

CHAPTER FOUR

No Smallholder Farmer Left Behind

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Efforts to improve the prosperity and resilience of smallholder farmers and rural households represent one of the greatest challenges and opportunities for achieving the goal of “no one left behind.” The estimated 500 million smallholder farmers in developing countries are among the world’s poorest and most vulnerable people.¹ The 2019 Global Food Policy report estimates that, “globally, 80 percent of the extreme poor (living on less than \$1.90 per day) and 75 percent of the moderately poor (living on \$1.90 to \$3.20 per day) live in rural areas.”² Most of these people work in agriculture.³

This chapter focuses on the potential of inclusive business models and large-scale alliances as solutions for reaching more smallholder farm households and enabling them to integrate into formal markets. It illustrates some of the key obstacles these farmers need to overcome to become more productive, prosperous, and resilient and how collaborative, market-driven approaches can help address these challenges. The chapter concludes with some key lessons learned on implementing these solutions and recommendations for increasing their systemic impact.

1. Food and Agriculture Organization of the United Nations (FAO), *Smallholder and Family Farmers*, Fact Sheet (Rome: FAO, 2012). The FAO defines smallholder and family farmers as those working on up to ten hectares.

2. International Food Policy Research Institute (IFPRI), *2019 Global Food Policy Report* (IFPRI, 2019). Poverty lines are calculated using 2011 PPP dollars; A. Castaneda and others, “A New Profile of the Global Poor,” *World Development* 101 (2018): 250–67.

3. World Bank Group, *Ending Poverty and Hunger by 2030: An Agenda for the Global Food System*, 2nd ed. (World Bank Group, 2015).

It is important to note at the outset that the majority of smallholder farmers, especially in Sub-Saharan Africa and Asia, currently lack the capacity, incentives, or proximity to integrate effectively into formal markets and corporate value chains. Targeting public sector research, assistance, incentives, and investments to the poorest rural households and regions will remain essential to enabling hundreds of millions of people to grow out of poverty.⁴ Even those farmers who are integrated into the supply chains of large-scale agricultural enterprises as customers and suppliers do not always earn a living income, especially on a sustained and reliable basis. Research by the Consultative Group to Assist the Poorest (CGAP) and the Farmer Income Lab, estimates that about 200 million smallholders are producing food as part of formal supply chains.⁵ Many of these farmers remain in extreme poverty or risk falling back into poverty as a result of climate-related or economic shocks. As such, there is a dual challenge of raising the productivity and capabilities of some 300 million smallholder farmers to enable them to access markets and to benefit from doing so, while at the same time continuing to raise and sustain the incomes and livelihoods of some 200 million smallholders who are already participating in formal markets and value chains. Public sector leadership and engagement is essential to addressing both of these challenges, alongside the evolution of market-led approaches and new types of public-private partnership.

Defining Inclusive Business Models and Large-Scale Alliances

Inclusive business models and large-scale alliances offer untapped potential for smallholder farmers to become small business enterprises. Such models and alliances can integrate smallholder farmers who are already producing, or have the potential to produce, food and other cash crops into local, national, and global supply chains and markets.

What are inclusive business models? The International Finance Corporation (IFC) provides a useful definition: “a business that provides goods, services and livelihoods on a commercially viable basis, either at scale or scalable, to people living at the base of the economic pyramid, making them part of the value chain of

4. John W. McArthur, “Agriculture’s Role in Ending Extreme Poverty,” in *The Last Mile in Ending Extreme Poverty*, edited by Laurence Chandy, Hiroshi Kato, and Homi Kharas (Brookings Institution Press, 2015): 175–218.

5. Robert Peck Christen and Jamie Anderson, *Segmentation of Smallholder Households: Meeting the Range of Financial Needs in Agricultural Families*. CGAP Focus Note, no. 85 (April 2013); and Farmer Income Lab, *What Works to Increase Smallholder Farmers’ Income? A Landscape Review*, Working Draft for Discussion, Commissioned by Mars Incorporated and completed by Dalberg and Wageningen University and Research, 2018.

companies' core business as suppliers, distributors, retailers or customers."⁶ Some definitions also include employment. These approaches are sometimes referred to as the base of the pyramid business models or as creating shared value models.⁷

The concept and practice of inclusive business models gathered momentum in the 1990s and early 2000s. They evolved in parallel with increased private sector investment in developing countries and the growing recognition in the development community that market-based solutions and non-state actors have an important role to play in efforts to eradicate poverty. Some corporations in agribusiness, financial services, information and communications technology, healthcare, housing, energy, mining, infrastructure, and tourism also started to recognize the business benefits and potential development impact of implementing inclusive business models.

Agriculture has been a major sector of focus in this emerging field of practice. Examples range across the food value chain. They include inclusive business models that provide affordable and accessible inputs to smallholder farmers, such as seeds, fertilizers, equipment, advisory services, financial products, and market information aimed at improving risk management, raising yields and productivity, and linking to income-generating markets. They also include investments in off-farm enterprises along the food value chain, such as small warehousing, processing, distribution, and retail businesses, as well as interventions to deliver essential goods and services to rural communities, such as health services, education, clean water and sanitation, energy, and physical and digital infrastructure.⁸

Inclusive business models are established to overcome a variety of market failures and governance gaps that impede the integration of smallholder farmers into formal value chains or their access to essential goods and services. These obstacles are usually complex and interdependent, so effective implementation often requires a multistakeholder group of actors delivering multidimensional interventions with aligned incentives. This is the case at the level of many project-level interventions and individual inclusive business models that work with a specific group of farmers. Collaboration is even more important in driving the

6. IEG | World Bank Group, *IFC's Experience with Inclusive Business: An Assessment of IFC's Role, Outcomes, and Potential Scenarios, An Independent Evaluation* (March 9, 2018).

