

Economic Contributions of the Vanilla Value Chain in the SAVA Region, Madagascar

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Abstrak

Penelitian ini mengkaji kontribusi ekonomi rantai nilai vanila di wilayah SAVA, Madagaskar, serta implikasinya terhadap mata pencaharian rumah tangga dan pembangunan regional. Pendekatan studi kasus kualitatif digunakan dengan memanfaatkan observasi lapangan, diskusi kelompok terarah, analisis dokumen, serta wawancara mendalam dengan 30 partisipan yang mewakili para aktor kunci dalam rantai nilai vanila, termasuk petani kecil, pengepul, perwakilan koperasi, eksportir, dan pemangku kepentingan lokal. Hasil penelitian menunjukkan bahwa produksi vanila merupakan sumber utama pendapatan tunai bagi sebagian besar rumah tangga dan berperan penting dalam aktivitas ekonomi regional. Namun, manfaat yang diperoleh terdistribusi secara tidak merata dan disertai dengan kerentanan yang tinggi terhadap volatilitas harga, risiko lingkungan, dan guncangan eksternal. Terbatasnya diversifikasi mata pencaharian serta lemahnya dukungan kelembagaan membatasi kemampuan untuk mengonversi peningkatan pendapatan jangka pendek menjadi keamanan ekonomi jangka panjang. Secara keseluruhan, penelitian ini menunjukkan bahwa kontribusi ekonomi rantai nilai vanila sangat bergantung pada struktur tata kelola dan ketahanan mata pencaharian.

Kata Kunci: *Aktivitas; Vanila; Kontribusi; Mata pencaharian; Produktif; SAVA.*

Abstract

This study examines the economic contribution of the vanilla value chain in the SAVA region of Madagascar and its implications for household livelihoods and regional development. A qualitative case study approach was employed, drawing on field observations, focus group discussions, document analysis, and in-depth interviews with 30 participants representing key actors across the vanilla value chain, including smallholder farmers, collectors, cooperative representatives, exporters, and local stakeholders. The results indicate that vanilla production constitutes the primary source of cash income for most households and plays a significant role in regional economic activity. However, the benefits are unevenly distributed and accompanied by pronounced vulnerability to price volatility, environmental risks, and external shocks. Limited livelihood diversification and weak institutional support constrain the translation of short-term income gains into long-term economic security. Overall, the study shows that the economic contribution of the vanilla value chain remains highly conditional on governance structures and livelihood resilience

Keywords: *Activities; Vanilla; Contributions; Livelihoods; Productive; SAVA*

Introduction

Vanilla production occupies a central position in the global spice economy, with Madagascar supplying more than half of the world's natural vanilla, most of it originating from the SAVA region in the country's northeast (Zhu, 2018). Over the past two decades, the vanilla value chain has undergone profound transformations driven by price volatility, export market dynamics, environmental pressures, and changing institutional arrangements. These transformations have generated substantial income opportunities for rural households while simultaneously creating new forms of vulnerability related to food security, land use, governance, and ecological sustainability (Andriamparany et al., 2021; Celio et al., 2023). As a result, the economic contributions of the vanilla value chain extend far beyond farm-level income generation, shaping broader livelihood systems, regional development trajectories, and state-market relations in Madagascar.

Despite its economic importance, the vanilla sector in the SAVA region is characterized by deep structural contradictions. Periods of price booms have led to significant increases in household cash income, improved access to consumer goods, and short-term poverty reduction among vanilla farmers (Kunz et al., 2020; Zhu, 2018). At the same time, these booms have intensified socio-economic inequalities, encouraged mono-cropping, increased exposure to price shocks, and exacerbated pressure on forest resources through land-use change (Zaehring et al., 2015; Scales, 2014). Empirical evidence shows that vanilla-dependent households often experience income instability, food insecurity, and heightened sensitivity to external shocks such as cyclones, pandemics, and global market downturns (Rakoto Harison et al., 2024; Fleming et al., 2025). These dynamics raise critical questions about the nature, distribution, and sustainability of the economic contributions generated by the vanilla value chain.

