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Analysis of the Sustainable Livelihood Approach (SLA) to Support Social Forestry: A Case Study of Rimbo Larangan Indigenous Forest, Kuantan Singingi, Riau, Indonesia

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ABSTRACT

This study analyzes the implementation of the Sustainable Livelihood Approach (SLA) to assess the readiness and potential of the community to manage the Rimbo Larangan Indigenous Forest in Kenegerian Teratak Air Hitam, Kuantan Singingi Regency, Riau Province, within the context of the Social Forestry. The method used is a mixed-methods approach combining quantitative data from a survey of 120 respondents with qualitative data from in-depth interviews with key stakeholders. The analysis focuses on five types of livelihood capital: human, natural, physical, financial, and social. The research results indicate that the community possesses livelihood assets at a moderate level, with human, social, and natural capital at a higher level compared to physical and financial capital. Strengths in human and social capital are reflected in educational levels, a culture of deliberation, and the active role of customary institutions in preserving the forest. Meanwhile, limitations in physical and financial capital highlight the need for support in the form of technical training, improved access to capital, and institutional mentoring. The implementation of SLA has proven effective in identifying the community's socio-ecological strengths and vulnerabilities and provides a scientific basis for the process of applying for recognition of the Rimbo Larangan Indigenous Forest under the Social Forestry. Accordingly, strengthening the five livelihood capitals through capacity building, economic diversification, and institutional collaboration is key to achieving adaptive and sustainable community-based forest management.



1. Introduction

Forests have an important role in meeting the essential needs of communities, ranging from the provision of food, medicines, and building materials to environmental services such as clean water, fresh air, and recreation [1]. For indigenous peoples, forests also embody local wisdom passed down through generations, serving as the foundation for conservative forest management practices [2]. This local wisdom manifests in systems of “prohibitions” that restrict forest use in specific areas, as observed in the Rumbio Traditional Prohibited Forest [3], [4] and the Imbo Putui Petapahan Indigenous Forest [5]. In Kuantan Singingi Regency, Riau Province, there is the Rimbo Larangan Kenegerian Teratak Air Hitam Indigenous Forest, managed according to customary rules. This management is carried out through local wisdom in the form of appeals, regulations, and forest protection maintained by local customary institutions [6]. This indigenous forest holds significant ecological value, including a carbon stock of 11,795.85 tons with a potential CO₂ absorption capacity of 43,290.76 tons [7]. However, to date, Rimbo Larangan has not been officially recognized under the Social Forestry scheme, despite its significant potential to be designated as an indigenous forest.

The Social Forestry Program, designed by the government through Ministry of Environment and Forestry Regulation No. 83 of 2016, aims to provide communities with legal access to forest management, based on three core principles: conservation, livelihoods, and rights [8], [9]. The implementation of the indigenous forest scheme within this program is expected to improve community welfare while preserving forest sustainability. According to research by Sisilia and Suhirman [10] in a related study on SLA within the agrarian reform program in Pasaman, West Sumatra, livelihood assets are viewed as the primary factor influencing the success of the agrarian reform program in improving community well-being by examining how communities manage and access the five types of livelihood capital: human, natural, social, financial, and physical capital. Another study by Alam [11] found that SLA analysis in the tourism sector can create better livelihood opportunities and help alleviate poverty. Additionally, research by Molosi-France and Kenneth [12] on the SLA approach in Botswana revealed that SLA can help identify the strengths and assets of local communities that can be leveraged to reduce poverty and enhance sustainable development.

Based on these findings, the application of SLA in the context of Social Forestry is necessary to assess the conditions, potential, and readiness of communities to manage forests independently and sustainably. SLA assesses the sustainability of community livelihoods through five key forms of capital, emphasizing the importance of the diversity of resources possessed by individuals, households, and communities, as well as their relationship with social, economic, and environmental contexts. This approach enables a comprehensive identification of communities’ strengths and vulnerabilities, and fosters the development of adaptive, inclusive, and sustainable forest management strategies [13], particularly within social forestry programs. Thus, the application of SLA in the Rimbo Larangan Indigenous Forest can provide a comprehensive picture of the community’s readiness to achieve self-reliance within the Social Forestry framework, while also serving as crucial input for the government in the process of legally and equitably recognizing and designating indigenous forests.

