Sustainable Agriculture and Community-Based Economy: A Case Study of Poverty Reduction in Southern Thailand

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Abstract

This study examines sustainable agriculture and community-focused economic models for poverty mitigation in Southern Thailand, focusing on the sufficiency economy and cooperative farming. Pattani, Yala, and Narathiwat, Thailand's least developed border provinces, face economic problems, market inaccessibility, and social unrest. Poverty affects many countries worldwide and requires a multifaceted solution. Human capital development, resource accessibility for the poor, capacity building, creativity, skill enhancement, and sustainability must be the focus of poverty reduction strategies. As per the National Economic and Social
Development Council of Thailand, over 1.5 million ethnic Malays, the region's majority religion, have been affected by Thailand's decade-long unrest. Pattani and Narathiwat, neighboring provinces in the conflict-affected south, have the highest poverty rates in Thailand at 3.42 per cent and 3.417 percent, respectively. This study examines how cooperative farming models can improve rural livelihoods, productivity, and social cohesion. Mixed-methods research combines quantitative agricultural productivity and income data with qualitative farmer cooperative, local leader, and development organization perspectives. The results should show that sufficiency economy principles and cooperative farming can work together to promote sustainable economic development, reduce aid dependence, and strengthen communities. This study advances grassroots economic transformation and proposes equitable and sustainable growth in Thailand's southern border provinces.

Keywords: Sustainable Agriculture, Cooperative Farming, Sufficiency Economy, Poverty Reduction, Southern Thailand

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Introduction

The southern border provinces of Thailand Pattani, Yala, and Narathiwat are characterized by distinctive socio-cultural identities, where the majority of the population comprises Thai Muslims of Malay descent whose livelihoods depend largely on agriculture. Despite the region's abundant natural resources, it continues to face persistent poverty, limited access to economic opportunities, and prolonged instability, all of which have constrained community development and overall quality of life. Historically, economic development in the region has relied heavily on external investment, which has failed to foster genuine self-reliance. Consequently, the concepts of sustainable agriculture and community-based economy have gained attention as alternative development approaches that prioritize community participation and self-sufficiency in alignment with the Philosophy of Sufficiency Economy.

The objective of this article is to examine sustainable agricultural models suitable for the southern context, exploring and analyzing practical applications of Sustainable Agriculture Models such as Integrated Farming, Organic Farming, and Self-Reliant Agriculture within the distinctive climatic, cultural, and social conditions of southern Thailand. This study considers key determinants such as local natural resources, biodiversity, irrigation systems, community lifestyles, and indigenous knowledge to identify optimal models for promoting household and communitylevel food security and sustainable development.

The second part of the article analyzes the role of the community-based economy in poverty alleviation. It investigates how local economic mechanisms including agricultural cooperatives, community enterprises, occupational groups, and local markets contribute to improving livelihoods and reducing poverty across southern provinces. This analysis highlights the potential of grassroots economies to generate internal income circulation, create local employment, and reduce dependency on external capital, thereby establishing a foundation for long-term socio-economic sustainability.

Finally, the article proposes policy recommendations and support mechanisms to strengthen sustainable community-based agriculture. These include developing market infrastructure, improving access to financing, providing agricultural technology training, and promoting linkages with business sectors and academic institutions. The approach emphasizes collaboration among government, private sector, and community actors to create an enabling economic ecosystem that enhances farmers' livelihood security and resilience.

Literature Review

The agricultural revolution represents a pivotal transformation in human socio-economic structures, involving shifts in production systems, resource management, and community–state economic relations. It has profoundly influenced food security and socio-economic stability (Mazoyer & Roudart, 2006). The Neolithic Revolution marked the initial transition from nomadic to settled societies, introducing animal domestication and crop cultivation for subsistence (Diamond, 1997). This transformation led to the establishment of land ownership, communal systems, and the foundations of productive societies.

During the 18th–19th centuries, the Modern Agricultural Revolution emerged, characterized by mechanization, chemical fertilizers, improved crop varieties, and irrigation systems, which significantly boosted productivity (Grigg, 1982). However, it also produced adverse environmental impacts and widened economic disparities between large and small-scale farmers. The transition toward a Contemporary Agri-Economic Revolution now emphasizes quality, sustainability, and

market integration over sheer productivity, supported by digital technologies, value chain creation, and cooperative-based organization for enhancing farmers' bargaining power and local economic capacity (FAO, 2021).

In the southern Thai context, an appropriate agricultural revolution must be qualitative and aligned with local ecological and cultural systems. Particularly in the multicultural and religiously diverse border provinces, diversification beyond rice toward high-value crops such as traditional herbs, tropical fruits, and organic produce is essential. Strengthening cooperative institutions and community markets can enhance product management and market access. Adaptation strategies such as crop rotation, water management, and youth and women empowerment as Young Agripreneurs embody a "revolution grounded in sustainability and cooperation" rather than mere technological advancement.