7. C. K. Prahalad, *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits* (Wharton School Publishing, 2016); Michael Porter and Mark Kramer, "Creating Shared Value: How to Reinvent Capitalism—And Unleash a Wave of Innovation and Growth," *Harvard Business Review* (January 2011).

8. Jane Nelson, *Expanding Opportunity and Access: Approaches that Harness Markets and the Private Sector to Create Business Value and Development Impact* (Harvard Kennedy School Corporate Social Responsibility Initiative, 2010); BMZ, Federal Ministry for Economic Cooperation and Development, *Growing Business with Smallholders: A Guide to Inclusive Business* (Bonn: GIZ, November 2012).

type of change needed at a system level to achieve greater scale and impact in empowering millions of smallholder farmers.

System-level or large-scale alliances are composed of a larger number of companies, government bodies, and other development actors, often numbering in the hundreds, collaborating to drive change across entire commodity value chains, agricultural corridors, landscapes, and regions, or at a global level.⁹ These alliances do not replace the need for specific inclusive business models and programmatic interventions. Rather, they aim to enable such interventions to have an impact beyond what any one of them could achieve alone. They are usually established to achieve one or more of the following objectives: mobilizing financial and other resources; leveraging breakthrough technologies; developing and spreading norms and standards; improving and coordinating research, data collection, and analysis; and advocating for policy reforms and behavior change.

Examples include the Alliance for a Green Revolution in Africa, the New Vision for Agriculture, the Farm to Market Alliance, the Global Alliance for Improved Nutrition, the Food and Land Use Coalition, CGIAR (the world's largest agricultural innovation network), and the Council on Smallholder Agricultural Finance. There are also commodity-focused platforms, such as the World Cocoa Foundation, the Better Cotton Initiative, the Ethical Tea Partnership, and the Global Aquaculture Alliance. Certain industry-led platforms are also starting to drive collective commitments by their member companies to support smallholder farmers and rural enterprises. They include the Consumer Goods Forum, the Sustainable Agriculture Initiative Platform, and GSMA, the latter of which represents the interests of mobile operators globally.

Helping Smallholder Farmers Overcome Obstacles

Inclusive business models and large-scale alliances can help overcome a variety of operational, financial, social, environmental, and policy challenges that prevent smallholder farmers from becoming more prosperous and resilient small enterprises. On rare occasions, commercial solutions for farmers in extreme poverty are viable on their own from the outset. In many cases, they need to be combined with more traditional donor-supported development interventions and humanitarian assistance. In others, impact investing or blended finance from both public and private sectors is necessary to catalyze and scale market-based solutions.

9. Jane Nelson, *Partnerships for Sustainable Development: Collective Action by Business, Governments and Civil Society to Achieve Scale and Transform Market*, Business and Sustainable Development Commission (Harvard Kennedy School Corporate Responsibility Initiative, 2017); Christina Gradl and Beth Jenkins, *Tackling Barriers to Scale: From Inclusive Business Models to Inclusive Ecosystems* (Harvard Kennedy School Corporate Responsibility Initiative, 2011).

What obstacles need to be overcome to enable smallholder farmers to prosper? While there are substantial differences across geographies, commodities, and income levels, there are a number of similar obstacles for most small farm businesses to overcome at every stage of the agricultural value chain.

Improving Access to Productive Resources and Market Integration

Many smallholders lack access to reliable and affordable financing, technologies, information, or other agricultural inputs and advisory services, all of which are essential to managing farm-level risk and improving productivity and quality. Together with price uncertainty, the lack of access to reliable market information and infrastructure, from storage facilities to transportation, limits smallholders' bargaining power and their links to local and global market opportunities. Inclusive business models, especially those that incorporate innovative digital and life science technologies, can play a valuable role in overcoming some of these production and income-generation challenges.

The majority of agricultural inclusive business models focus on improving farm-level performance and market integration. These models range from corporate-led initiatives by input providers, consumer goods companies, traders, and financial, digital, and infrastructure companies to market-led initiatives convened by development finance institutions (DFI). Examples of the latter include the IFC's Inclusive Business Models unit and the International Fund for Agricultural Development's (IFAD) program on Producer Public-Private Partnerships (4Ps) in agricultural value chains, as well as the agri-focused initiatives of most bilateral development finance agencies.

