

Employment Impacts of Agrifood System Innovations and Policies: A Review of the Evidence¹



INITIATIVE ON
Rethinking
Food Markets

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Abstract

The food sector constitutes the largest global source of employment, supporting the livelihoods of most of the world's poor and vulnerable populations. This article provides an extensive review of the available evidence of the employment effects of innovations and policy interventions in agrifood systems and value chains in low- and middle-income countries (LMICs). The review was guided by a two-part hypothesis: (1) food systems currently underperform in terms of their potential for generating decent jobs and income opportunities, and (2) this gap is only growing as expanding food markets and existing agrifood supply chain business models skew gains to the disadvantage of smallholders, agrifood small and medium enterprises (SMEs), and food sector workers.

Keywords: agrifood innovations; employment; agricultural transformation; gender; policies.

1. Background

The agrifood sector constitutes about one-fifth of the global economy and is the world's largest source of income and employment, supporting the livelihoods of most of the world's poor and vulnerable people. In recent decades, global agricultural productivity has increased due to technological and institutional innovations. This has contributed to poverty reduction and improved food insecurity. Despite these positive contributions, however, poverty remains widespread among rural and agrifood sector producers and workers. The challenge remains to address the constraints these producers and workers face and enable more inclusive value chain development that would provide decent livelihoods and employment for those currently left behind.

To this end, the CGIAR Initiative "Rethinking Food Markets and Value Chains for Inclusion and Sustainability" commissioned a meta-study to identify knowledge gaps regarding the impacts of developing countries' agrifood value chain (AVC) integration and modernization processes on employment and income sharing (Berdegué et al., 2023). This paper summarizes its key findings.

The underlying two-part hypothesis of the study is that food systems currently underperform in terms of their potential for generating decent jobs and income opportunities and that this gap is only growing as expanding food markets and existing agrifood supply chain business models skew gains to the disadvantage of smallholders, agrifood small and medium enterprises (SMEs), and food sector workers.

The study finds enormous potential for improving job quality and increasing employment opportunities in agrifood systems (AFS), especially for women, youth, and people living in poverty. This potential can be tapped when promoting the right type of farm-level and value-chain innovations and implementing well-targeted policies. At the same time, the need for further research still exists to design food system transformation that can create better jobs, improve livelihoods, and make agrifood supply chains more resilient and sustainable.

The study identified a range of farm and off-farm agrifood value chain innovations that generate better employment and income opportunities. However, such opportunities require adequate enabling policies to come to fruition, including public investments in infrastructure, support for wholesale market development, social protection, labor market regulation, and support to collective action organizations.

The remainder of this paper is laid out as follows. The methodology section describes the process through which the meta study was conducted. The results and discussion section summarizes the study's findings, including an overview of structural transformation and employment in changing agrifood value chains, the identified innovations that can drive AFS employment and income opportunities, and the needed enabling policies to support such transformation. The conclusion summarizes the study's main messages.

2. Methodology

This article summarizes the findings of a meta-study based on publications on employment in agrifood systems and value chains² indexed in the Scopus database and published since 2000. Initially, 139 highly

² An agricultural value chain is defined as "the set of activities that take a basic agricultural product from the grower to the final consumer, adding value at each stage of the production process" (Bellemare and Lim, 2018, p. 381).

cited texts were selected,³ and an additional 151 were added as the study progressed, mostly from references in the original set.

The review does not represent all existing literature on employment in agrifood systems and value chains published since 2020. For instance, we excluded two topics: (1) migration and (2) child labor in agriculture and agrifood systems. The reviewed documents are mainly in English.

We classified the studies by types of value chain innovations and policies and by employment effects, as per the matrix presented in Table 1. The matrix shows a high concentration of studies among three “drivers”: (1) changes in value chain structure and organization; (2) technological innovations in primary production; and (3) private institutional changes (such as food standards and value change contracting arrangements). There is also a concentration of literature on just two of the nine pre-identified types of employment effects: (1) changes in farmers’ and workers’ income and wages and (2) changes in the quantity of jobs. A second tier of relatively well-studied topics are effects on labor productivity and on gender (women’s economic empowerment).

The matrix also identifies apparent gaps in the available evidence and literature: (1) the impacts on employment conditions of technological innovations upstream and downstream, (2) labor legislation and regulations, (3) farm business organization in primary production, (4) public investments, (5) rural-urban linkages, (6) youth employment, and (7) social protection,

Table 1: Distribution of documents consulted by type of value-chain employment drivers and type of employment-related effects

Drivers/ Effects	Quantity of jobs	Labor productivity	Income and/or wages	Diversification	Social protection	Working conditions	Other effects	Gender effects	Youth effects	Total by driver
Legal and regulatory changes	14	3	8	0	3	7	3	1	4	30
Technological innovations in primary production	23	30	27	2	1	2	6	5	11	60
Organizational changes in primary	18	9	16	2	0	3	4	2	10	36

³ From these 139 papers, 21 were not relevant for the purposes of this review and thus not used.

Drivers/ Effects	Quantity of jobs	Labor productivity	Income and/or wages	Diversification	Social protection	Working conditions	Other effects	Gender effects	Youth effects	Total by driver
production										
Technological innovations upstream or downstream	9	6	4	0	0	1	2	3	9	20
Private institutional changes	12	4	21	2	6	17	7	16	6	46
Changes in the structure and organization of the value chain	40	17	43	28	4	11	3	23	14	89
Changes in rural-urban linkages	9	6	6	3	0	0	2	4	10	25
Investments in public goods and services	3	7	4	0	0	0	2	1	8	28
Other changes in governance	5	6	4	2	2	8	3	4	4	22

Drivers/ Effects	Quantity of jobs	Labor productivity	Income and/or wages	Diversification	Social protection	Working conditions	Other effects	Gender effects	Youth effects	Total by driver
Other drivers	16	13	13	13	10	4	4	25	14	73
Total by effect	109	72	122	47	21	43	32	71	33	

Note: One document can be registered in two or more cells, in different rows and columns.

Source: Berdegué et al. 2023..

3. Results and Discussion

The reviewed literature identifies a wide range of innovation types and enabling policies with expected impacts on employment and inclusion (see Tables 2 and 3). Employment effects are identified through impacts on labor productivity and on incomes and wages of agrifood system operators and workers. Inclusion effects are identified depending on whether innovations or policies have been beneficial in terms of improving income and employment opportunities for women and youth and/or in terms of reducing poverty. While outcomes are heterogeneous across studies, Tables 2 and 3 report predominant findings as reported by the reviewed literature. An empty cell in Tables 2 and 3 implies that not enough evidence was present in the reviewed literature to assess the degree and direction of the impact of innovations or policies. The remainder of this section first summarizes agrifood employment trends and patterns in the broader context of the structural change developing economies have been going through in recent decades (section 3.1). We subsequently explore the main findings of the literature review in greater detail for the sets of innovations (section 3.2) and policies (section 3.3).

Table 2: Employment and inclusion effects of agrifood value chain innovations

Innovations	Summary description	Employment effects (productivity, quantity of employment, and income and wages)	Inclusion effects (Gender, youth, and poverty reduction)	Comments
Mechanization	SMEs provide farm mechanization services (e.g., for land preparation and harvesting), with or without use of mobile phone apps. Potential to reach millions of	Mostly positive (However, because labor-saving through substitution effects, possible initial loss of agricultural employment and incomes of laid off		The availability of mechanization solutions and the limited economic capacity of potential adopters could leave groups of

Innovations	Summary description	Employment effects (productivity, quantity of employment, and income and wages)	Inclusion effects (Gender, youth, and poverty reduction)	Comments
	small-scale farmers.	workers. Yet with productivity growth farm incomes and off-farm income opportunities expand in most contexts.)		producers/ regions lagging.
Digital innovations (on and off farm)	Digital services that allow better production and marketing of agrifood production (risk-management tools, weather monitoring, mobile payments, e-commerce, etc.).	Mostly positive	Mostly positive (While women and the poor could see improvement in their situation due to digital innovations, gender gaps and income inequality could increase access to and use of digital technologies is constrained for these groups relative to others.)	Potential to reach many farmers, but primarily those with more assets and in better-endowed territories (connectivity, electrification).
Food standards that include labor provisions	Adoption of standards such as Fairtrade or GlobalG.A.P..	Mixed results	Mixed results	Large impacts for direct beneficiaries, but few farmers and SMEs tend to benefit. A niche innovation.
Modern contract farming and VC contracting	Contract farming for higher value products.	Mostly positive (For formal/modern sector workers and medium-sized farms; smallholders tend to be excluded as AVCs grow and modernize).	Mixed results (Informal sector workers and smallholders often do not benefit, sustaining prevailing income gaps).	Direct income effects tend to be substantial but benefit few farmers, mostly those with more assets. New employment opportunities may benefit larger numbers of households,

Innovations	Summary description	Employment effects (productivity, quantity of employment, and income and wages)	Inclusion effects (Gender, youth, and poverty reduction)	Comments
				including ones with poor asset endowment.
Small-scale irrigation schemes	On-farm improved irrigation systems.	Mostly positive	Mostly positive	Potential to reach relatively large numbers of farmers and agricultural workers, with significant impacts, although investment in irrigation is slowing down.
Agroecology and other types of diversified agricultural systems	Adoption of agroecological practices and other diversified production systems.	Mostly positive	Mostly positive	Reaches relatively few farmers, with contested economic impacts (though with positive environmental effects).
Flexible labor contracts	Labor contracts adapted to production and marketing needs with no job stability.	Mostly positive (Positive impacts tend to be restricted to duration of contract period only.)	Mixed results	Reaches large numbers of on- and off-farm workers employed in global value chains.

Source: Berdegue et al. 2023.

