

# CINNAMON FARMER'S HOUSEHOLD CAPITAL OF THE DAYAK MERATUS TRIBE

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## CINNAMON FARMER'S HOUSEHOLD CAPITAL OF THE DAYAK MERATUS TRIBE

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### Abstract

Non-timber forest product collection (NTFP) is generally a traditional activity of people living near forests, and in some places, non-timber forest product collection is the main source of daily life for the community to increase. One of the results that provide many benefits for the community is the cinnamon plant. Cinnamon is a non-timber forest product, and provides ecological and economic benefits. This study aims to analyze the livelihoods of households of cinnamon producers. The study will be conducted from April to July 2022 in Lok Lahung and Haratai Villages, Loksad Sub-District, Hulu Sungei Selatan District. This research study uses a mixed sequential explanation approach based on the principle of quantitative triangulation. Data were collected through a household survey using questionnaires to 30 respondents from Lok Lahung village and 30 respondents from Haratai village. Qualitative data were collected through in-depth interviews, focus group discussions (FGD), and field observations. The results of this study indicate that the living capital which is very influential on the income of cinnamon farmers in Loksado Sub-District is physical capital of 3.16 from a maximum total of 5. Then human capital at 2.77, financial capital at 2.50, natural capital at 2.01 and social capital at 1.85.

**Keywords:** Livelihood, Capital Interaction, Dayak Tribe, Qualitative Method.

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## 1. INTRODUCTION

Forests play an important role in people's livelihoods, especially in remote areas and high altitudes. Therefore, forest development has become a top priority in many parts of the world (Simelton *et al.*, 2016). In addition, the income of indigenous peoples living in mountain communities is heavily dependent on agricultural production and forest and non-timber products (NTFP) (Khuc *et al.*, 2020). Collecting non-timber forest products (NTFPs) is generally a traditional activity of communities living near forests, and in some places, the collection of non-timber forest products is the main source of daily life for the communities. Forest products are diverse economic resources which in the forest area are capable of producing timber, non-timber, and intangible forest products. One of the results that provide many benefits for the community is the cinnamon plant. Cinnamon is a non-timber forest product, and provides ecological and economic benefits.

From an economic point of view, namely regarding use and market analysis, NTFPs are divided into three categories, namely the subsistence level (for own consumption), the level of local use (semi-commercial), and commercial. Cinnamon's value is economically larger than timber and does not cause forest damage so that it will not cause the loss of functions and value of services from the forest (Pohan *et al.*, 2014).

Cinnamon is found in almost all regions in Indonesia, including South Kalimantan, spread along the Meratus mountains. The Dayak indigenous people around the Amandit watershed have been using the land for cinnamon cultivation for generations and collecting the produce for sale. Among them are the Dayak indigenous in the villages of Haratai and Lok Lahung. 90% of the people in the village cultivate their land with cinnamon plants.

Despite being the main producer of cinnamon, it does not guarantee that the farmers will control the market. The inability to control the market is indicated by the frequent fluctuations in the price of cinnamon. For the Dayak people, cinnamon plants are usually planted on former fields so that when the cinnamon harvest is ripe, they can all open the land to be used as fields again. Long harvest age, which is at least 7 years, makes forest farmers unable to use cinnamon as their main source of income. To meet household needs, they have to do work outside of their main job as farmers so that household needs can be met (Harviani, 2019). Communities will have access to capital investments for sustainable livelihood strategies. Livelihood strategies are achieved through a combination of different assets and access to livelihoods. Livelihood assets are critical for survival and for responding to environmental shocks and decisively building household livelihood resilience (World Food Programme, 2013; Nasrnia & Ashktorab, 2021). Access to assets is associated with choice of activity and welfare status. Disparities in access to livelihood assets determine households' choices to cope and their adaptive capacity to the various risks faced on a wide spatiotemporal scale. This type of correlation has positive consequences on household welfare (Makame *et al.*, 2018; Yang *et al.*, 2018; Kasim, 2019)

Under the Sustainable Livelihoods (SL) approach, farmers have five livelihood options that affect livelihood resilience. Five capitals are human capital (health, education, skills, etc.), social capital (social networks, memberships, groups, etc.), physical capital (equipment, instruments, tools), financial capital (credit, insurance, savings, etc.), and natural capital (land, forest, air quality, water, etc.) (DFID 1999; Ellis 1999; Krantz 2001; Scoones 2015; Nurlia *et al.* 2021). Five capitals are influencing farmer household livelihood strategies to address many emerging

vulnerabilities. It aims to analyze livelihood strategies developed in relation to.

