



BETWEEN TRADITION AND CHALLENGES: IDENTIFYING KEY FACTORS IN LOCAL COMMUNITY ADAPTATION TO ENVIRONMENTAL CHANGE

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ABSTRACT

Environmental changes resulting from oil palm plantation expansion have become a crucial issue in the discourse on sustainable development in Indonesia, particularly due to their impact on local communities and forest conditions. Although regulations such as the moratorium on oil palm expansion temporarily slowed deforestation, recent trends indicate that land conversion from forest to oil palm plantations is still ongoing. Local communities that have traditionally relied on forest resources are facing complex social, economic, and ecological pressures. This study aims to identify the key factors that shape the adaptive capacity of local communities to environmental changes caused by oil palm expansion. The research location is in the Parindu area, West Kalimantan. The method used is *the Analytical Hierarchy Process* (AHP), with a pentahelix approach in determining key informants so that decision-making is participatory and multidimensional. The results of this study indicate that institutional resources are the most crucial factor in improving community adaptive capacity. Local institutions—both formal and informal—play a strategic role in bridging local culture with modern economic demands. These findings emphasize the importance of strengthening local institutions to support community adaptation and promote sustainable, equitable, and locally-based development.

Article history:

Received July 19, 2025

Revised July 25, 2025

Accepted August 5, 2025

Available online August 14, 2025

Keywords: Event Study; Indonesian Capital Market; Policy Events; Market Reaction; Economic Policy



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1. INTRODUCTION

Environmental changes caused by human activities have become an important issue in many recent studies on sustainable development. The expansion of oil palm plantations in Indonesia has not only had positive impacts but also negative impacts, especially for local communities and the natural environment. From 2012 to 2022, the expansion of oil palm plantations replacing forests in Indonesia has shown a decreasing trend. This is also related to the extension of the oil palm moratorium in 2018, Based on Presidential Instruction (Inpres) No. 8 of 2018, regarding the postponement and evaluation of oil palm plantation permits, as well as the enhancement of oil palm plantation productivity. This regulation is valid for three years until 2021.

In 2023, one year after the moratorium ended, oil palm plantations replacing forests increased again. In 2023, the expansion of oil palm plantations replacing forests increased by 36% compared to 2022 (see Figure 1), although this figure is still much lower than deforestation due to oil palm plantations in 2012. However, this indicates that land conversion from forests to oil palm plantations is still ongoing. The expansion of forest land due to oil palm plantations often has a direct impact on the loss of biodiversity and the disruption of ecosystems. On the other hand, local communities that have long depended on forest products for their livelihoods also face significant pressures, both socially, economically, and ecologically.

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Expansion of Palm Oil Plantations 2001–2023

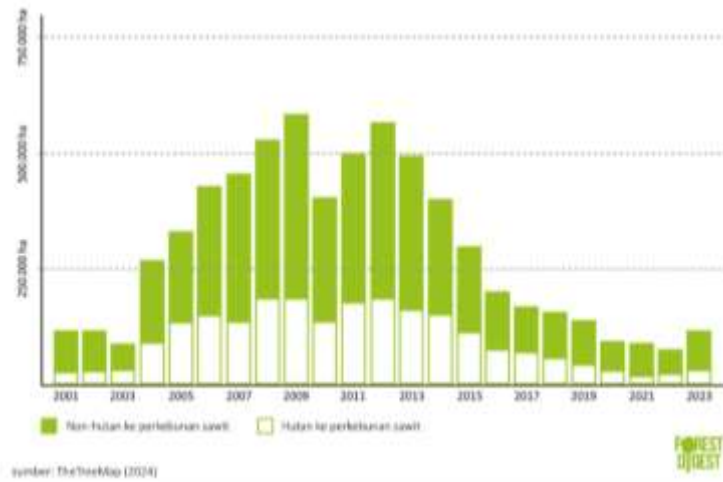


Figure 1. Expansion of Palm Oil Plantations 2001–2023 (Oktavianto, 2024)

Local communities that depend on the natural resources provided by forests are often on the front lines of environmental change. Local communities' responses to pressures resulting from land use change vary greatly, depending on their ability to adapt. Adaptive capacity reflects the ability of individuals and groups to adjust, innovate, and respond effectively to change. Factors such as financial resources, human resources, physical resources, social resources, natural resources, and institutional resources are important aspects in shaping a community's ability to adapt to environmental change.