Existing studies on Madagascar's vanilla sector have primarily focused on specific dimensions such as household livelihoods, food security, conservation outcomes, or market governance. Research has demonstrated that contract farming arrangements can improve income predictability and food quality, but may also reinforce dependency on exporters and limit farmers' bargaining power (Andriamparany et al., 2021). Other studies highlight the role of income diversification, particularly livestock keeping, as a strategy to buffer vanilla farmers against price volatility (Piquer-Rodríguez et al., 2018; Andriamparany et al., 2023). At the regional scale, land-use modeling reveals that export-oriented vanilla and clove economies increase farmers' income potential while simultaneously raising vulnerability to environmental and market risks (Celio et al., 2023). While these studies provide valuable insights, they tend to examine isolated components of the vanilla system rather than the integrated economic functioning of the value chain as a whole.

From a broader theoretical perspective, the vanilla economy in the SAVA region exemplifies key debates in development economics and rural studies concerning commodity dependence, diversification, and resilience. Commodity booms can stimulate rural growth but often fail to produce sustained development when institutions are weak and production systems remain undiversified (Birtal & Hazrana, 2019). Evidence from diversified agricultural systems suggests that combining multiple income sources enhances both economic resilience and environmental outcomes (Rasmussen et al., 2024). However, the vanilla sector in Madagascar remains highly specialized, exposing farmers and local economies to compounding risks associated with global price fluctuations, climate shocks, and governance failures (Rakotonarivo et al., 2021).

The economic contribution of the vanilla value chain must also be understood in relation to land use and environmental change. Northeast Madagascar is a global biodiversity hotspot where agricultural expansion and forest degradation are closely linked to livelihood strategies and export-oriented production (Zaehring et al., 2016; Emynorane et al., 2025). Vanilla cultivation has been associated with both forest conversion and agroforestry practices, depending on local institutions, market incentives, and farmer preferences (Watteyn et al.,

2022). Studies on land-use dynamics demonstrate that income from vanilla can either reduce pressure on forests by improving livelihoods or intensifying deforestation during boom periods when land values rise and security concerns increase (Zaehring et al., 2015; Dale, 2020; De Vasconcelos et al., 2025). These mixed outcomes highlight the need for a more nuanced assessment of how economic benefits are generated and distributed along the vanilla value chain.

Recent shocks have further exposed the fragility of the vanilla-dependent economy. The combined impacts of COVID-19, cyclones, and price crashes have significantly undermined food security and altered natural resource use among vanilla farmers in the SAVA region (Rakoto Harison et al., 2024). During crisis periods, households often revert to forest extraction or reduce dietary diversity, suggesting that income gains from vanilla do not necessarily translate into long-term economic security (Van Versendaal & Schickhoff, 2025). Moreover, policy instruments such as financial incentives and conservation payments have shown limited effectiveness in aligning economic gains with sustainable resource management when underlying structural vulnerabilities persist (Bell et al., 2023).

Study increasingly highlights the importance of institutions, cooperation, and governance in shaping economic outcomes within agricultural value chains. Both experimental and empirical evidence demonstrate that collective action, property rights, and considerations of social equity significantly influence how farmers respond to incentives and market signals (Cárdenas & Ostrom, 2004; Rakotonarivo et al., 2021). Within the vanilla sector, cooperative management arrangements, patterns of innovation adoption, and farmer preferences are critical in determining value capture and opportunities for upgrading along the chain (Bell et al., 2016; Watteyn et al., 2022). Nevertheless, much of the existing study remains fragmented, often concentrating on behavioral aspects or environmental implications in isolation, without sufficiently integrating the economic contributions of the vanilla value chain at the regional level.

A growing body of comparative literature from other vanilla-producing regions underscores the importance of examining value-chain impacts beyond production volumes. Studies from Tanzania and Indonesia show that vanilla production can significantly improve household welfare while also generating uneven benefits and reinforcing local inequalities when market access and institutional support are uneven (Kalemile et al., 2024; Aripnanata et al., 2025). These findings suggest that the economic contributions of vanilla are context-dependent and mediated by governance structures, diversification strategies, and linkages between production, processing, and trade.

A significant analytical gap remains in the literature on Madagascar's vanilla sector. Most existing studies concentrate either on micro-level household outcomes or on macro-level environmental effects, leaving the economic contribution of the vanilla value chain insufficiently examined as an integrated system that connects production, income distribution, livelihood resilience, and regional economic dynamics in the SAVA region. In particular, limited attention has been given to the ways in which value is generated, transmitted, and transformed along the chain and to how these processes shape both short-term income gains and long-term development trajectories. In addition, the relationship between vanilla-driven economic growth and underlying structural vulnerabilities, including market dependency, institutional fragility, and exposure to external shocks, has not yet been systematically explored.