2. METHODS

A household income survey of Dayak Meratus cinnamon farmers was conducted in two villages, Haratai Village and Lok Lahung Village, Loksado District, Hulu Sungai Selatan Regency (Figure 1). Loksad

province is bordered by Kota Bharu province to the east, Banjar province to the southeast, Padangbatung province to the west, Telagarangsat province to the north and Hul He Sungai Tengah province. Located around the Melatus Mountains, Loxad Province lies between 115°38'00" and 115°52'00" east longitude and between 2°28'00" and 20°54'00" south latitude.

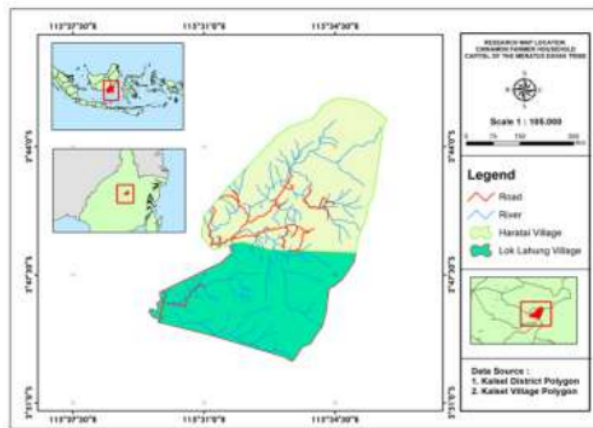


Figure 1. Map of Study Sites in Haratai and Lok Lahung Villages in Loksado Subdistrict

The selection of respondents was carried out through the *Cluster Random Sampling* so that each element of the population had the same opportunity to be selected as a sample. According to Effendi & Tukiran (2014) that the minimum number of samples that meet the statistical test requirements is 30 respondents, so the number of respondents in this study was 60 households, with 30 respondents in Haratai Village and 30 respondents in Lok Lahung Village. The selection of informants was carried out using Snowball Sampling, which was to obtain data from one

informant to another so as to be able to provide complete data (Sugiyono 2016). The number of informants obtained in this study was 5 people. Capital is one of the most important factors in agriculture. Ellis (1999) proposes his five life bases: natural capital, human capital, social capital, financial capital, and physical capital. Five variables were analyzed to determine their impact on farmers' livelihood strategy choices in cinnamon forests. It can see in Table 1 at the attachment.

Table 1. Operational Definition of Livelihood Capital

No	Variable	Operational Definition	Indicator	Measurement Scale
1	Natural Capital (X <sub>1</sub> )	Resources used by humans originating from nature or the surrounding environment such as water, soil, wood, etc.		

	Land tenure	Status of forest agricultural land tenure	Owner and cultivator Owner but not cultivator Not owner but cultivator	Ordinal
	Cinnamon land size	land area Cinnamon area controlled by farmer's household	..... m <sup>2</sup>	Ratio
	Agricultural land size other than cinnamon	The area of agricultural land other than cinnamon that is controlled by farmer households	..... m <sup>2</sup>	Ratio
2	Human Capital $X_2$ Capital contained in individuals which is influenced by education, skills, and the number of working household members.			
	Education level	Length of years of education of working farmer household members	Years of education	Ratio
	Labor allocation	Number of farmer household members who have jobs and earn rupiah	Number of working farmer household members	Ratio
	Number of skills	Number of skills mastered by farmer households outside farming skills	Total skills owned by farming households	Ratio
3	Social Capital ( $X_3$ ) Bonds and relationships between individuals in the community are marked by the participation of organizations, farmer groups or social gatherings.			
	Number of formal organizations	Participation of farmer households in formal organizations such as cooperatives, farmer groups, etc.	Number of formal organizations joined by farmer households	Ratio
	Number of non-formal organizations	Participation of farmer households in non-formal organizations such as <i>arisan</i>	Number of non-formal organizations joined by farmer households	Ratio
4	Financial Capital ( $X_4$ ) Availability of money used by households either in the form of farm income, savings or borrowing			
	Income level on farm (cinnamon)	The amount of money received by farmer households from the results of the cinnamon agricultural sector	Rp...../Month	Ratio

