

Rural Community Livelihood Around Kerinci Seblat National Park: The Study of Access and Socio-Ecological Relationship of Farming Households in Kota Baru Village, Uram Jaya Sub-district, Lebong Regency, Bengkulu

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Abstract

Forests hold diverse meanings and functions, serving both as natural resources and as critical sources of livelihood for local communities. Beyond providing essential raw materials that sustain human life, forests play a fundamental role in maintaining ecosystem functions and biodiversity. For indigenous peoples and rural populations residing in forest-adjacent areas, forests are deeply embedded in cultural practices and traditional knowledge, shaping their ways of life. In addition to their ecological significance, forests also serve as vital sources of livelihood for local communities. The residents of Kota Baru Village, for instance, depend on the resources of the Kerinci Seblat National Park (TNKS) forest area. Consequently, despite legal restrictions, they continue to engage in agricultural activities within the protected area. This study examines the livelihood structures, access mechanisms, and socio-ecological relationships of farming households surrounding the Kerinci Seblat National Park. Employing a mixed-methods approach, the research findings indicate that resource extraction—through agriculture and forest product collection—contributes significantly to household incomes. Farming households utilize four primary mechanisms to access forest resources within the national park: capital, technology, social identity, and market engagement. This access has fostered intricate socio-ecological relationships between households and the forest, which manifest in three distinct forms: co-existence, subsistence, and exploitation.

Keywords

social-ecological relationship; access mechanism; farmer households; livelihood structure

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INTRODUCTION

According to Article 1 of Government Regulation No. 10/2010, the purpose of conservation forests is to protect the diversity of plants, animals, and their habitats. One form of conservation area is a national park protected by the state. National parks are defined by Law No. 5 of 1990 as nature conservation areas with original ecosystems managed with a zoning system. They can be utilized for research, education, supporting science, tourism, and recreation. The existence of forest areas has a significant influence on the people who live around them. The lives of people living in buffer villages around the forest are still very dependent on the natural resources in the forest area. According to data from the Central Statistics Agency (BPS 2018), in 2014, 8.64 million families lived around the forest area, and 2.81% of the total practiced shifting cultivation. Forest communities rely on forest resources as a source of income. According to data from the Ministry of Environment and Forestry, 51.5% of the forest area in Indonesia has been used for various community activities (KLHK 2022). The rapidly decreasing forest area is caused by the increasing deforestation rate (Wahyuni & Suranto, 2021). Therefore, the government implements conservation forest policies to promote ecological sustainability by stopping exploitation, protecting ecosystems, and preserving biodiversity.

Kerinci Seblat National Park (TNKS) has an area of 1,389,509,867 hectares with 342 buffer villages. TNKS is one of the largest national parks on the island of Sumatra, which spans four provinces at once: Jambi Province, South Sumatra Province, Bengkulu Province, and West Sumatra Province. Communities living around the national park area are significantly affected by the conversion of forest status into a national park area. As a result, the community has changed the pattern of forest utilization. In this case, the conservation policy implemented by the government is like two different sides of a knife. People's lives in the buffer villages depend heavily on the forest, but their activities are considered contrary

to the conservation ethics of the national park policy. One of the affected community groups feels this, namely the Rejang Tribe IX Indigenous People who live in Kota Baru Village, Uram Jaya District, directly adjacent to the TNKS area. According to JKPP (Jaringan Kerja Pemetaan Partisipatif) mapping data 2015, the Kerinci Seblat National Park area in Kota Baru Village covered 698 hectares, equivalent to 82.2% of the total village area. The forest area was formerly known as the 'Demong Samin' customary forest of the Rejang Tribe IX MHA. According to Elias (2012), conservation in indigenous territories has two interrelated issues. First, efforts to support conservation must also consider the rights of indigenous peoples regarding land ownership rights, not just the purpose of conservation areas. Second, conservation must ensure access to community subsistence or agricultural activities.

Different interests and perceptions of natural resources will cause various parties to carry out certain activities to claim these resources, resulting in overlapping land claims (Ekrep & Soetarto, 2021). The government states that the national park area has a conservation function and should not be destroyed. However, the community claims that the forest is part of the customary land, a source of economic and food life. According to Damanik (2019), people's social and economic conditions in villages around forests are still poor, so people are still very dependent on forests. The behavior of people living around the forest, according to Mustofa (2011), is inseparable from things such as clearing land, utilizing land for farming, preserving the forest, and maintaining forest security. Estimates of the relative benefits of forest utilization also influence household decisions to develop agricultural activities and expand agriculture within forest areas (Dharmawan et al., 2020). This suggests that community income also comes from the forest extraction sector. According to Dharmawan (2007), livelihood strategies refer not only to and are limited to livelihoods but also to community livelihood strategies. Each farmer household will implement unique and diverse livelihood options based on

their capital and capabilities. The livelihood structure of farmer households derived from the area's extraction sector shows that agricultural activities still operate illegally in the national park area. Of course, these activities are determined by households' capacity and capital to utilize resources within the national park.

