

# Community Empowerment as a Strategy for Sustainable Livelihood Development: A Case Study of Lung Anai Village

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## Abstract

Lung Anai Village, located in the mining buffer zone of Kutai Kartanegara Regency, experiences complex livelihood dynamics due to coal mining activities affecting economic, social, and environmental dimensions. This condition highlights the need for a development approach that emphasizes sustainable livelihoods beyond economic growth. This community service program aims to strengthen community capacity using the Sustainable Livelihood Approach (SLA). A participatory, community-based method was applied through three stages: initial assessment, program implementation, and evaluation. The results show that social, physical, and financial capital are relatively strong, while human and natural capital remain lower, indicating structural imbalance. Community perception improved significantly from 37% positive responses in 2023 to 100% in 2024, reflecting increased trust. The Social License to Operate (SLO) index reached 77.2%, indicating strong social acceptance. The program enhanced participation, strengthened institutions, improved economic access, and promoted sustainable livelihoods. The SLA approach proved effective and replicable for empowering mining-affected rural communities.

**Keywords:** sustainable livelihoods, community empowerment, Sustainable Livelihood Approach, mining-affected rural areas

## 1. Introduction

Lung Anai Village is one of the villages located within the mining concession area of PT. Multi Harapan Utama in Kutai Kartanegara Regency, East Kalimantan Province. As a region characterized by an extractive-based economy, the presence of the coal mining industry has become a dominant factor influencing village development dynamics. Mining activities contribute significantly to Gross Regional Domestic Product (GRDP) and employment opportunities; however, they also generate multidimensional consequences for local communities, encompassing economic, social, and environmental aspects. On the one hand, mining operations create economic opportunities through job creation, increased income, and infrastructure development. On the other hand, these activities exert pressure on natural resources, alter traditional livelihood systems, and increase economic dependency on the mining sector, potentially leading to livelihood vulnerability when adaptive capacity remains limited (Kurniawan & Arisurya, 2020).

In the context of rural development, approaches that focus solely on economic growth are insufficient to address these complex challenges. The Sustainable Livelihood Approach (SLA) provides a more comprehensive analytical framework by integrating five key livelihood capitals—human, natural, physical, social, and financial (Tambe, 2022; Morse, 2025). This approach not only examines asset ownership but also links these capitals to vulnerability contexts, institutional structures, and policy environments (Knutsson &

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Ostwald, 2023; Zhang & Fang, 2020; Kogachi & Shaw, 2023). Furthermore, SLA emphasizes community agency, highlighting the importance of participation, local capacity, and resilience in responding to external pressures. Thus, SLA serves both as a diagnostic tool and as a strategic framework for achieving sustainable development outcomes (Atkinson, 2019; Ahmed et al., 2015).

Empirical findings in Lung Anai Village indicate relatively strong performance in social, physical, and financial capital. Strong social capital is reflected in high levels of trust, social networks, and participation in collective activities, while physical and financial capital indicate adequate infrastructure and access to economic resources. In addition, community perceptions of the company have improved significantly, with positive responses increasing from 37% in 2023 to 100% in 2024, indicating strengthened trust and social acceptance. Nevertheless, disparities across livelihood capitals persist. Human capital remains relatively low, indicating limitations in education, skills, and individual capacity to optimize economic opportunities (Marginson, 2019; Kuzminov et al., 2019). Similarly, natural capital shows signs of degradation, reflecting increasing pressure on environmental resources that form the foundation of local livelihoods.

These imbalances highlight the need for a structured and targeted intervention. Without strategic efforts, the existing dependency on the mining sector may intensify, while weak human and natural capital may hinder long-term sustainability. Therefore, a clear problem-solving plan is required to address these challenges systematically. The proposed approach consists of three main strategies: (1) Capacity strengthening, focusing on improving human capital through training, skills development, and knowledge transfer aligned with local economic potentials; (2) Livelihood diversification, aimed at reducing dependency on the mining sector by promoting alternative income-generating activities based on local resources; and (3) Strengthening environmental awareness and management, to enhance the sustainability of natural capital through community-based resource management practices.

