

Agricultural Value-Chain Transformation and Market Integration as Institutional Pathways to Inclusive Rural Development

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Abstract

Agricultural transformation increasingly depends on the organization of value chains, the integration of rural producers into markets, and the capacity of rural economies to convert commercialization into broader development outcomes. This paper examines these relationships through three complementary dimensions: agricultural value-chain transformation and governance; market integration, information and transaction costs; and the effects of these processes on rural development and inclusive transformation. The literature indicates that value-chain development extends well beyond primary production, encompassing processing, logistics, contractual coordination, certification, digital information, producer organizations and increasingly diversified rural employment. At the same time, market integration generates heterogeneous outcomes because participation depends on infrastructure, productive assets, organizational capabilities, bargaining conditions and institutional arrangements. Commercialization can improve income, market access and food availability, but its effects on nutrition, inclusion and household welfare are neither automatic nor uniformly distributed. Cooperatives, territorial labels, digital technologies and vertical coordination can reduce selected market failures when they are supported by credible institutions and complementary services. The evidence therefore suggests that agricultural value-chain development contributes most effectively to rural transformation when improvements in physical connectivity, market governance, productive capabilities and social inclusion occur jointly. Rural development policies should consequently move beyond production-centered approaches and address the institutional and organizational conditions through which farmers participate in increasingly interconnected agri-food systems.

Keywords: Agricultural value chains; Market integration; Commercialization; Rural development; Smallholders

JEL classification: Q12; Q13; O13; O18; R11

Introduction

Agricultural development has progressively shifted from a narrow concern with farm production toward a broader understanding of interconnected agri-food systems. Contemporary agricultural transformation involves relationships among farmers, input suppliers, traders, proces-



sors, transport operators, wholesalers, retailers and consumers, making value-chain organization an important determinant of rural economic outcomes. Changes in food demand, urbanization and market organization are expanding activities located between primary production and final consumption, particularly processing, logistics, storage and trade. Consequently, the ability of rural producers to participate in agricultural transformation increasingly depends on their connection with these midstream and downstream activities. Market relationships can provide access to inputs, technologies, information and more remunerative outlets, while weak coordination, high transaction costs and limited infrastructure can restrict participation. The literature reviewed in this paper similarly shows that contractual arrangements, sustainability standards and territorial certification may facilitate upgrading, although their effects remain conditional on institutional design and producers' capacity to comply with market requirements. Agricultural value-chain transformation should therefore be understood as an organizational and institutional process rather than simply as an expansion of agricultural output or the volume of commodities exchanged.

Market integration constitutes a second component of this transformation because production incentives depend heavily on farmers' ability to reach markets, obtain information and conduct transactions under acceptable conditions. Transport infrastructure can reduce spatial isolation, improve price transmission and expand commercialization opportunities, but physical connectivity alone is insufficient when intermediary market power, information asymmetries or limited access to alternative buyers continue to constrain producers. Digital technologies can reduce information-search costs, facilitate agricultural advice and strengthen payment mechanisms, although their effects depend on farmers' resources and their capacity to convert information into effective commercial decisions. These market processes also have implications extending beyond agricultural sales. Commercialization may affect household income, food security and dietary diversity, while cooperatives and collective organizations can strengthen bargaining capacity and access to services. At the same time, rural transformation increasingly incorporates nonfarm employment, entrepreneurship and occupational diversification generated by stronger interactions between agriculture, towns and expanding agri-food markets. Against this background, this paper examines how value-chain governance, market integration and rural development outcomes interact, with particular attention to the conditions under which agricultural commercialization can support inclusive and sustainable rural transformation.

1. Agricultural Value-Chain Transformation and Governance

1.1. Structural transformation, midstream development and value-chain upgrading

Tschirley et al. (2015) show that changing food demand in Africa is reshaping employment across the broader agri-food economy, with expanding opportunities in processing, transport, wholesale and retail alongside primary production. This implies that rural development increasingly depends on how effectively agricultural producers are connected to downstream activities generated by changing consumer preferences. Reardon (2015) reinforces this interpretation through the concept of the "hidden middle," emphasizing the expansion of small and medium enterprises involved in storage, logistics, processing and wholesale. The implication is that these midstream actors are not peripheral to agricultural transformation because their efficiency directly affects market access, food prices and rural nonfarm employment. Barrett et al. (2022) extend this perspective by conceptualizing agri-food transformation as a structural process linking farms with input services, coordination, processing, logistics and retail. Feyaerts et al. (2020) add that both local and global value chains can support income, employment and



technology adoption when institutions allow smallholders to participate effectively. Taken together, these contributions imply that agricultural modernization should be understood as transformation of the entire food economy, where the interaction between farms, midstream enterprises and downstream markets increasingly determines the distribution of development opportunities across rural areas.

Minten et al. (2019) demonstrate that changes in quality differentiation, marketing organization and buyer relationships within Ethiopian coffee value chains can alter production incentives at farm level. Their findings imply that downstream market developments can influence farmer behaviour by changing the rewards associated with quality, coordination and market participation. Liverpool-Tasie et al. (2020) complement this perspective by showing that such market linkages generate development gains only when relationships with processors, traders, retailers, input providers and farmer organizations are sufficiently durable and inclusive. Swinnen and Kuijpers (2019) further show that vertical coordination can address missing credit, information and input markets through contracts, embedded extension, quality control and input provision. Their contribution implies that value-chain organization can perform functions that conventional rural markets often fail to provide. Vandecasteele et al. (2018) add a spatial dimension by demonstrating that farmers located closer to urban markets face stronger incentives for commercialization, intensification and modern input use. Together, these studies imply that market transformation depends on more than rising demand. Its effects on smallholders are mediated by the organization of buyer relationships, access to complementary services and physical proximity to expanding markets. Value-chain modernization therefore becomes more effective when coordination, incentives and spatial connectivity evolve together.

Marivoet et al. (2024) show that commercialization in eastern Democratic Republic of the Congo is emerging alongside persistent infrastructural and organizational bottlenecks, implying that food-system transformation remains uneven when rural production centers are poorly connected to demand. Vandecasteele et al. (2018) reinforce this implication by showing that transport connectivity and proximity to cities condition farmers' ability to benefit from urbanization through stronger market access and incentives for intensification. Liverpool-Tasie et al. (2020) add that connectivity alone does not ensure favorable outcomes because the inclusiveness and quality of relationships among value-chain actors determine whether small-scale producers can capture new opportunities. Barrett et al. (2022) place these mechanisms within a broader structural transformation in which farms increasingly depend on interactions with processing, logistics, wholesale, retail and input-service activities. Considered jointly, these contributions imply that the expansion of urban demand produces stronger rural development effects when physical infrastructure and institutional coordination develop simultaneously. Weak transport systems can restrict market access, while poorly organized relationships can limit the distribution of gains even where demand is expanding. Policies supporting agri-food transformation should therefore connect infrastructure investment with stronger market institutions and coordination mechanisms so that spatially dispersed producers can participate more effectively in increasingly integrated food systems.