This study responds to the identified gaps by examining the economic contributions of the vanilla value chain in Madagascar's SAVA region. Drawing on insights from livelihood analysis, land-use studies, and value-chain theory, the study investigates how vanilla production and trade shape household income, diversification strategies, and regional economic activity, while also assessing the conditions under which these contributions support sustainable development. The study aims to analyze the role of vanilla within household livelihood strategies, evaluate how value-chain dynamics influence vulnerability

to price fluctuations and environmental shocks, and identify the institutional and structural factors that affect the distribution and durability of economic benefits among farmers and local economies. The originality of this study lies in its integrated analytical approach, which connects value-chain processes with livelihood resilience and regional development dynamics in one of the world's most significant vanilla-producing areas. By advancing this perspective, the study contributes to broader debates on commodity dependence, rural development, and sustainability in export-oriented agricultural economies, and provides evidence relevant for policymakers, development practitioners, and value-chain actors seeking to enhance economic benefits while reducing vulnerability and promoting inclusive growth in the SAVA region.

Methodology

This study adopts a qualitative case study approach to examine the economic contributions of the vanilla value chain in the SAVA region of Madagascar. This approach is suitable for exploring livelihood dynamics, institutional arrangements, and value-chain processes within their local social and economic contexts. The SAVA region, comprising Sambava, Antalaha, Vohemar, and Andapa was selected because of its key role in global vanilla production and strong dependence on vanilla-based livelihoods. Fieldwork was conducted over five months, allowing the researcher to observe variations in production, marketing, and livelihood strategies. The researcher was actively involved in data collection and analysis and maintained reflexive field notes to support interpretation and minimize bias.

Participants were selected through purposive sampling based on their involvement in the vanilla value chain and their relevance to the study objectives. A total of 30 participants took part in the study, including smallholder vanilla farmers, local collectors and intermediaries, cooperative representatives, exporters or processors, and local government or development actors. Participants were diverse in terms of production scale, market access, and dependence on vanilla income, enabling a comprehensive understanding of value-chain dynamics. Data were collected primarily through in-depth semi-structured interviews guided by a research instrument developed specifically for this study and pilot-tested prior to full implementation. Focus group discussions with farmers and direct field observations complemented the interview data, while document analysis of policy materials, cooperative records, and development reports provided additional contextual insights.

Data were analyzed using an iterative thematic approach, as illustrated in Figure 1, which outlines the qualitative research process from study design and data collection to analysis and validation. Interview and discussion data were transcribed verbatim and coded using both inductive and deductive methods aligned with the study objectives. The analysis focused on themes related to economic value, income distribution, livelihood resilience, and vulnerabilities within the vanilla value chain. Credibility was strengthened through triangulation across data source, as well as member checking with selected participants. Ethical standards were followed by obtaining informed consent, ensuring participant anonymity through pseudonyms, and securely managing research data.