Ribot and Peluso (2003) define access as ways for individuals or groups to benefit from something influenced by power. When communities around the TNKS area lose the ability to manage their land due to policy enforcement, their livelihoods and income are disrupted. This encourages people to continue to enter and access the forest forcibly. Community access to natural resources in the area can reflect the form of social-ecological interaction between the community and the forest area. Social and ecological systems are two interrelated components of life that cannot be separated from each other in the continuity of life (Berkes & Folke, 1998). According to Hafsaridewi et al. (2018), an ecological system is an interdependent system of organisms or biological units, while a social system is a system that is interdependent with other people of the same kind. According to Anderies et al. (2004), social-ecological interactions are dynamic, interdependent, and mutually influencing relationships between social and environmental systems. Interactions between systems will always involve the exchange of energy, materials, and information (Marten, 2008). Social-ecological systems have a dynamic relationship of dependence and interaction, where changes in one system will cause changes in other systems (Sjafrie, 2018). In the context of national parks, social-ecological interactions between residents around forests and conservation forest areas are carried out to fulfill their daily needs. Research by Ginting et al. (2010) found that local people in national park areas are involved in ecotourism and non-ecotourism activities. Then, there are also two types of community interactions with natural resources, namely positive impacts and negative impacts (Susanto et al., 2020). The dynamics of access to intensive

forest areas indicate that the social-ecological interactions are also quite complex. Therefore, this study aims to analyze the livelihood structure, the mechanism of community access to forest areas, and the variety of social-ecological relationships formed between communities and forest areas.

METHODS

Data collection for this research was conducted in Kota Baru Village, Uram Jaya Sub-district, Lebong Regency, Bengkulu. This research uses a mixed-method approach integrating quantitative and qualitative research methods (Creswell, 2018). In this research, the quantitative approach uses a survey research strategy with a questionnaire as an instrument in the data collection process. The qualitative approach in this study is needed to collect descriptive data emphasizing the meaning of the social phenomena or events under study (Sugiyono, 2017). The methods used to obtain qualitative data are field observations and in-depth interviews (Singarimbun & Effendi, 2008). Data collection was carried out from December 2023 to May 2024. Two types of data are used in this research: primary and secondary. Primary data was obtained from questionnaires, in-depth interviews, and field observations, while secondary data was obtained from literature studies and related documents.

The population in this study were farmer households in Kota Baru Village. This study took a sample of 45 farmer households that were selected purposefully. This is because the exact sample frame of farmer households in Kota Baru Village is unknown. Each sampled household will be represented by the head of the household or the party responsible for managing the farmer's household. Respondent data was collected through structured interviews with questionnaires. The informants in this study were selected purposefully to explore the main information needed at the research location. Informants in this study were the national park, village government, traditional leaders, and farmers who own land around

the national park area. The number of informants was adjusted to the needs of qualitative data. Informant data collection was carried out through in-depth interviews with the interview guide that had been prepared previously.

Quantitative data were processed using Microsoft Excel 2021 and IBM SPSS Statistics 26 software and presented as graphs or cross tables. These were then analyzed descriptively to see the characteristics of farmer households around the national park, income structure, and access mechanisms. Meanwhile, qualitative data from in-depth interviews were analyzed descriptively and qualitatively through the stages of data reduction, presentation in narrative form, and conclusion drawing. Furthermore, the data were analyzed to determine social-ecological interactions between farmer households and national park areas.

RESULT AND DISCUSSION

Kota Baru Village Overview

Kota Baru Village is located in Uram Jaya District, Lebong Regency, Bengkulu Province, and has an area of 820 hectares. The distribution of land area based on land use is divided into 698 ha for forests or TNKS areas, 45 ha for community gardens, 72 ha for rice fields, and the remaining 5 ha for residential areas. Kota Baru Village is divided into 3 hamlets with a population of 632 people spread across 222 families. The population of Kota Baru Village consists of 318 men and 314 women. Kota Baru Village is a traditional village inhabited by MHA Rejang Tribe IX, an indigenous people who first inhabited the village area long before the Republic of Indonesia was founded. MHA Rejang has a traditional government system known as “Kutai” with strong conventional norms. All residents in Kota Baru Village are Muslims.