In addition, these strategies are implemented through a participatory approach, ensuring active community involvement in planning, implementation, and evaluation processes. This participatory mechanism is essential to ensure that the program aligns with local needs, reduces dependency, and promotes long-term empowerment (Giampiccoli & Saayman, 2018; Samaddar et al., 2021).

Based on this framework, this community service program aims to strengthen the capacity of the Lung Anai Village community by leveraging local potential and participatory principles. The program is expected to improve human resource quality, foster economic resilience through diversification, and enhance social and environmental sustainability. Ultimately, this initiative is not only intended to generate short-term benefits in the form of increased knowledge and skills but also to establish a more adaptive, resilient, and sustainable livelihood system. Furthermore, it is expected to serve as a replicable model for implementing the Sustainable Livelihood Approach in other mining-affected rural areas.

## **2. Implementation Method**

To provide a clear and systematic overview of the implementation stages, the overall process of the community service program is illustrated in Figure 1. The flowchart demonstrates the sequence of activities, starting from initial condition identification, program design, implementation, monitoring and evaluation, to sustainability planning.

### **2.1 Identification of Initial Conditions**

The initial stage was conducted to obtain a comprehensive understanding of the livelihood conditions of the Lung Anai Village community. This stage included two main activities:

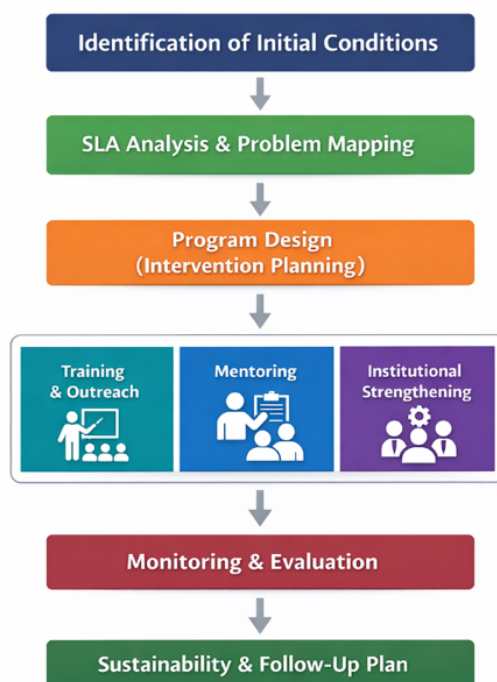
#### **a. Sustainable Livelihood Approach (SLA) Analysis**

This analysis focused on identifying five key livelihood assets: human, natural, physical, social, and financial capital. Data were collected through field observations, semi-structured interviews, and focus group

discussions (FGDs). The purpose of this analysis was to evaluate the strengths and weaknesses of each type of capital as a basis for designing appropriate intervention programs (Quandt, 2018).

### b. Identification of Village Problems and Potential

This activity was conducted using a participatory approach involving the community in problem and resource mapping. The identification covered economic constraints, human resource capacity, environmental conditions, and opportunities for developing locally based enterprises such as livestock and MSMEs. The results were used to determine the priority programs for community service (Laudet & White, 2010).



**Figure 1.** Flowchart of Community Service Implementation Based on the Sustainable Livelihood Approach

## 2.2 Implementation of Activities

The implementation phase involved executing the community service program based on the results of the initial identification. This phase consisted of three main activities:

### a. Community Outreach and Training

This activity aimed to improve community knowledge and awareness of sustainable livelihoods, business management, and the use of local resources. Training was also provided to enhance practical skills, particularly in livestock business management, product processing, and entrepreneurship.

### b. Assistance for Business and Livestock Groups

Mentoring was provided to business groups and livestock farmers to increase productivity, improve management practices, and promote economic independence. This was carried out through regular field visits, technical consultations, and facilitation of access to supporting resources (Junn et al., 2023).

