CHAPTER 2

Smallholders and Rural People Making Food System Value Chains Inclusive

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KEY FINDINGS

- Propelled by urbanization, rising incomes, and changing diets, food markets are expanding in Africa and South Asia, creating enormous potential for job and income opportunities along food supply chains.
- Small and medium-sized enterprises have proliferated in storage, logistics, transportation, and wholesale and retail distribution to meet growing rural and urban food demands. This so-called quiet revolution appears to be taking place out of sight of policymakers, leaving much of the potential for inclusive value-chain development untapped.
- Smallholders often struggle to connect with actors in the middle of the food supply chain as a result of limited access to land and inputs and lack of capacity to scale up or implement new practices to meet quality requirements.
- Lack of infrastructure and skills is holding back the development of food supply chains in low-income Africa and Asia, especially where the potential is greatest: in small towns and intermediate cities near rural farmlands.

RECOMMENDATIONS

- Promote inclusive food supply chain development by leveraging the transformations already taking place in downstream food supply chains, particularly the expansion of small and medium-sized enterprises and growth of off-farm employment.
- Catalyze investments that strengthen food supply links so that smallholders have greater market access and food transporters, distributors, processors, and retailers can thrive. Governments should create an enabling environment for agrifood businesses by providing basic infrastructure, creating the right market incentives, promoting inclusive agribusiness models, and supporting information and communications technology use that fosters inclusive value chains.
- Enable smallholder engagement in dynamic food supply chains by addressing issues that hinder participation. Policies and regulatory frameworks should ensure land tenure security, access to credit, training and technical assistance, and resilience-enhancing social protection.
- Make much greater investments in data collection and analysis across the entire food system, particularly for the “hidden middle,” to underpin policies for inclusive value chains.

Reducing poverty and ending hunger depend on making progress in rural areas, where most of the world's poor and undernourished live. Since the 1990s, rural transformation in many of the poorest countries has helped more than 750 million people move out of extreme poverty.¹ Boosting smallholder productivity and incomes and creating off-farm employment by developing the downstream segments of food value chains could be keys to achieving the same for those who remain behind. Agrifood system transformation is therefore critical for greater inclusion of smallholder households and other rural people. This chapter outlines a range of policy options to leverage this enormous untapped potential.

Industrialization, the main driver of past structural transformations, is lagging in most countries of Africa south of the Sahara and South Asia. In these poorest regions, rapid urbanization is not being matched by commensurate growth in employment and income opportunities in manufacturing and modern service sectors. As a result, most workers exiting low-productivity agriculture are moving into low-productivity informal services, usually in urban or peri-urban areas.

The benefits of this type of transformation are modest. Since the 1990s, poverty rates in Africa have declined little, while the absolute number of poor has risen.² Poor rural Africans migrating to cities are more likely to join the masses of urban poor than to find a pathway out of poverty. A similar dynamic is occurring in South Asia, where the rural poor are more likely to escape poverty by staying in rural areas than by moving to cities.³ Growing demographic pressures will exacerbate these challenges: by 2030, the combined population of Africa and Asia is projected to increase from 5.6 billion to more than 6.6 billion. In this context, the world's 510 million smallholder farmers (those farming under 2 hectares), whose prospects for finding better jobs are already bleak, risk falling even farther behind.

Despite their precarious position, smallholders play a large role in the food system. According to a recent FAO study, they produce roughly 36 percent of the value of the world's agricultural food supply.⁴ In China and India, the shares are significantly higher, at 80 and 50 percent, respectively. In Africa south of the Sahara and South Asia (excluding India), smallholdings comprise 70 to 75 percent of farm units, but they generate just 35 to 40 percent of the primary production value

of the domestic food sector—substantial, but far less than often claimed (Box 1).⁵ Limited access to land and inputs and concentration on production of inexpensive staple crops explain the disproportionately low share of agrifood value added earned by small-scale farmers. Their more inclusive participation in food-sector growth therefore has significant potential to reduce poverty and improve livelihoods.

Growing urban markets will continue to be the main drivers of agrifood sector expansion, including in Africa and Asia. Urban populations already consume up to 70 percent of the world's food supply, even in countries with large rural populations.⁶ Income growth is driving a dietary transition, as urban consumers shift consumption from staple cereals toward high-value fish, meat, eggs, dairy products, fruits, vegetables,

BOX 1 SMALLHOLDERS IN THE FOOD SYSTEM

Agriculture is the predominant economic activity in rural areas of developing countries, and smallholders make up the largest share of farmers. About 1.5 billion people, often poor, live in smallholder households. What constitutes a small farm varies within and across countries, depending on socioeconomic and agro-ecological conditions, but a threshold of 2 hectares is often used to define "small." Worldwide, 510 million farms (84 percent of an estimated total of 608 million farms) are less than 2 hectares, while 70 percent of farms cultivate less than 1 hectare. Small farms account for only 11 percent of the world's farmland, but in poorer countries, small farms occupy a much larger share of the land—almost 40 percent of farmland in Africa and South Asia. Smallholders there generate 35 to 40 percent of the primary production value of domestic food production—a significant share, but far less than often claimed (Figure B1). This should not be surprising, given smallholders' limited access to land and inputs and dedication to the production of generally low-priced staple crops.