2. Research Significance

This study holds important significance in supporting community-based indigenous forest management through the Sustainable Livelihood Approach (SLA) in the Rimbo Larangan Indigenous Forest of Kenegerian Teratak Air Hitam. In academic terms, this study contributes to the development of research on the application of the SLA in the context of Social Forestry, particularly in examining the relationship between community livelihood assets and the sustainability of indigenous forest management. This study is also important because research on the application of the SLA in indigenous forest in Riau Province remains relatively limited. It provides an overview of the community's livelihood capital including human, social, natural, physical, and financial capital which serves as the foundation for assessing the community's readiness to manage indigenous forest independently and sustainably. This information can assist communities and customary institutions in developing forest management strategies that are more adaptive, participatory, and oriented toward the sustainability of community livelihoods. It is also expected to serve as a basis for consideration by the government and stakeholders in the process of recognizing and designating the Rimbo Larangan Indigenous Forest within the Social Forestry. It is hoped that this research will support efforts to protect indigenous forest, improve community welfare, and strengthen the sustainable management of natural resources based on local wisdom.

3. Methods

This study was conducted in the Rimbo Larangan Indigenous Forest of the Teratak Air Hitam Sub-district, Sentajo Raya District, Kuantan Singingi Regency. Respondents were selected from the communities of villages located around the indigenous forest, namely Teratak Air Hitam Village, Seberang Teratak Hitam Village, Parit Teratak Hitam Village, and Jalur Patah Village. This study used mixed methods by combining qualitative and quantitative approaches. The mixed-methods research approach integrates the use of quantitative and qualitative data within a single study. In this approach, researchers collect and analyze data in both numerical and textual forms to understand the research phenomenon more fully and comprehensively. Mixed methods allow researchers to combine the strengths and advantages of quantitative and qualitative data, as well as overcome the limitations of each. Quantitative data provides measurable information and broader generalizations, while qualitative data allows for a deep understanding of the context, individual experiences, and subjective aspects of the phenomenon under study.

3.1 Data Collection Techniques

Data collection was conducted through surveys; survey data were obtained via questionnaires used by the researcher to interview respondents and through observation. The qualitative data was obtained through in-depth interviews conducted in person. The method for

selecting interview samples of key informants involved purposive sampling of several stakeholders. Interviews were conducted with stakeholders at the village level, such as the Village Head, Hamlet Heads, traditional leaders, and religious leaders.

3.2 Number of Respondents

The sample size for the questionnaire included 4 villages: Teratak Air Hitam Village (361 households), Seberang Teratak Hitam Village (104 households), Parit Teratak Hitam Village (234 households), and Jalur Patah Village (485 households). A total of 10% of households were sampled from each village, resulting in a total of 120 respondent households. This sample size of 120 respondents is considered sufficient for statistical data analysis in accordance with the normal distribution curve used and the underlying assumptions. In several statistical analyses, a sample size of 120 is considered sufficient to apply commonly used analytical techniques, and the justification for the sample size is conducted appropriately and transparently [14].

3.4. Data Analysis

The data collected in the field were analyzed using the Sustainable Livelihood Approach and descriptive analysis to identify the livelihood assets in the Rimbo Larangan Kenegerian Teratak Air Hitam Indigenous Forest. The data collected in the field was analyzed using the Sustainable Livelihood Approach, which employs five types of capital or assets: Human Capital, Natural Resource Capital, Financial Capital, Physical Capital, and Social Capital. These five forms of capital or assets are closely related to the sustainability of community livelihoods. In their study, Kesuma et al. [15] also used the same five forms of capital, namely natural capital, social capital, financial capital, physical capital, human capital, and political capital, to measure the performance of community groups managing social forests [15].

