



AGRICULTURAL TRANSFORMATION AND LOCAL RESILIENCE IN POST CONFLICT ACEH: A SUSTAINABLE LIVELIHOODS ANALYSIS

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Abstract

Agriculture remains a central pillar of Aceh's economy, yet the sector has not experienced substantial structural transformation despite post conflict recovery efforts. Persistent issues such as traditional cultivation practices, weak institutions, limited youth participation, and uneven access to production resources continue to constrain rural livelihoods. This study aims to analyze the dynamics of agricultural transformation, identify key factors shaping local economic resilience, and examine community based strategies that support sustainable agricultural development in a post conflict context. The research applied a qualitative descriptive approach grounded in the Sustainable Livelihood Framework. Fieldwork was conducted in Banda Aceh and Aceh Besar from May to September 2025 through in depth interviews, focus group discussions, and participatory observation involving twenty five purposively selected informants. Data were analyzed thematically using the interactive model of Miles, Huberman, and Saldaña, supported by triangulation and member checking to ensure validity. The findings show that transformation in Aceh remains uneven and is shaped more by administrative reforms than by changes in farming practices. Limited human capital, low youth engagement, and weak social cohesion slow the adoption of innovation. Institutional and financial constraints further restrict resilience, with farmers facing difficulties in accessing credit and formal support. At the same time, informal cooperation and customary leadership continue to play important roles in sustaining livelihoods. The study concludes that sustainable transformation is most effective when driven by community institutions that integrate human, social, and institutional capital. The research contributes to the literature by extending the Sustainable Livelihood Framework through the recognition of customary governance as a form of institutional capital in post conflict agrarian settings.

Keywords: *Aceh agriculture, sustainable livelihoods, post conflict development, institutional capital, rural resilience*

A. Introduction

Agriculture remains the backbone of Aceh's economy and the primary source of livelihood for its rural population. According to the Central Bureau of Statistics (BPS, 2023), there are about 826,176 agricultural enterprises across the province, which contribute around 31.52 percent to Aceh's Gross Regional Domestic Product (GRDP) in the second quarter of 2025. Although paddy production increased by about 18.21 percent

in 2024 compared with the previous year (BPS, 2025), the sector has not yet experienced meaningful structural transformation. Growth still depends on traditional practices, fragmented farmer institutions, and short-term subsidies rather than on innovation and inclusive economic capacity.

After the Helsinki Peace Agreement in 2005, Aceh entered a new period of post-conflict reconstruction that opened opportunities for sustainable development. The transition has been uneven and continues to face persistent structural challenges such as low productivity, weak irrigation and post-harvest infrastructure, limited access to finance, and the declining interest of young people in farming (Irawan et al., 2024). Regional development policies often follow a top-down pattern that gives limited attention to local social and cultural systems and to traditional institutions that still influence rural governance. The social fragmentation and institutional distrust left by the conflict continue to affect coordination among actors and reduce the effectiveness of agricultural programs.

Recent studies on Aceh describe these multidimensional challenges in different but complementary ways. Research on farmer organizations and support programs shows that institutional capacity strongly shapes how government assistance and collective initiatives reach farming communities (Irawan et al., 2024; Suadi et al., 2025). At the provincial level, green economy agendas and landscape initiatives highlight directions for sustainable commodity production and environmentally responsible development, including sustainable agriculture and green growth planning in Aceh (Aulia et al., 2025; Swainson & Mahanty, 2018). Post conflict scholarship, however, has largely concentrated on peacebuilding, reconciliation, and resource based reconstruction rather than on everyday livelihood adaptation in farming households, for example studies on reconciliation processes, peacebuilding impacts, and land redistribution for sustainable peace (Barron, 2008; Halik et al., 2025; Schiller, 2011; Tarfi et al., 2023). This contrast reveals a clear research gap, namely the need to understand livelihood adaptation not only through productivity and macro policy indicators but also through the interaction between social relations, local governance, and institutional recovery in rural agrarian settings.