### c. Strengthening Local Institutions

This activity aimed to enhance the capacity of community organizations in managing programs sustainably. It included improving organizational structures, strengthening leadership, and developing coordination and collaboration among stakeholders to ensure long-term program sustainability (Ceptureanu et al., 2018).

### 2.3 Evaluation and Monitoring

The evaluation and monitoring phase was conducted to assess the effectiveness of program implementation and its impact on the community. This stage focused on two main aspects, namely changes in public perception and program sustainability.

#### a. Evaluation of Changes in Public Perception

This evaluation aimed to measure changes in community perceptions of the community service program, including its contribution to improving welfare and strengthening relationships with external stakeholders, such as companies. Data were collected through questionnaires, interviews, and group discussions to obtain a comprehensive understanding of community responses to the program.

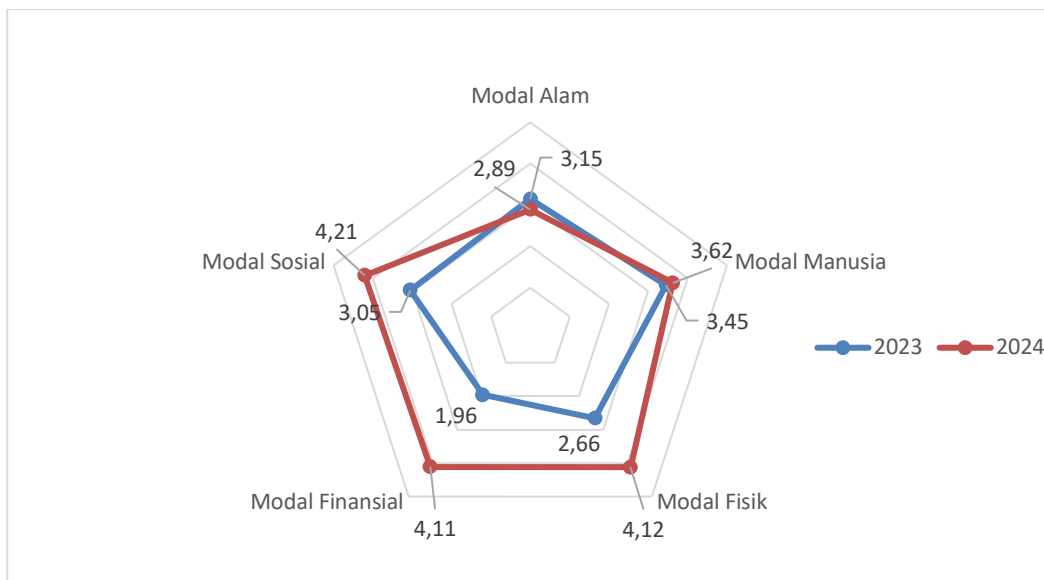
#### b. Program Sustainability Analysis

This analysis was carried out to examine the extent to which the implemented program could be sustained independently by the community. The assessment considered several key indicators, including the level of community participation, the continuity of economic activities, and the capacity of local institutions to manage and develop the program. This evaluation also served as a basis for identifying necessary improvements to ensure long-term sustainability (Crow & Whiteman, 2016).

## 3. Result and Discussion

### 3.1 Condition of Livelihood Capital in Lung Anai Village

The analysis of the Sustainable Livelihood Approach in Lung Anai Village shows variations in the strength of the five main livelihood assets. In general, social, physical, and financial capital are high, while human and natural capital are relatively low. This condition reflects an imbalance in the community's livelihood structure that requires attention in formulating empowerment strategies. To provide a clearer illustration of the distribution and relative strength of each livelihood asset, the results of the Sustainable Livelihood Approach (SLA) analysis are presented in Figure 2.



