DISCUSSION PAPER:

Enabling Smallholder-Based Agricultural Transformation

Lessons for companies from countries that have successfully reduced smallholder poverty at scale

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FARMER INCOME LAB

MARS

ABOUT THE FARMER INCOME LAB

The Farmer Income Lab is a collaborative 'think-do tank' to improve farmer incomes and build resilient supply chains that work for farmers and business. As an industry-led collective, the Lab harnesses the expertise of academic, public, private and civil society partners to generate insights and connect solutions in order to influence industry action. By understanding what works and what doesn't, and why, we can create solutions that can be activated, replicated and scaled.

In order to build fit-for-purpose supply chains, where smallholder farming enterprises and companies both thrive, incremental improvements are not enough. Through individual and collective action, we must push boundaries and extend our ambitions—because poverty won't be solved with the same approaches that perpetuate it.

This paper is the latest in a series that has explored **what** has worked to date in corporate and development agency programs aimed at improving smallholder farmer incomes, **where** poverty hotspots persist—for specific countries and commodities—and **how** companies are experimenting with traditional and trending procurement practices to address poverty. The paper seeks to help understand **under what conditions** smallholder farmer poverty reduction has been successfully and sustainably achieved at scale as part of a country's rural agricultural transformation process.

Earlier papers published by the Farmer Income Lab include:

- What Works to Increase Smallholder Farmers' Income? A Landscape Review (2018)
- Race to One: Mobilizing Business Action on SDG 1 (2019)
- Disrupting Commodities: Background Paper (2020)
- Disrupting Commodities: Building Thriving Rural Communities and more Sustainable, Resilient Agricultural Supply Chains (2021)
- Poverty and Procurement through a Pandemic: A case for new business practices that build supply chain resilience and improve farmer incomes (2021)

This report was prepared by Rogers MacJohn LLC, in collaboration with SocialSide, with input from members of the Farmer Income Lab Advisory Council.

The views expressed in this paper are those of the authors and do not imply endorsement by any individual member of the Farmer Income Lab.

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EXECUTIVE SUMMARY

Many smallholder farmers that participate in global value chains remain in poverty—creating risk for the food and agricultural companies that depend on the raw materials they produce. Traditional commodity procurement practices, designed to meet commercial objectives and maximize short-term profitability, have in many cases exacerbated the risks faced by rural households and discouraged them from investing in their farms. At the same time, traditional smallholder farmer programs, supported by governments and development agencies, have failed to bridge the gap and help farmers reach a living income. This suggests that 'business as usual' is not sustainable and leaves forward-looking companies searching for new approaches capable of tackling farmer poverty at scale.

This paper looks at lessons from countries or sub-national regions where major gains in smallholder farmer livelihoods have been achieved. These regions—primarily in Asia and Latin America—have brought large numbers of rural households out of 'moderate poverty' defined as $3.20 per person/day. The lessons are:

- **A well-performing agriculture sector is necessary to create pathways out of poverty in rural communities—but it is not sufficient.** In the early stages of development, agricultural growth has been found to be two to three times more effective in reducing extreme poverty than growth in other sectors. At the same time, the foundations for poverty reduction go beyond agriculture, and as rural communities move from extreme poverty towards a living income, more people earn greater shares of their income outside of agriculture.
- **To create pathways out of poverty and toward a living income, agricultural transformation must be smallholder-based.** Experience has shown that well-performing smallholder-based agriculture has greater potential to raise rural living standards on a broad scale, and to minimize income inequality, than large-scale commercial agriculture, where the benefits are more concentrated.
- **Business and government both have major roles to play in catalyzing and advancing smallholder-based agricultural transformation.** Governments typically play leading roles in the early stages when investments in core public goods are needed and markets for various goods and services remain underdeveloped. As foundations are put in place, governments begin to lead less and facilitate more, better leveraging the capabilities of the private sector to innovate, invest, and commercialize agriculture.
- **The countries that have been most successful in promoting smallholder-based agricultural transformation have had several things in common.** First, they have put in place solid foundations for broad-based rural poverty reduction and a productive and fast-growing agricultural sector. Second, they have shifted their strategic focus over time to both ensure national food security and to best nurture the country's comparative advantage in servicing domestic, regional and international markets. And third, they have effectively supported the development of a vibrant rural economy and other opportunities, beyond farming, to sustainably increase rural household incomes.
- **Agricultural transformation has been effective when a clear and focused strategy has been co-created by governments and the private sector.** This requires a firm understanding of farm and value chain economics to assess the potential for capturing market share and the key constraints to profitability and competitiveness. Once farm and value chain economics, market competitiveness, and risks are well understood, a business case can be made for public and private investment, and government policies can be structured to support the strategy for catalyzing economic growth and poverty reduction.
- **Smallholder-based agricultural transformation can be realized by making progress across four important pillars in tandem: (i) productivity, (ii) market access / connectivity, (iii) value addition and distribution, and (iv) risk mitigation.** Productivity growth is fundamental and should emphasize both land *and* labor productivity. Market access / connectivity includes improved value chain linkages, information flows, logistics, and transportation

infrastructure. Value addition and distribution relates to capturing more wealth in the value chain locally such as through quality differentiation and undertaking primary processing; however, it is important for smallholders to capture a fair share of this value creation through higher farm gate prices and/or various profit-sharing arrangements. The benefits of productivity growth, reduced transaction costs and increased value addition might be lost without effective measures to mitigate (financial, commercial, production, and environmental) risks.