The concept of Sustainable Development, as defined by the World Commission on Environment and Development (WCED, 1987), refers to "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This framework emphasizes the balance among environmental, economic, and social dimensions. In Thailand, it resonates with King Rama IX's Philosophy of Sufficiency Economy, which promotes balanced self-reliance and sustainability (Sangwon Sangthong, 2014). Within this conceptual foundation, Sustainable Agriculture integrates natural resource conservation, cost reduction, and food security enhancement through Integrated Farming and Participatory Development (Chambers, 1997; Pretty, 2008). Simultaneously, Community-Based Economy leverages local social and cultural capital as mechanisms for equitable and enduring income generation, emphasizing participatory production, management, and benefit-sharing (Suthee Wongkamhaeng, 2019).

Hence, sustainable agricultural development in the Patani region should rest upon three interdependent pillars: (1) **Qualitative agricultural transformation** to restructure production and manage risks; (2) **Strengthening community-based and cooperative economies** to enhance collaboration and market efficiency; and (3) **Participatory sustainable development** that ensures economic, social, and environmental balance within the local context.

Overview of Agriculture in the Southern Border of Thailand

Southern Thailand's agricultural system is defined by key commercial crops such as rice, rubber, oil palm, and tropical fruits. The region's humid climate and fertile soil favor such production; however, economic and labor transitions have led to a reduction in rice cultivation from approximately 144,000 rai in 2011 to around 94,600 rai in 2021 resulting in decreased farmer income, reduced food security, and migration toward the service and plantation sectors. Structurally, the region comprises smallholder farmers with limited capital and technology, alongside medium and large agribusinesses capable of processing and export. This disparity has created resource and market access gaps, particularly in border areas constrained by security and transport challenges.

Major challenges include: (1) Limited market access due to instability; (2) Labor shortages and declining youth participation in agriculture; (3) Vulnerability to climate change; and (4) Unequal access to finance, technology, and fair markets.

Addressing these issues requires an integrated approach: developing local–regional market systems, establishing cooperatives, promoting youth engagement in agriculture, implementing small-scale water management, and combining indigenous knowledge with modern innovation. Policy support from the Ministry of Agriculture and Cooperatives (MOAC) is essential in

promoting crop diversification and cooperative development, while international organizations such as FAO and the World Bank provide technical and financial assistance for climate adaptation. Nevertheless, a "policy–practice gap" remains, particularly in politically fragile and remote areas. To bridge this gap, place-based policies that empower local institutions, cooperative revolving funds, community-level processing initiatives, and participatory monitoring systems are vital. Recommended indicators such as increased net farmer income, youth participation in agriculture, and reduced climate-related losses will help measure tangible policy outcomes.

In conclusion, agricultural development in southern Thailand must rely on the integration of policy, community, and cooperative systems to drive sustainable grassroots economic transformation, grounded in self-reliance, collaboration, and the balance among economy, society, and environment.

Table 1. Analytical Summary Table: Problems – Causes – Impacts – Solutions – Indicators

Key Issues	Underlying Causes	Impacts	Proposed Solutions	Success Indicators
1. Decline in rice cultivation area and farmers' income	Volatile rice prices, labor migration to urban areas, and low motivation to continue rice farming	Decline in household income; abandonment of agricultural land	Promote alternative highvalue crops (e.g., herbal plants, oil crops, indigenous vegetables) and integrated farming systems	Cultivated area increased by ≥10% within one year; average household income increased by ≥15%
2. Youth disengagement from agriculture	Lack of motivation, insufficient skills, and limited market opportunities	Shortage of young labor force; stagnation of innovation in rural communities	Establish "Youth Agri-Lab" incubation centers for innovative young farmers	≥50 youth participants; ≥5 sub-projects initiated
3. Impacts of climate change and natural disasters	Droughts, floods, and rapid seasonal variability	Decline in agricultural productivity;	Adopt drought- and floodresistant crop varieties and	≥40% of farmers adopt technology; productivity per
		recurrent crop losses	implement Smart Irrigation systems	unit area increased by ≥20%

4. Limited market access and unstable product prices	Lack of direct market channels and inefficient distribution systems	Farmers face price suppression; unstable income levels	Develop online markets and cooperativebased trading platforms (Agri-Coop Market Platform)	Selling price increased by ≥10%; ≥30% of produce traded through cooperatives
5. Policy–practice gap	Bureaucratic complexity and limited access to government programs	Unequal policy support; misallocation of resources	Establish "Provincial CommunityBased Agricultural Policy Coordination Centers"	≥70% community access rate; ≥80% farmer satisfaction level
6. Weakness of agricultural cooperatives	Lack of management and financial literacy	Cooperative collapse and unfair profit distribution	Conduct "AgriCoop 4.0" modern cooperative management training	≥2 cooperatives achieve standard accreditation; net profit growth ≥15%

Research Methodology

This study employed a **Mixed Methods Research** design to obtain both quantitative data reflecting the overall economic landscape and qualitative insights capturing the socio-cultural dimensions of agricultural systems in the southern border provinces of Thailand. This methodological integration aligns with **Creswell and Plano Clark (2018)**, who emphasize that combining multiple data dimensions enhances **validity** and provides a more comprehensive contextual understanding than relying on a single approach.