**Figure 2.** Livelihood Capital Profile of Lung Anai Village

As illustrated in Figure 2, social, physical, and financial capital show relatively higher levels compared to human and natural capital, indicating an imbalance in the community's livelihood structure that may influence the effectiveness of development and empowerment programs.

#### **a. The Dominance of Social Capital as a Major Force**

The highest social capital score indicates that the Lung Anai Village community has a strong level of social cohesion. Relationships between individuals and community groups are well-established, characterized by high levels of trust, solidarity, and participation in collective activities. The existence of social groups, such as farmers' and livestock groups, also strengthens existing social networks. This condition is a crucial asset for the success of community service programs, as communities with strong social ties tend to be more receptive to innovation, collaborate on economic activities, and actively participate in empowerment programs. Furthermore, high levels of social capital also reflect a relatively harmonious relationship between the community and external parties, including companies, which is a supporting factor in the sustainability of community-based development programs (Chen et al., 2025; Hoi et al., 2018).

#### **b. The Role of Physical and Financial Capital in Supporting Economic Activities**

High levels of physical and financial capital indicate that the Lung Anai Village community has adequate infrastructure and economic access. Infrastructure, such as roads and production facilities, plays a crucial role in supporting community mobility and economic activity. Meanwhile, financial capital reflects access to income sources, both from the mining sector and other sectors. The mining industry indirectly contributes to increases in both types of capital, particularly through infrastructure development and the creation of economic opportunities for the surrounding community (Jönsson & Bryceson, 2017). However, this situation also requires vigilance, as dependence on a single economic sector can increase community vulnerability in the long term. Therefore, efforts to diversify economic activities are needed to provide the community with alternative, more sustainable livelihoods.

#### **c. Human Capital Limitations as a Major Challenge**

The lowest human capital score indicates that human resource capacity in Lung Anai Village still needs improvement. This limitation can be seen in aspects of education, technical skills, and managerial ability in running businesses. Low human capital is a barrier to the optimization of available economic potential. Although the community has access to resources and business opportunities, limited individual capacity can hinder productivity, innovation, and sustainable business development (Hart et al., 2016). In this context, capacity building through training, outreach, and mentoring is crucial to a strategy to strengthen community livelihoods.

#### **d. Low Natural Capital and Its Implications for Sustainability**

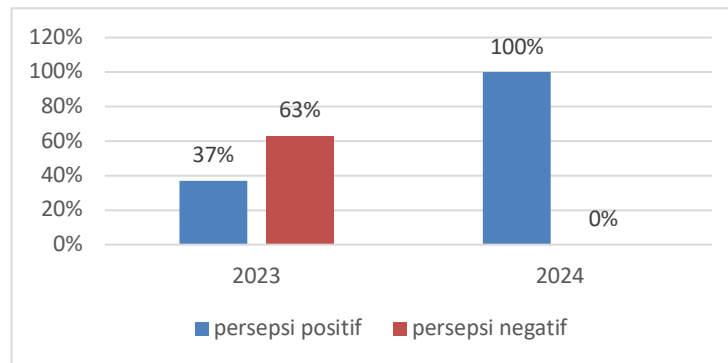
The relatively low natural capital indicates pressure on the environment and natural resources in Lung Anai Village. Mining activities, land-use changes, and the potential for environmental degradation are factors contributing to the decline in the quality of natural capital. This situation requires serious attention, considering that natural resources are a primary basis for community livelihoods, particularly in the agricultural and livestock sectors. Deteriorating environmental quality can impact productivity and increase community vulnerability to environmental change. Therefore, more sustainable and environmentally friendly natural resource management efforts are needed (Aprylasari & Azizah, 2025).