4. Results and Discussion

3.1 Availability of Livelihood Assets

The livelihood assets available include all assets owned privately by the community, as well as those available as public assets in the local environment. The community can use these assets to recover from vulnerabilities or to sustain their livelihoods. The availability of assets is determined by assigning a value or score to each indicator within an asset. The results of the analysis of the availability of the five community assets located around the Rimbo Larangan Kenegerian Teratak Air Hitam Indigenous Forest were analyzed using five types of capital: human capital, physical capital, social capital, natural capital, and accessibility capital.

According to Nurbaini et al. [16], livelihood assets are crucial because this approach helps communities manage their resources sustainably, thereby enhancing their well-being and resilience against various vulnerabilities, such as economic pressures, environmental changes, and social upheavals. According to Ngui et al. [17], forests and natural resources are an integral part of livelihood capital, and the sustainable management of and access to forest resources are vital in strategies for poverty reduction and the empowerment of forest dependent communities which can be analyzed using the five forms of capital within livelihood assets.

In the context of social forestry, strengthening these five forms of capital serves as the primary foundation for communities to manage forests independently and sustainably, thereby not only preserving the environment but also creating opportunities for increased income, strengthening social networks, and expanding access to resources and markets. Thus, livelihood assets play a vital role in supporting the successful implementation of social forestry as a development strategy focused on community well-being and forest conservation. The following outlines the five pillars of the Sustainable Livelihood Approach as examined among communities surrounding the Rimbo Larangan Kenegerian Teratak Air Hitam Indigenous Forest.

3.1.1 Human Capital

Human capital refers to the skills, knowledge, technical abilities, capacity to work, and good health that are essential to an individual's ability to pursue livelihood strategies [18]. In this study, human capital is analyzed through five indicator components that reflect the community's capabilities and quality of life. The basic indicators of human capital are formal education attained, experience in agricultural/plantation businesses, skills, family consultation, and family members involved in farming. Meanwhile, other indicators are tailored to the social conditions of the local community. The overall average of the indicators is moderate, with a score of 2.08, as shown in Table 1.

Table 1. Availability of Community Human Capital in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam

No	Human capital indicator	Skore	Descripton
1	Formal education	2,55	High
2	Experience in farming/plantation businesses	2,23	Medium
3	Skills and innovation in the field of farming/plantation operations	1,13	Low
4	Family discussion	2,75	High
5	Family members involved in farming	1,75	Medium
Total		10,41	
Average		2,08	Medium

Based on Table 1, the indicators with high scores are formal education (2.55) and family discussions (2.75), indicating that the community has a relatively high level of education as well as a strong culture of communication and joint decision-making. Meanwhile, experience in plantation businesses (2.23) and family members' involvement in farming (1.75) fall into the medium category, meaning there is still room for improving family capacity and participation in productive activities. The indicator with the lowest score is skills and innovation in the farming/plantation sector (1.13), indicating the community's limited ability to develop new techniques or business innovations. This is a major weakness that needs to be addressed through technical training, knowledge transfer, and mentoring. Consequently, it can be concluded that while the community possesses potential in formal education and family deliberation, enhancing skills and innovation is essential to strengthen human capital in supporting the sustainable management of social forestry. According to Kusuma et al. [15], in efforts to manage Social Forests within community groups, human capital can include the technical and entrepreneurial skills of

group members, which can be enhanced through training and practical business experience. In another study, Batoa et al. [19] found that within the Bajo community in the regency, strong human capital is considered one of the key factors directly influencing the social and economic empowerment of the community.