Table 3 Employment and inclusion effects of enabling policies and public investments

Innovations	Summary description	Employment effects (productivity, quantity of employment, and income and wages)	Inclusion effects (Gender, youth, and poverty reduction)	Comments
<p>Investments in infrastructure that “pull” rural employment and facilitate income diversification (public and private)</p>	<p>Investments that improve connectivity, such as physical (roads) and digital (mobile internet) infrastructure, combined with support to increase access and use of private and public services (financial, training).</p>	<p>Mostly positive</p>	<p>Mostly positive</p>	<p>Very large impacts on multiple dimensions with potential benefits for large numbers of rural households and small-scale farmers.</p> <p>Impacts vary with scope for public support (fiscal space and implementation capacity).</p> <p>Best results when different types of infrastructure investments are bundled (e.g., electricity, roads, connectivity, water).</p>
<p>Modernization of wholesale markets</p>	<p>Better infrastructure and services at wholesale markets.</p>	<p>Mostly positive</p>		<p>Potentially very large impacts for large numbers of small-scale farmers and rural households (as food consumers).</p>
<p>Social protection combined with agricultural and other economic development interventions</p>	<p>Social protection in conjunction with agricultural development and/or other economic development interventions (services, assets, credits, vocational training, infrastructure works, etc.). Agricultural development interventions increase agricultural productivity, and social protection helps access to these benefits for traditionally excluded groups.</p>	<p>Mostly positive</p>	<p>Mostly positive</p>	<p>Large impacts for large numbers of farmers and off-farm workers.</p>

Innovations	Summary description	Employment effects (productivity, quantity of employment, and income and wages)	Inclusion effects (Gender, youth, and poverty reduction)	Comments
Labor market regulation	Adoption of minimum wages.	Mostly positive	Positive, but limited impact	Minimum wages would have significant inclusion effects but only in the small proportion of workers in value chains that have formal contracts. Hence, overall inclusion effect in the agrifood system likely will be small at best.
Collective action organizations	Collective action organizations improve workers' bargaining power, help obtain better contracts and improve opportunities and working conditions for their members.	Mostly positive	Mostly positive (Younger workers tend to be excluded from collective action organizations.)	Complex to develop, requires long processes. Moderate to large impacts in low to moderate numbers of farmers.

Source: Berdegué et al. 2023.

3.1 Agrifood system employment dynamics: Structural transformation revisited

A discussion of effects of innovations and policies on employment in AVCs must be framed in the context of structural transformation (Hayami and Ruttan, 1989; IFAD, 2016; Johnston and Mellor, 1961; Losch et al., 2012; Timmer, 1988). Conditions of early structural transformation in the now high-income countries in Europe and the United States during the late 19th and 20th centuries differ from those witnessed today by much of the Global South (Losch et al., 2012; Losch, 2016, 2022). Many LMICs transiting out of agriculture-based economies can be said to be experiencing a process of "structural transformation lite" because the structural change is constrained by reduced space for rapid growth of manufacturing industries (Rodrik, 2016), constraints on international migration (compared with the European and United States experiences), and small productivity gaps between agriculture and other sectors due to relatively low productivity in non-agriculture. As a result, for tens millions of people around the world, the search for improved income opportunities appears as a choice between low-productivity jobs.

Recent studies estimate that around 857 million people are employed primarily (not necessarily full time or solely) in agriculture and another 375 million in non-agricultural AFS jobs (Davis et al., 2023). Dolislager et al. (2020) use household survey data to estimate the shares of full-time equivalent employment (FTE) in own-farm, farm-wage, post-farmgate AFS, and non-AFS employment. They find that, for rural areas worldwide, 41% of FTE is in the non-AFS sector, followed by 29% in own-farm employment, 20% in post-farmgate AFS, and 9% in farm wage employment. In urban settings, 72% of FTE is in the non-AFS sector, 25% in post-farm gate AFS, and 2% in on-farm and farm-wage employment. In both areas, post-farmgate AFS employment, at

22%, is almost as large as the sum of farm self-employment (20%) and wage labor (7%) Haga clic aquí para escribir texto..

Non-agricultural AFS employment is increasing worldwide, while agricultural employment as a share of total employment is following the opposite pattern in every region. Agricultural employment is also decreasing in absolute numbers in Sub-Saharan Africa and in South Asia and Latin America. With income growth, the share of AFS employment in total employment falls, while the number of non-agricultural AFS jobs increases relative to farm-level employment (Dolislager et al., 2020; Roser, 2023).

The empirical literature identifies income diversification through the development of the rural non-farm economy as one of the main pathways out of rural poverty (World Bank, 2008). Studies have consistently reported households engaged in non-farm employment have higher income than households not engaged in these activities (Barrett et al., 2001; Berdegúe et al., 2001; De Janvry and Sadoulet, 2001; Escobal, 2001; Graziano da Silva and Del Grossi, 2001; Haggblade et al., 2010; Hammond et al., 2023; Lanjouw, 2001; Lanjouw et al., 2001; Liu et al., 2020; Paudel et al., 2022; Reardon et al., 2001; Van Hoyweghen et al., 2020; Woldenhanna and Oskam, 2001). However, there is much heterogeneity in the types of jobs included in the concept of rural non-farm employment (RNFE), and not all have the same potential to lift people out of poverty (Davis et al., 2010; Haggblade et al., 2007; Reardon, 1997; Reardon et al., 2001).

The decision of specific rural households to diversify their income sources is contingent on the characteristics of the functional territory in which they live and work and their assets and incomes (Barrett et al., 2001; Reardon et al., 2001). The literature recognizes two broad types of rural non-farm employment: that in which households and individuals take advantage of opportunities in more productive jobs and sectors ("pull RNFE") and that in which they are "pushed" by poverty, missing or incomplete factor markets, or high levels of vulnerability and risk into low- productivity or "refuge non-farm rural employment" (Reardon et al., 2001). Determinants of access to high-return, high-productivity RNFE include the degree of economic dynamism of the territory, land size and quality, proximity to urban centers and markets, worker education and gender, family size, ethnicity, and access to capital (Barrett et al., 2001; Davis et al., 2010; De Janvry and Sadoulet, 2001; Haggblade et al., 2007; Hammond et al., 2023; Paudel et al., 2022; Reardon et al., 2001). Authors have highlighted the paradox that those with the greatest need to increase their income through high productivity non-farm activities have the least capacity to gain access to those activities (Barrett et al., 2001; Berdegúe et al., 2001).

Much of the dynamics of RNFE growth takes place in the "hidden middle" of AVCs. The "hidden middle" refers to the segments of the agrifood system between farm and retail, including services to on-farm production, processing, logistics, and wholesale trade (Reardon, 2015). As discussed above, employment in this part of the AFS globally is already almost as important as on-farm employment in LMICs. At the same time, the value added that the "hidden middle" generates is almost twice as much as that derived from on-farm production (Thurlow, 2021). However, it should be noted that jobs and firms within the "hidden middle" are highly heterogeneous, and there is not enough detailed analysis of the composition of the "hidden middle."

Expanding the "hidden middle" puts pressure on agricultural and rural labor markets, driving labor-saving technologies and often financing technological changes in agriculture. Some studies have found that, while agriculture has higher poverty-growth elasticities than non-agriculture as a whole, in some cases, the elasticities of agro-processing and trade and transport are as high as, or higher than, those of agriculture, highlighting the opportunities for poverty reduction that can be created by the expansion of the "hidden middle" (Dorosh and Thurlow, 2018).

The growth of the "hidden middle" is driven by private sector investment by firms of all sizes and is facilitated by organizational and technological changes at the farm level and in food retail. Market liberalization policy

reforms spur this process, which is characterized by rapid labor-intensive SMEs (Reardon, 2015). However, capital-labor ratios tend to increase during the transformation of these intermediate segments of the AFS, and growing private foreign and domestic investment drives consolidation and concentration; this allows for investments in technologies that are out of reach for smaller firms (Hernandez et al., 2018; Reardon et al., 2014).

A portion of jobs and SMEs in the “hidden middle” are located in peri-urban and urban centers and employ both urban residents and commuters from proximate rural localities. These jobs depend on primary production, highlighting the importance of rural-urban linkages that can be improved through investment in infrastructure, including roads, communications, and services (De Weerd et al., 2021). Studies show the poverty-reducing effect of SMEs in towns and small and medium-sized cities that interact closely with agricultural producers and households in their hinterland (Cazzuffi et al., 2017).

3.2 Innovations that encourage more and better AFS employment

From the literature review, we find clear evidence of employment and inclusion impacts from four types of agrifood value chain innovations: (1) farm-level mechanization and intensification; (2) digitalization in production, marketing, and intermediation; (3) food standards; and (4) contract farming and other forms of value chain contracting.

Mechanization

While structural transformation should reduce labor surplus in the agricultural sector, this process can take considerable time, particularly in regions with high population growth rates and limited employment options outside of agriculture, such as Sub-Saharan Africa. This delay explains why labor-intensive and more productive sectors can expand significantly but bring only slow increases in real wages (Fibaek, 2021; Maertens and Fabry, 2019). If there is a significant labor surplus in rural areas, market mechanisms alone will not result in much higher wages or better working conditions in the early stages of structural transformation (Christiaensen and Maertens, 2022).

Generally speaking, intensification increases agricultural and labor productivity (Hunt, 2000). We know that the rise in production per hectare since the 1960s (the Green Revolution) was accompanied by fewer people working in agriculture worldwide. In contrast, land used for crop production and pastures has remained nearly constant for the past 60 years.⁴ However, this process has had unintended consequences. In high-income and upper middle-income countries, many small-scale family farmers have been marginalized (Bowman and Zilberman, 2013), and millions of smallholder family farmers have not wanted and/or have not been able to adopt the agricultural intensification and modernization strategy of the Green Revolution (Malanski et al., 2022).