1.2. Contract farming and vertical coordination

Ruml et al. (2022) show that the livelihood effects of contract farming depend strongly on the specific combination of services, obligations, pricing arrangements and coordination mechanisms embedded in contracts. This implies that the developmental relevance of contracting should be assessed through institutional design rather than through participation alone. Otsuka et al. (2016) reinforce this interpretation by presenting contracts as responses to failures in product, credit, input and information markets. Their findings imply that buyers can reduce



these constraints by coordinating access to technologies, inputs and assured outlets while securing more reliable supply and quality. Maertens and Vande Velde (2017) extend this reasoning to staple-food chains by showing that rice contracts can facilitate access to inputs, technology and output markets and thereby affect both production and household welfare. Dubbert (2019) similarly demonstrates that contracts in Ghanaian cashew production can improve farm performance when market security is accompanied by complementary services. Taken together, these contributions imply that contract farming creates stronger development effects when agreements combine market access with support that addresses the constraints facing smallholders. Contracting should therefore be understood as an institutional mechanism for coordinating transactions and investments rather than merely as a guaranteed purchasing arrangement.

Meemken and Bellemare (2020) emphasize that participating farmers often appear better off, but they also show that contractors may select producers whose characteristics already favor commercial success. This implies that observed welfare differences cannot automatically be attributed entirely to contractual participation. Hoang and Nguyen (2023) reinforce this concern by showing that entry into contract farming depends on household resources, farm characteristics, institutional access and market conditions. Their findings indicate that contracts may reduce transaction costs after entry while leaving substantial barriers to participation for less-endowed farmers. Ton et al. (2018) reach a related conclusion from a broader synthesis, finding positive average effects on farm income but also substantial problems of selection and external validity. Bellemare and Novak (2017), however, demonstrate that contract participation can improve household welfare and reduce periods of food shortage, extending potential benefits beyond farm income or productivity. Together, these contributions imply that contract farming can support rural welfare, but the inclusiveness of these effects depends on who is able to enter contractual arrangements and under what conditions. Policy therefore needs to distinguish between the gains generated after participation and the structural factors determining access, especially when contractors preferentially select farmers with stronger assets or commercial capabilities.

Mishra et al. (2018) show that contracts can facilitate smallholder entry into differentiated organic rice markets by bundling standards, technical knowledge and coordinated marketing with market access. Their findings imply that vertical coordination can support value upgrading rather than simply increase the volume of conventional agricultural sales. Bellemare and Novak (2017) add that successful participation can translate commercial integration into broader household benefits through improved food security and reduced exposure to food shortages. Maertens and Vande Velde (2017) reinforce this connection between commercialization and household welfare by demonstrating that contracting in staple rice markets can affect production conditions and livelihoods while strengthening access to inputs and output markets. Ton et al. (2018), however, caution that positive effects observed across contract-farming studies should not be interpreted as universally replicable because outcomes vary across farmers, commodities and institutional environments. Considered jointly, these contributions imply that contract farming can connect market upgrading with rural welfare when contracts provide the services necessary for producers to meet quality or production requirements. The effectiveness of such arrangements nevertheless depends on local conditions, participation criteria and the capacity of contracts to generate benefits beyond already better-positioned farmers.

1.3. Standards, certification, sustainability and territorial labels

Sellare et al. (2020) show that the welfare advantages observed among certified cocoa producers cannot always be attributed exclusively to certification because cooperatives themselves



may generate part of these benefits. This implies that sustainability standards should be assessed together with the organizational structures through which they are implemented. Meemken (2020) reinforces this interpretation by showing that certification effects on prices and incomes are heterogeneous across crops, standards and institutional settings. The implication is that certification can create opportunities for value differentiation while simultaneously imposing compliance requirements that may disadvantage resource-constrained farmers. Chiputwa et al. (2015) similarly demonstrate that different coffee certification schemes influence prices, farm management and welfare through distinct mechanisms, indicating that labels should not be treated as institutionally equivalent. Mitiku et al. (2017) further show that differences in market premiums, certification requirements and organizational arrangements explain why private sustainability standards generate unequal effects on income and poverty. Taken together, these contributions imply that certification can support value-chain upgrading, but its effectiveness depends on the interaction between standards, producer organizations and compliance conditions. Policy should therefore distinguish the effects of certification itself from those generated by complementary institutions that enable farmers to participate and capture value.

Tayleur et al. (2018) demonstrate that certification is often concentrated in areas of high biodiversity significance without being systematically targeted toward locations where poverty reduction needs are greatest. Their findings imply that the geographical expansion of sustainability standards does not automatically maximize their developmental reach. Oya et al. (2017) reinforce this caution by showing that socioeconomic effects differ substantially across certification schemes and settings, while methodological limitations also complicate broad claims concerning poverty reduction. Lambin et al. (2018) extend the discussion beyond individual farms by showing that certification, corporate commitments, traceability and sourcing rules can influence commodity-driven deforestation only when coverage, monitoring, additionality and leakage are adequately addressed. Gardner et al. (2019) similarly demonstrate that transparency can reveal commodity origins and clarify responsibility, but information alone does not guarantee environmental or social improvement unless it is linked to incentives and accountability. Considered together, these contributions imply that sustainable value-chain governance requires more than expanding certification coverage. Effective standards must be spatially targeted, institutionally monitored and connected with mechanisms capable of influencing producer and corporate behavior throughout commodity chains, while also recognizing that environmental gains and poverty-reduction outcomes may not occur in the same locations.

El Hamidi (2023) shows that purchase intentions toward products carrying the “Regional Product” label in Marrakech–Safi are positively associated with perceived quality, packaging attitudes, personal societal perception, regional certification and marketing campaigns. This implies that territorial labeling can strengthen local-product differentiation when certification is combined with credible quality signals and effective market communication. Meemken (2020) provides a broader perspective by showing that standards can create value-upgrading opportunities while also functioning as market-entry requirements that generate compliance costs. Gardner et al. (2019) reinforce the importance of credibility by demonstrating that transparency and traceability can clarify product origins and responsibility, although these mechanisms need incentives and accountability to influence outcomes. Chiputwa et al. (2015) add that the welfare effects of labels depend on the particular certification system and the organizational support surrounding producers. Together, these contributions imply that territorial labels can contribute to value-chain development when they do more than identify geographic origin. Their effectiveness depends on whether certification strengthens perceived quality, whether



communication increases consumer recognition, and whether producers receive sufficient institutional support to meet labeling requirements and capture the additional value generated by differentiated market positioning.

2. Market Integration, Information and Transaction Costs

2.1. Spatial integration, trade costs and physical infrastructure

Bergquist and Dinerstein (2020) show that weak competition among agricultural intermediaries can increase marketing margins and affect the prices received by farmers, implying that market integration depends not only on physical access but also on the structure of intermediation. Porteous (2019) complements this perspective by demonstrating that high trade costs limit spatial arbitrage across African agricultural markets and generate persistent price differences between surplus and deficit regions. The implication is that producers may remain disconnected from remunerative demand even when production is sufficient, because the cost of moving commodities reduces the efficiency of exchange. Shamdasani (2021) adds that improved rural roads can alter production choices by reducing spatial isolation and increasing effective market accessibility, thereby strengthening incentives for commercially oriented agriculture. Tsiboe et al. (2025) broaden this mechanism by emphasizing that market integration requires both the physical movement of commodities and the circulation of information across locations. Taken together, these contributions imply that agricultural commercialization is shaped by a combination of trader competition, transport infrastructure and information connectivity. Policies seeking stronger value-chain integration should therefore address both the costs of reaching markets and the institutional conditions determining how prices and information are transmitted between producers, intermediaries and consumers.