The human capital of the community in Rimbo Larangan Indigenous Forest, is quite strong. This means that the community has the capacity to manage assets and sustain their livelihoods. The community’s human capital is already at an adequate level to support the application for social forestry, as it is grounded in the essential foundations of education and a culture of deliberation. However, to strengthen their position in forest management, technical assistance, skill enhancement, and business innovation are required. This is also in line with the mandate of Law Social Forestry Policies No. 11 of 2020 that emphasize the importance of community capacity building. Law No. 11 of 2020 on Job Creation underscores the importance of strengthening the position of social forestry, including by providing legal access to communities. There is a need for facilitation to improve community capacity so they can manage forest resources sustainably and responsibly, ensuring that social forestry programs operate effectively and guarantee fair benefits and legal protection regarding community access to forest resources.

3.1.2. Natural Capital

Natural capital is a natural resource that forms the basis of livelihoods for communities and traditional fishing groups, such as fishery resources, agricultural land, and forests [18]. Natural capital is vital for individuals engaged in activities that rely on natural resources, such as agriculture, fisheries, forestry, and others. Nobody can survive without the support of the environment and the food produced by nature. Effective utilization of available natural capital can provide additional income and be used to meet individual needs. According to Astaman et al. [20] (2024) in their study of the social forest area in Enrekang Regency, the role of natural resources particularly forests in supporting the sustainable well-being of communities within the social forest area of Enrekang Regency is highlighted. Furthermore, according to Nugroho et al. [21], natural resources such as forests serve as assets in farmers’ livelihood strategies, and there is a need for policies and sustainable resource management practices to support future economic and ecological sustainability. The results regarding the availability of natural capital for the residents of Rimbo Larangan Indigenous Forest, are classified as Moderate with a score of 2.08, as presented in Table 4.

Table 4. Availability of Community Natural Capital in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam

No	Indicator	Score	Description
1	Land condition	1,91	Medium
2	Air quality	2,03	Medium
3	Biodiversity Status	2,15	Medium
4	Environmental conditions	2,04	Medium

5	Have a family of medicinal plants	1,77	Medium
6	Diversification of farming	1,50	Low
7	Use of backyards	2,08	Medium
8	Use of straw	1,68	Medium
9	Drainage maintenance	2,61	High
10	Plant ownership	1,92	Medium
11	Landowner	2,41	High
12	Conflicts over the use of natural resources	2,87	High
Total		24,95	
Average		2,08	Medium

Based on Table 4, the indicators for drainage maintenance scored 2.61, land tenure 2.41, and conflicts over natural resource use 2.87 all falling into the high category. The findings indicate that the community has the capacity to maintain the ecological and hydrological functions of the land, has a relatively good level of control over cultivated land, and experiences minimal conflict in the use of natural resources. This condition is crucial because the success of Social Forestry heavily depends on the regulation of water management and social stability in managing the Rimbo Larangan Indigenous Forest. Conversely, the diversification of farming indicator, with a score of 1.50, falls into the low category, indicating that the community's capacity to develop productive enterprises based on natural resources beyond primary agriculture or plantations remains limited. This is a challenge for the sustainability of Social Forestry, as diversification of farming is one of the adaptive strategies to strengthen the economic resilience of forest communities, as explained in the Sustainable Livelihood Framework guidelines [18], which state that livelihood diversity can reduce vulnerability to economic and environmental. Natural capital can be utilized in various economic activities and resource management, including the conservation of critical areas, the management of strategic water sources, sustainable fisheries management, and investments in green infrastructure. The goal is to ensure that the benefits of this natural capital remain sustainable and can support human well-being in the long term [22]. The results of this analysis also indicate that community in the Rimbo Larangan Indigenous Forest, is suitable for development as a Social Forestry initiative based on indigenous forest. The community already possesses a good understanding of ecology but still requires mentoring in business diversification and sustainable forest management. Support from the government and supporting institutions is crucial for improving community well-being and forest sustainability, although challenges remain regarding financing and market access.