For the meta-study, we identified five sets of agricultural intensification technologies that have been proven to increase labor productivity under certain circumstances: (1) mechanization, (2) chemical and/or mechanized weed control, (3) irrigation, (4) conservation agriculture with zero and minimum tillage, and (5) improved varieties when their characteristics allow the introduction of labor-saving technologies. Changes in the farm worker management can also drive increases in labor productivity (Adu-Baffour et al., 2019; Atake et al., 2020; Christiaensen et al., 2021; Cock et al., 2022; Ibarrola-Rivas et al., 2016; Jena, 2019; Jourdain et al., 2001; Magar et al., 2022; Rasmussen, 1968; Tamru et al., 2017; Vetrova et al., 2019; World Bank, 2008). Alternative agricultural development strategies that depart from the Green Revolution’s emphasis on

⁴ Estimate based on [FAOSTAT data](#), showing agricultural land worldwide expanded by just 0.1% annually between 1961 and 2022.

intensification and modernization, such as agroecology (Altieri and Toledo, 2011), tend to be more labor intensive (Bowman and Zilberman, 2013).

The literature indicates that, overall, mechanization leads to positive employment and income effects. Mechanization does tend to be labor-saving, causing initial loss of agricultural employment and incomes of laid off workers, but with productivity growth, farm incomes and off-farm income opportunities expand in most contexts.

Automation and digitalization

There is ongoing debate about the significance of automation and digitalization in relation to agrifood systems in the Global South, with a large variation in estimates and no consensus on job impacts among the main published estimates and forecasts. Still, one pattern that emerges is that more jobs are likely to be replaced in agrarian economies (Schlogl and Sumner, 2020). The more optimistic analyses point out that early stages of automation (e.g., tractors) did not lead to massive unemployment, as surplus labor in agriculture moved to more productive jobs in manufacturing and services (FAO, 2022). Some authors suggest that the farm sector will concentrate losses in job numbers, particularly among family labor, hired field workers, and labor supervisors and contractors. Displacement of farm workers will be more significant in the commercial farm sector and in high-value value chains, where access to capital and technical support are less constraining (Charlton et al., 2022). These analyses project that total farm employment could still expand if automation solves seasonal labor shortages or when production cycles overlap in time, thus allowing production to grow (Pingali, 2007). The impact on on-farm employment will also depend on the possibility of expanding cultivated areas with increased automation and mechanization (Adu-Baffour et al., 2019; Christiaensen et al., 2021; FAO, 2022; Zhang et al., 2020).

Digitalization in agriculture is further associated with increased demand for skilled on-farm and non-farm workers (Charlton et al., 2022). Access to quality education and vocational training are necessary conditions for rural workers to access these new on- and off-farm jobs (IFAD, 2016), and many labor-saving technologies require significant initial investments and access to reliable electricity and high-quality internet (Charlton et al., 2019). Such conditions are unlikely to be met in the near or medium term for a large proportion of smallholders.

There is also the question of increased automation in sectors that could otherwise absorb part of the labor force displaced from agriculture, such as logistics, agro-processing, food retail, and food services. Labor-intensive SMEs occupy a large share of domestic agrifood markets (Barrett et al., 2022), but there seems to be a trend toward higher capital-labor ratios in the downstream segments of value chains (Reardon et al., 2014).

Contract farming

The literature reports the increasing importance of vertical coordination in agrifood value chains (Bellemare and Bloem, 2018; IFAD, 2003; Meemken and Bellemare, 2020; Swinnen, 2006, 2007; Swinnen and Maertens, 2007; World Bank, 2006; Barrett et al., 2022). Vertical coordination is driven by consolidation of the supermarket sector and increased market share and power of vertically integrated firms (Dolan, 2004), as well as by the associated spread of own label products, efforts by retailers to attain greater organizational flexibility, and the proliferation of mandatory and voluntary standards and codes of conduct (Gereffi, 1994).

One particular form of vertical coordination, contract farming, can improve risk management for producers and buyers, reduce costs, reduce or resolve the effects of missing credit markets, and improve smallholders' access to technical assistance and know-how, particularly regarding the production of higher value crops that are new to their region (Bellemare, 2010; Bellemare and Lim, 2018). In the Global South, participation in contracts varies widely, from less than 5% of smallholders to over 80% (Meemken and Bellemare, 2020). By comparison, in the United States, only 5% of farms used marketing contracts in 2020, and the share of farmers with production contracts was even smaller at 2% (Whitt, 2022).

More formal types of contract farming have gained attention with the fast growth of horticultural exports from the Global South, with large increases in on- and off-farm employment in these value chains (Maertens and Fabry, 2019). Even for high-value products, however, contract farming involves relatively small numbers of farmers and wage workers.⁵

Regarding the characteristics of smallholders who participate in contract farming, the evidence indicates a wide range of factors are related to a higher probability of participation, including: education; asset base; proximity to good roads, towns, and cities; access to irrigation; land size; greater agricultural experience; experience in selling to wholesalers or processors; membership in producers' organizations; having off-farm income; and prior technical efficiency (Bellemare, 2012; Bellemare and Bloem, 2018; Escobal and Cavero, 2012; Miyata et al., 2009; Otsuka et al., 2016; Reardon and Berdegú, 2002; Warsanga and Evans, 2018). Female-headed households and female farmers are at a disadvantage in gaining access to contracts (Bellemare and Bloem, 2018).

On the other hand, workers with less land and lower levels of education from relatively poor households take many of the new non-farm wage jobs in these value chains. Several studies found that rural women are well-represented in high-value export agro-processing jobs (Van den Broeck and Maertens, 2017).

There exists significant debate about the positive and negative effects of contract farming on the employment and welfare of participating producers and on- and off-farm wage workers. Some propose that participation negatively affects the income and/or autonomy of participating farmers (Dedehouanou et al., 2013a; Miyata et al., 2009), as buyers can use their market power to impose unfavorable conditions on producers (Singh, 2002).

For salaried agricultural workers, the effects of contract farming on wages are mixed. In contract farming, there may be pressure to restructure the workforce to meet the demands of lead firms, thus reducing labor costs and decreasing or replacing permanent labor with flexible and subcontracted labor. This mainly affects vulnerable workers, such as women, youth, and migrants (Barrientos and Kritzing, 2004; De Grammont and Lara Flores, 2010).

However, most of the studies reviewed support the view that smallholder producers tend to benefit from participating in contract farming schemes due to increased prices and/or increased yield compared to non-contracting smallholders of similar characteristics (Barrett et al., 2001; Bellemare, 2012; Bellemare and Bloem, 2018; Dedehouanou et al., 2013b; Maertens et al., 2012; Maertens and Swinnen, 2009; Meemken and Bellemare, 2020; Minten et al., 2009; Miyata et al., 2009; Neven et al., 2009; Rao and Qaim, 2013; Reardon et al., 2009; Ruml and Qaim, 2021; Soullier and Moustier, 2018; Swinnen, 2016; Swinnen and Maertens, 2007; Van Hoyweghen et al., 2020; Warsanga and Evans, 2018; World Bank, 2008). Nevertheless, some of the most comprehensive reviews that seek to determine whether contract farming improves the welfare of participating households observe that no policy-relevant conclusions can be drawn (Bellemare and Bloem, 2018) and challenge the notion that contract farming unambiguously improves welfare (Meemken and Bellemare, 2020).

Part of the problem in elucidating the welfare and distributional effects of contract farming is that there are different channels through which participation in value chains can directly and indirectly impact the welfare of farmers and wage workers. Many studies focus on the product market effects on contracting smallholder farmers and their households and tend to skip significant labor market effects involving wage workers on farms and in agro-industrial firms (Maertens et al., 2012). Some studies have found that many agro-industry employees are women, leading to development impacts such as a much-reduced gender wage gap and an increase in primary school enrollment for children of female employees (Maertens et al., 2012).

⁵ Global fruit and vegetable exports (fresh and processed) amounted to \$283 billion in 2020, accounting for 22% of total agricultural exports excluding fish, compared with a gross production value (fresh only) of \$1,108 billion.

Production contracts tend to have better effects than marketing contracts on farmer productivity. These effects are a response to the provision of technical assistance, inputs, credit, and/or machinery services, supporting the hypothesis that contracting allows smallholder farmers to overcome market imperfections that limit their productivity and production potential (Minot and Sawyer, 2016; Minten et al., 2009; Swinnen and Maertens, 2007). Some studies also report indirect benefits, such as those due to technological spillovers to products other than the one that was contracted (MacDonald et al., 2012; Minot and Sawyer, 2016; Minten et al., 2009; Swinnen and Maertens, 2007).

Food standards

Food standards incorporating labor conditions, such as GlobalG.A.P. and Fairtrade, appear to have heterogeneous effects on farmers' and wage workers' income (Maertens and Fabry, 2019). According to some authors, Fairtrade improves wages and welfare and reduces poverty among workers in those certified cooperatives that are able and willing to comply with high labor standards (Meemken et al., 2019). Other studies, however, have found that cooperatives obtaining certification for such standards saw their incomes and shares in value added increase only when international prices were low. In contrast, non-certified farmers could get higher prices if they timed their sales correctly. According to another set of studies, wages and working conditions for both non-certified cooperatives and certified and non-certified individual farms do not differ significantly (Meemken et al., 2019), probably because labor standards are barely monitored during routine inspections. Finally, several studies show that the costs associated with certification and compliance under the Fairtrade standard are often so high as to offset the favorable price differential (Meemken et al., 2019). Other authors emphasize that ethical standards usually fail to reach casual laborers, migrants, and/or women (Bolwig et al., 2008).

3.3 Enabling policies

The meta study also identified several types of policy interventions that are supportive of improved income and employment opportunities in AFS.