The Sustainable Livelihood Framework (SLF) provides a broad perspective for analyzing how five types of livelihood capital, human, social, natural, physical, and financial, work together to shape household strategies (DFID, 1999; Scoones, 2024). Its application in post-conflict settings is still limited. Studies in fragile environments show that disrupted institutions, uncertainty of land tenure, and changing power relations can reshape how people access and use assets (Levine, 2014; Schafer, 2002; Unruh, 2004). In Aceh, post-conflict agrarian initiatives such as land redistribution and agricultural recovery programs show the complex relationship between state policies and local customary structures (Budidarsono et al., 2008; Joshi, 2008; Tarfi et al., 2023).

This study examines the transformation of Aceh's agricultural sector through the perspective of the Sustainable Livelihood Framework. It seeks to identify the main factors that drive or hinder local economic resilience and to design an adaptive community-based model for sustainable agricultural transformation in a post-conflict context. Theoretically,

this research extends the SLF by recognizing the role of customary institutions as a form of institutional capital. In practical terms, the findings are expected to support more inclusive and context-sensitive agricultural development policies that strengthen Aceh's long-term recovery.

B. Methods

This study applied a qualitative descriptive approach based on the principles of the Sustainable Livelihood Framework. The approach was chosen to gain a deep understanding of how farmers in post-conflict areas rebuild their livelihood systems within complex social and institutional settings. The research did not focus on measuring productivity but on understanding the processes through which human, social, natural, physical, and financial capital interact in shaping adaptive livelihood strategies. The framework was used as a flexible analytical lens that helped interpret how livelihood assets were mobilized and transformed in response to post-conflict challenges and local realities in Aceh.

Fieldwork was conducted over five months from May to September 2025 in two selected areas, Banda Aceh City and Aceh Besar District. These locations were chosen purposively to represent different but complementary contexts. Banda Aceh serves as the policy and administrative center, while Aceh Besar represents an active agricultural region with dynamic farmer groups and local institutions. Data were collected through in-depth interviews, focus group discussions, and participatory observation involving farmers, agricultural extension workers, village officials, traditional leaders known as Panglima Utan, and representatives from microfinance institutions. In total, twenty-five informants were engaged, selected purposively based on their direct experience and involvement in agricultural transformation. The research adhered to ethical standards including voluntary participation, informed consent, and confidentiality throughout data collection.

The data analysis followed a thematic process guided by the interactive model of Miles, Huberman, and Saldaña (2018). The process involved data condensation, display, and conclusion drawing, supported by coding and triangulation across sources and methods. Each theme was interpreted within the Sustainable Livelihood Framework to explore the relationships among livelihood assets, vulnerability contexts, and institutional capacities. Validation was ensured through member checking with informants to confirm the accuracy of interpretations. This approach provided a grounded and holistic understanding of how agricultural transformation in Aceh unfolds through the interaction between livelihood capitals and the broader process of post-conflict recovery.

C. Results and Discussion

1. Results

The findings of this study are organized around the three main objectives of the research. Each objective reflects a central aspect of Aceh's agricultural transformation in

the post-conflict context, viewed through the lens of the Sustainable Livelihood Framework.

1) Transformation Dynamics in the Agricultural Sector

The transformation of Aceh's agricultural sector remains uneven across regions. Many farmers have continued traditional cultivation patterns with minimal technological improvement. The study found that innovation is mostly driven by a small number of farmer groups that maintain close ties with local extension services. Most informants stated that the sense of change in the sector is more administrative than practical. One farmer informant in Aceh Besar expressed this sentiment clearly:

“Training programs come and go, but we still farm the same way. We attend because there is an invitation, not because we expect change.” (Farmer, Interview 2025)

This statement reflects a wider perception that training activities often emphasize attendance rather than capacity building. Young people rarely participate, as many prefer to work in service or construction sectors in Banda Aceh. Another informant explained:

“Farming no longer attracts young people. They see their parents struggle, so they choose other jobs.” (Extension worker, Interview 2025)

These observations indicate that the transformation process is still limited to administrative reforms and short-term programs, while social transformation within the farming communities remains slow.