3.1.3. Physical Capital

Physical capital, or basic infrastructure capital, consists of production equipment, instruments, and facilities that enable communities to sustain their livelihoods, such as landing sites (for catches), navigation tools, fishing gear, markets, transportation, housing, water, energy, and communication facilities [18]. This capital is essential for connecting rural and urban areas. Consequently, individuals can move easily, whether to seek information or to migrate. Public service buildings and facilities such as schools, health centres, places of worship, and cooperatives are also needed

by rural communities to support their livelihoods. Based on the results of the analysis, the Physical Capital of the community around the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam is classified as Medium with a score of 1.91, as presented in Table 5.

Table 5. Availability of Community Physical Capital in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam

No	Indicator	Score	Description
1	Physical condition of the house	2,86	High
2	Rice field ownership	2,31	Medium
3	Dryland farming area ownership	0,33	Low
4	Ownership of a backyard	1,56	Low
5	Farm machinery	2,38	High
6	Communication tool	2,99	High
7	Distance to the market	2,39	High
8	Distance to the Community Health Center	1,19	Low
9	Distance to the subdistrict	1,18	Low
Total		17,18	
Avarage		1,91	Medium

Based on the Table 5, the indicators with high scores are the physical condition of the house (2.86), agricultural machinery (2.38), access to communication tools (2.99), and distance to the market (2.39). These conditions indicate that the community already possesses basic facilities and infrastructure that are adequate to support economic and social activities, particularly regarding access to information and the ease of distributing agricultural and plantation products. The availability of communication tools such as mobile phones and televisions also serves as a crucial asset in strengthening social networks and supporting the dissemination of information regarding government programs, including the Social Forestry scheme. However, several other indicators remain relatively low, such as ownership of dryland farming area (0.33), ownership of backyard (1.56), distance to Community Health Centre (1.19), and distance to sub-district offices (1.18). This indicates limitations in access to basic public services and additional land that could be utilized for productive household activities. These limitations in health access and administrative distances can impact time and cost efficiency, necessitating interventions such as improvements in public service infrastructure and rural transportation.

Overall, the community’s physical capital has shown sufficient readiness to support the implementation of the Social Forestry program, although improvements are still needed in terms of accessibility and facilities supporting productive economic activities. In the context of managing the Rimbo Larangan Indigenous Forest, the presence of good basic infrastructure and high communication access presents significant potential for strengthening institutional coordination and support activities. However, strengthening physical capital through the construction of road access, health facilities, and the development of productive backyard plots must be a priority so

that communities can become more self-reliant and empowered in the sustainable management of forest resources. Nevertheless, improving public facilities and optimizing backyard plots must remain a focus of support so that the Social Forestry program can truly strengthen community economic self-reliance and ensure the sustainable management of the Rimbo Larangan Indigenous Forest.

3.1.4. Financial Capital

Financial capital is the financial resources that people own or have access to in order to realize their livelihood choices, such as cash, savings, access to credit, regular remittances or pensions, and assets that can be converted into cash (such as livestock, jewelry, and so on) [18]. This includes cash flows and reserves that contribute to consumption activities and are equally important for production. Reserves can take the form of savings held as cash or bank deposits. Meanwhile, regularly received cash flows can include income from agricultural and plantation activities. Based on the results of the observations, it is shown that the financial capital possessed by the community in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam, has a medium category with a score of 1.99. These results are presented in Table 6.

Table 6. Availability of community financial capital in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam

No	Indicators	Score	Description
1	Income sources	1,46	Low
2	Family members who work/earn income	1,76	Medium
3	Monthly income	2,33	High
4	Amount of savings	1,54	Low
5	Financial difficulties	1,95	Medium
6	Livestock ownership (chickens, goats, cattle)	1,59	Low
7	Number of loans	2,35	High
8	Access to borrowing from relatives, neighbors, and friends	2,44	High
9	Borrowing from institutions (banks, cooperatives)	2,44	High
Total		17,87	
Average		1,99	Medium