Labor market regulation and working conditions

Most AFS workers work in primary agriculture, with 93.6% in the informal economy characterized by low incomes and limited social protection coverage. Some workers in certain AVCs experience improved working conditions, but systematic reviews have found that economic success does not necessarily translate into better working conditions (Malanski et al., 2022).

Decent work in agriculture is crucial for improving conditions and ensuring fair income, security, and social protection. However, focusing solely on decent employment may overlook other critical issues, such as self-employment and labor productivity. Labor contracting in AVC can also be unscrupulous, causing vulnerable workers, particularly women, to be coerced and underprivileged (Barrientos, 2013). The literature finds that poor working conditions exist in AFS because of informality, lack of oversight, and geographic dispersion (Christiaensen and Maertens, 2022; Fabry et al., 2022; Losch, 2022), particularly affecting women, youth, and migrants (Fabry et al., 2022).

Inclusive agribusiness organizations aim to improve working conditions and increase decent work for small-scale farmers (German et al., 2020). Instruments to encourage inclusive agribusiness include national labor laws, sectoral regulations, agricultural interventions, and contractual arrangements. However, labor regulations are limited in low- and middle-income countries. Inclusive business in Sub-Saharan Africa involves a relatively small number of wage employees (Maertens et al., 2012). Larger, buyer-driven value chains, such as coffee, cocoa, and palm oil, show success in improving working conditions for their formal workers (Bolwig et al., 2008; Woodhill, 2016).

Adopting certifications and standards can improve working conditions and inclusiveness in AVC, but their effects depend on the context, type, and initial conditions (Oberlack et al., 2023). Certifications tend to improve working conditions for qualified male workers but less so for women or subcontracted workers (Malanski et al., 2022). Power inequalities affect workers' benefits (Bain, 2010), and geography and institutions also influence labor conditions (Ghori et al., 2022).

Productive social protection programs

Social protection interventions have been found to be conducive of inclusive rural transformation and decent work (Trivelli et al., 2017). Social protection benefits support rural and poor households through income support and also by enabling better decision-making, risk management, and economic growth (FAO, 2023). Social protection coverage varies among regions and country income levels and between rural and urban settings (Lowder et al., 2017). Increasingly, social protection programs incorporate economic inclusion interventions to improve rural livelihoods and agricultural productivity, with positive net impacts on income and employment growth in low-income settings (Andrews et al., 2021; Tirivayi et al., 2016; Trivelli et al., 2017).

Collective action organizations

Labor unions improve agricultural workers' wages and workplace safety and reduce workload (Riisgaard and Hammer, 2011), while farmers' organizations improve incomes, crop yields, and product quality. Collective action organizations increase participation in contract farming, reduce transaction costs, and mitigate power asymmetries (Berdegué, 2001). Organized farmers in contract farming schemes can also experience increased profits (Warsanga and Evans, 2018), and women's self-help groups have shown positive outcomes for women's empowerment⁶ and access to services. However, a lack of such organizations has been found to hinder economic progress in rural Africa and other regions (Christiaensen and Maertens, 2022).

3.4 Women and youth in AVC

Gender issues in AVC have gained attention in the recent literature (Christiaensen and Maertens, 2022; Malanski et al., 2021, 2022; Schumacher, 2014). Women account for 38% of primary production employment and 41% of off-farm segments in LMICs (FAO, 2023). Female employment in agriculture is increasing, particularly in farm production and post-harvest processes, but at a slower pace in transportation, commercial intermediation, and contract negotiation. Gender roles and stereotypes reinforce these differences.⁷ Most own-account agricultural production is based on self-employed farmers and (mostly unpaid) contributing family workers. Women are overrepresented in the latter: 49% of women in agriculture work as contributing family members, compared to 17% of men (FAO, 2023).⁸

Studies of female employment in AVC show mixed impacts on gender inequality (Schumacher, 2014). Female employment in AVC is characterized by informality, inadequate working conditions, and concentration in lower-paid, less-skilled segments (Malanski et al., 2022).

The literature highlights the gender income gap in agricultural and non-farm jobs, with women earning 82% of men's wages (FAO, 2023).⁹ Inadequate working conditions, seasonality, and weak institutions limit

⁶ See the case of the National Union of Cotton and Food Producers in Mali during the 1990s discussed in Bosc (2018).

⁷ Despite this, Kramer and Lambrecht (2019) found that women and men show similar preferences (no gender gap) for on-farm and off-farm work.

⁸ Figure 2.6 in FAO (2023) presents overall data and regional breakdowns, showing that this trend holds in all regions except for Africa, where the share of contributing women family workers is larger in off-farm AFS.

⁹ The wage gap in agriculture is estimated to be 18.4% (6.4% attributed to endowment effect and 11.9% to structural effect) and 15.8% in off-farm wage employment (6.1% endowment effect and 9.7% structural effect).

women's access to decent working conditions (Mukasa and Salami, 2015). The gender labor productivity gap is also significant in agriculture. Endowment effects explain female plot managers' productivity gaps, while for wage workers, structural effects—gender biases and discrimination—are more critical in explaining the productivity gap (Fabry et al., 2022; FAO, 2023).

Globalization and contract farming could impact female employment by promoting economic independence and social connections (Christian et al., 2013). Large-scale and agro-industrial production may lower gender gaps, but the impact varies depending on the worker's initial situation, country, and existing regulations (Barrientos, 2008; Barrientos et al., 2003; Barrientos, Gereffi, et al., 2011; Barrientos, Mayer, et al., 2011; Barrientos and Kritzing, 2004; Maertens and Swinnen, 2012; Tallontire et al., 2005). While some literature highlights improvements in women's working conditions and wages (Maertens et al., 2012; Maertens and Swinnen, 2009; Singh, 2002), these effects are limited to certain value chains and contexts. The literature fails to determine whether entering global AVC benefits women, as evidence varies across product lines, countries, and regions (Schumacher, 2014).

Digital technologies, including mechanization, are reconfiguring labor portfolios in AVC, enabling women to access services and improve productivity (Rajkhowa and Qaim, 2022; Suri and Jack, 2016). However, women need to catch up on access to and adoption of these technologies, which could be widening existing employment and income gaps.

Around one billion youth ages 15 to 24 live in developing countries, with rural areas experiencing the fastest growth (IFAD, 2019). Youth often engage in subsistence agriculture (OECD, 2021) but face limited access to resources and education. Their unemployment rate is three times that of adults. Underemployment among rural African youth is particularly significant, with 7.5% of the youth labor force unemployed and another third working at least 20 hours per week (Elder et al., 2015).

Most young rural workers are informally employed in agriculture (Abay et al., 2021; Christiaensen and Maertens, 2022; Elder et al., 2015; Fox et al., 2016; Yeboah and Jayne, 2018), and own-account farming is higher in Africa (Dolislager et al., 2020). Younger youth are likelier to work in family farming and informal enterprises with low entry requirements and labor returns. This is due to a lack of skills, work experience, limited access to resources, poor infrastructure, and low economic dynamism in rural territories (Allen et al., 2016; Christiaensen et al., 2021; Christiaensen and Maertens, 2022; Djido and Shiferaw, 2018; White, 2012; Yeboah and Jayne, 2018).

Land access for young rural Africans is influenced by land concentration and control of resources by older generations (Anseeuw and Bending, 2012; Cotula, 2012; Hall et al., 2011; Quan, 2007, cited by White, 2012). This tension causes youth aversion to agriculture because of issues related to vulnerability and village conditions (Peters and Krijn, 2011, cited by White, 2012). In contrast, Latin America's demographic transition has improved employment opportunities, education, and access to health care, broadening rural youth's aspirations and lifestyles (Asensio, 2019). The literature shows that AVC can help increase employment opportunities (Krumbiegel et al., 2018; Maertens et al., 2012; Oduol et al., 2017, cited by Christiaensen and Maertens, 2022).

SMEs in intermediate segments have helped increase youth labor market participation (Dolislager et al., 2020; Reardon et al., 2021; Vos and Cattaneo, 2021). The "hidden middle" contributes significantly to youth employment in AVC, with non-farm activities remaining the primary source of off-farm employment (Reardon et al., 2021). Rural youth in urban and peri-urban areas increase wage employment (Dolislager et al., 2020; Reardon et al., 2021; Vos and Cattaneo, 2021) by diversifying into non-farm employment (Wineman and Jayne, 2017, cited by Christiaensen and Maertens, 2022) and relocating to less consolidated economic niches (Allen et al., 2016; Fox and Signé, 2021). Increased domestic demand for diverse agricultural and food products and new technologies, such as ICT connectivity and agricultural automation, can attract rural youth (Charlton et al., 2022; FAO, 2022; Fox and Signé, 2021). Digitalization and automation offer skilled jobs, but youth-focused human capital development and skills development programs are crucial for transitioning to

complex technologies and addressing precarious working conditions in developing countries (Allen et al., 2018; Charlton et al., 2022; FAO, 2022; Jayne et al., 2014).

4. Conclusion

The reviewed literature identifies five main messages that add to our understanding of agrifood systems employment trends, opportunities, and challenges.

First, agrifood systems in much of the Global South have evolved within a structural transformation limited by the absence of a growing manufacturing sector and by severe constraints on large-scale international migration.

Second, AFS represents a substantial source of employment in LMICs. Although its share is diminishing, agriculture is the main AFS employer. Non-farm activities within AFS increase their share in total AFS employment.

Third, while general patterns toward better AFS employment conditions exist, particular situations vary greatly based on several determinants; policy options must be tailored to each context.

Compared to traditional subsistence smallholder agriculture, particularly in poor rural areas of LMICs, just about any employment alternative offers some socioeconomic improvement.

Rural non-farm employment is an option for tens of millions of workers from rural farming households. However, many rural people engaged in RNFE can only access low-productivity, low-income jobs (“refuge RNFE”).