Sotelo (2020) demonstrates that domestic trade frictions influence regional prices, agricultural specialization and welfare, implying that reductions in internal transport costs can reshape comparative advantage within national economies. Donaldson (2018) provides complementary evidence by showing that transportation infrastructure reduces trade costs, expands interregional trade and changes prices and welfare across connected areas. These findings indicate that infrastructure can alter the economic geography of agricultural production rather than merely facilitate the movement of existing output. Aggarwal et al. (2024) extend this reasoning by showing that lower market-access costs strengthen incentives for farmers to adopt productive technologies, since the profitability of innovation partly depends on the ability to sell output under favorable conditions. Brooks and Donovan (2020) add that infrastructure also reduces uncertainty by making market access more reliable, which can influence production and investment decisions beyond reductions in average travel costs. Together, these contributions imply that transport improvements affect agriculture through multiple channels: they modify spatial specialization, technology profitability, price relationships and the predictability of commercialization opportunities. The developmental effect of infrastructure therefore depends on how improved connectivity interacts with producers' investment decisions and the evolving structure of regional markets.

Asher and Novosad (2020) show that rural roads can generate substantial occupational transformation, particularly by facilitating movement toward nonfarm employment, while producing more limited short-run effects on income and agricultural outcomes. Their findings imply that connectivity alone does not guarantee immediate agricultural welfare gains because complementary conditions determine how households use new market opportunities. Aggarwal et al. (2024) reinforce this point by showing that technology adoption responds to market-access costs, suggesting that infrastructure becomes more productive when farmers can combine im-



proved connectivity with profitable technologies. Porteous (2019) further indicates that persistent trade costs can continue to limit the movement of agricultural commodities and weaken spatial arbitrage, even where production growth occurs. Tsiboe et al. (2025) add that telecommunications infrastructure can complement roads by improving the transmission of market information and strengthening price integration. Considered jointly, these contributions imply that infrastructure-led agricultural transformation is strongest when physical access, information flows and productive capabilities develop together. Roads can reduce isolation and expand economic options, but their agricultural effects remain constrained if producers lack technology, market information or competitive marketing channels. Public investment should therefore connect transport improvements with communication systems and measures that strengthen farmers' capacity to respond to newly accessible markets.

2.2. Digital information, price discovery and bargaining power

Mitra et al. (2018) show that information asymmetries in agricultural markets can strengthen intermediary margins and weaken farmers' bargaining positions, implying that greater price transparency can alter the distribution of value within market transactions. Courtois and Subervie (2015) reinforce this interpretation by demonstrating that access to market information can improve farmers' ability to evaluate offers and negotiate with buyers. Tadesse and Bahiigwa (2015) add that mobile phones reduce information-search costs and allow producers to compare market conditions without physically visiting multiple locations, thereby influencing marketing choices. Shimamoto et al. (2015) reach a similar implication in rural Cambodia, where mobile communication lowers search and coordination costs and improves access to commercial information. Taken together, these contributions imply that agricultural market integration has an informational dimension that complements physical infrastructure. Roads and buyers may expand commercial possibilities, but poorly informed farmers can still capture a limited share of market value when they lack reliable knowledge about prices or alternative outlets. Digital communication can therefore improve bargaining conditions and marketing decisions, although its effect depends on how information is used within existing market structures and on whether producers possess credible alternatives when negotiating with intermediaries.

Fabregas et al. (2019) show that digital agricultural advice can be delivered at relatively low marginal cost to geographically dispersed farmers, implying that digital platforms can substantially expand access to knowledge and extension services. Cole and Fernando (2021) reinforce this potential by demonstrating that mobile delivery can influence the adoption and diffusion of agricultural practices, while also showing that sustained engagement and farmers' capacity to implement recommendations remain necessary. Aker and Ksoll (2016) similarly caution that mobile access can reduce communication and information costs without automatically generating transformative agricultural outcomes. Their findings imply that digital technologies operate through household capabilities and complementary institutional conditions rather than replacing them. Sekabira and Qaim (2017) extend the digitalization perspective beyond information by showing that mobile money can reduce transaction constraints, facilitate agricultural marketing and support income diversification. Considered jointly, these studies imply that digital integration of rural producers requires more than transmitting advice or prices. Effective digitalization depends on whether farmers trust the information, possess resources to act on recommendations and have access to financial mechanisms that support transactions and investment. Digital tools therefore contribute most effectively to value-chain participation when information, extension and payment functions are connected rather than developed as isolated services.

Arimoto et al. (2019) demonstrate that transparent price information does not necessarily generate efficient regional trade when quality uncertainty, limited trust and difficulties establishing



new trading relationships persist. Their findings imply that reducing informational frictions is only one component of market integration. Mitra et al. (2018) reinforce this limitation by showing that intermediaries can respond strategically when farmers receive better information, meaning that changes in transparency do not automatically eliminate market power. Sekabira and Qaim (2017) add that reliable financial transactions are also necessary for effective market participation because mobile money can reduce payment and liquidity constraints across distance. Courtois and Subervie (2015) further indicate that information becomes valuable when it improves farmers' capacity to assess offers and bargain more effectively. Together, these contributions imply that digitally supported market integration requires an institutional environment in which information can be converted into credible commercial choices. Transparent prices may improve negotiation, but producers still need trusted trading relationships, secure payment mechanisms and realistic access to alternative buyers. Policies centered exclusively on information provision may therefore have limited effects where nonprice barriers, intermediary power and transaction risks remain substantial, making broader commercial institutions necessary for stronger farmer participation in agricultural value chains.

2.3. Commercialization, market participation and high-value channels

Ola and Menapace (2020) show that smallholder participation in high-value markets is systematically conditioned by productive assets, organizational membership, infrastructure and market-related characteristics. This implies that commercialization opportunities are not equally accessible and may disproportionately benefit farmers who already possess stronger capabilities. Muriithi and Matz (2015) reinforce this interpretation by demonstrating that commercial vegetable production can generate positive welfare effects among Kenyan smallholders, while entry into these markets depends on resources and effective market connections. Kilelu et al. (2017) add an institutional dimension by showing that dairy hubs can strengthen commercialization through improved coordination and access to complementary services, although farmers unable to satisfy quantity, quality or organizational requirements may remain excluded. Saha et al. (2022) further emphasize that sustained commercialization depends on underlying capacities, including assets, production potential, institutions and the ability to manage market opportunities and risks. Taken together, these contributions imply that commercialization should not be understood simply as an increase in the proportion of output sold. Its developmental effects depend on whether smallholders possess or can access the productive, organizational and institutional resources required to enter markets, maintain reliable supply and meet the conditions imposed by increasingly coordinated value chains.

Olwande et al. (2015) demonstrate that smallholder market participation differs substantially across maize, kale and dairy because perishability, production characteristics, market structure and household conditions vary by commodity. Their findings imply that commercialization policies should be differentiated rather than based on a uniform model of market participation. Achandi and Mujawamariya (2016) reinforce this reasoning by distinguishing the decision to enter the market from the quantity sold once participation occurs. This implies that the determinants of market entry may differ from those affecting commercialization intensity, requiring policies to address separate constraints at each stage. Saha et al. (2022) complement this perspective by showing that farmers' commercialization capacities depend on assets, production potential and institutional access, which influence their ability to respond consistently to market opportunities. Kilelu et al. (2017) further illustrate that stronger coordination through institutional arrangements such as dairy hubs can facilitate access to markets and services while simultaneously establishing participation requirements that some producers cannot meet. Considered jointly, these contributions imply that market integration is a layered process shaped



by commodity characteristics, household capabilities and organizational arrangements. Effective value-chain interventions therefore need to distinguish between helping farmers enter markets, increasing the scale of their sales and enabling them to remain competitive within specific commodity systems.