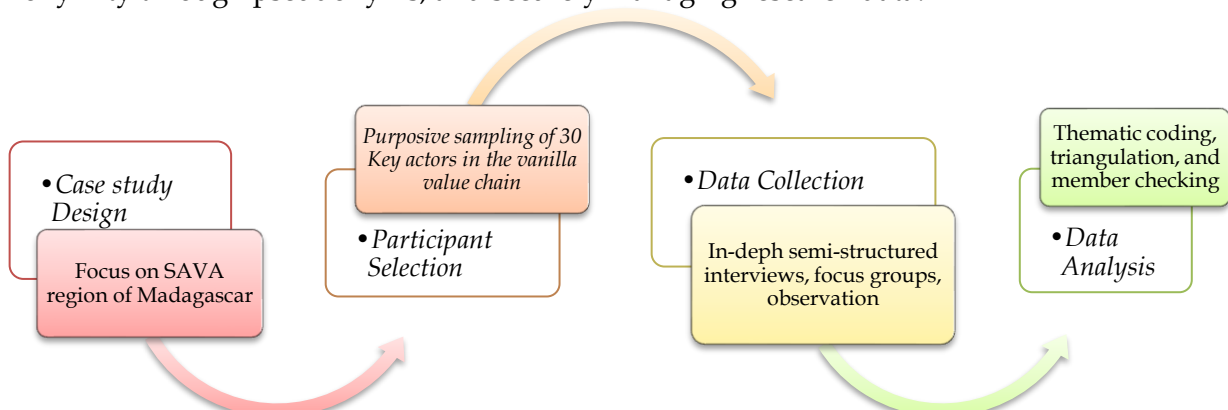


Figure 1. Methodological Framework and Data Analysis Flow

Results and Discussion

Economic Contribution of Vanilla to Household Income and Livelihood Structures

The findings highlight vanilla production as the principal source of cash income for households in the SAVA region, confirming its pivotal role in shaping local livelihood structures. Income generated from vanilla sales exceeds earnings from subsistence crops and other agricultural activities, particularly during periods of high global prices. This income is primarily allocated to essential household needs, including food purchases, education expenses, housing improvements, and healthcare. Such spending patterns indicate that vanilla income contributes directly to both short-term welfare and longer-term human capital investments. Consistent with earlier studies, these results demonstrate how vanilla booms temporarily enhance purchasing power and stimulate rural economic activity in northeastern Madagascar (Zhu, 2018; Gallage et al., 2018; Andriamparany et al., 2021).

At the same time, the study revealed marked differences in income stability and benefit capture among vanilla-producing households. Farmers with larger landholdings, established plantations, and stronger connections to collectors or exporters reported more predictable income flows than small-scale producers reliable on spot markets. Participation in contractual arrangements and cooperative structures emerged as an important factor influencing income security, access to market information, and bargaining power. These findings suggest that the economic benefits of vanilla production are strongly mediated by institutional access and market positioning rather than by production alone. Similar patterns have been observed in regional analyzes of income vulnerability, which show that farmers' exposure to economic risk is closely linked to their integration within export-oriented value chains (Celio et al., 2023).

The uneven distribution of vanilla income has broader implications for rural social structures and long-term development trajectories. Higher-income households were better able to reinvest vanilla earnings in land expansion, production security, and diversification strategies, reinforcing their economic position over time. Lower-income households, in contrast, tend to allocate most of their earnings to immediate consumption needs, limiting opportunities for asset accumulation and resilience building. This pattern indicates that vanilla-driven income growth can coexist with increasing socio-economic differentiation within rural communities. The findings therefore point to the importance of institutional mechanisms that promote more inclusive value-chain participation, such as transparent pricing systems, strengthened farmer organizations, and equitable contract arrangements.

Value Distribution and Power Relations Along the Vanilla Value Chain

The findings indicate that value distribution along the vanilla value chain in the SAVA region is characterized by pronounced asymmetries among actors, with farmers capturing only a small proportion of the final export value. Participants consistently described how prices at the farm gate were shaped by a combination of international market fluctuations and the purchasing strategies of exporters, leaving producers with limited influence over price formation. Local collectors played a pivotal intermediary role, often controlling access to markets and credit while transferring price risks downward to farmers. Limited access to timely and accurate market information further weakened farmers' bargaining positions, particularly during periods of price decline, when urgent cash needs forced them to accept unfavorable terms. This structure reinforces dependency relationships and constraints farmers' ability to strategically time sales or negotiate better conditions, highlighting the embedded power imbalances within the value chain.

Institutional arrangements emerged as a key factor shaping how value is distributed and how power is exercised along the chain. The findings align with earlier research showing that governance mechanisms, property rights, and collective action significantly influence economic outcomes in agricultural markets (Cárdenas & Ostrom, 2004; Banerjee & Chattopadhyay, 2019). Farmers who were affiliated with cooperatives or producer groups

reported improved access to price information, greater transparency in transactions, and, in some cases, higher farm-gate prices. Collective marketing arrangements enabled some producers to pool output, reduce transaction costs, and engage more effectively with buyers. These experiences support evidence that cooperative management can enhance value capture and upgrading opportunities when organizational structures function effectively (Bell et al., 2016; Watteyn et al., 2022).