FIGURE B1 Smallholder share in value of primary food production

Source: S. K. Lowder, M. V. Sanchez, and R. Bertini, "Farms, Family Farms, Farmland Distribution and Farm Labour: What Do We Know Today?" FAO Agricultural Development Economics Working Paper 19-08 (FAO, Rome, 2019).

and processed foods. Growing demand for these high-value products provides an opportunity for agriculture. But it also presents challenges for millions of small-scale farmers. Expanding and more profitable food markets can encourage the concentration of food value chains in large commercial farms and large-scale processors and distributors (supermarkets), possibly excluding smallholders. To benefit from market

Box 1 continued

Productive and domestic activities of smallholder farm households tend to be intertwined. Most small farms rely on family labor and produce some food for their own use, but dependence on subsistence farming is becoming less common and participation in food and agricultural markets is increasing (Box 2). Many smallholders supplement low farm-based revenue with income from off-farm work, often in the informal economy. Women make up about 43 percent of the agricultural labor force and some head smallholder households (see Chapter 4).

Smallholders are at higher risk of poverty. Twenty percent of people whose livelihoods are in agriculture are considered extremely poor (living on less than \$1.90 a day) and 30 percent are moderately poor (living on less than \$3.10 a day). Levels of poverty are notably higher in rural areas—about 18 percent of rural residents are extremely poor, and over 45 percent are either extremely or moderately poor.

Raising farm incomes and improving off-farm options can benefit rural families in terms of nutrition, healthcare, education, and investment in long-term assets. But when smallholders possess little land and human capital and live in isolated communities, they are likely to be poorly integrated into agrifood value chains, with limited access to markets, finance, and services. They are also more vulnerable to weather shocks and input and output price volatility. As a vital part of developing-country food systems, smallholders have much to gain from the potential benefits created by greater inclusion in today's evolving food value chains.

Source: This box draws on FAO, "Smallholders and Family Farmers," Sustainability Pathways factsheet (Rome, 2012); S. K. Lowder et al., "Farms, Family Farms, Farmland Distribution and Farm Labour: What Do We Know Today?" FAO Agricultural Development Economics Working Paper 19-08 (FAO, Rome, 2019); HLPE (High Level Panel of Experts on Food Security and Nutrition), *Investing in Smallholder Agriculture for Food Security* (Rome: FAO, 2013); and FAO, *The State of Food and Agriculture 2015* (Rome: 2015).

opportunities, small-scale producers will have to adjust to ongoing market changes and increasingly stringent food quality and safety requirements in downstream food value-chain segments.

As food systems transform, the emergence of millions of small and medium-sized enterprises (SMEs) in transportation, processing, and distribution—the expanding "hidden middle" of the food supply chain—can promote inclusion of the rural poor. Because food processing, distribution, and services tend to be more labor-intensive, and labor productivity is relatively high in these sectors, food and beverage industries have great potential for creating nonfarm employment. For women in particular, employment in high-value food sector activities has expanded considerably in many countries (see Chapter 4). In Africa and South Asia, midstream activity now represents a substantial portion of agrifood sector GDP, ranging from 25 percent in low-income countries like Rwanda to 60 percent in middle-income countries like Egypt and Indonesia (Box 2). Recent evidence shows that with access to improved infrastructure (roads, storage, electricity, drinking water) and credit, SMEs can thrive and become instrumental in connecting farmers to markets.⁷

To help ensure that food value-chain development is inclusive, efforts to facilitate connections between smallholders, SMEs, and urban markets should be informed by a good understanding of urbanization patterns. About half the total urban population of developing countries, almost 1.5 billion people, lives in cities and towns of 500,000 inhabitants or fewer. Though often ignored by policymakers, geographically concentrated networks of small cities and towns are the places where rural people market their products, buy their seed and other inputs, send their children to school, and access healthcare and other services. These smaller urban centers can play a key role in accelerating the development of rural economies and making them more inclusive.⁸

We propose two sets of policy options to leverage the potential of food systems to boost incomes and create jobs for smallholders and rural workers: (1) promote nonfarm job and income generation through development of the "hidden middle" of agrifood supply chains; and (2) improve farm productivity and incomes by connecting smallholders to markets, with attention to territorial aspects of development.