Kota Baru Village is at an average altitude of 1000 MDPL with a diverse landscape, ranging from mountains, hills, rice fields, flat lowlands, and rivers. Community settlements are in flat plains along the

foothills. This flat lowland has great potential to be developed as an agricultural area, so rice fields owned by residents dominate it. The source of irrigation for the rice fields is very abundant because it is supported by the presence of the Uram River, or “Bioa Uem,” whose flow surrounds Kota Baru Village. Meanwhile, people also use mountainous areas, which include slopes and ridges, as agricultural land. Agriculture is a milestone in life that is the basis for the economic structure of the population. Residents develop farming businesses on three types of land: rice fields, community gardens, and forest gardens within the TNKS area. The agricultural commodities produced vary according to the condition of the agricultural land. Rice is a commodity produced in rice fields that use irrigation water. Agriculture on mixed land produces commodities such as coffee, rubber, jengkol, petai, chili, cardamom, galangal, ginger, cassava, purple sweet potato, and local fruits such as tupok, kisip, iking, langsung, rambutan, and duku. Meanwhile, forest land farming in the national park produces coffee, durian, avocado, cinnamon, petai, and jengkol. The diverse environmental landscape conditions in Kota Baru Village also increase the risk of natural disasters. Rivers and mountains surround the village, making this village vulnerable to floods and landslides that endanger agricultural land and residential areas.

Dynamics of Natural Resource Utilization from Within The Kerinci Seblat National Park Area

Kerinci Seblat National Park is home to 4,000 species of plants, including the world’s largest flower, *Rafflesia arnoldi*, and the world’s tallest flower, *Amorphophallus titanum* (corpse flower). The TNKS area is also a habitat for Sumatran Tigers, Sumatran Rhinos, Sumatran Elephants, Dahan Tigers, Malayan Tapirs, Sun Bears, and around 370 species of birds. However, the natural resources in the TNKS area are close to people living in buffer villages, one of which is Kota Baru Village in Uram Jaya District. These natural resources have encouraged

people to access and explore the area. This condition is supported by the history of customary forests, which have now changed their status to TNKS areas. This indicates differences in viewing the function of the TNKS area between the community and the national park.

Before the Determination of the TNKS Area (before 1982)

The traditional government system of the Rejang Tribe is known as Kutai (*kuteui/kutei*). A combination of several kutai is called a clan. Dutch colonization influenced the clan government system in Bengkulu in 1861. Each clan had customary land, which was not only materially important but also had a supernatural meaning (religious-magical style) known as Taneak Adat/Tanea Tanai. Customary rights, also known as Taneak Tanai, are the rights of customary law communities to control land and the natural resources therein. The existence of customary rights has legal consequences both within and outside the Rejang Tribe association. Internally, the existence of ulayat rights gives the customary law association concerned exclusive capacity to manage, use, and care for its land and natural resources, while externally, ulayat rights provide the responsibility to protect its land and natural resources from control by outside parties or other parties. external customs' and anything that threatens the existence of the land and natural resources. The Rejang MHA fellowship society has the following privileges:

- The right to clear *imbo* land (empty forest land not cultivated)
- The right to pick and take "*imbo*" products such as rattan, hunt animals or river and lake products in the *imbo* forest, such as fish, and harvest plants in the *imbo* forest such as durian, petai, and jengkol
- The right to remain and reside in their respective *luak langgam* areas.

In the life of the Rejang community, every member of the customary law community association has the right to harvest and utilize *imbo* or forest products. Each mem-

ber has the right to utilize forest resources which can be obtained by clearing the undergrowth under the trees and making *sulo* symbols or *balai-balai*. When someone makes this symbol, he must notify the *Kutai Tuai* (kutai head) so that ownership of the land and trees becomes his. When the sign fades, or the trees die, ownership rights to the land and trees will be lost or obliterated if the prospective owner still does not obtain permission from the *Kutai* chairman. The land that has been cleared will then be used as a plantation to plant coffee, jengkol, petai, and durian commodities.

MHA Tribe IX Rejang also has customary norms regarding forest preservation. This is intended to maintain sustainability and maintain forests for the future. Certain *imbo* locations have sections called *imbo 'utan piadan'*, which require customary harvest permits to obtain forest resources. This is intended to protect the interests of the Rejang indigenous community. For example, the cut trees must be old or dying to maintain the wood quality for building houses. Apart from that, *piadan* forests (protected forests) cannot be used as fields. Apart from reserve debt, other parts of forest areas that may not be used as land or plantations are areas near springs, river watersheds, and steep slopes. Any member of the traditional community association who violates the regulations will be subject to a customary fine, the amount of which is determined by the *Kutai Tuai*.

