



Survival strategies of rubber farmers in Nagari Batukambing, Ampek Nagari District, Agam Regency, West Sumatra Province, Indonesia

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Abstract: Agriculture is a crucial sector in the Indonesian economy, especially in rural areas that rely on agricultural activities as a source of livelihood. One important agricultural commodity is rubber, which not only serves as a source of income for farmers but also contributes to both the local and national economy. In Nagari Batukambing, Ampek Nagari District, Agam Regency, West Sumatra Province, rubber farmers play a central role in rubber production, although they often face various economic and social challenges. This study aims to analyze the survival strategies of rubber farmers in Nagari Batukambing, Ampek Nagari District, Agam Regency, West Sumatra Province. The research utilizes the livelihood strategy theory proposed by Ellis, which focuses on the utilization of livelihood assets, including human capital, natural capital, physical capital, financial capital, and social capital. This study adopts a qualitative approach with a descriptive research type. Data collection methods include document study, non-participant observation, and in-depth interviews. Data analysis involves several steps: data collection, data reduction, data presentation, and conclusion drawing. The research findings have significant implications for both farmers and agricultural policy. Farmers are encouraged to prioritize skill development and ongoing education to adapt to changing agricultural practices, while also diversifying their crops to reduce financial risks and enhance food security. Efficient use of tools and equipment should be emphasized to boost productivity, alongside robust financial management through savings and accessible loans to support investments and manage unexpected expenses. Strengthening social networks among farmers and landowners fosters mutual support and collaboration. For policymakers, there is a need to develop support programs that provide training, improve access to microcredit, invest in agricultural infrastructure, and encourage cooperative initiatives to enhance farmers' bargaining power. Overall, these strategies and policies can significantly contribute to the resilience and sustainability of farming communities in Nagari Batukambing.

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Received: Jan 12, 2025;

Revised: Feb 28, 2025;

Accepted: Apr 03, 2025;

Published: May 30, 2025;

Keywords: Agriculture, Rubber Farmers, Survival Strategies, Livelihood Capital, West Sumatra



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1. Introduction

Indonesia is a resource-rich agrarian country where the majority of its population relies on agriculture (Wibowo & Parmansyah, 2018). Farmers, who typically reside in rural areas, manage agricultural land through cultivation, often using traditional tools such as hoes and sickles. (María et al., n.d.; Nava Aguirre et al., 2018) The agricultural sector is not only the backbone of the economy, contributing approximately 13% to the national GDP with over 30 million registered farmers, but it is also vital for maintaining food security and improving the community's welfare. (Achmad, 2018a, 2018b; Syuaib, 2016) However, challenges such as climate change, low adoption of modern technology, and difficulties in market access hinder the potential of this sector. One of the important commodities in

Indonesia's agricultural sector is rubber. Rubber farming has rapidly developed and is a major contributor to foreign exchange earnings through export activities (Vernando et al., 2024). The primary goal of rubber exports is to meet the raw material needs of industrialized countries (Hidayah et al., 2018). Indonesia supplies 75% of the world's total natural rubber production, making it one of the largest producers after Thailand and Malaysia (Husaini et al., 2023).

Additionally, rubber farming serves as a source of livelihood for many communities, including in West Sumatra Province, which has rubber plantations covering an area of 178,197.57 hectares, according to data from the West Sumatra BPS (Statistics Agency). One area in this province known for rubber farmers is Nagari Batukambing, Ampek Nagari District, Agam Regency. The people of Nagari Batukambing rely on rubber farming, with plantation areas reaching 200 hectares. There are approximately 300 households working as rubber farmers, divided into three categories: landowners, tenants, and laborers. The number of laborers in this area reaches 165 households, who perform various tasks on others' land for wages (Nurhamlin & Pertiwi, 2014). Being a farmer in the village does not require high knowledge; rather, it relies on physical labor (Raven et al., 2016). Agriculture also serves as a way of life encompassing economic, social, and cultural aspects (Sari, 2022). In Nagari Batukambing, the income from working as rubber laborers is used to meet daily needs. Observations indicate that the income of rubber farmers in Nagari Batukambing, Ampek Nagari District, Agam Regency, West Sumatra Province, shows significant differences based on farmer categories. According to surveys, landowners have the highest income at IDR 3,120,000 per month, followed by tenants with an income of IDR 1,620,000, while rubber laborers earn only IDR 1,120,000 per month. Although the income of rubber laborers is used to meet daily living expenses, it does not match their expenditures, which reach IDR 1,300,000 per month. This situation creates a significant challenge for laborers, where expenses exceeding income make it difficult for them to survive. Several factors influence this income, including fluctuating rubber prices and unpredictable weather conditions, which affect their ability to work optimally. In this context, it is crucial for rubber laborers to develop effective survival strategies to meet their living needs. Therefore, the aim of this research is to analyze the factors influencing the income of rubber laborers as well as the survival strategies they implement in Nagari Batukambing.