Based on Table 6, indicators with high scores such as monthly income (2.33), total loan amount (2.35), access to loans from relatives/neighbors/friends (2.44) and borrowing from institutions such as banks and credit unions (2.44) indicate that the community has relatively strong social networks and access to financing sources. This presents significant potential for supporting the establishment of local economic institutions, such as community forest cooperatives or Forest Farmers' Group (KTH) business units. The community's ability to access capital from outside the community demonstrates a fairly good level of financial trust, which can support the implementation of social forestry in the Rimbo Larangan Indigenous Forest. However, several indicators with low scores such as income sources (1.46), savings (1.54), and livestock ownership

(1.59) show that the diversification of the community’s economic sources remains limited. This condition indicates that most of the income still depends on traditional agriculture or irregular daily labor. Limited savings also reveal the community’s low capacity to bear short-term risks, such as crop failures or price hikes.

Overall, the financial readiness of the community in the Rimbo Larangan Indigenous Forest can be categorized as sufficient to apply for and initiate a Social Forestry, though it is not yet fully robust in terms of economic sustainability. In a policy context, this readiness already meets one of the administrative and social requirements set forth in Ministry of Environment and Forestry Regulation No. 83 of 2016 on Social Forestry, particularly regarding the community’s ability to organize itself and collectively manage economic resources. However, interventions such as assistance with access to capital, financial management training, and the establishment of group-based microfinance institutions are urgently needed to strengthen the community’s long-term economic resilience.

3.1.5. Social Capital

Social capital is the network and relationships within a community that people rely on to make a living, such as social and professional organizations, associations, and savings and loan groups. Social capital is crucial as it serves as a buffer that helps individuals recover from shocks, such as the death of a family member [18]. Additionally, it acts as a safety net that supports an individual’s resilience against insecurity. Social cohesion can also provide support for other assets; for instance, labor assistance can compensate for limited human capital. The social capital possessed by the community in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam, falls into the moderate category with a score of 2.08; these results are presented in Table 6.

Table 6. Availability of Community Social Capital in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam

No	Indicator	Score	Description
1	Trust in the local community	2,18	Low
2	Security in the local environment	2,33	Medium
3	Participation in farmer groups	1,49	Low
4	Customary activities that encourage togetherness	2,54	High
5	Participation in community activities	2,29	Medium
6	Ability to help others	2,26	Medium
7	Family members participating in organizations	1,61	Low
8	Sources of public service information	1,57	Low
9	Relatives who can provide help in emergencies	2,47	Medium
Total		18,74	
Average		2,08	Medium

Based on Table 6, indicators with high scores such as traditional activities that foster a sense of community (2.54) and turning to relatives for help in times of need (2.47) indicate that social bonds and the value of cooperation remain strong within the community. This serves as a

crucial foundation for community-based forest management, as the success of social forestry heavily depends on cooperation among group members and mutual trust. Additionally, levels of environmental security (2.33) and participation in community activities (2.29) also indicate the presence of social stability and local solidarity that support the formation of participatory village forest or customary forest institutions. However, several indicators remain in the low category, such as participation in farmers' groups (1.49), members participating in organizations (1.61), and sources of public service information (1.57). These conditions indicate that community participation in productive institutions and access to public information remain limited. Low institutional participation can hinder coordination and transparency in forest management if not promptly addressed. Therefore, institutional support and capacity-building particularly regarding the organization of forest farmer groups, cooperatives, and village deliberation forums constitute strategic steps to strengthen the community's social readiness.

Overall, the community's social capital in the Rimbo Laranagn Indegenous Forest, Kenegerian Teratak Air Hitam is at a sufficiently prepared level to pursue social forestry, as it already possesses a foundation of trust, solidarity, and supportive social networks. Local values such as customary traditions and mutual aid serve as crucial assets to ensure the sustainability of community-based forest management. According to research by Ramadhan et al. [23], the success of forest resource management and sustainability heavily depends on the capacity and social character of the communities involved (e.g., social relationships and trust within the community). However, to ensure optimal implementation, institutional strengthening of groups, increased organizational participation, and the development of information access and communication among residents are necessary.