Income level off farm	The amount of money received by farmer households from labor wages, profit sharing etc.	Rp...../Month	Ratio
Income level nonfarm	The amount of money received by farmer households from outside the agricultural sector is	Rp...../Month	Ratio
Savings rate	Amount of money set aside or saved by households in the form of savings in the bank	Rp...../Month	Ratio
Borrowing	The amount of money that farmers borrow to meet household needs	Rp...../Month	Ratio
Remittance Receipt	Remittance receipts from family members	Rp...../Month	Ratio
Physical Capital ( $X_5$ )			
Capital that supports business activities such as agricultural equipment, seeds, fertilizers, and infrastructure such as ownership of transportation equipment, communication equipment, livestock			
Ownership level of production assets	Total ownership of farm household assets that support agricultural production such as land, agricultural tools, seeds, fertilizers, farm houses, etc.	Total value of all agricultural production assets ownership which is calculated in rupiah	Ratio
Ownership level of non-production assets	Total asset ownership outside of agricultural production assets such as houses, transportation equipment, communication tools, livestock, etc.	The total value of all non-agricultural assets' ownership calculated in rupiah	Ratio

### 3. RESULTS AND DISCUSSION

#### *Characteristics of Respondents*

Farmers who are respondents in this research are cinnamon farmer households

in the village Lok Lahung and Haratai Village, Loksado Sub-district totaling 60 households represented by the head of the family. Characteristics of respondents in this study were analyzed in terms of age,

gender, education and number of dependents. Based on the selection of respondents using the *cluster random sampling technique*, the cinnamon farmer households who became respondents in this study led to upper-class households. Research data shows that the majority households of cinnamon farmers are headed by men, which is 86.49%. Cinnamon farmer households headed by women are only 13.51% due to divorce or death or the husband is too old to be able to support the family anymore. The average age of cinnamon farmers in the two villages ranges from 26 to over 66. The main age group is 26 to 55 years old, which is included in working age. Age is related to physical ability and thus affects labor productivity (Ukkas 2017; Nurlia *et al* 2021). The majority of households cultivate cinnamon because they continue the family business and other households plant cinnamon trees on their fields because this business has a large profit.

The low level of education in both villages creates a simple mindset of cinnamon farmers. Society in ancient times did not really attach importance to education. The low level of education is also influenced by access and ease of obtaining education in rural areas, remote locations and the cost of education. Education affects the way and mindset of farmers because education is a process of developing knowledge, skills and attitudes in receiving information and making decisions to do something good (Narti 2015).

The number of dependents is the number of individuals in the respondent's household whose living needs are still covered by the respondent. The majority of respondents have 2 dependents in their household, as much as 40.54 %. This is because there are

some respondents who already have children who are married themselves so that they are no longer the responsibility of the head of the household.

Cinnamon farmer household land tenure is divided into two categories, namely cinnamon land and agricultural land other than cinnamon. Land other than cinnamon is usually cultivated as fields, rubber plantations and fruit orchards (Rezekiah *et al.*, 2022). The area of land they work on ranges from 0.5 - 2 Ha. There is only 1 farmer out of 60 farmers whose land is cultivated by other farmers, this is due to the old age factor. This is consistent with a study by Anggraini *et al.* (2022) stated that the average land area owned by a farmer on the edge of a forest area in Dompu Province ranges from he to over 1.0 hectares.