In addition to creating more jobs, efficient and inclusive agricultural supply chains can help lower consumer prices, thereby raising real incomes of poor people in both rural and urban areas while, at the same time, raising relative prices received by farmers, providing them additional income as well as incentives to enhance productivity and to diversify.¹⁰ The case for engagement is, therefore, substantial. The World Bank, for example, estimates that growth originating in agriculture is two to four times more effective at reducing poverty than growth originating in other sectors.¹¹ It makes the case that, "Raising the returns to labor in agriculture and in jobs in the food system, including in agribusiness, can significantly contribute to shared prosperity."¹²

10. World Bank Group, *Ending Poverty and Hunger by 2030: An Agenda for the Global Food System*, 2nd ed. (2015).

11. Ibid.

12. Ibid.

Improving Access to Basic Services, Food Security, and Nutrition

In addition to lacking on-farm productive inputs and income-generating market access opportunities, many smallholder farm households lack affordable access to basic goods and services essential for poverty alleviation, such as nutritious foods, education, clean water and sanitation, energy, and healthcare. For example, despite the fact that smallholder farmers produce some of the major commodities consumed in the world and up to 80 percent of the food supply in Asia and Sub-Saharan Africa, they are among the most undernourished and food insecure populations, making up half of the world's hungry people.¹³ In addition, these farmers are often excluded from social safety nets, insurance schemes, cash transfer programs, technologies, and other interventions that can help rural communities survive crises and improve resilience in the face of conflict and climate related or economic shocks. Overcoming these obstacles usually requires combining inclusive business models and market-driven approaches with humanitarian assistance and donor or philanthropic support.

The World Food Programme's (WFP) public-private partnerships offer examples of aligning and sequencing humanitarian and market-led approaches. In addition to its ongoing mandate to deliver food assistance in emergencies, WFP is working systematically with vulnerable rural communities to improve nutrition, income-generating opportunities, and longer-term resilience. WFP's Food Assistance for Assets and its Rural Resilience Initiative with Oxfam America are examples. The organization has also made a commitment to source more of its staple food requirements for responding to humanitarian emergencies from local smallholder farmers in the regions where it is operating. It is doing so by working in partnership with private-sector enterprises and donors to build inclusive business models, such as Purchase for Progress and the Farm to Market Alliance.

Similar combinations of humanitarian and market-led approaches can be found in the delivery of healthcare, water, energy, and a range of financial services. In the case of access to essential drugs and vaccines, for example, some pharmaceutical companies, both global and local, are developing inclusive business models or impact investing initiatives to help address "last mile" rural health challenges. Many are doing so in partnership with information technology and digital companies; large footprint investors such as agribusiness and energy and mining companies; donors; and public and private research institutes.

13. IFPRI. *2019 Global Food Policy Report* (2019); See also: Shenggen Fan, "Small Farmers Can Help Meet Sustainable Development and Climate Goals—But They Need Our Support," IFPRI (April 11, 2016), www.ifpri.org/blog/small-farmers-can-help-meet-sustainable-development-and-climate-goals-they-need-our-support.

Addressing Climate Change and Environmental Health Challenges

Climate change is placing substantial pressure on other drivers of rural poverty. Data is currently limited on the percentage of GHG emissions accounted for by smallholder farmers.¹⁴ There is no doubt, however, that these farmers are among the world's most vulnerable populations when it comes to adapting to the negative impacts of climate change. The 2016 Global Food Policy report summarizes this multidimensional challenge: "Climate change exacerbates the production challenges faced by smallholders and increases the likelihood of agricultural and income losses, pests and diseases, and asset depletion. For example, yields of staple crops grown by smallholders, such as maize, rice, and wheat, are expected to decline in the coming years as a result of climate change."¹⁵

A growing number of inclusive business models and large-scale alliances are focused on supporting climate-smart agriculture and access to insurance, sustainable infrastructure, and other services to improve the climate risk management, mitigation, and adaptation capabilities of smallholder farmers and rural communities.¹⁶ Policy reforms and government-led efforts to place prices on carbon, water, and other ecosystem services also will be essential alongside publicly funded social safety nets, infrastructure investments, and cash transfers.

In addition to climate change, many smallholder farmers face a variety of challenges that degrade both the environment and human health while also threatening livelihoods and resilience. They include indoor air pollution, unsafe use of chemicals, soil degradation, loss of biodiversity, and high exposure to neglected tropical diseases. These challenges are further exacerbated by limited health and environmental literacy and lack of access to basic health and environmental management tools. Environmental NGOs and intergovernmental institutions, such as the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme (UNEP), the Nature Conservancy, the World Wildlife Fund (WWF), and the World Resources Institute are starting to work with corporations and development NGOs, such as CARE and Oxfam, to develop partnerships and inclusive business models that focus on tackling environmental health challenges within the broader context of farmer livelihoods.

14. CGIAR, *Better Methods to Measure the Emissions of Small Scale Farming*, CGIAR Research Program on Climate Change, Agriculture and Food Security, Research in Action Factsheet (2013).

15. IFPRI, *2016 Global Food Policy Report* (2016).

16. Simon Winter, Maaïke Bijker, and Melissa Carson, *The Role of Multi-Stakeholder Initiatives in Promoting the Resilience of Smallholder Agriculture to Climate Change in Africa* (Harvard Kennedy School Corporate Responsibility Initiative and Dalberg Research, 2017).

Tackling Gender Inequality

It will be impossible to eradicate poverty and achieve food security without empowering women farmers. Estimates vary, but according to the World Bank, women represent some 40 percent of the agricultural labor force in Sub-Saharan Africa, and in some countries their contributions exceed 50 percent.¹⁷ The contribution of rural women to poverty eradication and food security is likely to be higher if one includes their work within households, food processing, and kitchen gardens or homestead plots, which are often not counted as agriculture, as well as their off-farm income-generating activities.¹⁸ Yet, due to a variety of social and economic obstacles, women farmers produce yields of 20 to 30 percent less than men.¹⁹

Tackling gender inequality in rural communities can lead to higher productivity and income generation, better nutrition, and more household income spent on education and health. The World Bank estimates, for example, that if women farmers had the same access as men to resources such as credit, inputs, technology, and knowledge, they could achieve gender parity in farm yields and potentially reduce the number of hungry people by about 12 percent to 17 percent.²⁰

Concerted efforts are required to make women's empowerment an explicit goal of inclusive business models. Research by the Asian Development Bank focused on rural and urban inclusive business models in Asia and Latin America found that in more than 100 examples studied, only thirteen explicitly aimed to empower women and ten identified implicit benefits for women in describing their mission.²¹ Much more needs to be done to improve rights and opportunities for rural women across the food value chain, from women as agricultural producers and workers to consumers of basic services.