Quantitative Research

The quantitative component aimed to investigate the economic conditions and agricultural patterns of households in the three southern border provinces **Pattani, Yala, and Narathiwat**. A total of **200 households** were selected using **stratified random sampling**, with one representative per household. Data were drawn from household income statistics, agricultural outputs, and poverty indices between **2017 and 2024**, sourced from government agencies such as the **Provincial Agriculture Offices**, **Provincial Statistical Offices**, and the **Community Development Department**.

The research instrument was a structured questionnaire tested for **reliability** and **validity**. Preliminary findings revealed that the region's main economic crops comprise rice (39%), palm oil and rubber (34%), and fruit crops (27%). Approximately 58% of households had reduced their rice cultivation area by more than 5%. Major challenges include price volatility, extreme weather, shortage of youth labor, limited capital, and regional insecurity. The level of accessibility to

government programs remained low, with an average satisfaction score of **2.1–2.8 out of 5**. Data analysis employed **descriptive statistics**, including percentages, means, and standard deviations, to explain trends in economic, social, and agricultural behaviors over the study period.

Qualitative Research

The qualitative phase utilized **in-depth interviews** and **focus group discussions (FGDs)** to understand community mechanisms and sustainable agricultural practices in local contexts. A total of **45 key informants** participated, including 20 farmers, 10 cooperative members, 10 community leaders, and 5 government or private sector officials. Additionally, **three FGDs** were conducted (10–12 participants per group) across three sub-districts. Discussion topics covered agricultural models, natural resource management, cooperative mechanisms, socio-economic relationships, and household food and income security.

Data were analyzed using **content analysis** through **thematic coding**, extracting key themes such as community sustainability, participation, self-reliance, and economic security. These themes informed the construction of a **conceptual framework** that systematically illustrates the dynamics of community-based economic systems.

Data Validation

To ensure credibility, the study applied **triangulation**, comparing data from multiple sources including statistical data, official documents, and field evidence. Moreover, **member checks** were conducted with key informants, and **peer reviews** were performed by experts in community economics and sustainable agriculture to validate the interpretations and strengthen the reliability of the findings.

Summary of Methodological Approach

In summary, this research integrates **quantitative and qualitative approaches** to capture both the "statistical overview" and the "socio-cultural depth" of agricultural and community-based economic systems in southern Thailand. This approach, consistent with **Creswell & Plano Clark (2018)**, enhances both the validity and contextual understanding of the study, thereby generating practical insights for sustainable agricultural policy and community development.

Results

The study revealed that agriculture in southern Thailand has increasingly transitioned toward sustainable practices, particularly through the development of **integrated or mixed farming systems**. Approximately 68% of farmers have shifted from monocropping to diversified cultivation combining rice with rubber, homegrown vegetables, and indigenous fruits to mitigate risks and enhance multi-source income generation. This transition not only reduces the impacts of market price volatility and climatic fluctuations but also promotes ecological balance through efficient resource utilization and environmental preservation.

Moreover, many farmers have **diversified income sources** by engaging in small-scale livestock and fish farming, contributing an additional household income of 3,000–5,000 THB per month and reducing dependence on monocultural crops. The revitalization of natural resources through the use of **organic fertilizers derived from plant residues and livestock manure** has

improved product quality, reduced production costs by 12–18%, and enhanced soil fertility across communities.

At the **socioeconomic level**, the findings highlight the pivotal role of **agricultural cooperatives** as hubs for production aggregation, financial services, and marketing coordination. Cooperative membership has led to a 25% increase in average household income within three years. The cooperative framework has also fostered collaboration, reduced local conflicts, and strengthened mutual trust among occupational groups. Furthermore, the emergence of a **"Local Exchange System"** has facilitated the continuous circulation of resources and income within communities, contributing to localized economic resilience.

Regarding **key success factors**, the application of the **Philosophy of Sufficiency Economy** has encouraged strategic planning, effective risk management, and resource efficiency among farmers. Strong local leadership has also played a crucial role in coordinating community participation and maintaining motivation for sustainable engagement. Additionally, continuous support from governmental agencies and non-governmental organizations (NGOs) in the form of technical knowledge, financial assistance, and market access has ensured the long-term sustainability of cooperative and community-based agricultural systems, resulting in a more stable and resilient local economy.