2. Factors Affecting Local Economic Resilience

The second objective concerns the factors that either hinder or support the strengthening of local economic resilience. Findings reveal that the most significant obstacles arise from weak institutional coordination, unequal access to production resources, and limited trust among actors. Local leaders and farmer groups continue to play an important role, yet their capacity is uneven. As one village informant explained:

“We still rely on our customary structure to organize planting and water sharing, but government projects often come without consulting us.” (Village leader, Interview 2025)

This illustrates the ongoing disconnect between formal agricultural programs and local governance systems. On the other hand, some villages with strong leadership have successfully coordinated collective action, especially in maintaining irrigation channels and managing group savings. Access to credit remains a consistent challenge. Several informants mentioned that the requirements for formal loans are too strict, while informal loans carry high interest rates. A farmer summarized the dilemma as follows:

“When we apply for KUR, they ask for land certificates and collateral, but we do not have them. If we borrow from traders, the price of our rice becomes their decision.” (Farmer, Interview 2025)

Such constraints limit farmers' adaptive capacity and perpetuate dependence on external assistance. Nonetheless, informal cooperation and shared labor systems continue to serve as coping mechanisms that sustain local resilience.

3. Community-Based Strategies for Sustainable Transformation

The third objective explores community initiatives and strategies for building sustainable agricultural transformation. The data show that innovation is more likely to succeed when it is rooted in local institutions and supported by trusted social networks. In several villages, traditional leaders such as the Panglima Utan have revived their role in mediating between farmers and government programs. One traditional leader informant described this process:

“We help farmers organize collective planting and talk to the agricultural office when there are issues. If we are involved, farmers listen and cooperate better.”
(Traditional leader, Interview 2025)

This participatory model has encouraged young farmers to return to collective farming activities, especially when linked with small-scale agribusiness projects. Farmers who joined local innovation hubs reported improved access to training and tools, although support remains inconsistent. The study also found that transparency in subsidy allocation and cooperative credit mechanisms improved trust among members. These community-driven efforts demonstrate that social cohesion and institutional collaboration are essential for strengthening local economic resilience in Aceh’s post-conflict recovery.

2. Discussion

1) Transformation Dynamics and the Role of Human and Social Capital

The transformation of Aceh’s agricultural sector shows considerable variation between areas. Many farmer informants revealed that although government programs and training have been introduced, most farmers continue to use traditional cultivation methods. One farmer informant explained that training sessions were often attended as a formality rather than as opportunities for learning. This suggests that the pace of change remains slow and that transformation is more visible at the administrative level than in daily farming practices. The persistence of conventional habits reflects limited internal innovation and the low integration of new technology at the grassroots level.

From the perspective of human capital, this finding demonstrates the limited transfer of knowledge and skills among generations. The Sustainable Livelihood Framework defines human capital as the set of abilities and experiences that enable people to pursue livelihood strategies effectively (Scoones, 1998; DFID, 1999). The low participation of young people in agriculture indicates that farming is not yet perceived as an attractive or sustainable livelihood. Many informants pointed out that young people prefer urban jobs or sectors with faster economic returns. This situation affects regeneration and the continuity of local food production, which are crucial for long-term resilience in post-conflict recovery.

Social capital also shapes the direction of agricultural transformation. Villages with active farmer groups and strong social ties tend to organize collective farming and distribute inputs more effectively. Conversely, communities with weaker social relations struggle to coordinate, often depending on external assistance. Traditional leaders such as the Panglima Utan continue to hold social legitimacy that can facilitate cooperation.

Literature on post-conflict rural recovery supports this finding, emphasizing that rebuilding trust and institutional legitimacy is vital for sustainable recovery (Unruh, 2004; Levine, 2014). Strengthening social cohesion in Aceh is therefore not only a cultural necessity but also a strategic condition for accelerating agricultural transformation.

2) Institutional and Economic Constraints on Local Resilience

Institutional and financial constraints remain major challenges in the development of Aceh's agricultural sector. Informants consistently noted weak coordination between government agencies and local actors, which causes duplication of programs and limited effectiveness. Many smallholders experience difficulties in accessing subsidies and credit facilities because they lack formal land certificates. A village leader informant stated that government projects often arrive without proper consultation with local communities, which reduces the sense of ownership and responsibility among farmers. These findings reflect how institutional misalignment undermines the sustainability of development programs.