3.2. Community Readiness for Social Forestry Based on Livelihood Asset Analysis

The livelihood assets approach used to assess the level of community readiness in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam, within the Social Forestry program was analyzed using five livelihood assets: human capital, natural capital, physical capital, financial capital, and social capital. These assets form the basis of the analysis for understanding the community's capacity and potential to achieve sustainable forest management. According to research by Ayu et al. [24] on livelihood assets in community-based forest management (HKM) conducted by the Beringin Jaya Farmers' Group, the initiative has had a significant impact on enhancing the community's livelihood assets. The changes observed include improvements in natural capital such as land ownership, timber species, and non-timber forest products; human capital such as training and the number of children attending school; financial capital such as income sources and loans; social capital such as organizations, social networks, levels of trust, and mutual aid; and physical capital, including housing conditions, the number of motor vehicles, and electronic equipment.

The condition of the community's livelihood assets in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam is in good condition. This can be seen from the five assets forming a pentagon in Figure 1; all forms of capital are in the medium category. Additionally, these five assets nearly form a perfect pentagon, indicating no significant imbalance among the assets. The lowest value or score is 0.00, and the highest or maximum value is 3.00. Social capital, human

capital, and natural capital have the same value or score of 2.08, while financial capital has a score of 1.99 and physical capital has a score of 1.91.

Figure 1 shows the pentagon of community livelihood assets, which reinforces the findings of the analysis conducted among the community in the Rimbo Larangan Indigenous Forest. Overall, all five forms of capital are at a moderate level, indicating that the community possesses sufficient basic capacity to manage the forest area in a traditional and self-reliant manner. Strengths in human, social, and natural capital serve as the primary foundation for driving the success of community-based forest management, while physical and financial capital require strengthening through external support. The results of this analysis can serve as a basis for consideration and a foundation in proposing a social forestry in the Rimbo Larangan Indigenous Forest. The following SLA analysis can serve as supporting factors and important considerations in the proposal for a social forestry scheme in the Rimbo Larangan Indigenous Forest.

The SLA approach in this study has also provided a comprehensive overview of the social, economic, and ecological conditions of the communities surrounding the forest. Through an analysis of the availability of five key forms of capital—human, social, natural, physical, and financial—SLA helps identify the strengths and vulnerabilities of the community in the context of forest resource management; furthermore, SLA can serve as a diagnostic tool to assess the extent to which a community possesses the basic capacity to participate in sustainable forest management. This aligns with the research by Hadianiti et al. [25], where SLA serves as a strategy to identify the conditions of social, human, physical, natural, and financial capital, as well as entrepreneurial orientation, among communities surrounding forests holding social forestry permits in the Tanah Laut Forest Management Unit (KPH). Furthermore, SLA serves as the foundation for strengthening arguments in proposals and facilitating assistance, as well as enhancing the capacity of Social Forestry in the Rimbo Larangan Indigenous Forest, Kenegerian Teratak Air Hitam.