Unilever provides one example of an integrated effort to achieve women's empowerment. In 2014, the company made an explicit commitment through the Enhancing Livelihoods pillar of its Sustainable Living Plan to empower 5 million women by 2020 through a combination of fairness in the workplace, providing economic opportunities, and building inclusive business models.²² The company

17. World Bank Group, "Help Women Farmers 'Get to Equal,'" Brief (April 18, 2017), www.worldbank.org/en/topic/agriculture/brief/women-farmers-getting-to-equal.

18. Cheryl Doss, Ruth Meinzen-Dick, Agnes Quisumbing, and Sophie Theis, "Women in Agriculture: Four Myths," *Global Food Security* 16 (2018): 69–74.

19. World Bank Group, *Ending Poverty and Hunger by 2030: An Agenda for the Global Food System*, 2nd ed. (2015).

20. Ibid.

21. Asian Development Bank, *How Inclusive is Inclusive Business for Women? Examples from Asia and Latin America*, (2016): 10.

22. Unilever, *Opportunities for Women: Challenging Harmful Social Norms and Gender Stereotypes to Unlock Women's Potential*, (March 2017).

does not stipulate how many of these women live in low-income rural communities in developing countries, but states, “In 2016, we enabled over 800,000 women to access initiatives aiming to develop their skills and expand their opportunities in our extended agricultural supply chain.”²³ The company has also committed to develop a set of global land rights principles, which, among other goals, will aim to enhance women’s land rights.

A second example is the Livelihoods Fund for Family Farming (L3F) established in 2015 by Mars Incorporated and Danone and joined by nine companies since. Their goal is to help 200,000 smallholder farmers convert to climate-smart sustainable farming practices, increase yields and incomes, and improve livelihoods and women’s economic empowerment, positively impacting 2 million people in rural communities over the next decade.²⁴ DFIs, such as the IFC, and international NGOs, such as CARE and World Vision, are also starting to work with companies to explicitly integrate gender equality into agricultural inclusive business models and impact investing initiatives.

Improving Children’s Rights

The figures are stark when it comes to the well-being of many children in low-income farming communities. The combination of high levels of child labor, lack of access to education, and hazardous working conditions can result in human rights abuses and the undermining of future opportunity for millions of children. The International Labour Organization (ILO) estimates that the majority of child labor, approximately 60 percent, occurs in agriculture, including farming, fishing, aquaculture, forestry, and livestock. This adds up to nearly 100 million girls and boys.²⁵ Meanwhile, in 2018, the FAO found that, “after years of steady decline, child labor in agriculture has started to rise again in recent years driven in part by an increase in conflicts and climate-induced disasters.”²⁶

Tackling the challenge of child labor calls mainly for humanitarian interventions and policy reforms, although inclusive business models that place a high priority on respecting human rights are an important part of the solution. A number of the world’s leading agribusiness and consumer goods companies, for example, are working to integrate the corporate responsibility to respect human

23. Ibid.

24. Livelihood Funds, “Livelihoods Fund for Family Farming,” www.livelihoods.eu/l3f/.

25. ILO, “Child Labor in Agriculture,” <https://www.ilo.org/ipec/areas/Agriculture/lang--en/index.htm>; See also: ILO, *Accelerating Action against Child Labour*, Global Report under the Follow-Up to the ILO Declaration on Fundamental Principles and Rights at Work 2010 (2010).

26. FAO, “*Child Labor in Agriculture Is On the Rise, Driven by Conflict and Disasters*” (June 12, 2018), www.fao.org/news/story/en/item/1140078/icode/.

rights, including efforts to tackle child labor, into their inclusive business models, based on the UN Guiding Principles on Business and Human Rights.²⁷

Advocating for Policy Reforms to Support Smallholder Farming

In too many cases, national policies, regulations, and fiscal incentives create barriers to smallholder prosperity and resilience. This ranges from a lack of government prioritization for agriculture and land tenure reform to public subsidies and financing mechanisms that explicitly favor large farms over small, urban consumers over rural, environmentally unsound farming practices over climate-smart and resource-efficient ones, and infrastructure investments in industrial sectors over infrastructure for food production, storage, market access, processing, and distribution. Although official development assistance for agriculture has more than doubled in real terms since the early 2000s, recent levels still represent less than half the amount invested in agriculture in the mid-1980s.²⁸

As the 2016 Global Food Policy report states, “Although smallholder agriculture is often recognized as a vital sector for development, it has rarely enjoyed the policy and institutional support necessary to allow smallholders and rural economies to thrive.”²⁹ More than any other change, policy reforms and improved public governance and accountability at both the national and local levels will be essential to achieving the goal of “no smallholder farmer left behind.” Large companies, industry associations, NGOs, and multistakeholder alliances can play a collective role in advocating for and supporting food policy reform, both in donor and developing country partner governments. They can also help governments improve agricultural delivery models, data collection, and data analysis.