Ogututu et al. (2020) show that agricultural commercialization can increase income and facilitate food purchases, potentially contributing to improved diets, but these outcomes operate through several production, income and consumption pathways. This implies that commercialization should be evaluated through its broader household effects rather than through sales indicators alone. Carletto et al. (2017) reinforce this caution by demonstrating that greater commercialization does not automatically improve nutrition because food purchases, production composition and household decision-making mediate the relationship between market participation and nutritional outcomes. Ngutah Mutea et al. (2025) similarly show that commercialization and food security are not necessarily aligned, since household conditions and market imperfections influence whether participation strengthens or weakens food access. Muriithi and Matz (2015), however, provide evidence that participation in commercial vegetable production can improve household welfare when farmers are effectively connected to remunerative markets. Taken together, these contributions imply that commercialization can support rural welfare but should not be treated as an end in itself. Its benefits depend on how additional income is generated and used, whether households retain adequate access to food, and whether markets provide sufficiently favorable conditions. Policies promoting market participation should therefore combine commercialization support with measures that protect food security and strengthen households' capacity to convert commercial gains into broader welfare improvements.

3. Rural Development Outcomes and Inclusive Transformation

3.1. Income, food security, diets and nutrition

Sibhatu et al. (2015) show that farm-production diversity can contribute positively to dietary diversity, but its effect remains relatively modest compared with the role that markets can play in expanding access to varied foods. This implies that nutrition-sensitive agricultural strategies should not rely exclusively on increasing the number of crops produced by each household. Koppmair et al. (2017) reinforce this perspective by demonstrating that market access represents a major pathway through which rural households in Malawi obtain diverse foods, allowing specialization and exchange to complement own production. Gupta et al. (2020) reach a similar implication in India by showing that dietary quality results from interactions between production diversity and market access rather than from either mechanism in isolation. Muthini et al. (2020) further demonstrate that small farm households simultaneously produce and purchase food, indicating that subsistence production and commercialization should not be treated as mutually exclusive strategies. Taken together, these contributions imply that well-functioning food markets can support dietary diversification by enabling households to convert agricultural income into a broader food basket while maintaining selected forms of own production. Nutrition policy should therefore consider both farm production choices and the accessibility, affordability and diversity of foods available through rural markets.

Stifel and Minten (2017) demonstrate that geographic remoteness is associated with disadvantages in household welfare and nutrition because weak market access constrains purchasing opportunities and alters agricultural incentives. Their findings imply that physical connectivity to food markets constitutes an important component of food security rather than merely a condition for agricultural commercialization. Hirvonen et al. (2017) add that improved market access can increase the range of foods available to households, while nutrition knowledge influ-



ences how these opportunities are translated into children's diets. This indicates that better access alone may remain insufficient when households lack information concerning appropriate food choices. Nandi et al. (2021) reinforce the broader importance of market accessibility by showing across low- and middle-income countries that food-market access is generally associated with greater dietary diversity, although effects vary across locations and household groups. Montalbano et al. (2018) further show that food-security outcomes depend on the structure of farmers' market relationships and the returns obtained from participation in agricultural chains. Together, these contributions imply that market integration can become a nutrition-sensitive rural-development mechanism when physical access, effective participation and household capabilities improve simultaneously. Infrastructure and market development therefore need to be complemented by measures that strengthen nutritional knowledge and ensure that farmers obtain sufficient returns from commercialization.

Van Asselt and Useche (2022) provide an important qualification by showing that stronger commercialization among coffee-producing households can increase overweight and obesity risks while reducing production diversity without necessarily raising agricultural income. Their findings imply that deeper market integration should not automatically be interpreted as nutritionally beneficial because commercialization can modify consumption patterns in unfavorable ways. Sibhatu et al. (2015) similarly caution against assuming that either specialization or diversification alone determines dietary quality, since market access can support diverse consumption when households are able to exchange specialized production for varied foods. Montalbano et al. (2018) add that welfare effects depend on how farmers participate in agricultural chains and on the returns generated through those relationships. Stifel and Minten (2017) further demonstrate that improved market access can enhance purchasing opportunities and dimensions of household welfare, but these effects remain linked to the broader functioning of markets. Considered jointly, these contributions imply that the nutritional consequences of commercialization depend on both the quality of market participation and the composition of food consumption that follows. Policies should therefore evaluate market integration not only through income or sales growth but also through its effects on food access, production diversity and diet quality.

3.2. Cooperatives, collective action, gender and inclusive rural organization

Lutz and Tadesse (2017) show that farmer organizations face an inherent tension between competitiveness and inclusiveness when entering more demanding agricultural value chains. Their framework implies that open membership can broaden participation but may weaken investment incentives and organizational discipline, whereas more selective structures can improve commercial performance while excluding weaker farmers. Verhofstadt and Maertens (2015) reinforce this concern by showing that cooperative membership can improve welfare through better market access, services and collective action, although the benefits remain heterogeneous and the poorest farmers may still face participation barriers. Mojo et al. (2017) add that coffee cooperatives can improve farmers' position in commodity markets by organizing collective marketing and reducing the disadvantages associated with individual negotiation. Gezahegn et al. (2019) further demonstrate that larger cooperatives can obtain efficiency gains by spreading fixed costs and strengthening their capacity to provide marketing and service functions. Taken together, these contributions imply that cooperative development requires a balance between organizational scale, commercial efficiency and broad member inclusion. Stronger collective organizations can improve smallholder bargaining and market access, but their governance structures determine whether these advantages are distributed widely or concentrated among better-positioned members.



Wossen et al. (2017) demonstrate that cooperatives can reduce information and transaction constraints while complementing extension services, thereby supporting technology adoption and household welfare. Their findings imply that farmer organizations operate not only as marketing institutions but also as mechanisms linking producers with knowledge, technologies and services. Aku et al. (2018) reinforce this multifunctional role by showing that farmer organizations can improve market opportunities and seasonal income for smallholder vegetable producers through aggregation and access to buyers. Kumar et al. (2018) provide a complementary implication for perishable commodities, where dairy cooperatives can improve market access and provide more stable arrangements for milk collection and sales. Mojo et al. (2017) similarly show that collective marketing can strengthen farmers' commercial position in coffee value chains. Together, these contributions imply that cooperatives are particularly effective when they reduce several constraints simultaneously rather than focusing only on product sales. By coordinating information, technology, aggregation and marketing, producer organizations can lower transaction costs that individual farmers would find difficult to manage independently. Their developmental contribution therefore depends on the breadth and reliability of the services they provide and on their capacity to maintain effective links with downstream markets. Ed-Dib and El Hamidi (2019) show that rural women's entrepreneurial participation in Morocco is constrained by restrictive sociocultural norms and limited access to resources, while supportive legal and economic infrastructures can strengthen entrepreneurial intentions. Their findings imply that market opportunities alone are insufficient when institutional conditions limit women's ability to act on them. El Azhari et al. (2026) reinforce this perspective by demonstrating that integrative literacy programs can improve attitudes toward income-generating activities, subjective norms and perceived behavioral control among rural Moroccan women, although cultural pressures remain persistent. Verhofstadt and Maertens (2015) add that even within collective organizations, poorer or more constrained farmers may not benefit equally from cooperative membership. Wossen et al. (2017) further show that organizational participation becomes more effective when it improves access to information, extension and productive technologies. Considered jointly, these contributions imply that inclusive rural development requires both collective market institutions and measures that strengthen individual capabilities. Cooperatives and farmer organizations can reduce transaction barriers, but their benefits may remain uneven when social norms, limited skills or weak access to resources restrict participation. Institutional inclusion therefore needs to accompany market coordination if vulnerable rural groups are to convert organizational membership into sustained economic opportunities.