In addition to generating labor for family members, intensification/commercialization often also requires wage workers. These AFS also demand more goods and services inherent to agricultural intensification and commercialization.

In contract farming, the effects of the labor market are much more important than the effects of direct farmer income. Agricultural and labor productivity, wages, and incomes will tend to be higher than in the previously discussed situations. However, the better (formal, permanent, better-paying) jobs downstream are mostly reserved for men. Overall, the numbers employed on-farm and off-farm in contract farming make up just a small fraction of total AFS employees.

Fourth, the bright spots where AFS employment is flourishing are overrepresented in the 290 documents reviewed. These include high-value export agriculture and non-agricultural AFS in dynamic regions or value chains. Unfortunately, most producers, workers, and AFS firms are not in these bright spots, showing a clear need to broaden research on employment and employment conditions in AFS.

References

- Abay, K. A., Asnake, W., Ayalew, H., Chamberlin, J., and Sumberg, J. (2021). Landscapes of opportunity: patterns of young people's engagement with the rural economy in sub-Saharan Africa. *Journal of Development Studies*, 57(4), 594-613. <https://doi.org/10.1080/00220388.2020.1808195>
- Adu-Baffour, F., Daum, T., and Birner, R. (2019). Can small farms benefit from big companies' initiatives to promote mechanization in Africa? A case study from Zambia. *Food Policy*, 84, 133-145. <https://doi.org/10.1016/J.FOODPOL.2019.03.007>
- Allen, A., Howard, J., Kondo, M., Jamison, A., Jayne, T., Snyder, J., Tschirley, D., and Yeboah, K. F. (2016). Agrifood youth employment and engagement study. *Agri-food Youth Employment and Engagement Study (AGYEES)*, 1. https://www.isp.msu.edu/files/4814/7249/7008/AgYees_Report_FINAL_web.pdf.
- Allen, T., Heinrigs, P., and Heo, I. (2018). *Agriculture, food and jobs in West Africa* (14). Paris: OECD Publishing. <https://doi.org/https://doi.org/10.1787/24142026>.
- Altieri, M. A. and Toledo, V. M. (2011). The agroecological revolution in Latin America: Rescuing nature, ensuring food sovereignty and empowering peasants. *Journal of Peasant Studies*, 38(3), 587-612. <https://doi.org/10.1080/03066150.2011.582947>.
- Andrews, C., De Montesquiou, A., Arévalo, I., Puja, D., Boban, P., Samaranayake, S., Heisey, J., Clay, T., and Chaudhary, S. (2021). *The State of Economic Inclusion Report 2021: The potential to scale*. Washington, D.C.: The World Bank. <https://doi.org/10.1596/978-1-4648-1598-0>.
- Anseeuw, W. and Bending, T. (2012). *Land rights and the rush for land: Findings of the global commercial pressures on land research project*. ILC.
- Asensio, R. H. (2019). Superando el muro: Rutas (y frustraciones) de inclusión económica de los jóvenes rurales latinoamericanos. *Rimisp*, 261, 1-31.
- Atake, E.-H., Dandonougbo, Y., Litaaba-Akila, D., Kouevidjin, D., and Sika Limazie, M. (2020). *Agricultural investments, labor productivity, and rural poverty reduction: Gender disparities in Togo*. www.pep-net.org.
- Bain, C. (2010). Structuring the flexible and feminized labor market: GlobalGAP standards for agricultural labor in Chile. *Journal of Women in Culture and Society*, 35(2), 343-370. <https://doi.org/https://doi.org/10.1086/605479>.
- Barrett, C. B. B., Reardon, T., and Webb, P. (2001). Nonfarm income diversification and household livelihood strategies in rural Africa: Concepts, dynamics, and policy implications. *Food Policy*, 26(4), 315-331. [https://doi.org/10.1016/S0306-9192\(01\)00014-8](https://doi.org/10.1016/S0306-9192(01)00014-8).
- Barrett, C. B., Reardon, T., Swinnen, J., and Zilberman, D. (2022). Agri-food value chain revolutions in low- and middle-income countries. *Journal of Economic Literature*, 60(4), 1316-1377. <https://doi.org/10.1257/jel.20201539>.
- Barrientos, S. (2008). Contract labour: The "Achilles Heel" of corporate codes in commercial value chains. *Development and Change*, 39(6), 977-990. <https://doi.org/10.1111/j.1467-7660.2008.00524.x>.
- Barrientos, S. (2013). "Labour chains": Analysing the role of labour contractors in global production networks. *The Journal of Development Studies*, 49(8), 1058-1071. <https://doi.org/10.1080/00220388.2013.780040>.
- Barrientos, S., Dolan, C., and Tallontire, A. (2003). A gendered value chain approach to codes of conduct in African horticulture. *World Development*, 31(9), 1511-1526. [https://doi.org/10.1016/S0305-750X\(03\)00110-4](https://doi.org/10.1016/S0305-750X(03)00110-4).
- Barrientos, S., Gereffi, G., and Rossi, A. (2011). Economic and social upgrading in global production networks: A new paradigm for a changing world. *International Labour Review*, 150(3-4), 319-340. <https://doi.org/10.1111/j.1564-913X.2011.00119.x>.
- Barrientos, S. and Kritzingner, A. (2004). Squaring the circle: Global production and the informalization of work in South African fruit exports. *Journal of International Development*, 16(1), 81-92. <https://doi.org/10.1002/JID.1064>.

- Barrientos, S., Mayer, F., Pickles, J., and Posthuma, A. (2011). Decent work in global production networks: Framing the policy debate. *International Labour Review*, 150(3-4), 297-317. <https://doi.org/10.1111/j.1564-913X.2011.00118.x>.
- Bellemare, M. F. (2010). Agricultural extension and imperfect supervision in contract farming: Evidence from Madagascar. *Agricultural Economics*, 41(6), 507-517. <https://doi.org/10.1111/j.1574-0862.2010.00462.x>.
- Bellemare, M. F. (2012). As you sow, so shall you reap: The welfare impacts of contract farming. *World Development*, 40(7), 1418-1434. <https://doi.org/10.1016/j.worlddev.2011.12.008>.
- Bellemare, M. F., and Bloem, J. R. (2018). Does contract farming improve welfare? A review. *World Development*, 112, 259-271. <https://doi.org/10.1016/j.worlddev.2018.08.018>.
- Bellemare, M. F., and Lim, S. (2018). In all shapes and colors: Varieties of contract farming. *Applied Economic Perspectives and Policy*, 40(3), 379-401. <https://doi.org/10.1093/AEPP/PPY019>.
- Berdegúe, J. (2001). "Cooperating to Compete: Associative Peasant Business Firms in Chile." PhD dissertation.
- Berdegúe, J. A., Ramírez, E., and Escobar, G. (2001). Rural nonfarm employment and incomes in Chile. *World Development*, 29(3), 411-425. www.elsevier.com/locate/worlddev.
- Berdegúe, J.A., Trivelli, C., and Corvalán, C. (2023). *Creating more and better employment in agrifood systems*. CGIAR Rethinking Food Markets. <https://www.kismfoodmarkets.org/node/2495>.
- Bolwig, S., Ponte, S., du Toit, A., Riisgaard, L., and Halberg, N. (2008). *Integrating poverty, gender and environmental concerns into value chain analysis: A conceptual framework and lessons for action research*. <https://www.econstor.eu/handle/10419/44670>
- Bosc, P.-M. (2018). *Empowering through collective action*. IFAD Research Series, 9. Rome: IFAD.
- Bowman, M. S., and Zilberman, D. (2013). Economic factors affecting diversified farming systems. *Ecology and Society*, 18(1). <https://doi.org/10.5751/ES-05574-180133>.
- Cazzuffi, C., Pereira-López, M., and Soloaga, I. (2017). Local poverty reduction in Chile and Mexico: The role of food manufacturing growth. *Food Policy*, 68, 160-185. <https://doi.org/10.1016/j.foodpol.2017.02.003>.
- Charlton, D., Hill, A. E., and Taylor, J. E. (2022). *Automation and social impacts: winners and losers*. FAO. <https://doi.org/10.4060/cc2610en>.
- Charlton, D., Taylor, E., Vougioukas, S., and Rutledge, Z. (2019). Innovations for a shrinking agricultural workforce. *Agricultural and Applied Economics Association*, 34(2), 1-8. <https://www.jstor.org/stable/26785766>.
- Christiaensen, L., and Maertens, M. (2022). Rural employment in Africa: Trends and challenges. *Annual Review of Resource Economics*, 14(66). <https://doi.org/10.1146/annurev-resource-111820-014312>.
- Christiaensen, L., Rutledge, Z., and Taylor, J. E. (2021). Viewpoint: The future of work in agri-food. *Food Policy*, 99, 1-12. <https://doi.org/10.1016/j.foodpol.2020.101963>.
- Christian, M., Evers, B., and Barrientos, S. (2013). Women in value chains: Making a difference. *Capturing the Gains*, 6.3, 1-6. <http://ssrn.com/abstract=2265832> <https://ssrn.com/abstract=2265832>.
- Cock, J., Prager, S., Meinke, H., and Echeverria, R. (2022). Labour productivity: The forgotten yield gap. In *Agricultural Systems*, 201, p. 103-452). <https://doi.org/10.1016/j.agsy.2022.103452>.
- Cotula, L. (2012). The international political economy of the global land rush: A critical appraisal of trends, scale, geography and drivers. *Journal of Peasant Studies*, 39(3-4), 649-680. <https://doi.org/10.1080/03066150.2012.674940>.
- Davis, B., Mane, E., Gurbuzer, L. Y., Caivano, G., Piedrahita, N., Azhar, N., Benali, M., Chaudhary, N., and Rivera, R. (2023). *Estimating global and country-level employment in agrifood systems, Issues 23-24*. Rome: FAO. <https://www.fao.org/documents/card/en/c/cc4337en>.
- Davis, B., Winters, P., Carletto, G., Covarrubias, K., Quiñones, E. J., Zezza, A., Stamoulis, K., Azzarri, C., and DiGiuseppe, S. (2010). A cross-country comparison of rural income generating activities. *World Development*, 38(1), 48-63. <https://doi.org/10.1016/j.worlddev.2009.01.003>.