- **Three approaches have been identified for making progress on all four pillars at scale.** Business and government may choose to deploy one or more of these depending on geographical, regulatory, and cultural contexts: (i) fostering competitive agricultural commodity clusters, (ii) facilitating incremental consolidation of small-scale production where it makes economic sense for smallholders, and (iii) formalizing farm-to-market linkages across the value chain. However, in countries where these approaches have been successful, governments have also supported the growth of competitive manufacturing and service sectors, which have provided additional outlets for agricultural produce plus attractive alternative employment for smallholder farmers who exit farming.

These lessons suggest a number of implications and tee up preliminary recommendations about what companies can do to maximize impact on smallholder farmer incomes while meeting commercial objectives.

1. **Evaluate poverty reduction potential.** In countries and/or sub-national regions where companies source critical raw materials, it is important to first assess the extent to which the right enabling environment, or at least the political will, exists. In parallel, companies should undertake detailed economic and risk analyses for different types of farmers and other value chain intermediaries (e.g., farmer organizations, primary processors). Such analyses should cover profitability, cash flow, and financial resiliency, looking at key cost and revenue drivers. These analyses are necessary to develop effective approaches for reducing poverty, tailored to farmers' specific circumstances.
2. **Develop a strategic plan with government and other stakeholders.** This plan should ideally be developed through an open multistakeholder platform facilitated by a neutral development agency acting as an 'honest broker' to ensure that the benefits are broad-based and inclusive of women, youth, and marginalized communities. The plan should leverage a region's comparative and competitive advantages, taking a long-term view of market trends and climate change. It should include applicable approaches for strengthening the four pillars of smallholder-based agricultural transformation, based on local regulatory, geographic, and cultural contexts. For example, these plans might include creating agricultural commercial clusters, consolidating small-scale production, and/or establishing more formal value chains.
3. **Clarify roles and track progress.** It is essential that the value chain stakeholders, government, and others (e.g., development agencies, civil society, research institutes) determine and agree on roles and responsibilities for implementing the plan, as well as who will drive the policies, standards, and investments needed. Companies have different roles to play on different issues based on their core competencies. As the multistakeholder platform shifts from planning to implementation management, a set of common SMART (specific, measurable, achievable, relevant, and time-bound) indicators will ensure that investments and policies are coordinated and synergistic as well as allow stakeholders to track progress, evaluate performance, institutionalize learning, and update strategies when necessary.

In the context of current trends, the issue of smallholder farmer poverty will only increase in importance. Further discussion and action—most critically through new, more strategic relationships between business and government—are needed to advance the vision of the Farmer Income Lab: *a future in which all agricultural raw materials are sourced from profitable, socially responsible, and environmentally sustainable farming enterprises that contribute to rural economic growth and poverty reduction, enabling rural communities and natural ecosystems to thrive.*

1. THE CHALLENGE OF SMALL-SCALE FARMER POVERTY AND THE PURPOSE OF THIS PAPER

Millions of smallholder farmers that participate in agricultural supply chains continue to live in poverty, an unsustainable situation that is also increasingly untenable for companies that depend on the raw materials they grow. Traditional smallholder farmer support programs have not moved the needle very far. For companies seeking to increase their impact on alleviating rural poverty amongst smallholder farmers in their supply chains, this paper identifies lessons from places where major gains in smallholder farming households' livelihoods have been achieved.

Over the past three decades, global value chains (GVCs) have become a dominant feature of the world economy, driving a major expansion in trade and helping to increase incomes in many developing countries. The steepest declines in poverty—especially when measured at the higher standard of $5.50 per day typically used for upper middle-income countries—have occurred among the developing countries that have been most actively involved in GVCs. In these countries, the emergence of specialized geographic clusters of agribusinesses and supporting infrastructure has yielded major gains in productivity, employment, and income (World Bank 2020).