#### **e. Implications for Sustainable Livelihood Development Strategies**

The imbalance between livelihood capitals in Lung Anai Village indicates that development has not been fully integrated. Strengths in social, physical, and financial capital need to be optimized as a basis for development, while weaknesses in human and natural capital should be the primary focus of intervention. In the context of community service, this situation indicates the need for an approach that is not only oriented toward economic improvement but also toward strengthening individual capacity and environmental sustainability (Franco & Tracey, 2019). By integrating the five livelihood capitals in a balanced manner, the Lung Anai Village community is expected to build a more resilient, adaptive, and sustainable livelihood system in the face of various dynamics of change.

### 3.2 Public Perception

To illustrate the shift in community perception toward the company’s presence, the comparison between 2023 and 2024 is presented in Figure 3.



**Figure 3.** Trends in Public Perception in Lung Anai Village

As shown in Figure 3, the sharp increase in positive perception highlights the effectiveness of participatory and need-based empowerment strategies in fostering stronger relationships between the community and external stakeholders. The Lung Anai Village community's perception of the company's presence has changed significantly over the past year. In 2023, the positive perception rate was 37%, which then increased sharply to 100% in 2024. This increase reflects a transformation in community attitudes, from a previously mixed attitude to a completely positive one. This change in perception did not occur spontaneously but rather resulted from structured and sustained community empowerment program interventions. Programs tailored to local needs and that involve active community participation have been proven to increase community trust in the company. Furthermore, community involvement in various development activities also provides opportunities for them to experience the direct benefits of the company's presence, both economically and socially.

#### a. Increased Trust and Social Relations

The growing positive public perception indicates that the relationship between the community and the company has become more harmonious. Public trust in the company is a crucial indicator of the success of empowerment programs, as this trust influences the level of community participation and support for the activities undertaken. This harmonious relationship also reflects more effective communication between the company and the community. The programs implemented are not merely top-down but also consider the community's aspirations and needs, thereby fostering a sense of ownership (Azizah et al., 2023).

#### b. The Role of Empowerment Programs in Shaping Perceptions

Improving public perception is inextricably linked to the role of the community development and empowerment (CPD) program. Programs designed with a participatory approach enable communities to be directly involved in every stage of the activity, from planning to evaluation. This involvement positively shapes community perspectives, making them not only objects of development but also active subjects in the process. Thus, the positive perceptions formed are based not only on program outcomes but also on the process of community involvement.

#### c. Implications for Program Sustainability

A fully positive community perception is a crucial form of social capital for supporting the sustainability of community service and development programs in Lung Anai Village. A high level of community acceptance of a company can strengthen its social license to operate, the social legitimacy accorded by the community to the company's activities (Diamastuti et al., 2024). However, this condition also requires careful management. Positive perceptions must be maintained through program consistency, transparency, and the

continued benefits felt by the community. Otherwise, there is the potential for a decline in trust in the future, especially if the programs implemented no longer align with community needs.

**d. Reflections in the Perspective of Sustainable Livelihoods**

From the perspective of the Sustainable Livelihood Approach, community perception is part of the social dimension that influences the success of livelihood strategies. Positive perceptions will encourage active participation, strengthen social networks, and improve the community's ability to access resources and opportunities. Therefore, improving community perception in Lung Anai Village not only reflects the short-term success of the empowerment program but also serves as an important indicator in supporting the long-term sustainability of community livelihoods.

**3.3 Social License to Operate (SLO)**

To provide a comprehensive overview of the level of community acceptance and social legitimacy across the study area, the Social License to Operate (SLO) index and its key components for each village are presented in Table 1.