BOX 2 CHANGING STRUCTURE OF FOOD SECTORS IN DEVELOPING COUNTRIES

Domestic markets are the primary markets for farmers in Africa and Asia, and their importance is likely to grow. In Africa's food sector, exports make up only 5 to 10 percent of agricultural production and only 10 percent of food consumed is imported. But 80 percent of domestic food supplies in Africa are purchased in markets and handled by private sector value chains, primarily SMEs. Only 20 percent remain within farm households for their own consumption (Figure B2).

Estimates, using the limited data available, find that the share of the agrifood system in GDP ranges between about 30 percent in lower-middle-income countries such as Bangladesh, Egypt, Indonesia, and Viet Nam and 40 to 60 percent in Myanmar and lower-income countries in Africa south of the Sahara (Figure B3). The share of the midstream of the agrifood system is already substantial in all these selected countries (between 19 percent in India and Niger and 57 percent in Egypt) and is growing.

Changes in supply and demand for food products are driving growth in off-farm segments of agrifood systems. First, the share of own-consumption in rural food production has gradually fallen, accompanied by a shift to marketed production of more-profitable vegetables and animal-sourced foods, which has led to a rise in marketing and logistics services. Second, the urban share of the food market has risen rapidly, raising demand for more diverse foods. As cities grow, then, so must supply chains—particularly the transportation and wholesale segments. Third, people are consuming more processed food. As a result, more domestic food processing companies are emerging, and both regional and global companies are entering into national markets. Finally, retailing has evolved over the past several decades, from the marked increase in consumption of food away from home to the rapid spread of fast food chains, restaurants, and supermarkets in Africa and Asia.

FIGURE B2 Supply channels of food consumption in Africa south of the Sahara

Source: T. Reardon et al., "Overview," in *Africa Agriculture Status Report 2019: The Hidden Middle: A Quiet Revolution in the Private Sector Driving Agricultural Transformation* (Nairobi: Alliance for a Green Revolution in Africa, 2019).

FIGURE B3 Share of agrifood value chain segments in GDP in Africa and Asia

Source: J. Thurlow, "Measuring Agricultural Transformation" (PowerPoint presentation to USAID, Washington, DC, 2020), <https://www.slideshare.net/ifpri/aggdp-agemp-measuring-agricultural-transformation>.

Source: This box draws on T. Reardon et al., "Overview," in *Africa Agriculture Status Report 2019: The Hidden Middle: A Quiet Revolution in the Private Sector Driving Agricultural Transformation* (Nairobi: AGRA, 2019); T. Reardon and C. P. Timmer, "The Economics of the Food System Revolution," *Annual Review of Resource Economics* 4 (2012): 225-264; C. Barrett et al., "Structural Transformation and Economic Development: Insights from the Agrifood Value Chain Revolution," *Journal of Economic Literature* (forthcoming); J. Thurlow, "Measuring Agricultural Transformation" (PowerPoint presentation to USAID, Washington, DC, 2020).

GENERATING NONFARM AND AGRIFOOD EMPLOYMENT

Policymakers must focus on creating sufficient income and employment opportunities for the developing world's rural population. Since agriculture remains the primary source of food and income for the poor in most low- and middle-income countries, stimulating productivity growth among smallholder farmers is one key to doing so. Development of off-farm activity will also be critical. Nonfarm employment is already more important in rural low-income contexts than often thought. For example, while 70 to 80 percent of rural Africans are engaged in own-farming, recent assessments have shown that it accounts for only a third of their employed time (Figure 1).

In fact, about 25 percent of overall rural employment in both Africa south of the Sahara and lower-income Asia is in the midstream of food supply chains—in areas such as wholesale trade, logistics, processing, and retailing. These agrifood system activities are especially important, particularly in terms of income, for women and youth in peri-urban areas and in areas just beyond. Household

survey data for five African countries suggest that income (per full-time equivalent) from nonfarm agrifood system rural enterprises is more than double the income derived from farm activity and also higher than income from non-agrifood system businesses (Figure 2).⁹

Growth of downstream activities—such as packing fruits and vegetables, collecting, refrigerating, and shipping milk, slaughtering animals and preparing and distributing the meat, and collecting and milling feed grains—thus provides opportunities for inclusive economic development. Urban demand for higher-value, more perishable products provides additional income and employment opportunities for actors along food supply chains. Such products tend to have higher economic value because their proper handling requires activities like cold storage and transportation, packaging, and processing that tend to be labor-intensive, both on- and off-farm, when operated through SMEs, possibly even more labor-intensive than the handling of staple foods like grains and pulses.¹⁰ The emergence of these activities creates employment multipliers in rural areas and the small towns that service them.

FIGURE 1 Employment by occupational category in Africa south of the Sahara and Asia

Source: Authors' elaboration based on M. Dolislager et al., "Youth Agrifood System Employment in Developing Countries: A Gender-Differentiated Spatial Approach," IFAD Research Series No. 43 (IFAD, Rome, 2018).