In summary, interventions and investments to improve the productivity, incomes, and resilience of smallholder farmers require diverse groups of actors working systematically together to address multidimensional and interdependent challenges. There is also the need to work simultaneously at the household, on-farm, off-farm, local, national, and global levels.³⁰ While inclusive business models and

27. United Nations Human Rights Office of the High Commissioner, *Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy” Framework* (New York and Geneva: United Nations, 2011).

28. Based on data taken from OECD Development Assistance Committee Creditor Reporting System online database (<https://stats.oecd.org/>), and from John W. McArthur, “Agriculture’s Role in Ending Extreme Poverty,” in *The Last Mile in Ending Extreme Poverty*, edited by Laurence Chandy, Hiroshi Kato, and Homi Kharas (Brookings Institution Press, 2015): 175–218.

29. IFPRI, *2016 Global Food Policy Report* (IFPRI, 2016).

30. Farmer Income Lab, *What Works to Increase Smallholder Farmers’ Income? A Landscape Review*, Working Draft for Discussion, Commissioned by Mars Incorporated and completed by Dalberg and Wageningen University and Research, 2018.

large-scale alliances can address only some of the obstacles faced by smallholders, they can play a vital role alongside public sector policy reforms and investments and, where, needed humanitarian assistance.

Implementing and Evaluating Inclusive Business Models

How widespread are inclusive business models today? There are hundreds of examples of multinational companies, domestic companies, NGOs, and DFIs working together on inclusive business models or participating in alliances to support smallholder farmers. Unfortunately, however, there is no comprehensive mapping or rigorous data on the number of companies implementing such models or the total number of smallholder farmers being reached. Nor is there reliable and comparative data on improvements in farmer incomes and livelihoods as a result of being integrated into inclusive business models.

More refined analysis and research are required in each of these areas, but the broad direction for public and private sector engagement is clear. As outlined earlier in this chapter, a combination of market-driven inclusive business models supported by policy reforms and incentives is required to improve the incomes and livelihoods of the estimated 200 million smallholder farmers who already participate in formal markets and value chains. At the same time, public policies and government- or donor-led programs are required to enable about 300 million additional smallholder farmers to access markets and to benefit from such access. Public sector leadership is essential, but the need to engage many more companies, impact investors, social enterprises, and other partners in building inclusive business models and value chains is also clear.

Key Actors in Building Inclusive Business Models

The majority of inclusive business models that focus on smallholder farmers involve formal partnerships and informal interaction between the following groups of actors, a growing number of which are using digital platforms to lower transactions costs, increase efficiencies, and improve the quality of risk management, program delivery, and evaluation:

- *Farmers' organizations and aggregators:* Farmer cooperatives, producer collectives, smallholder representative bodies, and women's organizations.
- *Input providers:* Local enterprises, ag-tech entrepreneurs, or large companies providing a variety of inputs such as seeds, fertilizers, irrigation, tractors and other equipment, energy, data analysis, training, and advice.

- *Off-takers and customers:* Large farms that manage smallholder out-grower schemes, local traders and trading companies, multinational food and beverage companies, and a wide variety of local processing, distribution, and retail enterprises.
- *Financial services providers:* Microfinance institutions, local banks, and insurance companies and digital financial technology platforms.
- *NGOs and research institutes:* Development and environmental NGOs and local or international research partners, who often play valuable roles in program design, implementation, farmer outreach, and evaluation.
- *Development finance institutions:* Most multilateral and bilateral DFIs have established market-based programs focused on addressing smallholder and rural poverty. These programs invest in, provide loans to, or partner with other actors in the value chain, including both agribusiness companies and financial intermediaries.
- *Donors and foundations:* Some level of grant funding is often required to address market failures or deliver essential goods and services, such as health-care, education, clean water, and sanitation. These may not be direct inputs to increase farm yields and incomes but can have a substantial impact on tackling rural poverty, especially for women.

An emerging group of companies is developing and scaling breakthrough technologies, which have a vital role to play as drivers of inclusive business models. They range from digital and life science start-ups to large, established science-based corporations. Many are implementing technology solutions that can be applied directly by farmers themselves, such as the use of drought, flood, and pest resistant seeds, e-extension services, precision agriculture, weather-linked insurance, digitally enabled marketplaces, and shared mechanization services.

Others are applying technologies such as satellite-enabled remote sensing and spatial mapping, combined with Big Data, machine learning, and predictive analytics to dramatically improve data collection and analysis.³¹ This can range from mapping crop yields, weather patterns, and water insecurity to disease surveillance and population health patterns. Such information can, in turn, provide an evidence base for better decisionmaking and resource allocation, in both the public and private sector.

31. Jennifer L. Cohen and Homi Kharas, "Using Big Data and Artificial Intelligence to Accelerate Global Development" (November 15, 2018). This report is part of "A Blueprint for the Future of AI," a series from the Brookings Institution that analyzes the new challenges and potential policy solutions introduced by artificial intelligence and other emerging technologies, www.brookings.edu/research/using-big-data-and-artificial-intelligence-to-accelerate-global-development/.

The World Economic Forum (WEF) has identified twelve breakthrough technology innovations that offer potential for making food systems more inclusive, efficient, nutritious, and sustainable. Most of these require inclusive business models and large-scale alliances to be implemented and scaled.³² WEF argues that the following technologies in particular could help smallholder farmers improve yields and income by 1 percent to 7 percent: mobile service delivery; big data and advanced analytics; microbiome technologies; gene-editing for multi-trait seed improvements; off-grid energy generation and storage; and biological crop-based protection and micronutrients for soil management.³³ If applied with complementary financing, advisory, and market information services, their impact on yields and income is likely to be higher.