After the Determination of the TNKS Area (1982 - present)

The clan government system only lasted until 1980. When UU No. 5 of 1979 concerning Village Government was implemented, all the lowest-level government systems in Indonesia were replaced with village administrative government systems. This policy shift resulted in the loss of access and control over the rights of the IX Rejang Tribe MHA, one of which was access to customary forest areas. Management of forest areas by the government does not involve or benefit indigenous communities. A lack of protection and support for the economy

of Indigenous communities as small people characterizes this. Due to limited access to the TNKS area, the community cannot manage their own forest products and plants. The community has managed the area for decades, creating an inseparable bond with the forest. This bond of dependency results in people continuing to forcibly enter the TNKS area to carry out agricultural activities and collect forest products. However, people carry out activities in the forest with feelings of anxiety and fear of being caught by TNKS patrol officers. They are forced to do this to maintain their livelihood. Coffee, durian, avocado, cinnamon, jengkol, and petai are commodities produced by plantations owned by communities in the area. Fish, rattan, ferns, and combs are some of the forest products obtained by the community by collecting forest products in the area.

Customary rules and norms no longer apply after the TNKS area was established due to changes in forest status and the abolition of the clan government structure. Currently, there are still several community-owned plantations within the national park area. According to traditional leaders, whenever there is land that has the potential to be encroached or utilized, the encroachers will open it and take the resources within it. This shows that the government and society have failed in managing and protecting forests. Therefore, collaboration between indigenous communities and the government or TNKS is essential to manage forests in a way that benefits all parties both economically and ecologically.

Farmer's Households Livelihood Structure

According to Ellis (2000), livelihood structure is the composition of household income which is divided into three sectors, namely on farm, off farm and non-farm. However, the results of this research reveal that the source of livelihood does not only come from three sectors but there is one other sector, namely the national park area extraction sector. Prasetya (2013) explains that the income structure is the composition of household income which comes from various activities

carried out by all household members. In this study, the household income structure is calculated as the net income received by the household from various livelihood sectors within one year after deducting the costs of purchasing seeds, labor costs, fertilizer costs, pesticide costs, transportation costs, agricultural equipment rental costs, and other operational costs.

The livelihood structure will be described based on the layers of farmer households according to the area of land ownership. Farmer household layers are classified into three, namely narrow land households with a land area of <0.8 ha, medium land households with a land area of 0.8 – 1.3 ha, and large land households with a land area of > 1.3 ha. The results show that there are differences in average income per year in the three levels of farming households. Small land households have an average annual income of IDR 22,032,100. Medium land households have an average yearly income that is greater than small land households, namely IDR 33,962,714. Households with large land ownership have an average annual income that is slightly lower than households with moderate land ownership, namely IDR 31,850,333. This shows that, apart from land area, other factors influence the average annual household income. Average family income from each sector varies according to household level. The following is the percentage composition of farmer household income based on land holding area.

Figure 1 explains that households with large land areas have higher on-farm and off-farm incomes than households with medium and small land areas. The middle land farming household layer has the highest area extraction sector income among all farming household layers. On the other hand, small land households have higher non-farm sector income among all levels of farming households. This shows that the larger the land controlled by farming households, the greater their on-farm and off-farm income. This is because the larger the land area controlled, the more plants can be planted and agricultural activities can be carried out, resulting in high income from

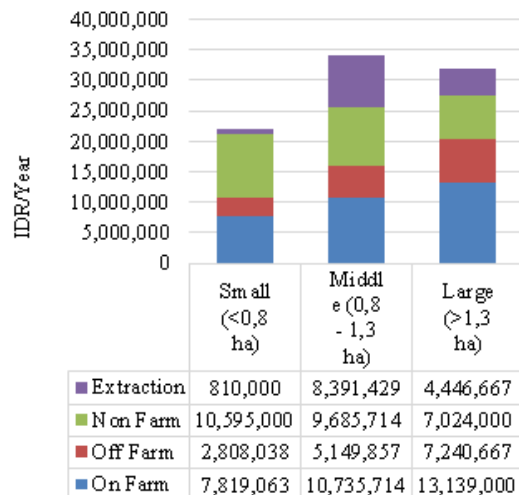


Figure 1. Average composition of farmer household income around the TNKS area based on land holding area in Kota Baru Village, Uram Jaya District, Lebong Regency, in 2024

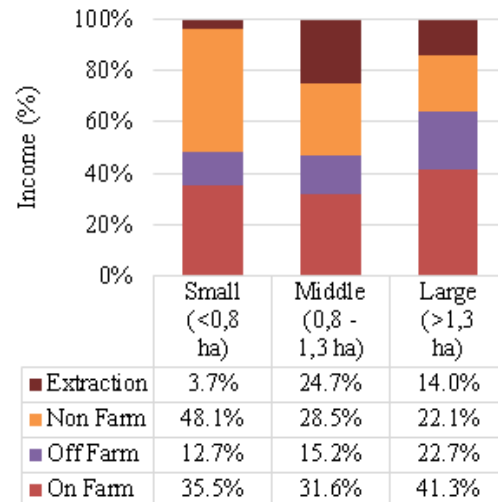


Figure 2. Income composition of farm households by land tenure size in percentage in Kota Baru Village, Uram Jaya District, Lebong Regency, in 2024

farm products both in the on-farm and off-farm sectors. Farming households' on-farm sector income is obtained from rice cultivation, smallholder plantations, animal husbandry, and fisheries activities. The income from the off-farm sector is obtained from working on other people's land, either from working on land by profit sharing or pawning or working as a laborer in planting and harvesting.