In agriculture, GVCs have played an important role in expanding developing countries' trade in higher value perishable foods such as fish, meat, fruit and vegetables, as well as nuts, spices and processed foods associated with these commodities. According to UN COMTRADE data, these exports grew four-fold to $220 billion between 2000 and 2016 and now account for just over half of the total value of developing countries' agro-food trade. Many developing countries have engaged in this less traditional, higher value agro-food trade, although about a dozen (now primarily upper middle-income) countries have benefitted the most, accounting for two-thirds of the expanded trade (both exports and imports). These are therefore the countries that have seen the greatest gains in terms of rural incomes and value chain job creation, often due to the need for local value-added processing and the higher value of perishable and processed products.[1] The most successful countries have been those that have effectively fostered knowledge-intensive agriculture, addressed pertinent biosecurity and food safety risks, and taken advantage of advances in food logistics.

However, while GVCs related to certain beverage and industrial crops such as coffee, tea, cocoa, cotton, rubber, sugar, and oil palm have also served as important exports of developing countries, the impacts of these value chains on employment and income have been more mixed. For commodities that are often exported with minimal local value addition (i.e., with minimal processing into intermediate or finished products), there have been serious concerns about how well GVCs have contributed to poverty reduction and overall living standards in the rural areas of the countries of origin. Effective means of enhancing the profitability of small-scale production, strengthening the overall livelihood resilience of farming households, and improving the distribution of the value created within the GVC have not been applied by most governments, nor have they been well understood, prioritized, or implemented by most downstream buyers (Tschirley et al. 2009; Aksoy, 2012).

When it comes to global agricultural value chains, the Farmer Income Lab envisions a future in which all raw materials are sourced from profitable, socially responsible, and environmentally sustainable farming enterprises that contribute to rural economic growth and poverty reduction—enabling rural communities and natural ecosystems to thrive. But today, millions of smallholder farmers that participate in agricultural supply chains continue to live in poverty. Research commissioned by the Farmer Income Lab has found that as many as 24 million of the 36 million smallholder farming households that participate in 'tightly structured' agricultural supply chains, both global and domestic, may be living in poverty using the 'moderate' international poverty line of $3.20 per day.[2] Of these, up to nine million—just over one quarter—may be living in 'extreme poverty,' as defined by the World

Bank, earning under $1.90 per day (Farmer Income Lab 2019).[3] This latter estimate is especially concerning as, outside of sub-Saharan Africa, very few countries still have national rates of extreme poverty exceeding 25%. As with the rural poor more broadly, poor commodity suppliers experience a wide range of poverty-related issues, including limited access to clean water, improved sanitation, electricity, and basic education and healthcare services (World Bank 2018). In many countries, weak or non-existent social protection systems leave many smallholder farmer households highly vulnerable to shocks—from weather, illness, commodity prices, and other factors—which may drive them back into poverty even when they have previously made advances.[4]

Traditional approaches are not moving the needle enough. If a livable income in the rural areas of most low and lower middle-income countries is accepted to be at least $3.20 per capita per day, or perhaps even closer to $5 per day, then income gains of 100 to 200% may be needed in many markets (Farmer Income Lab 2018). But a Farmer Income Lab review of nearly 200 studies, including a number of meta-studies that represent more than 1,600 total studies, found that most smallholder farmer programs—implemented by governments, development agencies, civil society organizations, and private companies—increased incomes by 50% or less (Farmer Income Lab 2018). Additional Lab research has found that traditional procurement practices, designed to maximize short-term profitability, are proving incapable of improving farmer incomes—instead increasing risk, depressing prices, and discouraging farmer investment in their farms (Farmer Income Lab 2019a).

This all suggests that 'business as usual' is not sustainable. The persistence of smallholder farmer poverty not only hurts families and their communities; it also creates a variety of risks for global food and agricultural companies that depend on the raw materials they supply—risks to security and quality of supply, price and supply volatility, reputation, and regulatory compliance. Lacking adequate resources to support a decent standard of living, smallholder farmers defer investments on their farms, use fewer or lesser quality inputs, and reduce their level of effort on the raw materials buyers are looking for, while often struggling to become food secure. These factors reduce the productivity of their land and labor. They may resort to child labor and/or forest encroachment as coping strategies or break commodity sale commitments in order to meet short-term cash flow needs. The difficulty of their circumstances may lead younger farmers to leave agriculture altogether. These risks are increasing as key trends in the operating environment for food and agriculture companies make sustainability issues like smallholder farmer poverty more important — trends such as increasing global demand for food, tightening environmental limits on supply due to climate change and loss of arable land, and mounting expectations from consumers, governments, and investors (Farmer Income Lab 2019b).

For these reasons, some companies are looking for new approaches capable of tackling farmer poverty in their supply chains at scale. Companies are already experimenting with approaches such as long-term contracting and other procurement methods intended to distribute risk and value more equitably—such as cost-plus pricing—which are demonstrating promising results so far.[5] However, while companies are experimenting with new approaches, there are questions regarding the conditions under which these can deliver sufficient impact on their own. To understand what the most conducive enabling environment is for achieving impact with corporate-led programs, and what the role of government is in putting that environment in place, the Farmer Income Lab decided to explore the common factors historically in place in those countries and/or sub-national regions where poverty reduction has been achieved at scale and what the respective roles of government and companies were.