#### *Natural Capital*

Natural capital is the collective term for the earth's natural resources and associated ecosystem services that enable human life (Natural Capital Declaration, 2012). The livelihoods of the Meratus Dayak people cannot be separated from being cultivators, sap tappers and cinnamon collectors. Natural capital is measured based on the area of land for cinnamon plantations and land area other than cinnamon or agricultural land other than cinnamon owned or managed by cinnamon farmer households. Sajogyo (1997) classifies farmers into three categories or layers based on the area of farmland controlled, namely small-scale farmers or lower layers with agricultural land area <0.5 ha, medium scale with agricultural land area 0.5-1.0 ha, and broad scale or top layer with agricultural land area >1.0 ha. Figure 2 is the percentage of household farmers of cinnamon farmers of the Dayak Meratus tribe.

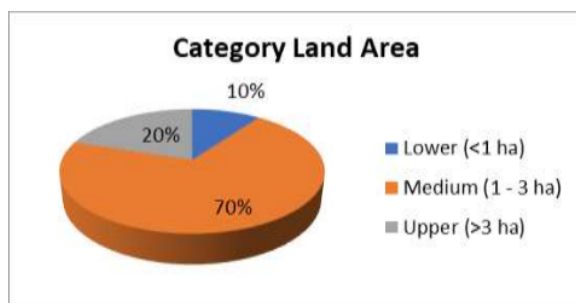


Figure 2. Percentage of Household Layering of Cinnamon Forest Farmers of the Dayak Meratus Tribe

Based on Figure 2, it can be observed that the majority are medium-scale farming households, namely 70%. Cinnamon land is entirely planted with cinnamon trees interspersed with complementary crops such as rubber and others and almost entirely is owned and managed by themselves. The most dominant types of crops grown are rice and rubber. Other types of plants include vegetables and chilies. Other types of plants are planted side by side with cinnamon trees because the harvest period for cinnamon trees is relatively long, so households must have input or other income from planting cinnamon to meet their daily needs. The respondents' average cinnamon area is 1.07

ha and the average land area excluding cinnamon is 1.24 ha.

#### Human Capital

Human capital is capital owned or existing by individuals (DFID 1999). Human capital represents an individual's ability to gain better access to living conditions (Wijayanti et al., 2016). Human capital is the main living capital necessary to inform the living strategy of the community and is a key factor in the management of other living capital.

Human capital is measured based on the average education of working household members and the number of working family members. Figure 3 shows the percentage education of cinnamon farmer households:

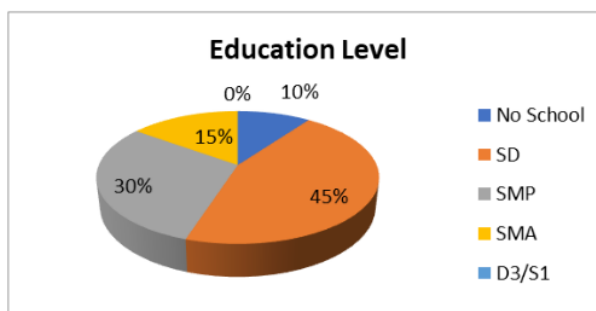


Figure 3. Percentage Education of Cinnamon Farmer Households in Loksado Sub-District

Based on Figure 3 above, it is found that the majority of cinnamon farmer households' average education is elementary school graduates, which is 45%. On graphic, household members who are already working have just graduated from

elementary school or have dropped out of junior high school (SMP). Only a few people or the head of the household studied up to high school (SMA/SMK) even only 1 person who finished school to college. It is in contrast with the research from Firman &



Sholikha (2020) human capital in Tlekung Village, Batu City was included in the high category (80.54%). It could be the high category because the level of the people's knowledge is high and complemented by good access or transportation facilities and convenience that can be obtained easily. Based on a study by Danish *et al.* (2019) convenient high school education in Pakistan cannot equip the population with the awareness and skills to protect ecosystems. Meanwhile, a study by Langnel *et al.* (2021) states that members in each ECOWAS country behave pro-environmentally because they have a high level of education. From these data, it can be concluded that the level of education can influence a person's decision to manage the environment for the better or vice versa.