In the non-farm sector, the narrower the land, the more non-farm sector income will increase in the composition of farmer household income. This is because the narrower the land controlled by farming households, the lower the yields they will obtain, so households have to look for alternative sources of income outside the agricultural sector. This aligns with the opinion of Sembiring and Dharmawan (2014), who state that many farming households still work in the non-agricultural sector. This is because household income that only comes from the agricultural sector is still considered unable to meet family needs. Generally, smallholder farming households earn income from the non-farm sector by working as honorary employees, village officials, traders, tailors, masseurs, middlemen, salon services, areca nut peeling workers, sand and stone miners,

and agricultural product transport services during the season. harvest rice.

The smallest income for large and narrow land farming households comes from the regional extraction sector. Meanwhile, the layer of farming households with the largest percentage of regional extraction sector income is medium-sized farming households. This shows that the area of land controlled does not affect the amount of income in the regional extraction sector but is influenced by the existence of agricultural activities in the region, land productivity, and the use of agricultural products in the region. The income level of farming households originating from the regional extraction sector indicates that the community still carries out agricultural activities in the region. Farmers and agricultural activities in the area also suggest that households use an access mechanism to utilize resources in the area.

Access Mechanism

According to Ribot and Peluso (2003), access is formed through two mechanisms, namely (1) mechanisms for access to rights (right-based access) which are determined through legal provisions, customs, and conventions, and (2) structural and relational/

interconnected access mechanisms (structural and relational access mechanisms) through technology, capital, markets, labor, knowledge, authority, social identity, and social relations. Access to rights (right-based access) is divided into legal access (legal access) and illegal access (illegal access). Legal access recognizes rights with the force of law or regulations, customs/habits, and agreements/conventions. Meanwhile, illegal access is an action contrary to rules in the form of clandestine access carried out forcibly due to limited resource space. Changes in the status of forest areas in Kota Baru Village have resulted in changes in the form of access from legal to illegal. The following is a more in-depth explanation of the dynamics of access mechanisms for farming households in Kota Baru Village to the Kerinci Seblat National Park area.

Access Mechanism Before Determination of TNKS

Before its status as a national park, the forest was a customary forest area belonging to the Rejang Tribe IX MHA. The community's main identity determines community access to forest areas as part of the Rejang Tribe IX MHA alliance. Additionally, access is also determined by authorized figures or traditional leaders. In the period before the establishment of TNKS, communities had legal access to forests, which was their right as indigenous communities. Then, if you look at the access mechanism structurally, social identity and authority are the main factors in forming access. When the status of the forest was still a customary forest, the community gained access to utilize areas within the forest area, which were their rights as part of the customary community through the agreement of the "Tuai adat", whose position was as leader or chairman of the *Kutai* during the "mergo" era.

Access Mechanism After Determination of TNKS

After the TNKS area was established, all forms of community activities in the forest area became prohibited. The communi-

ty has automatically lost access to forest areas because they are no longer within their rights as part of the customary community. However, until now, people still carry out agricultural activities forcibly in the area (illegally). People are always worried, afraid, and anxious when carrying out activities in the area. The biggest risk is being caught and punished according to regulations by the national park. Access mechanisms in this study only identified four access mechanisms used by 48% of respondents from the total number of respondents in the category of having entered the TNKS area. Technology, capital, social identity, and markets are the four access mechanisms.

The access mechanism uses technology. Technology is measured by the amount of technology or agricultural equipment owned by farming households to access and take advantage of natural resources in the TNKS area. The amount of agricultural technology ownership in a household depends on the amount of land cultivated and the level of employment on agricultural land. The larger the area of land cultivated and the harder the level of work, the greater the quantity of technology owned by farmers. Households use technology to increase land productivity and efficiency of agricultural activities, facilitate access to resources in the area, and protect themselves from wild animals. The type of agricultural technology owned by farming households in Kota Baru Village is still classified as traditional equipment. The agricultural tools used by respondents for activities in the area are hoes, sickles, machetes, rims, sprays, and saws. As many as 45.4% of respondents had little agricultural technology (<7 pieces of agricultural equipment), 31.8% of respondents had a moderate amount of agricultural technology (7-9 pieces of agricultural equipment), and 22.7% of respondents had much agricultural technology (> 9 pieces of agricultural equipment).