2. Materials and Methods

This research was conducted in Nagari Batukambing, Ampek Nagari District, Agam Regency, West Sumatra Province, focusing on the lives of rubber farm laborers. Given the importance of understanding the social and economic dynamics faced by laborers in this area, the study employs a qualitative approach with a descriptive research type. This approach allows the researcher to explore and understand individual experiences and perspectives in depth, situated within a constructivist paradigm that emphasizes social reality as constructed through individual interactions and experiences.

The study involved 15 informants, selected based on specific criteria: they must be current rubber farm laborers in Nagari Batukambing, have at least one year of experience in rubber farming, and be willing to share their experiences. This selection criteria ensures a diverse range of insights into the challenges and strategies faced by laborers in the region.

Data collection methods include document studies, non-participant observation, and in-depth interviews. Document studies provide historical context and relevant additional information about the conditions of rubber farm laborers, while non-participant observation allows the researcher to observe interactions and daily activities without influencing the situation. In-depth interviews were conducted to gain a comprehensive understanding of the challenges, hopes, and survival strategies employed by rubber farm laborers.

The unit of analysis is individuals working as rubber farm laborers in Nagari Batukambing, as each individual's experiences offer different insights into their daily lives.

The process of transcribing interview data was conducted verbatim to ensure accuracy, followed by thematic analysis to identify key patterns and themes in the responses. Data analysis utilized the model proposed by Miles and Huberman (1992), which includes stages of data collection, data reduction, data presentation, and conclusion drawing. The data reduction process filters relevant and significant information, while data presentation aims to display findings in an easily understandable format. Finally, conclusion drawing summarizes the research results and provides recommendations that may be useful for policy development and improving the welfare of rubber farm laborers in Nagari Batukambing.

3. Results and Discussion

Rubber farmers in Nagari Batukambing, Agam, face economic challenges and unpredictable weather by implementing various long-term strategies. They diversify crops through intercropping and agroforestry to ensure income stability, while adopting sustainable farming practices and integrated pest management. Additionally, farmers form savings groups and cooperatives to enhance financial access and use insurance to protect against losses. Training and education, along with collaboration within community networks, are crucial for knowledge sharing. Improved market access and value-added products, along with climate adaptation strategies such as resilient crop varieties and efficient water management, as well as policy advocacy, all contribute to the resilience of rubber farmers in the region. Rubber farmers in Nagari Batukambing benefit from various programs and assistance from the government and NGOs aimed at increasing their harvests and exploring alternative income sources. These include agricultural training and extension services that educate farmers on best practices and sustainable techniques, as well as financial assistance such as subsidies for inputs and microcredit options provided by NGOs. Additionally, collaborations with research institutions focus on developing high-yield and disease-resistant rubber varieties. Support for cooperative formation helps farmers pool resources and access markets more effectively.

3.1 Overview of Rubber Farmers in Nagari Batukambing

Nagari Batukambing is a village located in the Ampek Nagari District of Agam Regency, West Sumatra Province. One of the primary livelihoods of the people in Nagari Batukambing is working as rubber farmers. The community has been engaged in rubber farming since 1980. According to the data collected, there are 165 households in Nagari Batukambing whose primary occupation is rubber farming. Based on interviews, rubber farmers in Nagari Batukambing not only tap rubber but also maintain the rubber plantations. They typically tap rubber daily when the weather is favorable and not rainy, and they clean the plantations by cutting the grass that grows tall and disrupts the farmers' comfort.

The tools necessary for tapping rubber include tapping knives, coconut shells, vinegar, and others, which the rubber farmers provide themselves. Similarly, the tools needed to maintain the rubber plantations, such as grass cutters and sickles, are also supplied by the farmers. Generally, rubber farmers harvest rubber sap once a week, usually collecting about 50 kg of sap during that period. The collected sap is then sold to a trader (toke). Rubber farmers typically deliver the sap directly to the trader, although some traders may come to the rubber farms to collect it.

After selling the sap, the rubber farmers hand over the proceeds to the plantation owners, who then pay the farmers their wages. The wages for rubber farmers can be split into thirds or halves with the plantation owner, depending on the agreement between the two parties. For cleaning the rubber plantation, the wage is Rp. 100,000 per day. Currently, the price of rubber ranges from Rp. 10,000 to 12,000, depending on its quality. Based on interview results, rubber farmers in Nagari Batukambing have a monthly income of Rp. 1,120,000. However, this income is insufficient to meet their daily living expenses. Meanwhile, their expenses amount to Rp. 1,300,000 per month. This disparity is due to higher expenses than income, exacerbated by the unpredictable weather and fluctuating rubber prices. During the rainy season, rubber farmers are unable to tap

rubber. When prices fall, their income decreases accordingly, forcing them to devise various strategies to survive and meet their needs.