In the context of oil palm plantation development, local communities are often faced with a dilemma between preserving traditional values and modern economic demands that drive land use change. Given this situation, it is important to identify key factors that can help local communities adapt to environmental changes caused by oil palm plantation expansion. By understanding these key factors, development and conservation policies can be designed in a more participatory and contextual manner, ensuring that they not only focus on economic development but also consider the social-ecological resilience of communities.

This study was conducted in the Parindu area of West Kalimantan to identify and analyze key factors that shape the adaptive capacity of local communities in the area to environmental changes caused by oil palm plantation expansion. The focus of this study is on how communities can adapt their local practices in response to environmental changes.

The expansion of oil palm plantations has had a complex impact, especially on local communities, particularly those living in forest areas. Many local communities depend on forests and land as a source of livelihood through subsistence farming, hunting, and non-timber forest product collection. When these lands are converted for oil palm plantations, access to natural resources becomes increasingly limited, which will directly impact the livelihoods and cultural identity of communities (Colchester et al., 2006; Obidzinski et al., 2012). In some cases, local communities are also actively involved in oil palm plantations through plasma core partnership schemes, where they provide land or work as direct labor in a system managed by the core company. Although these partnerships aim to empower communities and develop the local economy, in practice they often result in power imbalances, lack of transparency, and unfair distribution of profits (Vermeulen & Goad, 2006). This system also creates high economic dependence on the company, thereby reducing the community's independence and adaptive capacity in managing their own resources.

Palm oil expansion often causes social conflicts related to claims of ownership over customary land, environmental degradation, and the destruction of the social and cultural values of communities. These conflicts often arise due to overlapping land use permits, lack of recognition of indigenous peoples' rights, and weak mechanisms for protecting local communities (McCarthy & Cramb, 2009). In this context, the ability of communities to adapt is crucial for their survival and adjustment to rapid environmental and social changes.

It is important to view local communities not merely as victims of oil palm expansion, but also as actors with knowledge, adaptive strategies, and collective capacity to respond to change. Local knowledge of land use, agroforestry systems, and strong social networks are important assets in building resilience and sustainability at the local level (Butt, 2014).

2. METHODS

To identify the key factors in the formation of community adaptive capacity in the Parindu region, West Kalimantan, we used the Analytical Hierarchy Process (AHP) method. This method is a quantitative approach developed by Thomas L. Saaty in 1980 to assist in complex decision-making. AHP facilitates the structuring of a problem hierarchically and allows decision makers to make qualitative and quantitative assessments through a *pairwise comparison* process of each relevant factor (Saaty, 1980). This method is very useful in decision making ranging from natural resource management to public policy selection.

Determining Key Informants for the Analytical Hierarchy Process (AHP)

In applying the AHP method, determining key informants is a crucial step because the quality of AHP results greatly depends on the expertise, experience, and understanding of informants regarding the issue being studied. In this study, we used the pentahelix approach to determine key informants. This approach avoids bias from a single perspective, thereby enriching the weight of decisions to be more inclusive and contextual (Winarno et al., 2021). We involved six key informants representing each stakeholder (government, academics, business actors, community, and NGOs).

Steps in AHP

The AHP method is highly flexible and capable of handling problems with limited data or perception-based data, making it appropriate for use in research involving local community participation or experts. AHP enables researchers to assess community preferences regarding various factors that shape a community's adaptive capacity. AHP can be used to integrate qualitative community assessments into an evidence-based policy evaluation framework. The main steps that can be taken in the AHP process are shown in Figure 2.

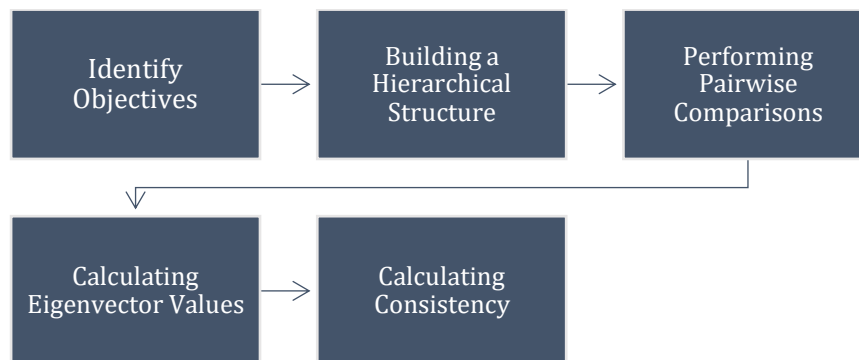


Figure 2. AHP Process (Saaty & Vargas, 2012)