Note: AFS = agrifood system. Employment shares show weighted averages of the values depicted across all countries. The estimates are based on observed data from recent household surveys (2013–2017) in six African countries (Ethiopia, Malawi, Niger, Nigeria, Tanzania, and Uganda) and four lower-income Asian countries (Bangladesh, Cambodia, Indonesia, and Nepal). Dolislager et al. then used these data to estimate a regression model that allowed them to project to regional aggregates.

FIGURE 2 Income from agrifood system and non-agrifood system activities in five African countries

Source: Adapted from M. Dolislager et al., “Youth Agrifood System Employment in Developing Countries: A Gender-Differentiated Spatial Approach,” IFAD Research Series No. 43 (IFAD, Rome, 2018).

Note: Based on LSMS-ISA survey data for Ethiopia, Malawi, Niger, Tanzania, and Uganda during 2013–2017. Estimates reflect averages for the five country cases. AFS = agrifood system; PPP = purchasing power parity; FTE = full-time equivalent employment.

Agrifood value chains and other rural-urban linkages are the key to unlocking these opportunities. In low-income countries in Africa and South Asia, rapid expansion of the midstream of food value chains is being driven by the growth and proliferation of SMEs, but has attracted little interest from researchers and policymakers. This “quiet revolution” taking place in food value chains mirrors what happened in other parts of the world in earlier decades.¹¹ A wide array of formal and informal SMEs dominates this current phase of food system transformation (Box 2). Yet weaknesses remain. Tapping the vast potential of food supply chains to drive inclusive transformation will require public policy support to (1) provide adequate infrastructure, (2) create the right market incentives, and (3) facilitate skills development.

INVESTING IN INFRASTRUCTURE AND MARKET LINKAGES

Adequate rural infrastructure, including quality rural and feeder roads, reliable electricity, and storage facilities, is essential for pro-poor growth and improving rural livelihoods. Inadequate rural infrastructure leaves communities isolated, holds back food value-chain development, contributes to postharvest food losses, and is significantly associated with poverty and poor nutrition.¹²

To stimulate farm productivity and raise farm incomes, infrastructure should be designed to help smallholders access markets. Infrastructure investments should align with support measures that help smallholders overcome other barriers, such as lack of access to credit, improved inputs, or land. For small farmers, such investments help smooth income shocks from seasonality, market volatility, and weather variability. For example, in India, cold storage is reducing the seasonality of the potato supply in Delhi and giving farmers in Agra District new marketing options that counterbalance the power of traditional wholesalers (Box 3).

A comparative analysis of Europe, Brazil, and Chile suggests that infrastructure investment has the biggest impact on market access when it supports a package for connectivity—including improvements in roads, electricity, and communications technology.¹³ In Brazil, for example, transport times and costs for individual farmers and drivers have been reduced through infrastructure that provides nodes, such as truck stops, for self-organized transportation of products. In Europe, smallholders in the livestock sector have benefited from infrastructure investments that reduce costs to access local abattoirs, wholesale markets, and Internet ordering systems.

BOX 3 DELHI'S DYNAMIC POTATO VALUE CHAIN

Rapid transformation of India's food supply chains over the past two decades has been marked by expansion of modern retail sales, particularly in urban but also in rural food markets. In the case of the potato value chain, cold storage has given small farmers in Agra District new marketing options. The share of potato farmers using cold storage increased from 40 percent in 2000 to 95 percent in 2009. While traditional storage methods allow for only three months of storage after harvest, new cold storage options mean that potatoes can be stored for seven months. This gives farmers the flexibility to choose among traders competing for their product, including Agra wholesalers, Delhi wholesalers, and rural brokers.

Cold storage operators also provide financial services. Sixty percent of farmers, both large and small, obtain credit using the stored potatoes as collateral. The rapid development of cold storage in Agra District seems to have been driven on the *demand* side by much higher rewards to smallholder farmers when using cold storage and on the *supply* side by the abundant supply of potatoes and rising incomes in Delhi. Government policy has supported this development with subsidies for construction and expansion of cold storage, a reliable power grid, and improvements in roads to Delhi. Because consumers are willing to pay for better-quality stored potatoes, storage costs can be incorporated in prices. Hence, it pays for farmers to store.

Source: Adapted from FAO, *The State of Food and Agriculture 2017: Leveraging Food Systems for Inclusive Rural Transformation* (Rome: 2017).