**Table 1.** Social License to Operate (SLO) Index Across Villages in the Study Area

No	Village	Community Satisfaction (CS)	Community Support to Operation (CSO)	Advantage to community (AC)	Community Perception Index
1	Lung Anai	76,40%	78,30%	76,90%	<b>77,20%</b>
2	Sungai Payang	66,60%	66,80%	68,10%	<b>67,20%</b>
3	Jembayan Dalam	68,60%	70,00%	67,90%	<b>68,80%</b>
4	Jembayan Tengah	67,40%	69,40%	67,10%	<b>68,00%</b>
5	Loh Sumber	77,80%	76,60%	80,10%	<b>78,20%</b>
6	Loa Kulu Kota	72,90%	72,00%	74,10%	<b>73,00%</b>
7	Jembayan	74,30%	74,50%	74,50%	<b>74,40%</b>
8	Jongkang	87,90%	85,40%	89,40%	<b>87,60%</b>
9	Bakungan	49,70%	52,40%	46,60%	<b>49,60%</b>
10	Loa Duri Seberang	71,60%	74,50%	68,90%	<b>71,70%</b>
<i>Collective Average of Villages</i>		<b>71,30%</b>	<b>72,00%</b>	<b>71,40%</b>	<b>71,60%</b>

Source: Processed Primary Data, 2024

The Social License to Operate (SLO) is an important indicator of a company's level of community acceptance and social legitimacy in an area. In the context of Lung Anai Village, the measurement results show that the SLO index is in the high category, with an average of 77.2%. This value is an aggregation of three main components: community satisfaction at 76.4%, community support for operations at 78.3%, and advantage to the community at 76.9%. In general, this value reflects that the Lung Anai Village community has a relatively high level of satisfaction, support, and perceived benefits of the company's presence. This condition indicates that the relationship between the community and the company has reached a high level of social acceptance, which is an important foundation for the company's continued operations in the area.

**a. Community Satisfaction Level**

The community satisfaction score of 76.4% indicates that the majority of the community is satisfied with the company's existence and the programs it has implemented. This satisfaction extends beyond economic factors to include social aspects, such as increased access to facilities, job opportunities, and community empowerment programs. This high level of satisfaction indicates that the programs implemented have

addressed most of the community's needs and expectations. Furthermore, it also reflects the alignment of program planning with the local socio-economic conditions.

#### **b. Community Support to Company Operations**

The highest score of 78.3% in the community support to operations component indicates that the community not only accepts but also actively supports the company's ongoing operations. This support manifests itself in community participation, minimal social conflict, and a cooperative relationship between the community and the company. This high level of support is an important indicator that the company has successfully built a mutually beneficial relationship with the community. In the context of sustainable development, community support is a key factor in maintaining social stability and reducing potential resistance to industrial activities (Hariram et al., 2023).

#### **c. Perception of Benefits to Community (Advantage to Community)**

The community's benefit-to-cost score of 76.9% indicates that the community perceives tangible benefits from the company's presence. These benefits can include increased income, access to empowerment programs, and infrastructure development that supports community economic activities. This perception of benefits is a crucial factor in establishing a company's social legitimacy. When the community directly experiences positive impacts, acceptance of the company increases significantly.

#### **d. Implications for Social Sustainability and Community Service Programs**

A high SLO index indicates that Lung Anai Village has achieved a high level of social acceptance of the company's activities. This provides crucial social capital to sustain its community empowerment and community service programs. However, the sustainability of the SLO depends not only on current achievements but also on the company's consistency in maintaining quality relationships with the community. Sustainable programs, transparency, and community involvement in decision-making are key factors in maintaining this level of trust (Nugroho et al., 2025).

#### **e. SLO in the Perspective of Sustainable Livelihoods**

From the perspective of the Sustainable Livelihood Approach, SLO is closely linked to a community's social and financial capital. A high level of social acceptance can strengthen community access to resources, increase economic opportunities, and encourage participation in development activities. Therefore, the SLO achievement in Lung Anai Village not only reflects the success of the relationship between the community and the company but also serves as an important indicator in supporting the sustainability of the community's livelihood system as a whole.

### **3.4 Impact of Community Service Program**

The implementation of community service programs in Lung Anai Village has had a significant impact on various aspects of community livelihoods. This impact is evident not only in economic changes but also in social and institutional dimensions, which, overall, contribute to improving the sustainability of community livelihoods.