The first step in the AHP process is to determine the objectives, which must reflect the main problems to be solved or the priorities to be determined. The next step is to build a hierarchical structure, which is the backbone of AHP. This structure is arranged from top to bottom, starting from the objectives to the factors that form those objectives. After creating the structure, the next step is to perform *pairwise comparisons*. The results of these comparisons will become weight values. After obtaining the weight values, the eigenvector values must be calculated (). The results of this calculation will provide information on how much each factor contributes to the final objective. The final step is to calculate the consistency *ratio* (CR). If the CR value is **less than 0.1**, the assessment is considered consistent, and the AHP results are valid as a basis for decision-making.

3. RESULTS AND DISCUSSIONS

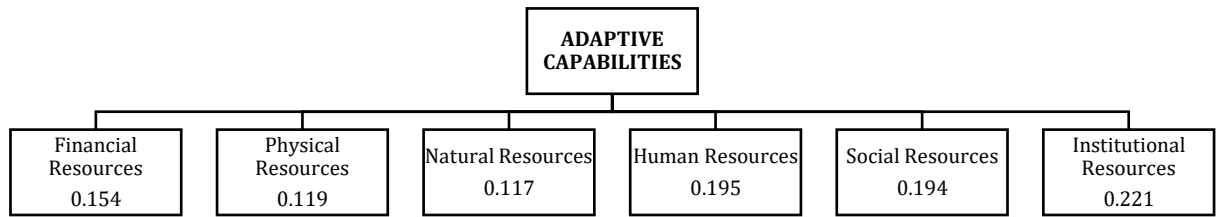


Figure 3. AHP Data Analysis Results

The AHP calculation results indicate that in the context of developing community adaptation capacity in the Parindu region of West Kalimantan, the key factor that needs to be considered is institutional resources. Most of the key informants () agreed that to improve community adaptation capacity in this region, the establishment of good institutions would greatly assist the community in adapting to environmental changes occurring in the Parindu region.

The Role of Local Institutions in Enhancing Community Adaptation Capacity

Institutions play a very important role in shaping and strengthening the adaptive capacity of local communities to environmental changes caused by oil palm expansion. According to Smit and Pilifosova (2001), institutions can play a role in regulating access to resources, providing information, and creating a regulatory framework that supports the community's ability to adapt. Local institutions not only function as regulators but also as facilitators for communities in developing adaptation strategies. Local institutions can also play a role in aligning local traditions passed down through generations with oil palm development in the Parindu region.

Local institutions play a strategic role in bridging tensions between local cultures rooted in traditional values and palm oil expansion that brings global economic logic. Local institutions—both formal, such as village governments, and informal, such as customary institutions—can function as mediators in ensuring that transformation does not erode the identity and sustainability of local communities (Li, 2014; McCarthy, 2010).

Customary institutions play an important role in regulating land use, limiting deforestation in areas considered sacred, and managing conflicts between communities and companies. Research by Colchester et al. (2006) shows that when palm oil companies operate using a participatory approach that involves traditional institutions, it can result in more equitable agreements, including in plasma schemes or *benefit sharing*.

Local institutions also have the capacity to transform external pressures into internal adaptation spaces. In several Dayak communities in West Kalimantan, customary institutions facilitate the integration of local wisdom and oil palm cultivation practices through land zoning systems, crop rotation, or ritual arrangements for sacred forest areas (Sirait, 2009). These efforts not only preserve cultural sustainability but also strengthen the bargaining position of communities in dealing with companies and government policies.

4. CONCLUSION

Environmental changes resulting from oil palm plantation expansion have had significant impacts on local communities, particularly those who depend on forest resources for their livelihoods. Although regulations such as the oil palm moratorium have been implemented to curb deforestation, recent data indicate that land conversion from forest to oil palm plantations continues, leading to social, economic, and ecological pressures. In addressing this situation, the adaptive capacity of local communities is key to their survival and ability to adjust to change. Research conducted in the Parindu region of West Kalimantan, using the Analytical Hierarchy Process (AHP), confirms that institutional resources are the most critical factor in shaping community adaptive capacity. Local institutions, both formal and informal, not only play a role in regulating access to resources and resolving conflicts but also have the capacity to bridge economic interests and the preservation of local culture. Therefore, strengthening local institutions in a participatory,

inclusive, and contextual manner is a prerequisite for ensuring sustainable development that not only pursues economic growth but also protects the social-ecological resilience of local communities.

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