"I have quite a lot of farming equipment at home because I work in the garden and rice fields. Of course, gardening requires good tools. If they are not good or cannot help according to my needs, I will find it dif-

ficult.” (Mrs. SRA, 55 years old)

The access mechanism uses capital. Capital is allocated for extraction, production, and other processes related to obtaining benefits from natural resources. The total number of respondents who spent capital was 45.5% of households, while those who did not devote capital were 54.5% of households. The average amount of capital expenditure for households that spend capital is IDR 1,710,000. Most of the capital is allocated to purchasing coffee plants’ fertilizer, seeds, and pesticides. The majority of households that do not spend capital are households that utilize the area’s natural resources for subsistence needs only. The commodities taken are jengkol, petai, durian, kecombrang and avocado. However, several households extract coffee plants without spending capital. This household manages coffee plants traditionally by “*nyeping*”, namely pruning coffee branches so that the fruit produced is dense enough and does not require any fertilizer or pesticides. This is due to the condition of the plantations, which have fertile soil, the lack of destructive pests, and the personal reasons of farmers who do not intend to manage their plantations intensively and accept whatever results they obtain.

“My garden does not use fertilizers and pesticides. It’s been like that since my parents’ time. The results are still quite good. This is because there are not many pests and the coffee trees also grow well.” (Mr. SRH, 35 years old)

The access mechanism uses social identity. 100% of respondents are residents of Kota Baru Village, a traditional Rejang community. Therefore, all respondents’ households use access to areas based on social identity. The community uses the access they gain to benefit from forest resources through agricultural activities and collecting forest products. This is achieved by using their social identity as the Rejang traditional community, and the community also has control over the forest area. This control takes the form of regulating who can access and benefit from forest areas. Even though most people know that forest areas are part of national parks and are prohibited from

entering, people still think that carrying out agricultural activities within their national park areas is part of customary forests and is a right of Indigenous peoples.

The access mechanism uses market. There are two categories of households based on market access mechanisms to national park areas, namely households that receive encouragement from the market and households that do not receive encouragement from the market. There are 59% of households that are influenced by market incentives and 41% of farming households that are not influenced by market incentives. Households that get encouragement from the market are households with exploitative forms of interaction and commercial goals. Households access and take advantage of forest resources in the area to sell according to market demand. Meanwhile, households that do not receive encouragement from the market are households with purely subsistence interests, namely for the household’s food needs and distribution to relatives and neighbors. The household decided not to sell these commodities due to limited quantities.

Through the access mechanism obtained by households to utilize forest resources, goals can be identified that shape various social-ecological relationships between communities and forest areas. Access mechanisms influence how society utilizes resources, interacts with the environment, and contributes to the existing ecosystem. The relationships formed, of course, include economic aspects related to the livelihoods and welfare of communities around the forest and social and ecological aspects related to the use, management, and sustainability of forest areas, which play an important role in maintaining natural balance and community welfare.

Form of Social-Ecological Interaction of Farmer’s Households Patterns of Socio-ecological Relations of Farmer’s Households Around the Kerinci Seblat National Park Area

Social and ecological systems are two interrelated components of life that cannot

Table 1. Differences in Access Mechanisms for Technology, Capital, Social Identity, and Markets in Kota Baru Village, Uram Jaya District, Lebong Regency, 2024

Difference	Technology	Capital	Social Identity	Market
De-scription	The number of agricultural equipment owned by farming households to access or take advantage of natural resources in the TNKS area	The total costs incurred by households to access or take advantage of natural resources within the TNKS area	The level of ethnic ownership that influences households to access or take advantage of natural resources in the TNKS area	The level of market encouragement that influences households to take commercial advantage of natural resources within the TNKS area
Using Party	Farmer household	Farmer household	MHA Rejang Suku IX	Farmer household
Land Use	Subsistence and exploitative needs	Subsistence and exploitative needs	Co-existence, subsistence, and exploitative needs	Subsistence and exploitative needs
Po-tential Con-flict	Conflict with TNKS management	Conflict with TNKS management	Conflict of interest in the forest with the TNKS management	Conflicts with TNKS and conflicts over resources with fellow farmers
How to De-fend Land	Increasing the use of agricultural tools for land efficiency and productivity	Arrange the balance of financing/ capital for land needs to remain productive	Using social identity to control access to land	Gain access to price information to maintain profit distribution to farmers

be separated from each other in the continuity of life (Berkas & Folke, 1998). According to Hafsaridewi et al. (2018), an ecological system is an interdependent system of organisms or biological units, while a social system is a system that is interdependent with other people of the same kind. The social system in this research refers to the existence of farming households around the Kerinci Seblat National Park area in Kota Baru Village. The ecological system refers to the Kerinci Seblat National Park area, which was previously a customary forest belonging to the MHA Rejang Tribe IX. Natural resources in the TNKS area are close to those living in buffer villages, including Kota Baru Village and Uram Jaya District. The existence of potential natural resources has directed people to access the area. This condition is supported by the history of customary forest ownership which has now changed its status

to a TNKS area. This indicates that there are differences in interests in viewing the function of the TNKS area between the community and the national park.