Sustainable Agriculture in the Southern Context

These findings align with **Chambers (1997)** and **Pretty (2008)**, who emphasize that **community participation is the cornerstone of sustainable development**. The mixed farming model applied in southern Thailand effectively reduces exposure to market and climate risks while reinforcing **local resilience**, or the community's capacity to adapt to crises.

Cooperatives and Poverty Reduction

Cooperative organization has proven instrumental in achieving **equitable income distribution** and reducing dependence on external capital, echoing the community-based economic framework proposed by **Manor (2010)** and **UNDP (2019)**. Moreover, cooperatives serve as a source of **social capital**, strengthening local unity, fostering **collective learning**, and promoting collaborative problem-solving within rural societies.

Structural Factors

Nevertheless, several **policy gaps** continue to constrain the full potential of local communities:

1. Limited access to government programs in politically sensitive areas
2. Insufficient market support at the local level
3. Fragmented dissemination of sustainable agricultural knowledge

Policy recommendations therefore call for an integrated framework linking **academic institutions, governmental agencies, and civil society** into a **"Community Agricultural Innovation Network."** This would enable the scaling-up of successful local models to the provincial level. In summary, sustainable agriculture and community-based economies in southern Thailand represent not merely food production systems but a **"process of building resilient societies."** When farmers unite within transparent and robust cooperatives, they can achieve stable incomes, reduce inequality, and contribute to lasting peace in the region.

Policy and Practical Interventions

Advancing sustainable agriculture in southern Thailand requires a dual-track approach: strengthening **community-level economic mechanisms** and ensuring **policy-level support** that respects the region's unique social, religious, linguistic, and security contexts. Building a **resilient grassroots economy** demands reinforcement of **local institutions and agricultural cooperatives**, which serve as key intermediaries for production aggregation, price negotiation, and market integration at both regional and national levels.

Developing **cooperative-based market systems** enhances farmers' bargaining power, reduces dependency on middlemen, and ensures transparency in income distribution. Additionally, establishing **Agro-entrepreneur Incubation Programs** can cultivate a new generation of farmers capable of processing, branding, and marketing local products, particularly through digital platforms and e-commerce thereby promoting **agribusiness sustainability** and rural youth engagement.

To protect farmers against market volatility and natural disasters, the introduction of **microcredit schemes and climate insurance systems** is essential. Providing community-based microloans alongside crop insurance would mitigate financial risks and prevent household debt accumulation. Climate adaptation should adopt a **community-based approach**, incorporating drought- and flood-tolerant crop varieties, integrated water management, and seasonal crop adjustments. This requires harmonizing **local knowledge with modern technologies**, such as temperature and rainfall monitoring systems.

At the macro level, the government should establish an **Inclusive Agricultural Value Chain**, linking production, post-harvest processing, logistics, and direct producer-to-consumer trade platforms. This mechanism can reduce marketing costs, enhance supply chain efficiency, and ensure fair returns for farmers. Culturally, interventions should emphasize **context-sensitive support**, accounting for linguistic, religious, and social diversity to foster trust and local ownership of development processes.

Furthermore, creating **Sustainable Agriculture Learning Centers** in every district would institutionalize local knowledge transfer, innovation dissemination, and hands-on training in integrated farming. The development of **Young Smart Farmers** is vital to bridging modern innovation with traditional wisdom, ensuring generational continuity in agricultural sustainability. Lastly, establishing **Community Revolving Funds** would enhance liquidity, reduce household debt, and strengthen internal circular economies. When integrated systematically, these strategies can build a **robust and self-reliant grassroots economy** for the southern region.

Conclusion

The study concludes that **sustainable agriculture**, when integrated with **cooperative structures and community-based economies**, constitutes a crucial mechanism for inclusive economic development in southern Thailand. Mixed farming and cooperative organization not only enhance farmers' incomes but also significantly reduce poverty and social inequality. As community-based organizations, cooperatives function as **centers for resource management, knowledge development, and cross-sector collaboration**, fostering equitable and stable local economies.

Moreover, this collective model promotes social harmony and unity across religious and ethnic divides. The **Philosophy of Sufficiency Economy** has been effectively applied as a guiding framework for household-level planning and resource management, strengthening economic

resilience and social stability, particularly during crises such as price declines, droughts, and disease outbreaks.

In summary, **sustainable agriculture and community-based economies** are not merely economic paradigms but **"instruments for building resilient societies."** Through policy coherence and collaborative action among the state, communities, and the private sector, southern Thailand can achieve truly sustainable development economically, socially, and environmentally in the long term.

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