Even though the head of the family only went to elementary school/equivalent, they try to send their children to as high school as possible. Therefore, there are some members of the cinnamon farming family who are successful by working outside of where they grew up such as civil servants and police. However, due to various obstacles faced, most of the children in the Loksado Sub-district where the research was conducted only reached the junior high school level after which they immediately worked to help their families. Whereas the higher the level of education taken, the higher the chances of getting a job. The following is a figure of the percentage of working members of the cinnamon farmer household:

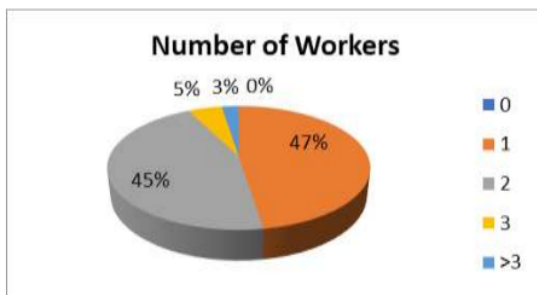


Figure 4. The Percentage Level of the Number of Workers in the Cinnamon Farmer Household Loksado Sub-District

Based on Figure 4, it is found that the majority of cinnamon farmers' household workers in one family are 1 person. In one of the cinnamon farmer households in Haratai Village, there is 1 family member who works as a civil servant but is outside the village and there is also 1 family member who works as a police officer in the city. Even though they are outside the city, these children still send money to their parents so that they continue to contribute to household income. In addition, there is 1 farmer household who still lives together even after the children have children. Most household members who work can already contribute to household income.

#### Social Capital

Social capital is the resources available to individuals and groups through membership in social networks and can be conceptualized at either the individual (egocentric) or collective (*sociocentric*) level (Porta, 2014; Moore & Kawachi, 2017; Carrillo-Alvarez *et al.*, 2018) Social capital is measured based on the participation of family members of cinnamon farming households in an organization. The following figure shows the number of organizations that cinnamon farmer households participate in.



Figure 5. Percentage Level of Number of Organizations Followed by Cinnamon Farmer Households Loksado District

Based on Figure 5 above, the majority of cinnamon farmer households follows one organization. Organizations that become benchmarks in this study are divided into two, namely formal and non-formal organizations. The organizations that are generally followed by cinnamon farming households are farmer groups and social gatherings. These two organizations are widely followed because they are considered beneficial for cinnamon farming households. The average cinnamon farmer household is registered in a farmer group because the agricultural or plantation products that are often sold to the market or to the city are cinnamon and rubber forest products. Meanwhile, agricultural products such as rice are not sold and are for their own needs. Household members who participate in social gathering are mostly

wives or women because this can increase the relationship and strengthen a relationship between neighbors.

*Financial Capital*

Financial capital is the ability of financial resources owned by business actors (Munizu, 2010). Financial capital most often refers to the assets needed by farmers to provide goods or services, which are measured in monetary terms. Financial capital is measured based on cinnamon farmers' household income. Cinnamon farmer household income does not only come from *on farm*, but also from *off farm*, *non-farm*, savings and loans. Once they borrow money, cinnamon farmers will borrow large amounts of money. The following is the average household income of cinnamon farmers.

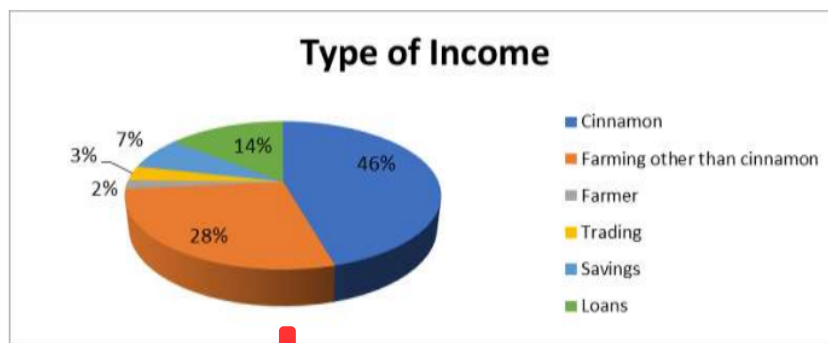


Figure 6. Average Household Income of Cinnamon Farmers in Loksado Sub-District by Source of Income