3.3. Livelihood diversification, structural transformation and rural resilience

Diao et al. (2019) show that urban growth reshapes nearby rural economies by expanding food demand, generating nonfarm employment and strengthening commercial linkages between cities and surrounding production areas. This implies that rural transformation increasingly depends on spatial interactions between agriculture, services and labor markets rather than on farm productivity alone. Nagler and Naudé (2017) reinforce this interpretation by demonstrating that rural nonfarm enterprises constitute an important component of livelihood diversification, with opportunities emerging in transport, processing, trade, input supply and other services linked to agricultural value chains. Loison (2015) adds that diversification can either reflect productive opportunity or household distress, making the quality of nonfarm activities more important than the simple number of income sources. Van den Broeck and Maertens (2017) further show that poverty reduction can occur through improved positions within agriculture and agri-food chains or through movement into alternative employment. Taken together, these contributions imply that rural development should be approached as a process in



which agricultural commercialization, nonfarm entrepreneurship and occupational mobility interact. Expanding value chains can create productive diversification when they generate remunerative services and employment, whereas weak markets may instead push households toward low-return activities that provide income without substantially improving long-term welfare.

Jayne et al. (2019) demonstrate that the emergence of medium-scale farms in sub-Saharan Africa can stimulate input markets, mechanization services and output trading, implying that changes in farm structure can generate wider effects throughout rural value chains. Their findings also indicate that these gains may coexist with land concentration and unequal access to productive resources. Binswanger-Mkhize and Savastano (2017) complement this perspective by showing that agricultural intensification responds to population pressure, market access and changing economic conditions rather than following a uniform pathway. This implies that farmers intensify production when additional output can be sold profitably and when required inputs are sufficiently accessible. De Janvry and Sadoulet (2020) reinforce this market connection by arguing that productivity improvements generate stronger development effects when producers have access to profitable demand, while expanding demand can itself stimulate production and structural change. Asfaw et al. (2019) add that diversification outcomes remain heterogeneous because welfare effects depend on household assets and the specific activities entered. Considered jointly, these contributions imply that structural transformation is shaped by interactions among farm scale, intensification, market demand and household capabilities. Policies should therefore consider both the market-development effects of changing farm structures and the distributional consequences that determine which rural households can participate in emerging opportunities.

Asfaw et al. (2019) show that livelihood diversification does not generate uniform welfare improvements because outcomes depend on initial assets, available opportunities and the type of activity entered. This implies that movement into productive nonfarm employment should be distinguished from diversification driven primarily by vulnerability. Loison (2015) reinforces this distinction by showing that rural households often combine farming with nonfarm activities for both opportunity-seeking and risk-management reasons, while distress diversification may remain concentrated in low-return occupations. Diao et al. (2019) provide a spatial mechanism through which more productive opportunities can emerge, demonstrating that growing cities increase demand for food, services and labor in surrounding rural areas. De Janvry and Sadoulet (2020) further show that such demand-side dynamics can stimulate agricultural production and broader structural change when farmers are effectively connected to markets. Together, these contributions imply that rural transformation depends not simply on reducing reliance on farming but on improving the quality of linkages among agriculture, value chains, urban demand and nonfarm employment. Development strategies should therefore support forms of diversification that strengthen accumulation and resilience while improving market connectivity so that occupational change reflects expanding economic opportunities rather than households' inability to sustain viable agricultural livelihoods.

4. Discussion

The literature reviewed suggests that contemporary agricultural transformation is fundamentally a value-chain process rather than a phenomenon confined to changes in farm productivity. Tschirley et al. (2015) and Reardon (2015) emphasize the growing economic importance of processing, transport, storage, wholesale and retail activities, while Barrett et al. (2022) interpret these developments as part of a broader transformation of agri-food systems. These contributions indicate that stronger agricultural performance increasingly depends on coordination between primary production and activities located further along the chain. Yet coordination



is not institutionally neutral. Swinnen and Kuijpers (2019) show that vertical relationships can compensate for missing credit, input and information markets, whereas Ruml et al. (2022) demonstrate that contract outcomes vary according to pricing arrangements, services and obligations. Meemken and Bellemare (2020) further caution that apparently favorable outcomes among contract farmers may partly reflect participant selection rather than contracting effects alone. Similar heterogeneity appears in certification. Meemken (2020) and Sellare et al. (2020) show that welfare effects depend on standards, commodities and organizational structures. The literature therefore supports a differentiated interpretation of value-chain upgrading in which institutional design, complementary services and access conditions determine whether modernization broadens participation or reinforces existing differences between farmers.

A second result concerns the multidimensional nature of market integration. Physical infrastructure remains important, but the evidence indicates that integration cannot be reduced to road construction or declining transport costs. Porteous (2019) demonstrates that trade costs generate persistent spatial price differences, while Donaldson (2018) and Sotelo (2020) show that transport improvements can reshape trade, specialization and welfare. Nevertheless, Bergquist and Dinerstein (2020) indicate that intermediary competition also affects the prices received by agricultural producers, suggesting that improved accessibility does not necessarily eliminate unequal bargaining conditions. Information therefore represents another important dimension. Courtois and Subervie (2015), Tadesse and Bahigwa (2015) and Mitra et al. (2018) show that greater access to market information can reduce search costs and strengthen farmers' capacity to evaluate offers. However, Arimoto et al. (2019) demonstrate that price transparency alone cannot overcome problems of quality uncertainty and limited trust. Digital services produce a similar pattern. Fabregas et al. (2019) identify considerable opportunities for expanding agricultural advice, while Cole and Fernando (2021) stress that behavioral responses depend on farmers' capacity to implement recommendations. Market integration therefore emerges as the joint outcome of infrastructure, information, competition, trust and complementary financial and institutional arrangements.

The broader development effects of commercialization are similarly conditional. Muriithi and Matz (2015) show that participation in commercial vegetable production can improve household welfare, whereas Ogutu et al. (2020) identify income and food-purchase pathways through which commercialization may improve diets. Yet Carletto et al. (2017) demonstrate that increased market orientation does not automatically translate into better nutrition, and Van Asselt and Useche (2022) show that deeper commercialization may even be associated with unfavorable dietary outcomes in particular settings. Market participation must therefore be considered together with household consumption behavior, production diversity and the quality of market relationships. Collective organization can moderate some of these constraints. Verhofstadt and Maertens (2015), Wossen et al. (2017) and Mojo et al. (2017) indicate that cooperatives can improve access to markets, information and services, although participation and benefits remain heterogeneous. Beyond agriculture, Diao et al. (2019), Nagler and Naudé (2017) and Loison (2015) demonstrate that expanding food systems can generate nonfarm employment and livelihood diversification. These opportunities are developmentally significant when diversification reflects productive accumulation rather than distress. Agricultural value-chain development should consequently be evaluated according to its capacity to generate remunerative market participation, inclusive organizations, improved household welfare and productive linkages with the broader rural economy.

Conclusion

This paper shows that agricultural value chains, market integration and rural development constitute closely connected dimensions of contemporary agricultural transformation. Changes in



food demand and urbanization have expanded the importance of processing, logistics, trade, services and other activities surrounding primary agricultural production. These developments create opportunities for smallholders, but access to such opportunities depends on the organization of value chains and the institutional conditions governing participation. Contract farming, certification, territorial labels and producer organizations can reduce market failures, facilitate access to services and support product differentiation. Their effects nevertheless remain heterogeneous because participation requirements, compliance costs, contractual arrangements and organizational capacities differ across farmers and commodities. Similarly, infrastructure and digital technologies can reduce transport and information costs but cannot independently resolve problems related to market power, trust, financing or weak productive capacities. The literature therefore does not support a linear relationship between increased commercialization and rural development. Instead, the developmental consequences of value-chain integration depend on the combination of market accessibility, institutional coordination, complementary services and farmers' capacity to respond to changing commercial opportunities. Policies focusing exclusively on production or physical market access may consequently generate limited results when these complementary conditions remain insufficient.