Often underpinning successful inclusive business models are intermediary organizations, system integrators, or systems leaders that are able to cultivate a shared vision for change, coordinate and align incentives, and enable mutual accountability for performance among diverse actors.³⁴

At the level of specific inclusive models, intermediary organizations include agri-based social enterprises such as IDH Sustainable Trade, TechnoServe, Root Capital, and Hello Tractor that combine agricultural, development, and business expertise to coordinate different actors and facilitate effective linkages between individual companies and smallholder farmers or producer organizations.

One illustrative example is Project Nurture, a partnership between the Coca-Cola Company, the Bill & Melinda Gates Foundation, and TechnoServe that integrated more than 50,000 smallholder farmers in Kenya and Uganda, a third of them women, into the company's mango fruit value chain. Over a period of five years, the partners needed to engage with and coordinate at least forty other public and private entities to develop and implement the initiative.³⁵

As outlined earlier in this chapter, at a broader system level, large-scale alliances serve as intermediaries and system integrators. They are being established as platforms for coordinating hundreds of different actors and inventions across entire value chains, agriculture corridors, landscapes, and regions, and at a global level. The goal of such platforms is to achieve greater scale and systemic impact than any inclusive business model can achieve alone.

The Alliance for a Green Revolution in Africa (AGRA) offers an illustrative

32. World Economic Forum, *Innovation with a Purpose: The Role of Technology Innovation in Accelerating Food Systems Transformation*, Report Prepared in Collaboration with McKinsey & Company (January 2018).

33. Ibid.

34. Jane Nelson and Beth Jenkins, *Tackling Global Challenges: Lessons in System Leadership from the World Economic Forum's New Vision for Agriculture Initiative* (Harvard Kennedy School Corporate Responsibility Initiative, 2016).

35. Beth Jenkins and Lorin Fries, *Project Nurture: Partnering for Business Opportunity and Development Impact* (Harvard Kennedy School Corporate Responsibility Initiative, 2012).

example. AGRA receives funding support from more than twenty public and private sector organizations and is working with governments in eleven African countries to help coordinate hundreds of other partners that are enabling or engaging directly with African smallholder farmers. Its current goal is to increase the incomes and improve food security for 9 million farm households by 2021 through direct interventions and investments with farmers. In addition, it aims to contribute to increasing the incomes and improving food security of another 21 million farm households by the same year through collective efforts to strengthen key market systems and improve policy frameworks, state capabilities, and public-private financing mechanisms. Helping to build and strengthen a variety of inclusive business models and value chains is one element of AGRA's approach.³⁶

Assessing the Development Impact of Inclusive Business Models

There is emerging evidence on the development impact of inclusive business models and some of the interventions that are most effective in raising farmer incomes. Two recent studies are worthy of note. One is an evaluation of the IFC's experience with inclusive business models, published by the World Bank's Independent Evaluation Group (IEG) in 2018.³⁷ While recognizing the challenges of data collection and analysis, IEG concluded that across all sectors, including agriculture, "Notably, no trade-off between profitability and inclusion objectives is apparent in available evidence."³⁸

However, the evaluation found less evidence of environmental and social benefits: "The performance of inclusive agribusiness projects is also comparable with that of other IFC agribusiness projects, except for their environmental and social (E&S) ratings, which are weaker, mostly owing to challenges involving land issues and waste processing unrelated to the inclusive nature of their business models."³⁹ This finding suggests the need for combining policy reforms with inclusive business models and the need for a "whole value chain" approach, from farm to market to processing and distribution. The evaluation concluded: "Factors affecting the success of inclusive agribusiness projects include adequacy of managerial decisions, regulatory action or inaction by the government,

36. Alliance for a Green Revolution in Africa, "AGRA: Growing Africa's Agriculture." Corporate profile, <https://agra.org/wp-content/uploads/2018/10/AGRA-Corporate-Profile.pdf>.

37. Independent Evaluation Group (IEG), *IFC's Experience with Inclusive Business An Assessment of IFC's Role, Outcomes, and Potential Scenarios*, IEG Meso Evaluation (World Bank Group: March 30, 2018).

38. Ibid.

39. Ibid.

fluctuations in global commodity prices, and adverse changes in country conditions.”⁴⁰ In short, even well-managed and commercially viable inclusive business models require appropriate policies and government support to sustain improved incomes and deliver broader social and environmental benefits for farmers.

The second study was commissioned by Mars Incorporated for the Farmer Income Lab and conducted by Wageningen University and Dalberg. It reviewed publicly available evidence to assess the question: “What are the most effective actions that lead buyers can take to enable smallholder farmers in global supply chains to meaningfully increase their incomes?”⁴¹ The authors identified sixteen types of intervention, mostly at the farm level, that have been widely considered to be effective and, hence, widely adopted; implemented for five or more years, thereby generating evidence over time; and subject to substantial research on their effect on income. They scanned 564 sources representing 1,652 underlying individual studies, including meta-studies.⁴² The sixteen interventions were assessed for their income impact, scale, durability over time, and gender inclusion of female and male farmers.