Based on Figure 6 above, it can be observed that the average income from cinnamon farming for cinnamon farmers is IDR

21,600,000 per year. Income *on-farm* comes from farming other than cinnamon, which is the result of tapping sap (rubber),

livestock, and other plantations. In addition, there are also cinnamon farmers who become farm laborers and traders. Although it does not affect much, the work is still carried out because the results of cinnamon have a long harvest period and the daily needs of the community are quite a lot.

As for financial capital in the form of savings, almost all households do not have bank savings, but in their respective homes. In addition, cinnamon farmers' income is also obtained from large loans but the community believes they can definitely repay the loan. The cinnamon farmer's household income has been allocated for daily expenses and school fees and some communities can allocate this income for savings. One respondent explained that from the income he received, in one month

he could save up to hundreds of thousands of rupiah. This proves that not all people there borrow to meet their needs. There are still people who can allocate their money well so that it can be saved for unexpected needs that will occur in the future.

#### Physical Capital

Physical capital is measured based on ownership of production assets and ownership of non-production assets. Production assets consist of land, cottages in the fields and cinnamon seeds and non-production assets consist of houses, motorbikes, refrigerators, cellphones, TVs, etc. From the data collected, it is found that production assets have a much greater value than non-production results, especially from land values. The following is a figure of utilization of cinnamon farmers' production assets.

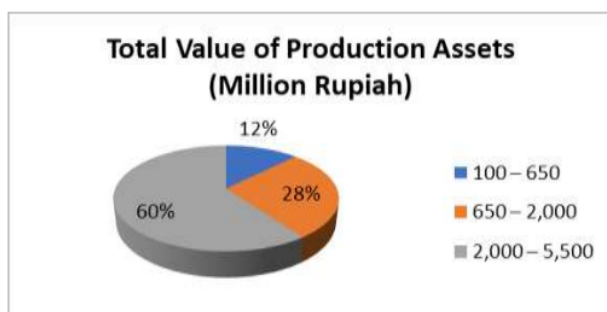


Figure 7. The Percentage Ownership of Household Production Assets of Cinnamon Farmers

Based on Figure 7, it is found that the majority of cinnamon farmer households have a production asset value in the category of Rp 2,000,000,000.00 to Rp 5,500,000,000.00. The number of production assets in the table is calculated based on the area of agricultural land and its use as well as cinnamon production equipment. Calculation of production

assets into rupiah is calculated based on the selling price of each item. Based on field observations, some cinnamon farmer households at least have a simple house made of wood on a cinnamon plantation as a temporary resting place or putting the tools needed in plantation and agricultural activities. The following is a figure of non-producing assets of cinnamon farmers.

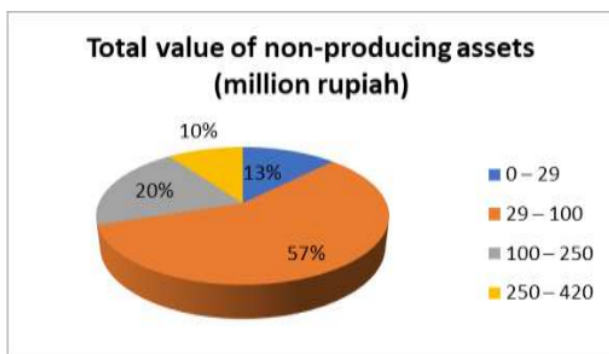


Figure 8. Percentage of Ownership of Non-Producing Assets of Cinnamon Farmers

Based on Figure 8, the majority of cinnamon farmers have non-production asset values in the category of Rp 29,000,000.00 to Rp 100,000,000.00. Non-production assets in this study include houses, mobile phones, motorcycles, televisions, refrigerators, and gold or jewelry. Calculation of non-production assets into rupiah is calculated based on the price of each item. All cinnamon farmer households own a motorbike because the road access from the village to the city center is very far and mountainous, so it is very tiring if you don't use a motorbike if you want to leave the village. In addition,