At the same time, the effectiveness of cooperatives varied considerably across localities. Participants noted that weak organizational capacity, limited managerial skills, and internal trust deficits often undermined collective efforts. In several cases, cooperatives struggled to enforce quality standards, manage finances transparently, or maintain stable relationships with buyers, reducing their potential to shift power relations in favor of farmers. Unequal participation within cooperatives also shaped outcomes, as better-resourced members were more likely to benefit from collective arrangements than smaller producers. These dynamics suggest that cooperative membership alone does not guarantee equitable value distribution, and that the quality of governance within producer organizations plays a decisive role. The findings underscore the importance of institutional strength and accountability in transforming cooperative structures from nominal associations into effective instruments for redistributing value within the vanilla value chain.

Livelihood Diversification and Economic Resilience

Livelihood diversification emerged as an important strategy through which vanilla-producing households in the SAVA region sought to manage economic risk and uncertainty. While vanilla remains the dominant source of cash income, many farmers are engaged in complementary activities such as livestock keeping, food crop cultivation, petty trade, and occasional wage labor. These activities were not primarily pursued for profit maximization but rather as mechanisms to stabilize household consumption and reduce dependence on a single volatile commodity. Participants stressed that alternative income sources became particularly relevant during periods of falling vanilla prices, delayed payments, or climatic disturbances that disrupted production. Diversification therefore functions as a risk-management strategy embedded within broader livelihood systems rather than as a shift away from vanilla production.

The findings reinforce existing empirical evidence demonstrating that income diversification enhances resilience among vanilla-dependent households by spreading risk across multiple activities (Kunz et al., 2020; Andriamparany et al., 2023). Livestock ownership, in particular, was frequently described as a form of savings that could be liquidated during financial stress, while food crop production contributed to household food security when market access was constrained. These practices mirror patterns observed in other export-oriented agricultural contexts, where diversified livelihood portfolios help buffer households against price volatility and external shocks. At the same time, diversification was unevenly distributed among households, with better-resourced farmers more able to invest in livestock or off-farm activities due to greater access to land, capital, and labor.

Constraints on diversification significantly shaped its scope and effectiveness. Many participants cited labor shortages, limited access to start-up capital, and land scarcity as major barriers to expanding non-vanilla activities. Seasonal labor demands for vanilla cultivation often compete with time needed for alternative enterprises, reducing households' capacity to pursue diversification beyond subsistence levels. These constraints align with broader findings from studies of specialized agricultural systems, where reliance on a high-value export crop can limit adaptive capacity and strengthen vulnerability over time (Birthal & Hazrana, 2019; Rasmussen et al., 2024). The results indicate that vanilla income alone does not automatically translate into durable livelihood security, particularly when structural barriers limit households' ability to develop complementary economic activities.

Vulnerability to Price Shocks, Environmental Risks, and External Crises

The results reveal that vanilla-dependent livelihoods in the SAVA region are structurally exposed to multiple, overlapping shocks that extend beyond short-term income volatility. Empirical accounts from participants show that sharp price collapses, recurrent cyclones, and the COVID-19 pandemic jointly undermined household income stability, food access, and livelihood continuity. During these periods, coping strategies often involved reducing meal frequency and dietary diversity, liquidating productive assets such as livestock, or intensifying reliance on forest resources. These responses indicate that vanilla income, while substantial during boom phases, does not translate into durable economic security. Instead, households remain locked in a cycle of boom-and-bust adjustment, where gains accrued during high-price periods are rapidly eroded when external disturbances occur.

These findings align closely with recent evidence on the compounding nature of crises affecting vanilla farmers in Madagascar. Rakoto Harison et al. (2024) demonstrate that the interaction between price crashes, climatic shocks, and health crises produces cumulative impacts that are more severe than isolated shocks, particularly for food security and natural resource use. Similarly, Fleming et al. (2025) show that price shocks influence not only income levels but also land-use decisions, crop diversification, and forest dependence. The present findings reinforce this literature by illustrating how heavy reliance on a single export commodity amplifies exposure to global market fluctuations, while weak institutional safety nets such as limited access to insurance, credit, or social protection constrain households' capacity to absorb and recover from shocks. In this context, vulnerability is not merely episodic but embedded within the structural organization of the vanilla economy.

The results also resonate with broader critiques of incentive-based and market-centered interventions in fragile rural contexts. Studies on conservation and development interventions in Madagascar suggest that financial mechanisms alone are insufficient to address underlying vulnerabilities when power asymmetries, institutional fragility, and social inequities persist (Rakotonarivo et al., 2021a; Bell et al., 2023). The observed increase in forest reliance during crisis periods underscores this limitation, as short-term survival needs override longer-term sustainability considerations. Taken together, the findings suggest that reducing vulnerability in vanilla-producing regions requires policy approaches that move beyond price stabilization or income incentives alone. Strengthening institutional resilience, promoting meaningful livelihood diversification, and integrating social protection with environmental governance are essential for transforming vanilla-based livelihoods from shock-prone systems into more robust and adaptive rural economies.