Key findings of the analysis are summarized in table 4-1, which categorizes the interventions based on their income effects. Three types of intervention stood out for their ability to increase farmer incomes at 50 percent or more at scale: poverty graduation schemes, out-grower schemes and contract farming, and climate change adaptation programs.

As described in chapter 3 of this volume, poverty graduation schemes are initiatives that provide a bundle of services, offered in sequence, designed to “graduate” farmers from direct support to meet their basic needs to the types of support that enable them to increase productivity and independently earn a consistent income. These schemes “typically include a combination of social assistance (for example, cash transfers, health services), financial services, skills training, seed capital or access to employment and mentoring.”⁴³ Out-grower schemes and contract farming provide farmers with access to buyers to sell a specified quantity of a commodity at a future date, and sometimes at a guaranteed price. They often include the provision of technical assistance and financial support. Climate-smart business models deliver a combination of financial tools, training, and inputs, such as climate-resilient seeds, to help smallholders adapt to and build resilience to address the negative impact of climate change.

40. Ibid.

41. Farmer Income Lab, *What Works to Increase Smallholder Farmers' Income? A Landscape Review*, Working Draft for Discussion Commissioned by Mars Incorporated and completed by Dalberg and Wageningen University and Research (2018).

42. Ibid.

43. Ibid.

In addition to identifying and assessing specific interventions, the authors found four critical cross-cutting success factors in the most successful case studies reviewed: bundling services; connecting deeply with farmers; customizing interventions; and partnering with governments, civil society actors, and peers.

In summary, while the sixteen interventions identified in the research offer useful guidance on the types of investments and business models that have potential for raising farmer incomes, they are usually not sufficient on their own. Even the most successful of these achieved 50 to 100 percent improvements in income, when it is estimated that a 200 to 300 percent improvement would be required in many cases to achieve a living income. In 2019, the Farmer Income Lab commissioned additional research to identify a set of more systemic case studies that have demonstrated income improvements of 200 percent or more.

Lessons Learned and Recommendations for Scaling Impact

Inclusive business models and the broader alliances that often evolve to support and scale them are by no means a panacea. Nor are they substitutes for public sector spending in rural communities or for national and global policy reforms aimed at making food systems more inclusive, sustainable, efficient, and nutritious. Yet, they offer an important set of options for helping to increase smallholder incomes and resilience.

Inclusive business models and alliances are not easy to implement or sustain. They require working closely with smallholder farmers to make sure initiatives are demand-driven and that risk burdens are more equally shared and market power dynamics addressed.⁴⁴ They usually involve high transaction costs, alignment of incentives among diverse participants, and long-term commitments. They require delivering short-term results while simultaneously investing in systemic solutions that may take many years to evolve.

Despite these challenges, a growing number of collaborative efforts demonstrate potential. Almost all effective inclusive business models and large-scale alliances to improve the productivity, prosperity, and resilience of smallholder farmers share common building blocks. These include strengthening legal rights and security of land tenure; bundling financial and nonfinancial services and technologies at the farm level based on close consultation with and capacity building of farmers; improving access to essential services such as health, education, energy, clean water, and sanitation; promoting women's empowerment; protecting children's rights and supporting youth development; facilitating farmers'

44. Oxfam, *A Living Income for Small-Scale Farmers: Tackling Unequal Risks and Market Power* (Oxfam Discussion Papers, November 2018).

Table 4-1. Analysis of Interventions

Category of Intervention	Description of Evidence	Relevant Interventions
Category 1 High income impact demonstrated at scale	Evidence demonstrates income increases of 50%+ can be achieved for large numbers of farmers (5,000+).	Poverty graduation schemes Out-grower schemes/contract farming Climate change adaptation
Category 2 Medium income impact at scale with demonstrated impact on income enabling factors	Evidence demonstrates 10% to 50% improvement in income across 5,000+ farmers, as well as strong performance of proxy indicators, such as production or empowerment.	Savings-led groups Access to finance Producer collectives
Category 3 Interventions with mixed evidence of impact across the selected criteria	Evidence demonstrates 10% to 50% improvement. While these interventions may not be able to deliver greater than 50% increases consistently, they can deliver positive results in specific contexts.	Agro-corridors Productivity enhancement Land tenure security Market information systems Crop insurance Farmer field schools
Category 4 Medium income impact with demonstrated limited impact on income enabling factors	Evidence demonstrates 10% to 50% increases and limited change in other income enabling factors such as empowerment.	Certification Post-harvest loss prevention
Category 5 Interventions that did not show significant income increases	Evidence demonstrates these interventions deliver income improvement of less than 10%, though they are highly scalable and could be part of a broader approach.	Pricing arrangements Input subsidies

Source: Adapted from Farmer Income Lab, “What Works to Increase Smallholder Farmers’ Income? A Landscape Review,” Working Draft for Discussion, 2018.

ability to organize and aggregate; improving the transparency and accountability of public expenditures; and investing in better data collection and analysis.

Beyond specific programmatic interventions, there are seven broader contextual lessons that actors involved in inclusive business models and large-scale alliances need to consider as key principles for achieving scale and systemic impact:

Align development and humanitarian interventions. Given the need to both increase smallholder farmer incomes and decrease their vulnerability to economic and climate-related shocks and conflict, development and humanitarian actors must work more cooperatively in rural communities. This cooperation is essential to achieve flexible sequencing or graduation along the spectrum of humanitarian needs and market-based solutions as well as better coordination and responsiveness during periods of emergency and protracted crisis. Inclusive business models rarely reach the poorest and most vulnerable smallholder farmers. Serving these farmers requires publicly financed services and infrastructure alongside donor funding and humanitarian assistance.