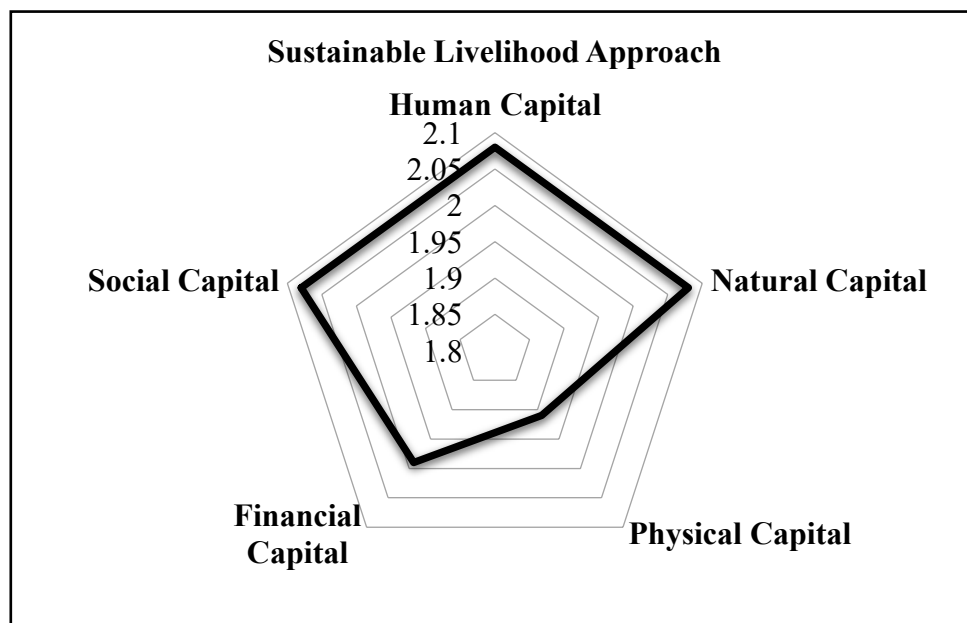


Figure 1. Sustainable livelihood approach

The results of the SLA analysis also indicate that social capital and natural capital fall into the high category. This condition indicates the presence of prominent socio-ecological strengths, particularly in the form of the active traditional institutions of Rimbo Larangan that continue to function in maintaining traditional forest governance. Social values such as cooperation, consensus-building in decision-making, and adherence to customary rules are key factors in maintaining a balance between the utilization and conservation of natural resources. High natural capital is also reflected in the continued availability of forest resources, including the presence of customary forest areas, agricultural land, and water sources that sustain the lives of surrounding communities. These two forms of capital affirm that the community possesses strong social and ecological foundations to support sustainable forest management. SLA can promote the sustainable and efficient management of natural resources to ensure they remain productive despite environmental pressures or policy changes. This management encompasses conservation, ecosystem rehabilitation, the application of environmentally friendly technologies, and the wise management of water and other resources, as seen in the study on household aquaculture in Sidoarjo Regency, which is managed intelligently and responsibly to support households' long-term resilience and adaptation to changes in natural resources [26].

Meanwhile, human, physical, and financial capital remain in the moderate category, requiring capacity building and institutional support. In Ministry of Environment and Forestry Regulation No. 9 of 2021 on Social Forestry Management, one of the key requirements for applying to the social forestry scheme is the existence of a strong community institution and evidence of the ability to manage forest areas sustainably. The results of this SLA analysis can also serve as empirical evidence that the community has met the required socio-ecological aspects. Strengths in social and natural capital reflect the continued functionality of the Rimbo Larangan customary institutions in safeguarding forest resource management, while the readiness levels in human, physical, and financial capital indicate potential that can be developed through mentoring and capacity building. Therefore, the SLA not only serves as a tool for analyzing the community's livelihood conditions but also forms the foundation and policy basis for strengthening the community's readiness and recognition in submitting the Rimbo Larangan Indigenous Forest scheme as part of the implementation of a sustainable social forestry program.

5. Conclusions

Research shows that the SLA approach is effective in identifying the socio-ecological strengths and vulnerabilities of communities surrounding the Rimbo Larangan Indigenous Forest in Teratak Air Hitam, Kuantan Singingi Regency, Riau, to support community-based forest management under the Social Forestry. The community possesses medium-level livelihood capital, with human, social, and natural capital at higher levels than physical and financial capital. The strengths of human and social capital are reflected in good educational levels, a culture of deliberation, and the active role of customary institutions in preserving the forest. Conversely, limitations in physical and financial capital indicate the need for support in the form of technical training, improved access to capital, and institutional mentoring. Consequently, strengthening these five livelihood capital components through capacity building, economic diversification, and institutional collaboration is key to achieving adaptive and sustainable forest management. This study also confirms that the

results of the SLA analysis can serve as a scientific basis and empirical evidence to support the application for recognition of the Rimbo Larangan Indigenous Forest within the Social Forestry.

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