- Dedehouanou, S. F. A., Swinnen, J., and Maertens, M. (2013a). Does contracting make farmers happy? Evidence from Senegal. *Review of Income and Wealth*, 59(SUPPL1). <https://doi.org/10.1111/roiw.12041>.
- Dedehouanou, S. F. A., Swinnen, J., and Maertens, M. (2013b). Does contracting make farmers happy? Evidence from Senegal. *Review of Income and Wealth*, 59(SUPPL1). <https://doi.org/10.1111/roiw.12041>.
- De Grammont, H. C. and Lara Flores, S. M. (2010). Productive restructuring and 'standardization' in Mexican horticulture: Consequences for labour. *Journal of Agrarian Change*, 10(2), 228-250. <https://doi.org/10.1111/J.1471-0366.2009.00246.X>.
- De Janvry, A. and Sadoulet, E. (2001). Income strategies among rural households in Mexico: The role of off-farm activities. *World Development*, 29(3), 467-480. [https://doi.org/10.1016/S0305-750X\(00\)00113-3](https://doi.org/10.1016/S0305-750X(00)00113-3).
- De Weerd, J., Christiaensen, L., and Kanbur, R. (2021). *When Distance Drives Destination, Towns Can Stimulate Development*. www.iza.org
- Djido, A. I. and Shiferaw, B. A. (2018). Patterns of labor productivity and income diversification: Empirical evidence from Uganda and Nigeria. *World Development*, 105, 416-427. <https://doi.org/10.1016/j.worlddev.2017.12.026>.
- Dolan, C. (2004). On farm and packhouse: Employment at the bottom of a global value chain. *Rural Sociology*, 69(1), 99-126. <https://doi.org/10.1526/003601104322919928>.
- Dolislager, M., Reardon, T., Arslan, A., Fox, L., Liverpool-Tasie, S., Sauer, C., and Tschirley, D. L. (2020). Youth and adult agrifood system employment in developing regions: Rural (peri-urban to hinterland) vs. urban. *The Journal of Development Studies*, 57(4), 571-593. <https://doi.org/10.1080/00220388.2020.1808198>.
- Dorosh, P. and Thurlow, J. (2018). Beyond agriculture versus non-agriculture: Decomposing sectoral growth-poverty linkages in five African countries. *World Development*, 109, 440-451. <https://doi.org/10.1016/j.worlddev.2016.08.014>.
- Elder, S., De Haas, H., Principi, M., and Schewel, K. (2015). *Youth and rural development: Evidence from 25 school-to-work transition surveys publication series*. www.ilo.org/publns
- Escobar, J. (2001). The determinants of nonfarm income diversification in rural Peru. *World Development*, 29(3), 497-508. www.elsevier.com/locate/worlddev.
- Escobar, J. A. and Cavero, D. (2012). Transaction costs, institutional arrangements and inequality outcomes: Potato marketing by small producers in rural Peru. *World Development*, 40(2), 329-341. <https://doi.org/10.1016/j.worlddev.2011.07.016>.
- Fabry, A., Van den Broeck, G., and Maertens, M. (2022). Decent work in global food value chains: Evidence from Senegal. *World Development*, 152, 105790. <https://doi.org/10.1016/j.worlddev.2021.105790>.
- FAO. (2022). The state of food and agriculture: Leveraging automation in agriculture for transforming agrifood systems. In *El estado mundial de la agricultura y la alimentación 2022*. Rome: FAO. <https://doi.org/https://doi.org/10.4060/cb9479en>.
- FAO. (2023). *The status of women in agrifood systems*. Rome: FAO. <https://doi.org/10.4060/cc5343en>.
- Fibaek, M. M. (2021). Working poor? A study of rural workers' economic welfare in Kenya. *Journal of International Development*, 33(1), 41-69. <https://doi.org/10.1002/jid.3511>.
- Fox, L., Senbet, L. W., and Simbanegavi, W. (2016). Youth employment in Sub-Saharan Africa: Challenges, constraints and opportunities. *Journal of African Economies*, 25, i3-i15. <https://doi.org/10.1093/JAE/EJV027>.
- Fox, L. and Signé, L. (2021). *The fourth industrial revolution (4IR) and the future of work: Could this bring good jobs to Africa?* <https://includeplatform.net/wp-content/uploads/2021/06/The-fourth-industrial-revolution-4IR-and-the-future-of-work.pdf>.
- Gereffi, G. (1994). The Organization of Buyer-Driven Global Commodity Chains: How US Retailers Shape Overseas Production Networks. In G. Gereffi and M. Korzeniewicz (Eds.), *Commodity Chains and Global Capitalism* (43-71). Praeger Publishing. <https://doi.org/10.1017/9781108559423.003>

- German, L. A., Bonanno, A. M., Foster, L. C., and Cotula, L. (2020). "Inclusive business" in agriculture: Evidence from the evolution of agricultural value chains. *World Development*, 134, 105018. <https://doi.org/10.1016/j.worlddev.2020.105018>.
- Ghori, S., Lund-Thomsen, P., Gallemore, C., Singh, S., and Riisgaard, L. (2022). Compliance and cooperation in global value chains: The effects of the better cotton initiative in Pakistan and India. *Ecological Economics*, 193, 107312. <https://doi.org/10.1016/j.ecolecon.2021.107312>.
- Graziano da Silva, J. and Del Grossi, M. E. (2001). Rural non-farm employment and incomes in Brazil: Patterns and evolution. *World Development*, 29(3), 443-454. www.elsevier.com/locate/worlddev.
- Haggblade, S., Hazell, P. B. R., and Reardon, T. (2007). *Transforming the rural nonfarm economy: Opportunities and threats in the developing world* (S. Haggblade, P. B. R. Hazell, and T. Reardon, Eds.). Baltimore, MD/London: Johns Hopkins University Press.
- Haggblade, S., Hazell, P., and Reardon, T. (2010). The rural non-farm economy: Prospects for growth and poverty reduction. *World Development*, 38(10), 1429-1441. <https://doi.org/10.1016/j.worlddev.2009.06.008>.
- Hall, D., Hirsch, P., and Murray Li, T. (2011). *Powers of exclusion: land dilemmas in Southeast Asia*. Singapore: NUS Press.
- Hammond, J., Pagella, T., Caulfield, M. E., Fraval, S., Teufel, N., Wichern, J., Kihoro, E., Herrero, M., Rosenstock, T. S., and van Wijk, M. T. (2023). Poverty dynamics and the determining factors among East African smallholder farmers. *Agricultural Systems*, 206(January), 103611. <https://doi.org/10.1016/j.agsy.2023.103611>.
- Hayami, Y. and Ruttan, V. W. (1989). *Agricultural development: An international perspective*. Baltimore, MD/London: The Johns Hopkins Press.
- Hernandez, R., Belton, B., Reardon, T., Hu, C., Zhang, X., and Ahmed, A. (2018). The "quiet revolution" in the aquaculture value chain in Bangladesh. *Aquaculture*, 493, 456-468. <https://doi.org/10.1016/j.aquaculture.2017.06.006>.
- Hunt, R. C. (2000). Labor productivity and agricultural development: Boserup revisited. *Human Ecology*, 28(2), 251-277. <https://doi.org/https://doi.org/10.1023/A:1007072120891>.
- Ibarrola-Rivas, M. J., Kastner, T., and Nonhebel, S. (2016). How much time does a farmer spend to produce my food? An international comparison of the impact of diets and mechanization. *Resources*, 5(4). <https://doi.org/10.3390/resources5040047>.
- IFAD. (2003). *Agricultural marketing companies as sources of smallholder credit in Eastern and Southern Africa*. Rome: IFAD.
- IFAD. (2016). *Rural development report 2016: fostering inclusive rural transformation* (International Fund for Agricultural Development, Ed.). Rome: IFAD. <https://www.ifad.org/en/web/knowledge/-/rural-development-report-2016-fostering-inclusive-rural-transformation>.
- IFAD. (2019). *Rural Development Report 2019: Creating opportunities for rural youth*. Rome: IFAD.
- Jayne, T. S., Chamberlin, J., and Headey, D. D. (2014). Land pressures, the evolution of farming systems, and development strategies in Africa: A synthesis. *Food Policy*, 48, 1-17. <https://doi.org/10.1016/j.foodpol.2014.05.014>.
- Jena, P. R. (2019). Can minimum tillage enhance productivity? Evidence from smallholder farmers in Kenya. *Journal of Cleaner Production*, 218, 465-475. <https://doi.org/10.1016/j.jclepro.2019.01.278>.
- Johnston, B. F. and Mellor, J. W. (1961). The role of agriculture in economic development. *American Economic Review*, 51(4), 566-593.
- Jourdain, D., Scopel, E., and Affholder, F. (2001). *The impact of conservation tillage on the productivity and stability of maize cropping systems: A case study in Western Mexico*. <http://agroecologie.cirad.xn--frdocumentobtenusurlesiteciraduriseauhttp-7vd//agroecologie.cirad.fr>.
- Kramer, B. and Lambrecht, I. (2019). *Gender and preferences for non-farm income diversification: A framed field experiment in Ghana* (01855). Washington D.C.: IFPRI. <https://papers.ssrn.com/abstract=3430750>.