Based on the results of researchers' findings in the field, there are three forms of social-ecological interaction carried out by households around the Kerinci Seblat National Park in Kota Baru Village: forms of co-existence, subsistence, and exploitative interactions. Co-existence interactions were found in farming households that had never entered the area. The relationship of co-existence is defined as the harmony of life between humans and nature that runs without disturbing each other (Dharma-wan, 2007). Apart from that, several farming households also access areas with a form of co-existence interaction. These households continue to benefit from forest environmental services in the form of the natural beauty

of waterfalls in the area for relaxation purposes. This activity is considered a balanced interaction between society and nature because humans live side by side with forest areas without carrying out disruptive physical use of forest resources. On the other hand, farming households who decide never to enter the national park area have a reason to see that forests are very limited and choose to focus on work outside the area.

The forms of interaction between households who stated that they had entered the area were categorized into subsistence and exploitative forms of interaction. These two forms of interaction have similarities because they both stated that they had entered the national park area. However, the two have clear differences after a more in-depth analysis of these activities. The categorization of forms of interaction is based on the type of commodity, the intensity of collection, and the purpose of collection. The commodities taken by households in the form of subsistence interactions are firewood, ferns, durian, jengkol, petai, and kecombrang for household food needs, and some are distributed to neighbors. Taking small amounts for subsistence needs and methods that do not cause major damage to the ecological system make the actions of farmer households a form of subsistence interaction. In farming households with exploitative forms of interaction, the classification indicators are based on the use of natural resources, which risks damaging the forest environment, and the quantity of extraction, which is quite large and excessive, threatens the sustainability of natural resources. Apart from that, the exploitative use of natural resources is for commercial purposes to produce economic profits that households enjoy personally. The commodities taken by households in the form of exploitative interactions are coffee, cinnamon, fish, and rattan.

In Figure 3, it can be seen that there are three forms of social-ecological relationships found in farming households in Kota Baru Village, namely co-existence, subsistence, and exploitative. The co-existence relationship is a balance between humans and

nature that runs without disturbing each other. This co-existence relationship can be seen in household activities that take advantage of forest environmental services in the form of the natural beauty of waterfalls in the area for relaxation. The subsistence relationship is carried out based on fulfilling household subsistence needs through the collection of natural resources in small quantities and methods of collection that do not cause major damage to the ecological system. The commodities taken for subsistence needs are firewood, ferns, durian, jengkol, petai, and kecombrang. Exploitative relationships are based on the utilization of natural resources that risk damaging the forest environment, the quantity of extraction is large enough and excessive enough to threaten the sustainability of natural resources. The commodities extracted are coffee, fish, cinnamon, and rattan. These commodities are extracted for economic needs or commercialized.

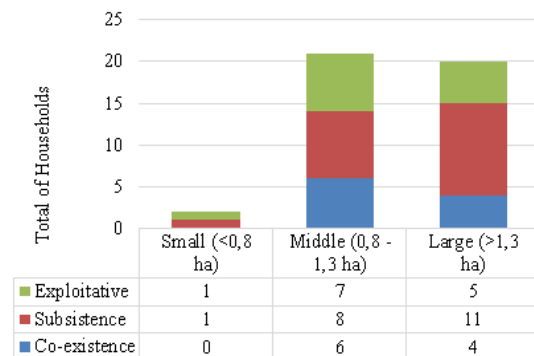


Figure 3. The pattern of socio-ecological relationships of farmer households around the Kerinci Seblat National Park area, Kota Baru Village, Uram Jaya District, Lebong Regency, 2024

"I collect firewood when I visit the farm. I use the firewood to boil water so that I can save gas. I also often collect durian, petai and jengkol fruit when they are bearing fruit. Not bad for family food, I don't sell them." (Mr. SAD, 57 years old)

There are differences in the social-ecological relationships built by households with small, medium, and large land areas. It can be seen that subsistence relations

are the most dominant among all levels of the household. Households with large land and medium land have all types of relationships, namely exploitative, subsistence, and co-existence. Meanwhile, households with limited land only build two types of relationships: exploitative and subsistence. This is because small-scale households have limited land and limited activity routines. The differentiator of the relationship between farming households lies in the relationship of co-existence. Households with large and medium-sized land that build co-existence relationships are households whose agricultural land is located in an area close to or adjacent to the natural object of a waterfall. When farmers feel tired and bored with work, they can relax momentarily and enjoy the natural beauty and fresh air at the waterfall. Not only that, several farmers relax while on their way to or from agricultural land in the area because the return road passes through a waterfall.

