43 \leq x < 10.33$ (moderate); $x \geq 10.33$ (high)

Based on Table 6, the level of human capital mastery among Alam Lestari Community Forestry farmers is dominated by the moderate category, indicating that human resource capacity is at an intermediate level with relatively adequate basic skills and experience. This condition indicates potential for development, although it is not yet fully optimal in supporting increased productivity and livelihood sustainability.

In terms of formal education, most farmers still have a low to intermediate level. Low educational attainment reflects limited access to knowledge and innovation, which has the potential to hamper farmers' ability to adopt new technologies and manage their farms more efficiently. These findings are in line with Burano and Siska (2019) and Anantika et al. (2019), who emphasise that the level of education plays an important role in shaping mindsets, openness to innovation, and improving farm management skills.

In addition to education, skills are an important component of human capital because they contribute to opportunities for livelihood diversification. The majority of farmers have basic to intermediate skills, both in the agricultural and non-agricultural sectors. However, the limited number and variety of skills indicate that the capacity to adapt to economic and environmental changes is still relatively limited. This reinforces the findings of Aulia et al. (2025) state that the low effectiveness of training activities is often caused by an approach that remains theoretical and does not address technical aspects in the field. Therefore, improving human resource capacity, especially for the younger generation, is important to strengthen the independence and competitiveness of farmers in the agricultural and forest product processing sectors.

The involvement of family members in economic activities is also relatively low, so that the burden of livelihoods is still largely borne by the head of the family. This condition reflects the limited contribution of additional income from other household members, which affects low economic flexibility and the household's capacity to face risks. These findings are consistent with the results of Sarti et al. (2024), who emphasize that the economic contribution of family members, particularly women farmers or wives, is determined by the proportion of income they generate relative to total household income.

Differences in the educational levels of working family members also determine the type of work and the stability of income. Family members with higher education tend to have access to the formal sector and more stable incomes, which can strengthen household economic capacity. This confirms that the quality of human capital not only affects productivity but also determines opportunities for livelihood diversification and sustainable welfare.

Overall, these findings indicate that the human capital of community forest farmers still needs strengthening to support more adaptive and sustainable livelihood strategies. However, the effectiveness of human capital does not stand alone, but is greatly influenced by social relationships and networks formed at the community level. Therefore, the following discussion focuses on social capital as an important component in strengthening cooperation, access to information, and the sustainability of Community Forestry farmers' livelihoods (Table 7).

Table 7. Number and Percentage of Social Capital Mastery Levels of Community Forestry Farmers

Social Capital	Numbers (n)	Percentage (%)
Low	0	0
Moderate	0	0
High	93	100
Total	93	100

Criteria: Average Score: $x < 6.86$ (Low); $6.86 \leq x < 18.33$ (Moderate); $x \geq 18.33$ (High)

Based on Table 7, all Alam Lestari Community Forestry farming households fall within the medium and high categories of social capital, with none classified as low. These findings indicate that social capital plays a strong role in supporting the livelihoods of community forest farmers, as reflected in high levels of trust, compliance with social norms, and active participation in group activities. Strong social capital contributes to the effectiveness of collective coordination and management of community forests.

Close kinship ties and proximity of residences strengthen social interactions and facilitate cooperation among group members. These conditions encourage a sense of shared responsibility and reinforce mutual assistance practices in forest area management. The high level of participation in community forest groups shows that local social values remain an important foundation in supporting economic activities and the sustainability of forest resource management.

These findings contrast with those of Putra & Suprianto (2020), who reported relatively low levels of social capital sustainability among farmers in other regions. These differences indicate that Alam Lestari Community Forestry farmers can utilise social capital more effectively as a livelihood asset, not only to strengthen cooperation networks, but also to increase collective capacity to maintain sustainable forest management. Thus, social capital serves as an important pillar in strengthening livelihood security and the successful implementation of Community Forestry.