Within the SLF framework, institutional constraints influence access to livelihood assets and shape the vulnerability context of rural households (Chambers & Conway, 1992). In Aceh, financial schemes such as KUR require formal documentation that many small farmers do not possess. Budiman and Suhendi (2024) explain that restrictive credit policies in rural Indonesia often reinforce dependency and limit innovation. The same pattern is observed here, where informal farmers remain excluded from formal assistance and rely on private lenders who control prices and supply chains. This situation limits the accumulation of financial capital and weakens the capacity to adapt to market and climate fluctuations.

Nevertheless, informal mechanisms continue to provide essential support for local resilience. Farmers in several villages maintain traditional practices of shared labor and collective savings. These forms of cooperation reflect the diversification strategies discussed by Ellis (2000), which allow households to manage risk and maintain stability under uncertainty. Ketola et al. (2024) also emphasize the importance of community-based resilience in sustaining rural economies. In Aceh, these practices remain vital buffers against institutional weaknesses. However, to transform from coping to thriving, such systems must be complemented by policy reform that aligns formal and informal institutions in the agricultural sector.

3) Community-Based Pathways for Sustainable Transformation

The study found that community-driven strategies are emerging as effective pathways for agricultural transformation in Aceh. Informants described that when customary leaders are directly involved in agricultural coordination, farmers are more cooperative and responsive to innovation. A traditional leader informant noted that joint planning between farmers and the agricultural office improves both communication and outcomes. This illustrates that formal recognition of local institutions can enhance program legitimacy. The experience of Aceh supports the argument that local leadership

plays a central role in linking state policy with community trust, particularly in post-conflict settings where government legitimacy has been fragile.

The concept of institutional capital within the SLF framework helps explain this process (Scoones, 1998; DFID, 1999). When traditional institutions such as the Panglima Utan or local farmer groups are integrated into decision-making, they act as intermediaries that balance formal and informal governance. Schafer (2002) and Unruh (2004) highlight that such hybrid institutional arrangements are often crucial for rebuilding rural governance after conflict. In Aceh, these arrangements have facilitated collective farming, irrigation management, and transparent distribution of agricultural support. They also open new spaces for social learning and knowledge sharing among farmers, particularly in communities that previously experienced fragmentation during the conflict period.

Furthermore, local innovation hubs and cooperative agribusiness groups have become platforms for youth involvement and small-scale entrepreneurship. These initiatives connect technical assistance with community empowerment, creating economic opportunities that align with cultural values. Irawan et al. (2024) and Aulia et al. (2025) found similar tendencies, where local participation strengthens sustainability and encourages inclusive growth. In Aceh, this community-based approach shows that sustainable transformation is possible when human, social, and institutional capitals operate together. The long-term resilience of the agricultural sector depends on reinforcing these local systems while ensuring that government policies remain adaptive and participatory.

D. Conclusion

This study shows that agricultural transformation in Aceh is progressing slowly and unevenly. Although agriculture remains central to the region's economy, the sector continues to rely on traditional practices and fragmented institutions. The findings indicate that limited human capital, low youth engagement, and weak social cohesion hinder the ability of rural households to adopt innovation. These conditions are shaped by the legacy of conflict, which has influenced trust, local governance, and the overall functioning of community institutions.

Institutional and financial challenges also restrict the resilience of small farmers. Access to subsidies, credit, and formal support remains uneven because program requirements do not always align with local realities. Informants explained that procedures for credit are difficult to meet and that formal programs are often introduced without sufficient consultation. In contrast, informal practices such as shared labour and community savings continue to support daily livelihoods but remain insufficient to sustain long term transformation without stronger institutional coordination.

Despite these constraints, the study finds that community initiatives provide an important foundation for sustainable agricultural development. The involvement of customary leaders, farmer groups, and emerging innovation hubs has strengthened cooperation and created more adaptive local systems. These findings confirm the

relevance of the Sustainable Livelihood Framework in understanding how human, social, and institutional resources interact in post conflict agrarian settings. The research concludes that future agricultural development in Aceh will be more effective when it builds on local institutions and supports community driven strategies that reinforce economic resilience.

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