Large land households have the highest subsistence relationship among other households. This is because households with large areas of land have land that is not actively cultivated and only use the land by carrying out activities of harvesting plants and collecting forest products only when it is in season and for uncertain periods. Medium land households have the most dominant exploitative relationship among other households. This is because medium-sized land farming households have actively and routinely cultivated land. Overall, 78 total activities are carried out by households accessing the national park area for subsistence and exploitative commodities. Total activity is measured by the number of types of forest commodities used by farming households. When compared, subsistence activities totaling 61 activities are more than exploitative activities totaling 17 activities. This shows that the most prominent form of social-ecological interaction in Kota Baru Village is the form of subsistence interaction as an alternative to support household food needs. Even though there is limited access to land, which has now become a national park area, the hereditary land use system, which

is still ongoing today, is a potential opportunity for the community to gain benefits from the forest area, both economic (in cash) and non-economic benefits (in kind).

CONCLUSION

The livelihood structure of farmer households in Kota Baru Village is limited to the on-farm, off-farm, and non-farm sectors and involves the national park forest area extraction sector. The area of land owned influences household income, but other factors influence income outside of the land area, namely land productivity and access to resources in national park areas. After deducting operational costs, farmer household income is calculated based on annual net income from various sectors. The results show significant differences in each household layer according to their land area. Households with limited land tend to be more dependent on the non-farm sector, contributing 48.1 percent. The non-farm sector includes jobs such as honorary employees, traders, tailors, areca nut peeling workers, middlemen, salon services, sand and stone miners, and agricultural product transport services. On the other hand, households with medium and large land areas rely more on the on-farm sector with the largest contribution for each household, namely 31.6 percent and 41.3 percent. The regional extraction sector contributes significantly to households with medium land, which is more productive in managing and utilizing land within the area.

There are four access mechanisms used by respondents in the category of having entered the TNKS area: technology, capital, social identity, and market. Technology is measured by the amount of technology or agricultural equipment owned by farming households to access and take advantage of natural resources in the TNKS area. The amount of agricultural technology ownership in a household depends on the amount of land cultivated and the level of employment on agricultural land. There, 45.5% of households had little technology (<7), 31.8% had moderate technology (7-9), and 22.7%

had much technology (>9). Capital is a collection of wealth in the form of finance that respondents use to take advantage of the natural resources of the national park area. There 54.5% of households spend capital to access the area, with the average capital expenditure amounting to IDR 1,710,000. Most of the capital is allocated to purchasing coffee plants' fertilizer, seeds, and pesticides. Meanwhile, 45.5% of households that did not spend capital were households that utilized the area's natural resources for subsistence needs only. 100% of respondents are from the Rejang indigenous community. Therefore, all respondents' households use access to areas based on social identity. This is achieved by using their social identity as the Rejang traditional community, and the community also has control over the forest area. Then, there are two categorizations of households based on market access mechanisms to national park areas: households that receive encouragement from the market as much as 59% and households that do not receive encouragement from the market as much as 41%. Households that receive encouragement from the market are households with exploitative forms of interaction, while households that do not receive encouragement from the market are households with purely subsistence interests.

Farming households around the Kerinci Seblat National Park in Kota Baru Village have three forms of social-ecological relationships: co-existence, subsistence, and exploitative. This form of co-existence interaction as a social system has no impact on the ecological system and is by the ecological mission. This is because the activities carried out are aimed at relaxation alone without any physical interaction with nature. Subsistence and exploitative forms of interaction were found in households that had entered the national park area. Analysis of subsistence interaction forms is based on meeting household consumption needs by utilizing forest commodities and plant products that were planted in small quantities before the forest became a TNKS area and did not cause major damage. The commodities with limited interaction are firewood,

ferns, kecombrang, durian, avocado, jengkol, and petai. The form of exploitative interaction is based on using natural resources, which risks damaging the forest environment; the quantity taken is large enough to threaten the sustainability of natural resources. Apart from that, the exploitative use of natural resources is for commercial purposes to produce economic profits that households enjoy personally. The commodities extracted are coffee, fish, cinnamon, and rattan.

Seeing the existence of communities in illegal areas and the contribution of regional extraction sector income to the total income of farmer households, it is necessary to establish cooperation between local communities and the government or national park area managers in managing the area, which can benefit both parties from an economic and ecological perspective. Apart from that, seeing the variety of commodities from various agricultural livelihood sectors, it would be very profitable to get support from the local government to develop it into a local economy by increasing the added value of agricultural products.

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