Loksado District is famous for various interesting tourist attractions to visit so some people use motorbikes to earn income, namely as ojek drivers to tourist attractions because not everyone can go through mountainous and uneven roads. The livelihood value of cinnamon farmers depends on the value of human, financial, natural, physical and social capital. The results show that physical capital has the largest percentage in ownership level. The relationship and interrelationships of each capital are then analyzed, and the asset pentagon is presented in Figure 9.

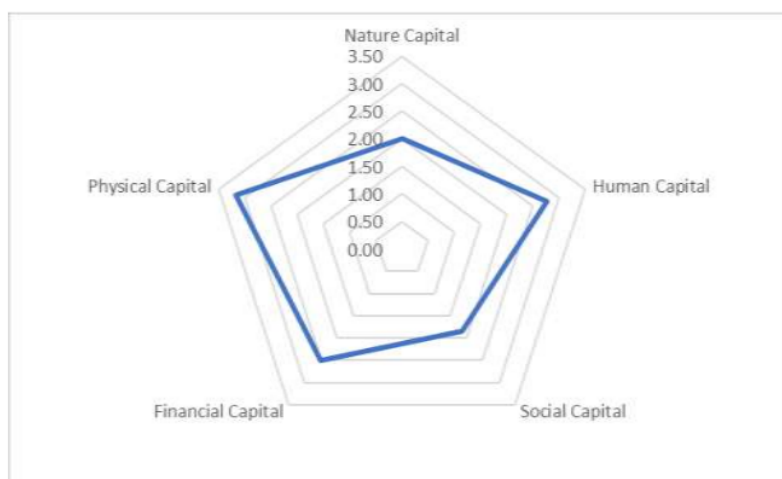


Figure 9. Cinnamon Farmer Household Capital Ownership in Loksado District

Figure 9 and Figure 10 show the most dominant household income capital ownership of cinnamon farmers is physical

capital. Physical capital is measured based on land ownership and land use by cinnamon farming households (production

assets). In addition, there are also non-production asset factors such as housing, communication tools, and the like which are the benchmarks in calculating physical capital in this study. Cinnamon farmer households in Loksado Sub-district use

forest land that they have been working on for generations to meet their daily needs. So that at first, they only worked on small land, for example 300 m<sup>2</sup>, over time the land they worked on grew wider with the more expenses they needed.

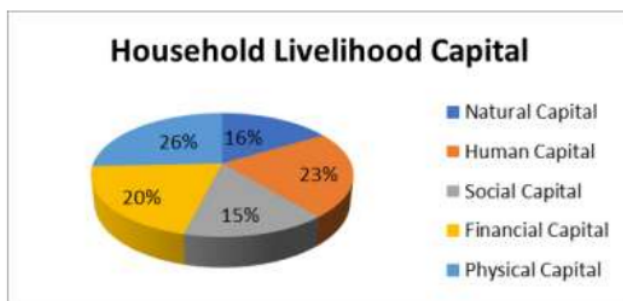


Figure 10. Average Ownership of Cinnamon Farmer Household Livelihood Capital Loksado Sub-District

#### 4. CONCLUSION

Community-owned livelihood assets influence the livelihood strategies of cinnamon forest farm households. The dominant capital investment in their lives is physical capital, which is 3.16 and comes from productive and non-productive assets.

#### Author Contributions:

AAR: Conceptualization, Methodology, Data Collection, Content Analysis, Writing (drafting and editing), RR: Data Collection, Content Analysis, Methodology. AF: Data Collection, Reviewing, SS: Data Collection, Content Analysis. Competing, HH: Data Collection, Content Analysis. Competing, YNS: Data Collection, Content Analysis. Competing, JJ: Data Collection, Content Analysis.

#### Interests:

The authors declare no conflict of interest.

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