Public investment in rural infrastructure can also induce forms of inclusive growth that go beyond linking smallholders to markets. For instance, in southern Chile, investment in rural roads and basic services leveraged significant private investment in the salmon aquaculture industry, which reduced poverty by employing rural women in agrifood industries.¹⁴ In central Nicaragua's milk-producing areas, investments in rural roads, cold storage, and milk processing stimulated strong economic and employment growth that benefited traders and large commercial farmers but did not create direct benefits for poor farmers.¹⁵ And in Nepal, investments in roads and bridges moderated food price levels and price volatility.¹⁶

Investment needs and potential economic synergies are probably best addressed through a territorial or geographic approach.¹⁷ Such approaches include planning of agro-industrial parks, agro-based special zones, incubators, clusters, and agro-corridors, all of which have had varying degrees of success.¹⁸ Infrastructure planning should also support existing "spontaneous clusters" of downstream agrifood businesses, which are too often ignored by national policymakers and donors. Nigeria's thriving maize feed-chicken system provides a good example of a spontaneous cluster driven by large numbers of SMEs in the midstream (Box 4). To further propel agrifood SME dynamics and facilitate deeper

integration of smallholders into markets, policies should promote investments that help strengthen the weakest links, which are often the supply of electricity, availability of temperature-controlled storage, and wholesale market development.¹⁹

Such infrastructure improvements can help dynamize distribution and service networks critical to the development of efficient food supply chains and generate a vast source of off-farm employment. By helping to forge spontaneous SME clusters, infrastructure will further reduce transaction costs for smallholder farmers—directly by connecting them to markets and indirectly by reducing transaction costs for wholesalers (who supply raw inputs to processors). Logistics clusters or hubs such as truck stops tend to emerge near both wholesale markets and SME processors, further reducing the cost of market linkages. This is the case, for example, with clusters of maize milling SMEs in Dar es Salaam and Arusha, Tanzania, located near grain wholesale markets, and likewise first-stage processors and milk collection centers in rural Zambia, some of which are SMEs.²⁰

PRICE INCENTIVES AND FOOD QUALITY REGULATION

In addition to infrastructure, adequate price incentives are critical to help small farmers capture a greater share of food system value-added. Price policies that

BOX 4 THE MAIZE FEED-CHICKEN SYSTEM IN NIGERIA

Nigeria has experienced significant economic growth and rapid urbanization in recent decades. Demand for animal-sourced foods has increased, now accounting for about 15 percent of household food budgets in rural areas and 20 percent in urban areas. The maize feed-chicken supply chain has developed as a spontaneous agrifood business cluster in response to the increased demand. In the upstream are roughly 8 million small and medium maize farmers, in the downstream are some 140 million maize purchasers, and intermediating between them are tens of thousands of maize traders, feed and flour mills, and third-party logistics service providers like transporters and warehouse owners.

Feed mills, including both SMEs and large-scale plants, have emerged as a dynamic midstream segment between maize farmers and chicken farmers. As consumption of chicken expanded rapidly during the past 15 years, production shifted from free-range to intensive, feed-based chicken farming—at both large-scale and rapidly growing small- and medium-scale operations. Small-scale fed-chicken farmers have proliferated in the north and south of the country. In response, the feed sector has increased output sixfold over 10 years. Because most of the maize used by the country's feed industry is produced in the north, a long supply chain of maize traders has developed quickly. Much the same has occurred in Nigeria's aquaculture sector, as increased demand for fish has led to expansion of maize-feed-based fish farming.

As a result of the long north-south maize supply chains and the growth of maize demand for both food and animal feed, the maize wholesale sector has also developed rapidly, with attendant growth in transport, warehousing, and handling. This growth has generated substantial employment and enhanced income opportunities of farmers and SME owners and workers in the midstream of Nigeria's maize feed-chicken supply chains.

Source: Adapted from T. Reardon et al., "The Quiet Revolution in Agri-food Distribution (Wholesale, Logistics, Retail) in Sub-Saharan Africa," in *Africa Agriculture Status Report 2019: The Hidden Middle: A Quiet Revolution in the Private Sector Driving Agricultural Transformation* (Nairobi: Alliance for a Green Revolution in Africa, 2019).

help reduce the level and variability of energy costs are especially important. Food processors and distributors rely on consistent, affordable access to electricity. In addition, because much of the equipment used in agrifood businesses in Africa and South Asia is imported, low tariffs facilitate rapid development of food supply chains and job creation.

Helping farmers meet higher food quality standards through regulation and quality certification can also improve market access and incomes for small farmers, making food systems more inclusive. Governments have a responsibility to protect consumers, both SMEs and individuals, from substandard products, whether poor quality seeds and fertilizers or damaged or contaminated food products. Quality certification can also help protect farm-level investments, expand the use of quality seed and fertilizer, increase output, increase SMEs' competitiveness in regional and global markets, and protect consumers. Supermarkets, in particular, which set standards for quality, safety, and consistency, are placing new demands on farmers. For example,

food safety concerns become an issue when demand increases for milk, meat, fish, vegetables, edible oils, peanut butter, and similar products, as well as for processed food and food prepared in restaurants (see also Box 3 in Chapter 6).