3.2 Survival Strategies of Rubber Farmers in Nagari Batukambing

According to Snel and Staring (Sejarah, 2024), survival strategies consist of a series of actions chosen by individuals or households based on specific socio-economic criteria. Theorizes that livelihoods are assets encompassing human, natural, physical, financial, and social resources. These assets are crucial for individuals and households to sustain their existence, as they provide the means to meet life's necessities. Livelihood assets enable individuals to enhance their welfare by optimizing the resources available to them (Izzati & Anantanyu, 2021). Access to these resources is essential for improving the well-being of communities. By integrating different forms of capital, individuals or groups can engage in sustainable living practices, which are vital for survival (Jamroni et al., 2016). In Nagari Batukambing, Kecamatan Ampek Nagari, Kabupaten Agam, rubber farmers employ various strategies to sustain their economic conditions. Based on surveys and interviews, the following survival strategies have been identified:

3.3 Utilizing Human Capital for Survival Strategies of Rubber Farmers in Nagari Batukambing

Rubber farmers in Nagari Batukambing leverage their human capital by utilizing their skills and collaborating with family members in their work. Human capital reflects an individual's ability to achieve a better livelihood (Rohmah, 2019). In this context, rubber farmers harness their skills for tasks such as tapping rubber, clearing plantations, and other activities like farming and operating chainsaws to supplement their income.

To succeed in these tasks, having adequate skills is crucial; otherwise, the work may not yield optimal results. Skilled workers contribute positively to the plantation owners, as their expertise ensures that the crops are harvested and maintained effectively. For instance, the skill of tapping rubber is vital, as errors in this process can damage the rubber trees, leading to decreased productivity and even plant death (Fatayati SYARIFA et al., 2016; Nugroho et al., 2022). Therefore, possessing these skills allows rubber farmers to enhance their income beyond their primary role. Additionally, rubber farmers in Nagari Batukambing often collaborate with family members, such as their spouses and children, to increase their income. Spouses may engage in trading or work alongside their husbands as fellow rubber farmers, rice farmers, or corn farmers, thus contributing to the household's financial needs. This collaboration is essential for meeting daily living expenses. Children of rubber farmers who have reached working age and are no longer in school also contribute to the family's income by assisting in rubber tapping, palm oil collection, corn farming, or taking on various odd jobs. This collective effort within the family helps to secure additional income and improve the overall livelihood of the household.

3.4 Utilizing Natural Assets/Capital by Making Use of Land for Farming.

Nature is a primary factor for communities that rely on the agricultural sector). In Nagari Batukambing, nature plays a crucial role in the lives of rubber farmers, as the majority of the local population depends on agriculture for their livelihoods. This relationship between the community and the environment is not merely transactional; it is deeply interwoven into their cultural identity and social structure. The lush landscapes and fertile soil of the region provide essential resources that sustain the community's way of life. In this context, natural capital refers to the natural resources that possess utility value and contribute additional income to support the community's overall well-being (Sabar et al., 2024). This concept encompasses not only the physical resources but also the ecological systems that maintain balance and fertility in the land. Natural capital includes vital elements such as land ownership, agricultural cycles, water availability, and land productivity. Each of these components plays a significant role in determining the success and sustainability of agricultural practices in the area.

Based on interviews conducted with local farmers, it was discovered that the rubber farmers of Nagari Batukambing actively utilize the available natural capital, with land being the most critical asset. Land serves as the physical and abiotic environment that acts as capital for enhancing living standards and promoting economic stability (Nugroho et al., 2022). The farmers in this region have various plots of land dedicated to different types of cultivation, which include rice, corn, and areca nut. These crops not only supplement their income but also ensure that their basic living needs are met. Furthermore, the farmers employ traditional agricultural practices that have been passed down through generations, blending indigenous knowledge with modern techniques to optimize their yields. The cultivation of rice, for example, is a staple in the community, providing both sustenance and a source of income. Some of the harvested rice is sold in local markets, while a portion is reserved for personal consumption, reflecting a balance between economic activity and self-sufficiency.

3.5 Utilizing Physical Assets

The effective use of physical assets is essential for enhancing productivity in agricultural work. Physical assets refer to the tools and infrastructure that farmers possess, which play a vital role in supporting their agricultural activities (Fao, 2013). For rubber farmers, these assets include a variety of equipment that facilitates their work, ensuring they can operate efficiently and effectively. Rubber farmers in Nagari Batukambing utilize several key tools to optimize their labor. One of the primary instruments they rely on is the rubber tapping knife, specifically designed for extracting latex from rubber trees. This tool is critical for their primary income source, as the quality and efficiency of tapping directly influence their yield. Additionally, they use grass-cutting machines, sickles, and machetes to maintain their farms and clear any overgrowth, which is vital for ensuring that their crops receive sufficient sunlight and nutrients.