Livelihood Strategi of Community Forestry Farming Households

Dharmawan (2007) emphasizes that livelihood strategies are embedded in daily life and represent individuals' efforts to secure employment, maintain survival, and improve well-being amidst dynamic social, economic, environmental, and political circumstances. Within this context, Community Forestry households employ varied livelihood strategies to reduce their dependence on a single income source, which is no longer sufficient to meet household needs. Farmers, therefore, combine multiple livelihood activities to stabilize household economies and ensure long-term sustainability. One common approach utilized is livelihood intensification. The number and proportion of farmers adopting various livelihood strategies are presented in Table 8.

Table 8. Number and Percentage of Farmers Based on Livelihood Strategies

Livelihood Strategy	Indicator	Numbers (n)	Percentage (%)
Intensification	Hiring external labor	37	69.81
	Using modern technology	16	30.19
Ekstensification	Increasing Community Forestry Area	0	0
	Increasing Non-Community Forestry Area	28	100
Diversification	Having another profession besides agriculture	45	54.22
	Assisting in forest management by Family members	29	34.94
	Household members working in non-forestry occupations	9	10.84
Migration	Temporary work outside the city	0	0
	Family members working outside the city	0	0

Based on Table 8, the livelihood strategies of Alam Lestari Community Forestry farming households are categorized into four types: intensification, extensification, diversification, and migration, with varying adoption patterns across households. In general, the dominant strategies are intensification and diversification, which demonstrate farmers' efforts to improve and stabilise their livelihoods by utilizing available resources. The intensification strategy is implemented through labour optimisation and the use of agricultural technology, reflecting efforts to increase productivity on limited land. This finding aligns with Scoones (1998) who emphasizes that intensification represents the optimization of natural and human capital to strengthen rural livelihoods. Conversely, the extensification strategy is carried out only on non-Community Forestry land, indicating limitations in space and regulations for Community Forestry land management, leading farmers to focus more on maintaining and improving the quality of existing land. These patterns are consistent with the findings of Hikmah et al. (2023),which show that farming households commonly adopt multi-source livelihood strategies—combining on-farm, off-farm, and non-farm

activities—as a means of reducing economic risk. Meanwhile, no farmers or their family members practice migration, suggesting that livelihoods remain strongly rooted in local activities and Community Forestry land management. The absence of migration may be attributed to farmers' attachment to their cultivated land, the availability of local employment opportunities, and the relatively small number of household dependents. These observations contrast with those of Aryani & Dharmawan (2024), who note that migration typically occurs among households facing constraints on income and skills, prompting them to seek non-agricultural employment elsewhere. In the context of Alam Lestari Community Forestry, the lack of migration underscores a livelihood orientation centered on the utilization of local resources, with diversification and intensification serving as the primary strategies for maintaining household livelihood stability.

Table 9. Number and Percentage of Farmers Based on Livelihood Strategy Levels

Numbers of lIvelihood Strategies	Numbers (n)	Percentage (%)
Low (1)	55	59.14
Moderate (2)	29	31.18
High (>3)	9	9.68
Total	93	100

The tendency in the application of livelihood strategies is further clarified in Table 9, which shows that most households are still in the low livelihood strategy category. This condition indicates that although some farmers have implemented a combination of intensification and diversification strategies, households' capacity to develop more diverse and adaptive livelihood strategies remains limited. The dominance of low-livelihood strategies reflects households' limited livelihood assets and limited flexibility in responding to economic and environmental risks. The most widely applied strategies are diversification and intensification, while migration strategies are rarely utilized. This shows that the livelihoods of community forest farmers remain highly dependent on local resources and available land management, with limited room for adaptation.

These findings differ from those of Agustin et al. (2024), which show that households in areas under pressure from land conversion tend to develop migration and non-farm sector utilization strategies as forms of economic adaptation. In the context of the Alam Lestari Community Forestry, the absence of migration indicates that, despite relative economic pressure, farmers still choose to maintain local resource-based strategies This condition indicates that strengthening livelihood assets and expanding economic opportunities are key to increasing household capacity to develop more diverse and sustainable livelihood strategies.