As large firms take a bigger share of the overall processing sector, SMEs and smallholders will likely face growing challenges in meeting the private sector standards set by supermarkets and large processors. Meeting these standards will require various "threshold investments" in food safety, quality, volume, and consistency by small-scale farmers, which may be cost-prohibitive to asset-poor farmers.²¹ In response, governments should consider providing assistance to smaller farms and agrifood operators that lack the means to comply with such initial requirements.

PROMOTING SKILLS AND ENTREPRENEURSHIP TRAINING

Fostering rural entrepreneurship and employment diversification, especially for women and youth, requires the development of general skills, such as those related

to running a business, accessing market information, and using information and communications technologies (ICTs). A more skilled labor force in low-income countries would increase agricultural productivity and stimulate the growth of high-productivity services and industrial sectors, and would enjoy access to better-paid jobs. Policies supporting education at all levels are important to inclusive rural transformation, although their impacts are felt only in the long term. Measures to increase the employability of rural youth include strengthening vocational training and basic education, establishing mechanisms for the recognition of informal-sector work experience, and creating greater awareness of job opportunities and labor rights.

However, agrifood businesses in Africa seem to see technical labor skills as less of a constraint on growth than high energy costs and inadequate roads.²² Further, most firms consider improved basic education and training in social, organizational, and entrepreneurial skills more important than general technical training. In terms of specific technical skills, the most-needed are proficiency in or knowledge of digital technologies, processing techniques, food safety, and ICT-enabled commercial procedures.

CONNECTING SMALLHOLDERS TO MARKETS

The “quiet revolution” in the downstream of food supply chains is also changing farming systems. Growing demand for higher-value food products means that farmers must change the crop production mix. New efficiency requirements and policies have encouraged mechanization and adoption of modern inputs. Often, however, smallholders have been left behind because they lack the resources needed to adapt to the changing food system.

Initiating and sustaining a process of inclusive transformation requires market access and other supports for smallholders to trigger sustainable productivity growth and foster their remunerative participation in food value chains.²³ Here we focus on four instruments for promoting inclusion of smallholders in agrifood supply chains: (1) securing land tenure; (2) promoting inclusive agribusiness models; (3) leveraging the potential of digital technology for smallholders; and (4) enhancing the capacity of farmers and other food chain actors to manage and cope with risks.

LAND TENURE POLICIES FOR INCLUSIVE VALUE CHAIN DEVELOPMENT

Secure land tenure can stimulate agricultural development and improve the well-being of landholders by increasing access to credit and input markets and facilitating land rental and sales markets. Securing land tenure can increase farm productivity, raise the incomes of farmers with limited land, and even facilitate the transition to off-farm activities.²⁴ Secure land tenure has, for example, been found to improve productivity in Madagascar, provide incentives to farm-level investment in West Africa, and enhance market access in Chad.²⁵ In many contexts, securing land rights for women in particular can be especially difficult, making it hard for women to access credit and inputs; addressing these issues requires a gender-sensitive approach to the design of land tenure policies and instruments for smallholders (see Chapter 4).²⁶

Land tenure plays a role in overcoming hurdles posed by excessive fragmentation of landholdings. An estimated 84 percent of the world’s farms are smaller than 2 hectares. In many low- and lower-middle-income countries of Africa and South Asia, average farm size is shrinking, to the point that many farm units using traditional farming practices are no longer economically viable.²⁷ At the same time, investors are consolidating farmland, and the number of medium-sized farms is increasing in high-potential areas. While the land productivity of small farms tends to be relatively high, the labor productivity of small farms is often low because smallholders lack the necessary scale to access markets or adopt new technologies (underscoring the importance of public rural services and farmers’ collective actions, discussed below).²⁸ Development of efficient land sale and rental markets, which depend on secure property rights, can give farmers access to larger plots that help them achieve economies of scale. Recent evidence suggests that land rental markets are more common than previously thought. For example, in Bangladesh and Togo, 40 percent of holdings are rented or operated under systems other than farmer-owned tenure.²⁹

Secure land tenure also supports the development of rental markets for equipment such as tractors and use of improved seeds and other inputs.³⁰ Agricultural mechanization is critical to boosting productivity because it enhances the performance of other inputs. Mechanization has increased worldwide, especially in

those countries that have undergone rapid transformation, and has proved profitable for small-scale farmers. For small farms, equipment rentals and shared use through farmer cooperatives can enable mechanization, as has been the case in parts of East Asia, where use of farm machinery facilitated by rental markets has increased sevenfold since 1985.³¹

Secure land tenure may also increase smallholders' access to water, as it provides incentives to farmers to make long-term investments in both land and water management. However, research on land policies in Ethiopia and Ghana suggests that policies to strengthen land ownership or usage rights on their own may be inadequate and need supplementary support measures.³²