Vanilla Expansion, Land Use, and Environmental Implications

The economic attractiveness of vanilla exerts a powerful influence on land-use decisions in the SAVA region, particularly during price boom periods when incentives to expand cultivation are strongest. Rising prices encourage farmers to prioritize vanilla as a high-return land use, reshaping local landscapes through both intensification and spatial expansion. In several cases, this dynamic is translated into the conversion of forested areas into new vanilla plots, driven by short-term income expectations, land scarcity, and increased competition over productive space. Such patterns reflect broader observations that export-oriented crop booms can rapidly alter land-use systems when regulatory oversight and tenure security are limited (Scales, 2014; Zaehring et al., 2015).

At the same time, vanilla expansion does not uniformly result in deforestation. Evidence from northeastern Madagascar demonstrates that vanilla cultivation can be embedded within agroforestry systems that maintain tree cover and support heterogeneous landscape mosaics (Zaehring et al., 2016). These systems often emerge where farmers possess greater ecological knowledge, longer planning horizons, or access to institutional support that encourages sustainable practices. Agroforestry-based vanilla production has been shown to reduce pressure on remaining forests while providing income opportunities

that are compatible with biodiversity conservation goals (Zaehring et al., 2016). This coexistence of environmentally contrasting strategies underscores that land-use outcomes are mediated by local governance arrangements, livelihood security, and the availability of alternatives to extensification.

The interaction between vanilla-driven income generation and land-use change highlights the deeply intertwined nature of economic and environmental processes in the region. Land-use modeling and empirical studies indicate that fluctuations in vanilla prices influence not only income levels but also farmers' decisions regarding land expansion, fallow management, and forest use, with long-term implications for landscape resilience (Fleming et al., 2025; De Pinto, 2020). These dynamics suggest that vanilla's economic contributions cannot be assessed in isolation from their environmental effects, as market incentives directly shape ecological outcomes. The evidence reinforces the view that sustainability in vanilla-producing regions depends on institutional configurations that align economic returns with land-use practices capable of maintaining both livelihoods and ecosystem functions.

Synthesis and Novelty of Findings

The analysis illustrates that vanilla-centered economic growth in the SAVA region generates significant income flows at both household and regional levels, while simultaneously reproducing deep-seated structural vulnerabilities. Income gains derived from vanilla production are unevenly distributed along the value chain, with farmers remaining exposed to price volatility, environmental risks, and external crises despite periods of high returns. Limited opportunities for meaningful livelihood diversification further constrain households' capacity to convert short-term earnings into durable economic security. Bringing together evidence on production dynamics, value distribution, and vulnerability reveals how these dimensions are mutually reinforcing rather than independent, offering a more holistic understanding of how the vanilla economy functions in practice.

An important contribution of this study lies in its integrated qualitative examination of the vanilla value chain as a regional economic system shaped by market forces, institutions, and livelihood strategies. By situating household experiences within broader value-chain and governance structures, the analysis advances existing debates on commodity dependence and rural development. Consistent with earlier work, the findings show that high commodity prices can stimulate rural income growth, yet they also expose limits to development when institutional capacity and diversification remain weak (Zhu, 2018; Rasmussen et al., 2024). The evidence challenges linear assumptions that price booms translate into sustainable development outcomes, instead emphasizing the decisive role of governance arrangements, collective organization, and adaptive livelihood strategies in determining whether economic gains lead to long-term resilience or renewed vulnerability.

Conclusion

This study shows that the vanilla value chain plays a central role in shaping household livelihoods and regional economic activity in the SAVA region, while simultaneously generating structural vulnerabilities linked to market dependence, unequal value distribution, and exposure to environmental and external shocks. Economic benefits from vanilla are highly conditional, mediated by institutional arrangements, governance quality, and households' capacity to diversify livelihoods. The findings indicate that short-term income gains do not automatically translate into long-term resilience, underscoring the importance of integrated value-chain governance and livelihood strategies that balance economic growth with social equity and environmental sustainability.

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