Welfare Levels of Community Forestry Farming Households

Household welfare serves as an essential indicator of the overall quality of life among Community Forestry farming households. In this study, welfare levels were assessed using the criteria established by Statistics Indonesia (BPS, 2023). The number and percentage distributions of farmers by welfare level are presented in Table 10.

Table 10. Number and Percentage of Farmers Based on Welfare Level

Indicator	Number (n)	Percentage (%)	Category
Expenditure	68	73.12	Moderate
Education	70	75.27	Moderate
Health	62	66.67	High
Population	79	84.92	High
Accommodation	86	92.47	Moderate
Poverty	59	63.44	Moderate
Social	72	77.42	Low

The welfare level of households in the Alam Lestari Community Forestry shows variation between indicators, with a tendency to fall into the moderate category. This condition reflects households' ability to meet their basic needs but has not been followed by an overall improvement in quality of life. Income patterns, which are still dominated by the agricultural sector and small-scale non-agricultural businesses, cause welfare levels to fluctuate and be vulnerable to changes in environmental and production conditions.

Relatively good welfare achievements in health and population indicate support for sustainable livelihoods, particularly through access to formal health services and relatively small household sizes. However, limitations in terms of housing conditions and poverty indicate that access to physical and financial assets is not yet fully optimal in supporting long-term welfare.

Social indicators are the weakest aspect in supporting the welfare of Community Forestry farmer households. Low involvement in formal organisations and limited access to information reflect weak social capital, particularly in terms of external networks (bridging social capital). This situation limits households' access to institutional support, market information, and broader economic opportunities. Therefore, improving the welfare of Community Forestry farmers requires not only strengthening physical and economic assets, but also developing

social capacity through institutional strengthening, network expansion, and improving sustainable access to information.

Relationship Between Livelihood Strategies and the Welfare Level of Community Forestry Farmer Households

Analyzing the relationship between livelihood strategies and household welfare is crucial for understanding how different strategies shape household welfare outcomes in Community Forestry. The results indicate that variations in livelihood strategies are associated with differences in household welfare levels, reflecting the role of strategic livelihood choices in enhancing households' capacity to cope with economic and environmental challenges. This relationship underscores that livelihood strategies function not only as income-generating mechanisms but also as adaptive responses that influence overall welfare conditions. The number and percentage distribution describing the relationship between livelihood strategies and welfare levels among Community Forestry farmers are presented in Table 11.

Table 11. Number and Percentage of Relationships Between Livelihood Strategies and the Level of Welfare of Community Forestry Household Farmers

Livelihood Strategy	Moderate		Total		Welfare Correlation Coeffisient
	n	%	n	%	
Low	55	59.14%	55	59.14%	
Moderate	29	31.18%	29	31.18%	0.407
High	9	9.68%	9	9.68%	
Total	93	100%	93	100%	

Based on Table 11, the welfare level of Community Forestry farmer households is predominantly in the medium category, with 55 households applying low livelihood strategies also falling into this category. The low, medium, and high livelihood strategy categories correspond to households applying one, two, or more than two strategies, respectively, and thus do not directly reflect the quality or effectiveness of the strategy nor the resulting welfare level. The limited contribution of migration strategies is evident from the absence of any respondents engaging in migration, while extensification strategies were also minimal, as most farmers did not expand their Community Forestry plots, and only 28 households expanded land outside the Community Forestry area (Table 8). This condition explains why 29 households with medium strategies and 9 households with high strategies still remain in the medium welfare category. Therefore, although the livelihood strategies adopted by households are sufficient to meet basic needs, they are not yet sufficient to elevate their welfare to a higher level.