PROMOTING INCLUSIVE AGRIBUSINESS MODELS

Producer organizations and inclusive forms of contract farming help smallholders overcome constraints to economies of scale and strengthen their access to markets. For instance, producer organizations allow small farmers to engage in collective marketing, which reduces their transaction costs, allows them to share risks, and improves their bargaining power. These organizations link farmers to upstream and downstream actors, thereby helping farmers to obtain better terms, for example, through fairer contract farming schemes.³³ Acting collectively also enables farmers to comply with food quantity, quality, and delivery requirements in supermarket contracts.³⁴ Small-scale fruit and vegetable producer groups in Kenya, for example, can meet modern market requirements. The country's banana and mango producers benefit from participating in collective marketing schemes. Of Kenya's mango producers, however, medium-scale mango farmers benefit more than small-scale farmers from shared marketing;³⁵ whereas in China, small-scale farms in general tend to benefit more than medium and large farms, highlighting the importance of context.³⁶

Producer organizations also facilitate access to credit, directly by managing microcredit systems and indirectly through innovative arrangements such as warehouse-receipt systems, in which stored produce is used as collateral to obtain short-term loans.³⁷ Because producer organizations can help farmers meet their financial needs and overcome liquidity constraints, they are especially attractive to smallholders.³⁸

Support for small farmers is particularly important today as global input markets consolidate, giving agribusiness input and technology providers little incentive to invest in small farms in developing countries. This context underscores the need for policy interventions that address market failures and respond to small farmers' needs, especially through the provision of public goods such as rural advisory services and support to farmers' collective action.

LEVERAGING THE POTENTIAL OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Face-to-face extension services and farmers' relationships with buyers are increasingly being complemented—and sometimes replaced—by information channeled through modern ICTs. This is bringing new benefits to smallholders. In India, for example, Internet service provided by a private food conglomerate to rural areas has given farmers access to more information, empowering them in the negotiation of farmgate prices.³⁹

Mobile phones in particular are increasing farmers' access to information. Mobile phone coverage and adoption have increased dramatically in developing countries over the past two decades. In Africa, coverage has expanded from less than 10 percent of the population in 1999 to more than 90 percent today. In terms of actual subscribers, 45 percent of Africans now have mobile phone access, and 50 percent are expected to by 2025.⁴⁰ In Asia, 66 percent had mobile access in 2019, and 72 percent are expected to by 2025.⁴¹

Mobile phones effectively shorten the distance between isolated smallholders and other actors involved in processing, transporting, marketing, and regulating farm produce.⁴² ICT connectivity allows farmers to seek solutions from peers and expands access to a range of other information sources. For instance, Sri Lanka's FarmerNet, a virtual trading floor, connects traders and farmers via text messaging.⁴³ Mobile phones have sped up input delivery through e-vouchers and real-time inventory tracking. For example, Nigeria introduced an e-wallet program that delivers seed and fertilizer vouchers directly to farmers' phones. The platform has been extended to deliver other benefits, such as vouchers for nutritional supplements.⁴⁴ In Kenya, the Kilimo Salama ("safe agriculture") pilot program uses weather stations to detect excessive and inadequate rainfall and sends a payment to affected farmers

through M-Pesa, a mobile money-transfer service.⁴⁵ ICTs can also make local access to credit and rural advisory services timelier and more efficient. Finally, it is hoped that ICT-savvy young people in Africa and South Asia will be able to seize new employment opportunities emanating from the widespread deployment of these technologies in agrifood systems.⁴⁶

SOCIAL PROTECTION FOR RISK MANAGEMENT AND LOCAL ECONOMIC DEVELOPMENT

Social protection, for instance in the form of food aid or cash transfers, is crucial to smallholders' risk management during rural transformation and for building resilient rural livelihoods. Social protection allows poor rural households to invest in riskier but more-remunerative livelihood activities. Essentially, these transfers can affect investment decisions via three pathways: (1) managing risks; (2) relaxing liquidity, credit, and savings constraints;

and (3) generating spillover effects into the community and local economy.⁴⁷

In a recent positive trend, social protection programs link social transfers to the promotion of rural employment and agricultural production. In Lesotho, a cash transfer program had a larger positive impact on agricultural production when combined with a program to improve homestead gardening.⁴⁸ Other programs link public food purchase schemes and school feeding programs to smallholder family farmers as suppliers. A recent study found that a home-grown school feeding program in 10 regions of Ghana had positive impacts when mechanisms were in place to enable the participation of smallholders and ensure access to input support services (Box 5). Impacts tended to be greater for context-appropriate food items—those that are agroecologically suitable and financially viable for small-scale production.⁴⁹

BOX 5 SOCIAL PROTECTION AND INCLUSIVE FOOD VALUE-CHAIN DEVELOPMENT THROUGH SCHOOL FEEDING PROGRAMS

Aulo Gelli (IFPRI)

School feeding programs across the world reach about 368 million children and cost about US\$70 billion a year. These programs have been found to improve children's educational levels and cognitive skills, and also to enhance their physical and psychosocial health. Children from disadvantaged families often benefit the most, though effects vary depending on context and the quality of program implementation.