The findings also indicate that the ultimate relevance of agricultural transformation should be evaluated through broader rural outcomes rather than through commercialization indicators alone. Stronger market participation can increase income, improve food purchasing possibilities and stimulate technology adoption, but it may not automatically improve nutrition or distribute benefits equally among rural households. Cooperatives and other collective organizations can strengthen farmers' bargaining positions and facilitate access to information, technologies and markets, although governance structures determine the extent to which disadvantaged producers participate in these gains. Rural transformation also increasingly involves interactions between agriculture and nonfarm activities. Expanding value chains can create employment in processing, transport, commerce and services and thereby support livelihood diversification and structural transformation. However, diversification produces stronger welfare effects when households enter productive activities rather than low-return occupations resulting from economic distress. The policy implication is that agricultural and rural-development strategies should combine market integration with investments in infrastructure, producer capabilities, institutional quality and inclusive rural organizations. Such an approach can strengthen the capacity of agricultural value chains to connect productivity growth with employment creation, household welfare, food security and more diversified rural economies while limiting the exclusionary effects that may accompany increasingly demanding agri-food markets.

References

1. Achandi, E. L., & Mujawamariya, G. (2016). Market participation by smallholder rice farmers in Tanzania: A double hurdle analysis. *Studies in Agricultural Economics*, 118(2), 112–115. doi:10.7896/j.1528.
2. Aggarwal, S., Giera, B., Jeong, D., Robinson, J., & Spearot, A. (2024). Market access, trade costs, and technology adoption: Evidence from Northern Tanzania. *Review of Economics and Statistics*, 106(6), 1511–1528. doi:10.1162/rest_a_01263.
3. Aker, J. C., & Ksoll, C. (2016). Can mobile phones improve agricultural outcomes? Evidence from a randomized experiment in Niger. *Food Policy*, 60, 44–51. doi:10.1016/j.foodpol.2015.03.006.
4. Aku, A., Mshenga, P., Afari-Sefa, V., & Ochieng, J. (2018). Effect of market access provided by farmer organizations on smallholder vegetable farmer's income in Tanzania. *Cogent Food & Agriculture*, 4(1), Article 1560596. doi:10.1080/23311932.2018.1560596.



5. Arimoto, Y., Kono, H., Ralandison, T., Sakurai, T., & Takahashi, K. (2019). Price and non-price information frictions in regional arbitrage: The case of rice traders in Antananarivo, Madagascar. *Economic Development and Cultural Change*, 67(2), 273–313. doi:10.1086/698163.
6. Asfaw, S., Scognamillo, A., Di Caprera, G., Sitko, N., & Ignaciuk, A. (2019). Heterogeneous impact of livelihood diversification on household welfare: Cross-country evidence from sub-Saharan Africa. *World Development*, 117, 278–295. doi:10.1016/j.worlddev.2019.01.017.
7. Asher, S., & Novosad, P. (2020). Rural roads and local economic development. *American Economic Review*, 110(3), 797–823. doi:10.1257/aer.20180268.
8. Barrett, C. B., Reardon, T., Swinnen, J., & Zilberman, D. (2022). Agri-food value chain revolutions in low- and middle-income countries. *Journal of Economic Literature*, 60(4), 1316–1377. doi:10.1257/jel.20201539.
9. Bellemare, M. F., & Novak, L. (2017). Contract farming and food security. *American Journal of Agricultural Economics*, 99(2), 357–378. doi:10.1093/ajae/aaw053.
10. Bergquist, L. F., & Dinerstein, M. (2020). Competition and entry in agricultural markets: Experimental evidence from Kenya. *American Economic Review*, 110(12), 3705–3747. doi:10.1257/aer.20171397.
11. Binswanger-Mkhize, H. P., & Savastano, S. (2017). Agricultural intensification: The status in six African countries. *Food Policy*, 67, 26–40. doi:10.1016/j.foodpol.2016.09.021.
12. Brooks, W., & Donovan, K. (2020). Eliminating uncertainty in market access: The impact of new bridges in rural Nicaragua. *Econometrica*, 88(5), 1965–1997. doi:10.3982/ECTA15828.
13. Carletto, C., Corral, P., & Guelfi, A. (2017). Agricultural commercialization and nutrition revisited: Empirical evidence from three African countries. *Food Policy*, 67, 106–118. doi:10.1016/j.foodpol.2016.09.020.
14. Chiputwa, B., Spielman, D. J., & Qaim, M. (2015). Food standards, certification, and poverty among coffee farmers in Uganda. *World Development*, 66, 400–412. doi:10.1016/j.worlddev.2014.09.006.
15. Cole, S. A., & Fernando, A. N. (2021). “Mobile”izing agricultural advice: Technology adoption, diffusion and sustainability. *The Economic Journal*, 131(633), 192–219. doi:10.1093/ej/ueaa084.
16. Courtois, P., & Subervie, J. (2015). Farmer bargaining power and market information services. *American Journal of Agricultural Economics*, 97(3), 953–977. doi:10.1093/ajae/aau051.
17. de Janvry, A., & Sadoulet, E. (2020). Using agriculture for development: Supply- and demand-side approaches. *World Development*, 133, Article 105003. doi:10.1016/j.worlddev.2020.105003.
18. Diao, X., Magalhaes, E., & Silver, J. (2019). Cities and rural transformation: A spatial analysis of rural livelihoods in Ghana. *World Development*, 121, 141–157. doi:10.1016/j.worlddev.2019.05.001.
19. Donaldson, D. (2018). Railroads of the Raj: Estimating the impact of transportation infrastructure. *American Economic Review*, 108(4–5), 899–934. doi:10.1257/aer.20101199.
20. Dubbert, C. (2019). Participation in contract farming and farm performance: Insights from cashew farmers in Ghana. *Agricultural Economics*, 50(6), 749–763. doi:10.1111/agec.12522.
21. Ed-Dib, M., & El Hamidi, N. (2019). Duality of formal and informal institutions and women's entrepreneurship in rural areas. *Revue du Contrôle, de la Comptabilité et de l'Audit*, 3(1), 70–86.
22. El Azhari, B., Lotfi, H., El Issi, A., El Hamidi, N., & Zaafrani, H. (2026). The impact of integrative literacy programs on rural people's intention to engage in income-generating activities: An analysis of motivational factors in light of the Theory of Planned Behavior. *Social Sciences & Humanities Open*, 13, Article 102253. doi:10.1016/j.ssaho.2025.102253.
23. El Hamidi, N. (2023). L'intention d'achat des produits avec label « Produit Régional »: Cas de la région Marrakech-Safi. *Revue Internationale des Sciences de Gestion*, 6(2), 1007–1025.