The cross-tabulation results in Table 10 and the Spearman Rank correlation test reinforce these findings, with a positive and significant relationship between livelihood strategies and levels of well-being ($r = 0.407$; $p < 0.01$). This finding suggests that diverse livelihood strategies, particularly through sustainable diversification and intensification, play a crucial role in enhancing the economic resilience of Community Forest Farmer households. Diversifying income sources, whether from the agricultural sector, NTFPs, or other non-agricultural sectors, not only improves economic stability but also reduces pressure on forest resources by fostering a more balanced interdependence. This demonstrates that livelihood strategies that prioritize the productive and sustainable use of forest resources are crucial to supporting community-based forest management. Diversified implementation and efficient intensification not only improve the well-being of farmer households but also maintain the forest ecosystem's functions, thereby aligning with the principles of sustainable development in the implementation of the Community Forest Program.

Relationship between Community Forestry Farmers' Livelihood Strategies and Livelihood Assets

The relationship between livelihood strategies and the livelihood assets of Community Forestry farmer households was conducted to understand the link between livelihood asset ownership and the choice of livelihood strategies implemented. The number and percentage distributions of livelihood strategies by livelihood assets are presented in Table 12.

Table 12. Number and Percentage of Relationship of Livelihood Strategy on Livelihood Assets

Livelihood Asset	Moderate		High		Total		Livelihood Strategy Correlation Coeffisient
	n	%	n	%	n	%	
Low	53	60.92%	2	33.33%	55	59.14%	
Moderate	26	29.89%	3	50.%	29	31.18%	451
high	8	9.20%	1	16.67%	9	9.68%	
Total	87	100%	6	100%	93	100%	

Based on the analysis presented in Table 12, variations in livelihood asset ownership are closely associated with the level of livelihood strategies adopted by Community Forestry farmer households. Households with stronger asset bases tend to adopt more diverse and adaptive livelihood strategies, while those with limited assets are more likely to rely on simpler, low-category strategies. This pattern highlights the role of livelihood assets as enabling factors that shape households' capacity to respond to economic pressures and environmental uncertainty.

Livelihood assets—including natural, human, social, physical, and financial capital—serve as the foundation for households' strategic choices. Stronger asset ownership provides greater flexibility to pursue intensification and diversification strategies, including engagement in non-agricultural activities, thereby enhancing households' adaptive capacity. Conversely, limited asset ownership constrains households' ability to innovate or expand livelihood options, resulting in strategies that are less resilient to risk.

To confirm that this relationship is not incidental, a Spearman Rank correlation analysis was conducted. The results indicate a statistically significant and positive relationship between livelihood assets and livelihood strategies ($p < 0.01$), demonstrating that higher levels of asset ownership are associated with greater strategic diversity. This finding underscores the importance of strengthening livelihood assets as a key pathway for enhancing economic capacity and livelihood resilience among Community Forestry farmer households.

These findings are consistent with Sahidu (2012), who explains that the livelihood strategies of Sasak farming households are strongly influenced by the availability of productive resources and social arrangements governing labor and production. Similar to Community Forestry farmers, households with limited assets tend to depend on labor-intensive, low-return activities. In contrast, households with stronger asset bases have greater flexibility to select more profitable and adaptive livelihood options. Overall, this study reinforces the argument that livelihood assets constitute a primary determinant of household resilience and strategic adaptability in both rural farming and Community Forestry contexts.

Conclusion

This study demonstrates that the livelihood strategies of Alam Lestari Community Forestry farmer households are predominantly characterized by intensification and diversification, while migration-based strategies are not employed. Household welfare generally falls within the medium category, supported by strong performance in health and demographic indicators, although the social indicator remains relatively low. The Spearman Rank correlation test reveals a positive, significant relationship between livelihood strategies and household welfare ($r = 0.407$; $p < 0.01$), indicating that greater diversification of livelihood strategies is associated with higher household welfare. Furthermore, livelihood assets were also found to influence variations in livelihood strategies. Households with stronger asset bases—particularly physical and social capital—are better able to implement more diverse and adaptive strategies. These findings indicate that strengthening livelihoods and implementing adaptive livelihood strategies within the Social Forestry scheme are key to improving household welfare while maintaining the sustainability of forest resource management.

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