There is also increasing experience linking school meal programs to promotion of farm production. Recently, Brazil and India both have developed large-scale public procurement schemes linked to school feeding programs. Elsewhere, "home-grown" school feeding (HGSF) programs link agricultural development with the market for school meals. HGSF programs typically aim to channel the demand for food for school meals to supply chains that buy from smallholders and small-scale enterprises in transport, distribution, and food preparation. This directly links social protection to efforts to make supply chains inclusive, thus enhancing incomes for small-scale providers and reducing poverty.

Ghana's HGSF program provides school meals through caterers who are directly contracted by the government. Each caterer is responsible for buying food from local farmers and preparing and distributing meals to schools. In a complementary pilot program, caterers have been asked to source food from smallholders and are trained to use local, district-specific menus that meet both dietary preferences and nutritional requirements and recipes that use fresh seasonal foods that can be purchased from producers in the targeted communities. An impact assessment conducted by IFPRI researchers and collaborators indicates that the combined national HGSF and piloted interventions have potential to improve farm sales and incomes in Ghana's poor northern regions. The study also finds significant positive results for educational performance and nutritional status of school-going children.

Source: This box draws on A. Gelli et al., "A School Meals Program Implemented at Scale in Ghana Increases Height-for-Age during Midchildhood in Girls and in Children from Poor Households: A Cluster Randomized Trial," *Journal of Nutrition* (May 2019); and E. Aurino et al., "Food for Thought? Experimental Evidence on the Learning Impacts of a Large-Scale School Feeding Program in Ghana," IFPRI Discussion Paper 1782 (IFPRI, Washington, DC, 2018).

Ethiopia's Productive Safety Net Program (PSNP) is another example with generally positive impacts. The PSNP provides chronically food-insecure rural households with a combination of cash or food transfers (direct support) and transfers through contributions of labor to public works and/or livelihood development. Impact assessments that compared PSNP and non-PSNP households found that both public works and livelihood support programs have had a significant positive impact on participation in non-farm business activities.⁵⁰ On average, the programs increased the probability of engaging in nonfarm activities (mostly in downstream food supply chain activity) by 5 to 7 percentage points. Related assessments found that the program also had positive impacts on crop yields and broader development of the local economy, without creating adverse incentives for agricultural producers.⁵¹

NO SILVER BULLETS

The potential to create new jobs and better incomes by strengthening food system linkages is enormous, given the growth of food markets propelled by urbanization, income growth, and related changes in dietary patterns. These changes provide opportunities for significant growth in rural incomes and improvements in smallholder livelihoods, as well-integrated networks of downstream activity develop, with new requirements for high-value-added food items, food quality, and food safety. A "quiet revolution" integrating and modernizing food value chains is already underway in Africa and South Asia. Policies can guide this transformation process to ensure that the economic gains from an expanding agrifood sector are shared fairly among supply chain actors, beginning with smallholders, and help address rural needs in regions with the greatest poverty pressures and employment needs.

This chapter offers a range of policy options and instruments that may help make food systems more inclusive for smallholders and rural populations. None of these is a silver bullet, however. Typically, combinations of interventions will be needed to provide the

enabling environment for market actors to invest in and innovate for the development of well-integrated food supply chains. To help smallholders connect to markets and help off-farm job creation flourish, policy-makers will need to look across the food system to identify and address the weak links.

Such a food systems approach will also be needed to align the objective of developing more inclusive food supply chains with other key food system objectives. We have already underscored the potential trade-off between moving toward an enhanced, consumer-focused food safety regulatory environment and ensuring the financial viability of small farms and food businesses. Other trade-offs concern possible increases in the ecological footprint of longer supply chains and the noncommunicable disease risks associated with the "Westernization" of diets (notably excess intake of salty and sugary processed foods and animal-sourced foods).

To effectively balance such trade-offs, policy-makers and analysts will need much better data. At present, policymakers are largely flying blind when it comes to the broader food system. We lack adequate statistics to depict the entire food chain from farm to fork. Farm and household survey data do provide insights into farming systems and farm household income generation, as well as food consumption and nutritional outcomes. But the data from enterprise, market, and field surveys necessary to understand the relative importance and functioning of other parts of the food system, especially those in the midstream, either do not exist or are scattered or buried among different sources. This "hidden middle" extends both to large public assets like domestic wholesale markets and to small private operations, including the millions of food traders, processors, and logistics and service providers.

This data gap hinders policy research and, hence, evidence-based policy guidance. Governments must invest in improved data gathering to provide policy-makers with the evidence they need to craft policies that effectively support and promote inclusive value chains across the entire food system.

"Smallholders often struggle to connect with actors in the middle of the food supply chain as a result of limited access to land and inputs and lack of capacity to scale up or implement new practices."