24. Fabregas, R., Kremer, M., & Schilbach, F. (2019). Realizing the potential of digital development: The case of agricultural advice. *Science*, 366(6471), Article eaay3038. doi:10.1126/science.aay3038.
25. Feyaerts, H., Van den Broeck, G., & Maertens, M. (2020). Global and local food value chains in Africa: A review. *Agricultural Economics*, 51(1), 143–157. doi:10.1111/agec.12546.
26. Gardner, T. A., Benzie, M., Börner, J., Dawkins, E., Fick, S., Garrett, R., Godar, J., Grimard, A., Lake, S., Larsen, R. K., Mardas, N., McDermott, C. L., Meyfroidt, P., Osbeck, M., Persson, M., Sembres, T., Suavet, C., Strassburg, B., Trevisan, A., West, C., & Wolvekamp, P. (2019). Transparency and sustainability in global commodity supply chains. *World Development*, 121, 163–177. doi:10.1016/j.worlddev.2018.05.025.
27. Gezahegn, T. W., Van Passel, S., Berhanu, T., D'Haese, M., & Maertens, M. (2019). Big is efficient: Evidence from agricultural cooperatives in Ethiopia. *Agricultural Economics*, 50(5), 555–566. doi:10.1111/agec.12509.
28. Gupta, S., Sunder, N., & Pingali, P. L. (2020). Market access, production diversity, and diet diversity: Evidence from India. *Food and Nutrition Bulletin*, 41(2), 167–185. doi:10.1177/0379572120920061.
29. Hirvonen, K., Hoddinott, J., Minten, B., & Stifel, D. (2017). Children's diets, nutrition knowledge, and access to markets. *World Development*, 95, 303–315. doi:10.1016/j.worlddev.2017.02.031.
30. Hoang, V., & Nguyen, V. (2023). Determinants of small farmers' participation in contract farming in developing countries: A study in Vietnam. *Agribusiness*, 39(3), 836–853. doi:10.1002/agr.21795.
31. Jayne, T. S., Muyanga, M., Wineman, A., Ghebru, H., Stevens, C., Stickler, M., Chapoto, A., Anseeuw, W., van der Westhuizen, D., & Nyange, D. (2019). Are medium-scale farms driving agricultural transformation in sub-Saharan Africa? *Agricultural Economics*, 50(S1), 75–95. doi:10.1111/agec.12535.
32. Kilelu, C. W., Klerkx, L., & Leeuwis, C. (2017). Supporting smallholder commercialisation by enhancing integrated coordination in agrifood value chains: Experiences with dairy hubs in Kenya. *Experimental Agriculture*, 53(2), 269–287. doi:10.1017/S0014479716000375.
33. Koppmair, S., Kassie, M., & Qaim, M. (2017). Farm production, market access and dietary diversity in Malawi. *Public Health Nutrition*, 20(2), 325–335. doi:10.1017/S1368980016002135.
34. Kumar, A., Saroj, S., Joshi, P. K., & Takeshima, H. (2018). Does cooperative membership improve household welfare? Evidence from a panel data analysis of smallholder dairy farmers in Bihar, India. *Food Policy*, 75, 24–36. doi:10.1016/j.foodpol.2018.01.005.
35. Lambin, E. F., Gibbs, H. K., Heilmayr, R., Carlson, K. M., Fleck, L. C., Garrett, R. D., le Polain de Waroux, Y., McDermott, C. L., McLaughlin, D., Newton, P., Nolte, C., Pacheco, P., Rausch, L. L., Streck, C., & Thorlakson, T. (2018). The role of supply-chain initiatives in reducing deforestation. *Nature Climate Change*, 8(2), 109–116. doi:10.1038/s41558-017-0061-1.
36. Liverpool-Tasie, L. S. O., Wineman, A., Young, S., Tambo, J., Vargas, C., Reardon, T., Adjognon, G. S., Porciello, J., Gathoni, N., Bizikova, L., Galiè, A., & Celestin, A. (2020). A scoping review of market links between value chain actors and small-scale producers in developing regions. *Nature Sustainability*, 3, 799–808. doi:10.1038/s41893-020-00621-2.
37. Loison, S. A. (2015). Rural livelihood diversification in sub-Saharan Africa: A literature review. *The Journal of Development Studies*, 51(9), 1125–1138. doi:10.1080/00220388.2015.1046445.
38. Lutz, C., & Tadesse, G. (2017). African farmers' market organizations and global value chains: Competitiveness versus inclusiveness. *Review of Social Economy*, 75(3), 318–338. doi:10.1080/00346764.2017.1300317.
39. Maertens, M., & Vande Velde, K. (2017). Contract-farming in staple food chains: The case of rice in Benin. *World Development*, 95, 73–87. doi:10.1016/j.worlddev.2017.02.011.



40. Marivoet, W., Ulimwengu, J. M., & Cisse, A. (2024). Mapping flows in the cassava, rice, milk, and fish supply chains of the Eastern Democratic Republic of the Congo: Is there any quiet revolution taking place? *The Journal of Development Studies*, 60(10), 1511–1529. doi:10.1080/00220388.2024.2364655.
41. Meemken, E.-M. (2020). Do smallholder farmers benefit from sustainability standards? A systematic review and meta-analysis. *Global Food Security*, 26, Article 100373. doi:10.1016/j.gfs.2020.100373.
42. Meemken, E.-M., & Bellemare, M. F. (2020). Smallholder farmers and contract farming in developing countries. *Proceedings of the National Academy of Sciences*, 117(1), 259–264. doi:10.1073/pnas.1909501116.
43. Minten, B., Dereje, M., Engida, E., & Kuma, T. (2019). Coffee value chains on the move: Evidence in Ethiopia. *Food Policy*, 83, 370–383. doi:10.1016/j.foodpol.2017.07.012.
44. Mishra, A. K., Kumar, A., Joshi, P. K., D'Souza, A., & Tripathi, G. (2018). How can organic rice be a boon to smallholders? Evidence from contract farming in India. *Food Policy*, 75, 147–157. doi:10.1016/j.foodpol.2018.01.007.
45. Mitiku, F., De Mey, Y., Nyssen, J., & Maertens, M. (2017). Do private sustainability standards contribute to income growth and poverty alleviation? A comparison of different coffee certification schemes in Ethiopia. *Sustainability*, 9(2), Article 246. doi:10.3390/su9020246.
46. Mitra, S., Mookherjee, D., Torero, M., & Visaria, S. (2018). Asymmetric information and middleman margins: An experiment with Indian potato farmers. *Review of Economics and Statistics*, 100(1), 1–13. doi:10.1162/REST_a_00699.
47. Mojo, D., Fischer, C., & Degefa, T. (2017). The determinants and economic impacts of membership in coffee farmer cooperatives: Recent evidence from rural Ethiopia. *Journal of Rural Studies*, 50, 84–94. doi:10.1016/j.jrurstud.2016.12.010.
48. Montalbano, P., Pietrelli, R., & Salvatici, L. (2018). Participation in the market chain and food security: The case of the Ugandan maize farmers. *Food Policy*, 76, 81–98. doi:10.1016/j.foodpol.2018.03.008.
49. Muriithi, B. W., & Matz, J. A. (2015). Welfare effects of vegetable commercialization: Evidence from smallholder producers in Kenya. *Food Policy*, 50, 80–91. doi:10.1016/j.foodpol.2014.11.001.
50. Muthini, D., Nzuma, J., & Qaim, M. (2020). Subsistence production, markets, and dietary diversity in the Kenyan small farm sector. *Food Policy*, 97, Article 101956. doi:10.1016/j.foodpol.2020.101956.
51. Nagler, P., & Naudé, W. (2017). Non-farm entrepreneurship in rural sub-Saharan Africa: New empirical evidence. *Food Policy*, 67, 175–191. doi:10.1016/j.foodpol.2016.09.019.
52. Nandi, R., Nedumaran, S., & Ravula, P. (2021). The interplay between food market access and farm household dietary diversity in low and middle income countries: A systematic review of literature. *Global Food Security*, 28, Article 100484. doi:10.1016/j.gfs.2020.100484.
53. Ngutah Mutea, E., Jacobi, J., Rist, S., Kiteme, B., & Hossain, M. S. (2025). Agricultural commercialization and food security: Evidence and policy implications for smallholder farmers in Kenya. *World Development Sustainability*, 6, Article 100214. doi:10.1016/j.wds.2025.100214.
54. Ogotu, S. O., Gödecke, T., & Qaim, M. (2020). Agricultural commercialisation and nutrition in smallholder farm households. *Journal of Agricultural Economics*, 71(2), 534–555. doi:10.1111/1477-9552.12359.
55. Ola, O., & Menapace, L. (2020). A meta-analysis understanding smallholder entry into high-value markets. *World Development*, 135, Article 105079. doi:10.1016/j.worlddev.2020.105079.
56. Olwande, J., Smale, M., Mathenge, M. K., Place, F., & Mithöfer, D. (2015). Agricultural marketing by smallholders in Kenya: A comparison of maize, kale and dairy. *Food Policy*, 52, 22–32. doi:10.1016/j.foodpol.2015.02.002.