Strengthen the links between agriculture, health, and nutrition initiatives. Given that many smallholder farmers are among the most malnourished and hungry people in the world, better alignment between the agriculture and nutrition communities is essential. Sustainable Development Goal 2 (SDG 2) is one of the first global commitments to explicitly combine agriculture and nutrition in its goal to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture.” It offers a useful set of targets and indicators for joint action.

Link agricultural, environmental, and climate investments. Increased efforts are needed to improve coordination and joint funding between agricultural, environmental, and climate change organizations and mechanisms. In addition to tackling specific challenges, such as water scarcity, soil degradation, and biodiversity, there is a need for systemic landscape approaches to improve the ability of smallholder farmers to adapt to climate change and to strengthen the resilience of rural communities more broadly. This calls for a combination of public and private investments, from weather-linked insurance and incentives for farmers to implement climate-smart practices to cash transfers, grants, and public infrastructure funding.

Build linkages between on- and off-farm opportunities and rural and urban areas. On-farm and off-farm interventions must be addressed more holistically to

provide farming households with greater flexibility to move between jobs and different types of income-generating activities, depending on the time of the year and farming cycle or during emergencies. Linked to this is the need for better coordination between rural and urban development interventions. UNDP administrator Achim Steiner and the International Food Policy Research Institute's (IFPRI) director general Shenggen Fan comment: "Although agricultural production is critical to rural economies, rural revitalization goes far beyond agriculture. It includes the development of non-farm opportunities and it makes cutting-edge technology and innovation the linchpins of rural economic growth. . . . One essential driver of rural revitalization is *rurbanomics*, an approach that emphasizes the linkages between rural and urban economies."⁴⁵

Combine disruptive new technologies with scaling older technologies that work. There can be no doubt that today's disruptive technologies and the convergence between them, from digital platforms to advances in life sciences and material sciences, offer some of the greatest untapped potential to transform the productivity, incomes, and resilience of smallholder farmers. One crucial challenge is to improve digital access for farmers. According to analysis by the Global System for Mobile Communications (GSMA), "the vast majority of the 1.2 billion people worldwide not covered by a broadband capable network live in rural areas."⁴⁶ There is also a need to combine disruptive new technologies with tried and tested technologies, such as drip irrigation, crop diversification and intercropping, integrated pest management, zero tillage, and residue retention.

Invest holistically in institutional, digital, and physical infrastructure. Increased public investment, combined with blended financing mechanisms and market-based delivery models, will be essential to increase rural access to reliable and affordable infrastructure, from roads and food storage facilities to clean water and energy infrastructure to broadband networks. In addition, initiatives to scale-up physical and digital infrastructure must integrate or be closely coordinated with investments in social and institutional infrastructure. This includes more efficient and accountable public sector institutions, such as rural utilities and extension services,

45. Achim Steiner and Shenggen Fan, "A Global Rural Crisis: Rural Revitalization is the Solution" (IFPRI: March 27, 2019). Drawn from Achim Steiner and Shenggen Fan, "Rural Revitalization: Tapping into New Opportunities," in *2019 Global Food Policy Report* (IFPRI, 2019).

46. GSMA, *Enabling Rural Coverage: Regulatory and Policy Recommendations to Foster Mobile Broadband Coverage in Developing Countries* (London: GSM Association, 2018). See also: World Bank Group, *Future of Food: Harnessing Digital Technologies to Improve Food System Outcomes* (World Bank Group, April 2019); FAO, *Tackling Poverty and Hunger through Digital Innovation* (Rome: FAO, August 2018).

as well as more inclusive and accountable community and market organizations, such as farmer cooperatives, producer collectives, and women's groups.

Leverage public and private research institutes. National and global research institutes need to take concerted action to undertake joint projects, share data and findings, and advocate for public funding to support more integrated approaches to agriculture, food security, and rural development. CGIAR, for example, has transformed itself from a network of agronomy-focused public research institutions to a network of public and private partners that are taking a more system-level approach to integrate research on food security, health, the environment, climate change, and prosperity. Other public and private research institutes have the potential to follow this more collaborative and systemic approach.

Conclusion

The underlying drivers of smallholder poverty, exclusion, and vulnerability are not only multidimensional but also interdependent. Effective solutions have to match this complexity with interventions that are equally multidimensional and interdependent. Efforts to “leave no one behind” cannot succeed without a concerted and collaborative effort to “leave no smallholder farmer behind.” There is everything to play for. As Bill Gates has argued, “Helping the poorest smallholder farmers grow more crops and get them to market is the world’s single most powerful lever for reducing hunger and poverty.”⁴⁷

For smallholder farmers, encouraging examples are starting to emerge of collaborative approaches and system level leadership. They include inclusive business models, blending financing mechanisms, and large-scale alliances among companies, governments, research institutes, and NGOs to bridge policy gaps, address market failures, support research and development, and test innovations that have the potential to scale. These collaborative efforts are still too few, too slow, and too small in terms of impact, but they demonstrate what is possible and provide a clear direction for joint action. If they can be scaled and replicated, they have the potential to improve the prosperity and resilience of millions of smallholder farmers and the rural communities in which they live.

47. Bill Gates, World Food Prize Speech, Des Moines, IA (October 15, 2009).