#### **a. Increasing Community Participation**

One of the main impacts of the community service program is increased community participation in development activities. Through a participatory approach, communities no longer act as objects but as subjects actively involved in every stage of the program, from planning to evaluation. This increased participation is evident in community involvement in training activities, group discussions, and program implementation at the field level. This condition indicates increased awareness and a sense of ownership of the program being implemented, which is a crucial factor in its success and sustainability (Aprylasari et al., 2022). This increased participation is evident in community involvement in training activities, group discussions, and program implementation at the field level. This condition indicates increased awareness and a sense of ownership of the program being implemented, which is a crucial factor in its success and sustainability (Aprylasari et al., 2022). As shown in Figure 4, community members actively participated in

focus group discussions (FGDs) as part of the participatory approach implemented in this program. The active engagement of community members in these discussions reflects strong social interaction and collective decision-making processes. This condition reinforces the role of social capital in supporting the successful implementation of community-based empowerment programs.



**Figure 4.** Community Participation in Focus Group Discussion (FGD) Activities in Lung Anai Village

#### **b. Strengthening Social Institutions**

The community service program also contributed to strengthening social institutions in Lung Anai Village. Community groups, such as business and livestock groups, experienced increased capacity in terms of organization, coordination, and decision-making. This institutional strengthening not only increased the effectiveness of program implementation but also strengthened the social networks that have become one of the village's main assets. Strong institutions enable the community to be more independent in managing economic activities and adapting to changes (Anindiyasari et al., 2025).

#### **c. Increasing Economic Access and Productive Business**

Another impact is seen in increased community access to economic activities and productive businesses. Through training and mentoring, communities gain new knowledge and skills that can be applied to business development, particularly in the livestock and small business sectors. Furthermore, community service programs also open up opportunities for communities to optimize previously underutilized local potential. This contributes to increased income and diversified livelihoods, ultimately reducing dependence on specific sectors (Aprylasari et al., 2025).

#### **d. Drivers of Sustainable Livelihoods**

The most important impact of the community service program is the increased sustainability of community livelihoods. This is demonstrated by communities' increased capacity to manage resources, strengthen social networks, and develop independent economic enterprises. The approach is not only oriented towards short-term results but also focuses on establishing resilient long-term systems. By strengthening various livelihood assets, communities are expected to be better able to cope with pressures and changes, both economic and environmental (Ma et al., 2024).

#### **e. Effectiveness of the Sustainable Livelihood Approach (SLA)**

Overall, the Sustainable Livelihood Approach (SLA) has proven effective in simultaneously integrating various dimensions of community livelihoods. This approach allows community service programs not only to focus on a single specific aspect but also to consider the interrelationships among social, economic, and environmental factors (Schmitz et al., 2012). Through this approach, interventions are more comprehensive and contextual, thus providing broader and more sustainable impacts. The success of the program in Lung

Anai Village demonstrates that the SLA-based approach can be a relevant model for application in other areas with similar characteristics, particularly in the mining area.

#### 4. Conclusion

The community service program in Lung Anai Village demonstrates that the Sustainable Livelihood Approach (SLA) is effective in identifying and strengthening community livelihood systems in mining-affected areas. The findings show that social, physical, and financial capital are relatively strong, while human and natural capital remain limited and require priority attention. The participatory approach implemented in this program has successfully increased community participation, strengthened local institutions, and supported the development of productive, locally based economic activities. In addition, community perception of the company improved significantly, as reflected in the increase from 37% to 100% in positive perception and a high Social License to Operate (SLO) value of 77.2%. For future community service activities, several recommendations are proposed. First, programs should prioritize capacity building in human capital, particularly through continuous training and skill development. Second, there is a need to strengthen environmental management practices to improve natural capital sustainability. Third, efforts to promote livelihood diversification should be expanded to reduce dependency on the mining sector. Finally, maintaining a participatory and collaborative approach involving communities and stakeholders is essential to ensure long-term sustainability and program effectiveness.

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