- Krumbiegel, K., Maertens, M., and Wollni, M. (2018). The Role of Fairtrade Certification for Wages and Job Satisfaction of Plantation Workers. *World Development*, 102, 195-212. <https://doi.org/10.1016/j.worlddev.2017.09.020>.
- Lanjouw, P. (2001). Nonfarm employment and poverty in rural El Salvador. *World Development*, 29(3), 529-548. www.elsevier.com/locate/worlddev.
- Lanjouw, P., Quizon, J., and Sparrow, R. (2001). Non-agricultural earnings in peri-urban areas of Tanzania: evidence from household survey data. In *Food Policy* (Vol. 26). www.elsevier.com/locate/foodpol.
- Liu, Y., Barrett, C. B., Pham, T., and Violette, W. (2020). The intertemporal evolution of agriculture and labor over a rapid structural transformation: Lessons from Vietnam. *Food Policy*, 94, 101913. <https://doi.org/10.1016/j.foodpol.2020.101913>.
- Losch, B. (2016). *Structural transformation to boost youth labour demand in sub-Saharan Africa: The role of agriculture, rural areas and territorial development*. http://www.ilo.org/global/about-the-ilo/mission-and-objectives/WCMS_099766/lang--en/indx.htm.
- Losch, B. (2022). Decent employment and the future of agriculture. How dominant narratives prevent addressing structural issues. *Frontiers in Sustainable Food Systems*, 6, 190. <https://doi.org/10.3389/FSUFS.2022.862249/BIBTEX>.
- Losch, B., Freguin-Gresh, S., and White, E. T. (2012). *Structural transformation and rural change revisited*. The World Bank. <https://doi.org/10.1596/978-0-8213-9512-7>.
- Lowder, S. K., Bertini, R., and Croppenstedt, A. (2017). Poverty, social protection and agriculture: Levels and trends in data. *Global Food Security*, 15, 94-107. <https://doi.org/10.1016/j.gfs.2017.06.001>.
- MacDonald, J. M., Perry, J., Ahearn, M. C., Banker, D., Chambers, W., Dimitri, C., Key, N., Nelson, K. E., Southard, L. W., Hasanov, S., Abebe, G. K., Bijman, J., Kemp, R., Omta, O., Tsegaye, A., Key, N., Runsten, D., Mergenthaler, M., Weinberger, K., ... Vasiljević, Z. (2012). Impact of contract farming on smallholder poultry farmers' Income in Kenya. *Supply Chain Management*, 12(4).
- Maertens, M., and Fabry, A. (2019). Creating more and better jobs in global value chains. *Future of Work in Agriculture*, 1-24. [https://farmlabor.ucdavis.edu/sites/g/files/dgvnsk5936/files/inline-files/Miet Maertens%3B Global Value Chains.pdf](https://farmlabor.ucdavis.edu/sites/g/files/dgvnsk5936/files/inline-files/Miet%20Maertens%3B%20Global%20Value%20Chains.pdf).
- Maertens, M., Minten, B., and Swinnen, J. (2012). Modern food supply chains and development: Evidence from horticulture export sectors in Sub-Saharan Africa. *Development Policy Review*, 30(4), 473-497. <https://doi.org/10.1111/J.1467-7679.2012.00585.X>.
- Maertens, M. and Swinnen, J. F. M. (2009). Trade, standards, and poverty: Evidence from Senegal. *World Development*, 37(1), 161-178. <https://doi.org/10.1016/j.worlddev.2008.04.006>.
- Maertens, M. and Swinnen, J. F. M. (2012). Gender and modern supply chains in developing countries. *The Journal of Development Studies*, 48(10), 1412-1430. <https://doi.org/10.1080/00220388.2012.663902>.
- Magar, S. T., Timsina, J., Devkota, K. P., Weili, L., and Rajbhandari, N. (2022). Conservation agriculture for increasing productivity, profitability and water productivity in rice-wheat system of the Eastern Gangetic Plain. *Environmental Challenges*, 7. <https://doi.org/10.1016/j.envc.2022.100468>.
- Malanski, P. D., Dedieu, B., and Schiavi, S. (2021). Mapping the research domains on work in agriculture. A bibliometric review from Scopus database. *Journal of Rural Studies*, 81, 305-314. <https://doi.org/10.1016/j.jrurstud.2020.10.050>.
- Malanski, P. D., Schiavi, S. M. de A., Dedieu, B., and Damasceno, J. C. (2022). International research on labor in agri-food value chains: A bibliometric review from web of science. *Frontiers in Sustainable Food Systems*, 6, 1-12. <https://doi.org/10.3389/fsufs.2022.852178> OPEN.
- Malanski, P., Schiavi, S., Dedieu, B., and Damasceno, J. C. (2022). Labor in agrifood value chains: a scientometric review from Scopus. *International Food and Agribusiness Management Review*, 25(3), 449-468. <https://doi.org/10.22434/IFAMR2021.0066>.
- Meemken, E.-M. and Bellemare, M. F. (2020). Smallholder farmers and contract farming in developing countries. *2020 Proceedings of the National Academy of Sciences*, 117(1), 259-264. <https://doi.org/10.6077/190x-1677>.

- Meemken, E. M., Sellare, J., Kouame, C. N., and Qaim, M. (2019). Effects of fairtrade on the livelihoods of poor rural workers. *Nature Sustainability*, 2(7), 635-642. <https://doi.org/10.1038/S41893-019-0311-5>.
- Minot, N. and Sawyer, B. (2016). Contract farming in developing countries: theory, practice, and policy implications. In A. Devaux, M. Torero, J. Donovan, and D. Horton (Eds.), *Innovation for inclusive value-chain development: Successes and challenges* (127-158). Washington D.C.: IFPRI.
- Minten, B., Randrianarison, L., and Swinnen, J. F. M. (2009). Global Retail Chains and Poor Farmers: Evidence from Madagascar. *World Development*, 37(11), 1728-1741. <https://doi.org/10.1016/j.worlddev.2008.08.024>.
- Miyata, S., Minot, N., and Hu, D. (2009). Impact of contract farming on income: Linking small farmers, packers, and supermarkets in China. *World Development*, 37(11), 1781-1790. <https://doi.org/10.1016/j.worlddev.2008.08.025>.
- Mukasa, A. N. and Salami, A. O. (2015). *Gender productivity differentials among smallholder farmers in Africa: A cross-country comparison* (231). www.afdb.org/.
- Neven, D., Odera, M. M., Reardon, T., and Wang, H. (2009). Kenyan supermarkets, emerging middle-class horticultural farmers, and employment impacts on the rural poor. *World Development*, 37(11), 1802-1811. <https://doi.org/10.1016/j.worlddev.2008.08.026>.
- Oberlack, C., Blare, T., Zambrino, L., Bruelisauer, S., Solar, J., Villar, G., Thomas, E., and Ramírez, M. (2023). With and beyond sustainability certification: Exploring inclusive business and solidarity economy strategies in Peru and Switzerland. *World Development*, 165, 106187. <https://doi.org/10.1016/J.WORLDDEV.2023.106187>.
- Oduol, J. B. A., Mithöfer, D., Place, F., Nang'ole, E., Olwande, J., Kirimi, L., and Mathenge, M. (2017). Women's participation in high value agricultural commodity chains in Kenya: Strategies for closing the gender gap. *Journal of Rural Studies*, 50, 228-239. <https://doi.org/10.1016/J.JRURSTUD.2017.01.005>.
- OECD. (2021). *Jobs for rural youth: The role of local food economies*. Paris: OECD. <https://doi.org/https://doi.org/10.1787/692c0ca1-en>.
- Otsuka, K., Nakano, Y., and Takahashi, K. (2016). Contract farming in developed and developing countries. *Annual Review of Resource Economics*, 8(1), 353-376. <https://doi.org/10.1146/annurev-resource-100815-095459>.
- Paudel, S., Filipski, M., and Minten, B. (2022). *Income diversification and the rural non-farm economy* (27). Washington D.C.: IFPRI. https://books.google.cl/books?hl=esandlr=andid=o6yeEAAAQBAJandoi=fndandpg=PA4anddq=Income+diversification+and+the+rural+non-farm+economyandots=jPkiEqJ7r5andsig=slmTSt_u6lPmv2KtrmYKZmudUkcandredir_esc=y#v=onepageandq=Income+diversification+and+the+rural+non-farm+economyandf=t.
- Peters, and Krijn. (2011). *War and the Crisis of Youth in Sierra Leone*. Cambridge: University Press.
- Pingali, P. (2007). Westernization of Asian diets and the transformation of food systems: Implications for research and policy. *Food Policy*, 32(3), 281-298. <https://doi.org/10.1016/j.foodpol.2006.08.001>.
- Quan, J. (2007). 4. Changes in intra-family land relations. In *Changes in 'Customary' Land Tenure Systems in Africa* (51-63).
- Rajkhowa, P. and Qaim, M. (2022). Mobile phones, off-farm employment and household income in rural India. *Journal of Agricultural Economics*, 73(3), 789-805. <https://doi.org/10.1111/1477-9552.12480>.
- Rao, E. J. O. and Qaim, M. (2013). Supermarkets and agricultural labor demand in Kenya: A gendered perspective. *Food Policy*, 38(1), 165-176. <https://doi.org/10.1016/J.FOODPOL.2012.11.008>.
- Rasmussen, W. D. (1968). Advances in American agriculture: The mechanical tomato harvester as a case study. *Technology and Culture*, 9(4), p.531-543. <https://www.jstor.org/stable/3101894?seq=1andcid=pdf->.
- Reardon, T. (1997). Using evidence of household income diversification to inform study of the rural nonfarm labor market in Africa. *World Development*, 25(5), 735-747. [https://doi.org/10.1016/S0305-750X\(96\)00137-4](https://doi.org/10.1016/S0305-750X(96)00137-4).
- 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. <https://doi.org/10.1093/OXREP/GRV011>.