57. Otsuka, K., Nakano, Y., & Takahashi, K. (2016). Contract farming in developed and developing countries. *Annual Review of Resource Economics*, 8, 353–376. doi:10.1146/annurev-resource-100815-095459.
58. Oya, C., Schaefer, F., Skolidou, D., McCosker, C., & Langer, L. (2017). Effects of certification schemes for agricultural production on socio-economic outcomes in low- and middle-income countries: A systematic review. *Campbell Systematic Reviews*, 13(1), 1–346. doi:10.4073/csr.2017.3.
59. Porteous, O. (2019). High trade costs and their consequences: An estimated dynamic model of African agricultural storage and trade. *American Economic Journal: Applied Economics*, 11(4), 327–366. doi:10.1257/app.20170442.
60. Reardon, T. (2015). The hidden middle: The quiet revolution in the midstream of agrifood value chains in developing countries. *Oxford Review of Economic Policy*, 31(1), 45–63. doi:10.1093/oxrep/grv011.
61. Ruml, A., Ragasa, C., & Qaim, M. (2022). Contract farming, contract design and smallholder livelihoods. *Australian Journal of Agricultural and Resource Economics*, 66(1), 24–43. doi:10.1111/1467-8489.12462.
62. Saha, A., Sabates-Wheeler, R., & Thompson, J. (2022). Insights into smallholder capacity for agricultural commercialisation: Evidence from four African contexts. *European Journal of Development Research*, 34, 1757–1802. doi:10.1057/s41287-021-00414-z.
63. Sekabira, H., & Qaim, M. (2017). Mobile money, agricultural marketing, and off-farm income in Uganda. *Agricultural Economics*, 48(5), 597–611. doi:10.1111/agec.12360.
64. Sellare, J., Meemken, E.-M., Kouamé, C., & Qaim, M. (2020). Do sustainability standards benefit smallholder farmers also when accounting for cooperative effects? Evidence from Côte d'Ivoire. *American Journal of Agricultural Economics*, 102(2), 681–695. doi:10.1002/ajae.12015.
65. Shamdasani, Y. (2021). Rural road infrastructure and agricultural production: Evidence from India. *Journal of Development Economics*, 152, Article 102686. doi:10.1016/j.jdeveco.2021.102686.
66. Shimamoto, D., Yamada, H., & Gummert, M. (2015). Mobile phones and market information: Evidence from rural Cambodia. *Food Policy*, 57, 135–141. doi:10.1016/j.foodpol.2015.10.005.
67. Sibhatu, K. T., Krishna, V. V., & Qaim, M. (2015). Production diversity and dietary diversity in smallholder farm households. *Proceedings of the National Academy of Sciences*, 112(34), 10657–10662. doi:10.1073/pnas.1510982112.
68. Sotelo, S. (2020). Domestic trade frictions and agriculture. *Journal of Political Economy*, 128(7), 2690–2738. doi:10.1086/706859.
69. Stifel, D., & Minten, B. (2017). Market access, well-being, and nutrition: Evidence from Ethiopia. *World Development*, 90, 229–241. doi:10.1016/j.worlddev.2016.09.009.
70. Swinnen, J., & Kuijpers, R. (2019). Value chain innovations for technology transfer in developing and emerging economies: Conceptual issues, typology, and policy implications. *Food Policy*, 83, 298–309. doi:10.1016/j.foodpol.2017.07.013.
71. Tadesse, G., & Bahiigwa, G. (2015). Mobile phones and farmers' marketing decisions in Ethiopia. *World Development*, 68, 296–307. doi:10.1016/j.worlddev.2014.12.010.
72. Tayleur, C., Balmford, A., Buchanan, G. M., Butchart, S. H. M., Corlet Walker, C., Ducharme, H., Green, R. E., Milder, J. C., Sanderson, F. J., Thomas, D. H. L., Tracewski, L., Vickery, J., & Phalan, B. (2018). Where are commodity crops certified, and what does it mean for conservation and poverty alleviation? *Biological Conservation*, 217, 36–46. doi:10.1016/j.biocon.2017.09.024.
73. Ton, G., Vellema, W., Desiere, S., Weituschat, S., & D'Haese, M. (2018). Contract farming for improving smallholder incomes: What can we learn from effectiveness studies? *World Development*, 104, 46–64. doi:10.1016/j.worlddev.2017.11.015.



74. Tschirley, D. L., Snyder, J., Dolislager, M., Reardon, T., Haggblade, S., Goeb, J., Traub, L., Ejobi, F., & Meyer, F. (2015). Africa's unfolding diet transformation: Implications for agrifood system employment. *Journal of Agribusiness in Developing and Emerging Economies*, 5(2), 102–136. doi:10.1108/JADEE-01-2015-0003.
75. Tsiboe, F., Adaku, A. A., & Ofori-Bah, C. O. (2025). Market integration and the role of transportation and telecommunication infrastructure: Insights for agri-food value chains efficiency in Ghana. *Journal of Agricultural and Applied Economics*, 57(3), 490–513. doi:10.1017/aae.2025.17.
76. van Asselt, J., & Useche, P. (2022). Agricultural commercialization and nutrition: Evidence from smallholder coffee farmers. *World Development*, 159, Article 106021. doi:10.1016/j.worlddev.2022.106021.
77. Van den Broeck, G., & Maertens, M. (2017). Moving up or moving out? Insights into rural development and poverty reduction in Senegal. *World Development*, 99, 95–109. doi:10.1016/j.worlddev.2017.07.009.
78. Vandecasteele, J., Beyene, S. T., Minten, B., & Swinnen, J. (2018). Cities and agricultural transformation in Africa: Evidence from Ethiopia. *World Development*, 105, 383–399. doi:10.1016/j.worlddev.2017.10.032.
79. Verhofstadt, E., & Maertens, M. (2015). Can agricultural cooperatives reduce poverty? Heterogeneous impact of cooperative membership on farmers' welfare in Rwanda. *Applied Economic Perspectives and Policy*, 37(1), 86–106. doi:10.1093/aep/ppy021.
80. Wossen, T., Abdoulaye, T., Alene, A., Haile, M. G., Feleke, S., Olanrewaju, A., & Manyong, V. (2017). Impacts of extension access and cooperative membership on technology adoption and household welfare. *Journal of Rural Studies*, 54, 223–233. doi:10.1016/j.jrurstud.2017.06.022.

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