Transportation also plays a significant role in their agricultural practices. Many farmers own motorcycles, which serve as essential transport to reach their fields, especially in areas where public transportation may be limited. This mobility allows them to manage their farms more effectively, making it easier to transport tools and harvested crops. Moreover, rubber farmers often engage in supplementary activities such as cultivating other crops and gathering firewood. For these additional tasks, they utilize a range of tools, including hoes, sickles, chainsaws, and axes. These implements not only aid in farming but also enhance their ability to gather resources necessary for household needs or for sale in local markets. The versatility of their physical assets allows them to diversify their income streams and improve their overall standard of living.

3.6 Utilizing Financial Assets through Savings and Loans

Financial capital refers to the financial resources used to meet daily living expenses. This capital encompasses various aspects, including income, savings, family obligations, business capital, and loans. In Nagari Batukambing, rubber farmers utilize financial capital by managing their savings and minimizing expenditures.

Effective financial management is crucial for farmers, given the numerous daily needs they must meet. By reducing unnecessary expenses, they strive to set aside a portion of their income for other necessities. These savings serve not only as a reserve but also as preparation for unexpected situations that may arise in the future. When emergencies occur, rubber farmers can access these savings, for instance, to cover operational costs of their agricultural activities.

Operational costs refer to the expenses that farmers incur to carry out their agricultural practices in order to obtain yields from their efforts (Barnes-Mauthe et al., 2015; Wulandhari et al., 2022). Rubber farmers in Nagari Batukambing must allocate funds for purchasing fertilizers, seeds, pesticides, and various other necessities to ensure the smooth running of their agricultural operations. Additionally, savings are also earmarked for children's education and other household needs.

Besides utilizing savings, rubber farmers often take loans from landowners. These loans become a solution when available funds fall short of meeting daily expenses or when urgent needs arise. The networks and trust established between farmers and landowners facilitate easier loan transactions. Typically, rubber farmers repay these loans after receiving their wages from the landowners.

3.7 Leveraging Social Capital by Maintaining Good Relationships with Landowners and Fellow Laborers

Social capital is a crucial asset in human life, encompassing the ability to build and leverage social networks and relationships that facilitate the pooling of resources by individuals (Bhandari & Yasunobu, 2009a, 2009b; Masciarelli, 2011). According to Hasbullah (2006), social capital pertains to all aspects related to cooperation within a community aimed at achieving a better quality of life, supported by values and norms such as mutual trust and reciprocity. Additionally, social capital serves as a valuable social resource that can help communities secure their livelihoods (Kirori, n.d.). Therefore, social capital refers to the resources possessed by individuals that stem from the social relationships and networks they cultivate.

In this context, when rubber farmers in Nagari Batukambing require assistance from landowners, they are often willing to offer help in return. This reciprocal relationship fosters a sense of trust between the farmers and the landowners. For instance, rubber farmers may borrow money from landowners as a survival strategy, with the understanding that they will repay the loan once they receive their wages.

Moreover, rubber farmers also strive to maintain good relationships with fellow laborers. When a laborer's friend finds work and their employer requires additional hands, they often extend an invitation to the rubber farmer to join them. This collaboration typically occurs when the rubber farmer has completed their tasks or during the rainy season when rubber tapping may not be feasible. The additional work offered by friends may include gathering firewood, cleaning fields, or planting and harvesting rice or corn. Such opportunities provide extra income for rubber farmers, helping them sustain their livelihoods.

By fostering these social connections, rubber farmers not only enhance their immediate economic prospects but also build a supportive community that can weather challenges together. This network of relationships ultimately plays a vital role in their overall resilience and ability to navigate the complexities of rural life.

4. Conclusions

The sustainability of strategies employed by rubber plantation workers in Nagari Batukambing relies on a holistic approach that integrates various forms of capital. By investing in human capital through skills training and family collaboration, workers can adapt to changing agricultural practices and pass down knowledge. Diversifying natural capital by cultivating crops like corn, rice, and areca nut enhances food security and reduces reliance on rubber, while optimizing physical capital through the maintenance and upgrading of tools boosts productivity. Effective financial capital management, including robust savings and access to loans, provides a safety net for investments and unexpected expenses. Finally, strengthening social capital by fostering relationships with landowners and fellow workers creates a supportive community that facilitates resource sharing and mutual assistance. Together, these strategies enhance resilience against economic and social challenges, ensuring the long-term sustainability of their livelihoods.

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