- Reardon, T., Barrett, C. B., Berdegue, J. A., and Swinnen, J. F. M. (2009). Agrifood industry transformation and small farmers in developing countries. *World Development*, 37(11), 1717-1727. <https://doi.org/10.1016/j.worlddev.2008.08.023>.
- Reardon, T. and Berdegue, J. A. (2002). The rapid rise of supermarkets in Latin America: Challenges and opportunities for development. *Development Policy Review*, 20(4). <https://doi.org/10.1111/1467-7679.00178>.
- Reardon, T., Berdegue, J. A., and Escobar, G. (2001). Rural nonfarm employment and incomes in Latin America: Overview and policy implications. *World Development*, 29(3), 395-409. [https://doi.org/10.1016/S0305-750X\(00\)00112-1](https://doi.org/10.1016/S0305-750X(00)00112-1).
- Reardon, T., Chen, K. Z., Minten, B., Adriano, L., Dao, T. A., Wang, J., and Gupta, S. Das. (2014). The quiet revolution in Asia's rice value chains. *Annals of the New York Academy of Sciences*, 1331(1), 106-118. <https://doi.org/10.1111/nyas.12391>.
- Reardon, T., Liverpool-Tasie, L. S. O., and Minten, B. (2021). Quiet revolution by SMEs in the midstream of value chains in developing regions: wholesale markets, wholesalers, logistics, and processing. *Food Security*, 13(6), 1577-1594. <https://doi.org/10.1007/s12571-021-01224-1>.
- Riisgaard, L. and Hammer, N. (2011). Prospects for labour in global value chains: Labour standards in the cut flower and banana industries. *British Journal of Industrial Relations*, 49(1), 168-190. <https://doi.org/10.1111/J.1467-8543.2009.00744.X>.
- Rodrik, D. (2016). Premature deindustrialization. *Journal of Economic Growth*, 21(1), 1-33. <https://doi.org/10.1007/s10887-015-9122-3>.
- Roser, M. (2023). *Employment in agriculture*. <https://ourworldindata.org/employment-in-agriculture>
- Ruml, A. and Qaim, M. (2021). New evidence regarding the effects of contract farming on agricultural labor use. *Agricultural Economics*, 52(1), 51-66. <https://doi.org/10.1111/AGEC.12606>.
- Schlogl, L. and Sumner, A. (2020). Automation and structural transformation in developing countries. In *Disrupted Development and the Future of Inequality in the Age of Automation* (51-78). Palgrave Pivot, Cham. https://doi.org/10.1007/978-3-030-30131-6_5.
- Schumacher, K. P. (2014). Gender relations in global agri-food value chains - a review. *DIE ERDE* , 145(3), 127-134. <https://doi.org/10.12854/erde14510>.
- Singh, S. (2002). Contracting out solutions: Political economy of contract farming in the Indian Punjab. *World Development*, 30(9), 1621-1638. [https://doi.org/10.1016/S0305-750X\(02\)00059-1](https://doi.org/10.1016/S0305-750X(02)00059-1).
- Soullier, G. and Moustier, P. (2018). Impacts of contract farming in domestic grain chains on farmer income and food insecurity. Contrasted evidence from Senegal. *Food Policy*, 79, 179-198. <https://doi.org/10.1016/j.foodpol.2018.07.004>.
- Suri, T. and Jack, W. (2016). *The long-run poverty and gender impacts of mobile money*. <http://science.sciencemag.org/>.
- Swinnen, J. (2016). Economics and politics of food standards, trade, and development. *Agricultural Economics (United Kingdom)*, 47, 7-19. <https://doi.org/10.1111/agec.12316>.
- Swinnen, J. F. M. (2006). *The dynamics of vertical coordination in agrifood chains in Eastern Europe and Central Asia* (42). <http://www.copyright.com/>.
- Swinnen, J. F. M. (2007). Global supply chains, standards and the poor: How the globalization of food systems and standards affects rural development and poverty. In *Global Supply Chains, Standards and the Poor: How the Globalization of Food Systems and Standards Affects Rural Development and Poverty*. CABI Publishing. <https://doi.org/10.1079/9781845931858.0000>.
- Swinnen, J. F. M. and Maertens, M. (2007). Globalization, privatization, and vertical coordination in food value chains in developing and transition countries. *Agricultural Economics*, 37(S1), 89-102. <https://doi.org/10.1111/J.1574-0862.2007.00237.X>.

- Tallontire, A., Dolan, C., Smith, S., and Barrientos, S. (2005). Reaching the marginalised? Gender value chains and ethical trade in African horticulture. *Practice*, 15(3), 559-571. <https://doi.org/10.1080/09614520500075771>.
- Tamru, S., Minten, B., Alemu, D., and Bachewe, F. (2017). The rapid expansion of herbicide use in smallholder agriculture in Ethiopia: Patterns, drivers, and implications. *European Journal of Development Research*, 29(3), 628-647. <https://doi.org/10.1057/s41287-017-0076-5>
- Thurlow, J. (2021). *Beyond Agriculture Measuring Agri-Food System GDP and Employment*. Washington D.C.: IFPRI. <https://pim.cgiar.org/2021/03/30/beyond-agriculture-measuring-agri-food-system-gdp-and-employment/>.
- Timmer, P. (1988). The agricultural transformation. In H. Chenery and T. Srinivasan (Eds.), *Handbook of Development Economics*, 1, 275-331. <https://www.researchgate.net/publication/4825947>.
- Tirivayi, N., Knowles, M., and Davis, B. (2016). The interaction between social protection and agriculture: A review of evidence. *Global Food Security*, 10, 52-62. <https://doi.org/10.1016/j.gfs.2016.08.004>.
- Trivelli, C., Vargas, S., and Clausen, J. (2017). *Social Protection and Inclusive Rural Transformation*. Rome: IFAD. [https://socialprotection.org/sites/default/files/publications_files/Research Series Issue 9 - Social protection and inclusive rural transformation.pdf](https://socialprotection.org/sites/default/files/publications_files/Research%20Series%20Issue%209%20-%20Social%20protection%20and%20inclusive%20rural%20transformation.pdf).
- Van den Broeck, G. and Maertens, M. (2017). Moving up or moving out? Insights into rural development and poverty reduction in Senegal. *World Development*, 99, 95-109. <https://doi.org/10.1016/j.worlddev.2017.07.009>.
- Van Hoyweghen, K., Van den Broeck, G., and Maertens, M. (2020). Employment dynamics and linkages in the rural economy: Insights from Senegal. *Journal of Agricultural Economics*, 71(3), 904-928. <https://doi.org/10.1111/1477-9552.12387>.
- Vetrova, S. A., Zayachkovskiy, V. A., and Sirota, S. M. (2019). Monogerm table beet from the perspective of economic efficiency. *IOP Conference Series: Earth and Environmental Science*, 395(1). <https://doi.org/10.1088/1755-1315/395/1/012052>.
- Vos, R. and Cattaneo, A. (2021). Poverty reduction through the development of inclusive food value chains. In *Journal of Integrative Agriculture*, 20(4), 964-978. [https://doi.org/10.1016/S2095-3119\(20\)63398-6](https://doi.org/10.1016/S2095-3119(20)63398-6).
- Warsanga, W. B. and Evans, E. A. (2018). Welfare Impact of wheat farmers participation in the value chain in Tanzania. *Modern Economy*, 09(04), 853-887. <https://doi.org/10.4236/me.2018.94055>.
- White, B. (2012). Agriculture and the generation problem: Rural youth, employment and the future of farming. *IDS Bulletin*, 43(6), 9-19. <https://doi.org/10.1111/J.1759-5436.2012.00375.X>.
- Whitt, C. (2022, June 23). *Farmers' Use of Contracts Has Declined Over Last 25 Years*. Washington D.C.: USDA Economic Research Service. <https://www.ers.usda.gov/amber-waves/2022/june/farmers-use-of-contracts-has-declined-over-last-25-years/>.
- Wineman, A., and Jayne, T. S. (2017). Intra-rural migration and pathways to greater well-being: Evidence from Tanzania. *Feed the Future Innovation Lab for Food Security Research Paper 60: Michigan State University*.
- Woldenhanna, T. and Oskam, A. (2001). Income diversification and entry barriers: Evidence from the Tigray region of northern Ethiopia. *Food Policy*, 26. www.elsevier.com/locate/foodpol.
- Woodhill, J. (2016). *Inclusive agribusiness: The state of play background working paper prepared for the global donor platform for rural development*.
- World Bank. (2006). *The dynamics of vertical coordination in agrifood chains in Eastern Europe and Central Asia: Implications for Policy and World Bank operations* (Vol. 64089). Washington D.C.: World Bank. <http://www.copyright.com/>.
- World Bank. (2008). *World development report 2008: Agriculture for development*. Washington D.C.: World Bank. https://reliefweb.int/report/world/world-development-report-2008-agriculture-development?gclid=Cj0KCQiA3eGfBhCeARIsACpJNU8Ufv6Puom5qhBG2Va40rrwh2f2PGWALEnK0DEQUZJd7FNdnj4nsAkaAq7qEALw_wcB.
- Yeboah, F. K., and Jayne, T. S. (2018). Africa's evolving employment trends. *Journal of Development Studies*, 54(5), 803-832. <https://doi.org/10.1080/00220388.2018.1430767>.

Zhang, J., Mishra, A. K., Zhu, P., and Li, X. (2020). Land rental market and agricultural labor productivity in rural China: A mediation analysis. *World Development*, 135, 105089. <https://doi.org/10.1016/J.WORLDDEV.2020.105089>.

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Employment Impacts of Agrifood System Innovations and Policies: A Review of the Evidence

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