This paper looks at lessons for companies from the experiences of some countries, or sub-national regions within countries, where steep changes in smallholder farmer livelihoods have been achieved. The paper offers insight and tees up important questions about what companies can do to maximize their impact, and where. It ultimately aims to catalyze a discussion regarding the elements of rural agricultural development that companies can most effectively lead, leverage or influence vis-à-vis governments and other stakeholders to better realize the 'win-win' of (i) meeting their commercial objectives, and (ii) having more powerful positive impacts on farming household incomes on a larger scale.

Study Methods and Their Limitations

The objective of this paper is to look at the common denominators across a set of countries and sub-national regions that have been successful at sustainably moving smallholder farmers out of poverty *at scale*. The process for case study selection involved 1) selecting countries or sub-national regions where there has been a significant reduction in rural poverty rates over the past three decades, and 2) where smallholder farmers were responsible for the majority of agricultural production. The commodities researched within these regions were based on the ubiquity of smallholder farmer involvement in their production.

This study combined several methods and approaches, including the development of a conceptual framework linking rural poverty reduction, agriculture and commodity value chains and deep dives into the experiences of selected, relatively 'successful' countries to discern the common denominators.

Most of the examples cited in this paper are from countries that have been widely successful in reducing the incidence of not only 'extreme poverty' ($1.90/day) but also 'moderate poverty' ($3.20/day) which, for simplicity, we equate to a 'livable income' in rural areas of low-income and lower middle-income countries (World Bank 2018). Many countries have been successful in reducing extreme poverty, yet far fewer have made large, broad-based gains in moving their rural populations across the 'moderate poverty' line. In fact, among the 100 or more developing countries, only 11 currently have a national 'moderate poverty' rate below 10% (and therefore *rural* 'moderate poverty' rates below 15% or 20%). All of these countries are either in Latin America[6] or East and Southeast Asia.[7] In addition to snapshots from these countries, selected other examples are provided to illustrate particular themes, challenges or opportunities.

This paper seeks to help companies understand **under what conditions** smallholder farmer poverty reduction has been successfully and sustainably achieved at scale so that they can better tackle poverty within their supply chains. It does not provide a political economy analysis of agricultural policy or commodity system 'winners' and 'losers' related to the influence of individual state, private or civil society actors. We advise treating the findings from this research as well-informed hypotheses to test in specific contexts and conducting a thorough analysis of farmer economics, value chain structure, political environment, gender dynamics, and risks (environmental, human rights, and financial) to arrive at tailored and effective strategies. We also advise developing such country/value chain strategies as part of a multistakeholder platform, facilitated by development agencies, to maintain objectivity, manage political economy risks, and ensure that voices, both across and beyond the value chain, such as farmers, women's groups, and small-to-medium size enterprises (SMEs) are heard.

In addition, topics such as environmental sustainability, climate change adaptation and gender equality are now understood to be important challenges facing countries struggling to reduce rural poverty and promote a competitive agriculture sector. Yet, these are among topics which were not well studied several decades ago during many countries' earlier agricultural transformation phases, making it difficult to obtain hard data or even strong qualitative examples from that time. Therefore, while there is much to learn from these successful cases, more recent best practices at a smaller scale related to climate change adaptation, environmental degradation prevention, and inclusion of women should be integrated with these learnings in any holistic sustainability strategy moving forward. Thankfully, there is now a large and growing body of literature illustrating good practices in these areas.

2. SMALLHOLDER-BASED AGRICULTURAL TRANSFORMATION AND THE CENTRAL ROLE OF GOVERNMENT

Smallholder-based agricultural transformation is key to creating pathways out of poverty for large numbers of smallholder farmers. Governments generally must lay the foundations for agricultural transformation to unfold before companies can take leading roles in the process.

Sustainable rural economic development and poverty reduction are rooted in agriculture, although agriculture plays a diminishing role over time. In developing countries, rural households typically use multiple strategies to overcome poverty,[8] and farming is a crucial one especially in the early stages of economic development. In those early stages, agricultural growth has been found to be two to three times more effective in reducing extreme poverty than equivalent levels of growth in manufacturing or most service sectors (Ivanic and Martin 2018). But, in the course of economic structural change, the importance or quantitative shares of agriculture in employment, national gross domestic product (GDP), economic growth and poverty reduction all decline, in some cases quite sharply. The potential role of commodity production in addressing rural poverty must be considered in each local context bearing in mind the scope for other pathways out of poverty, at present and in the near-term future. The diminishing role of agriculture in later stages of development is illustrated, for Vietnam, in Spotlight 1 below.

Photo credit: Dominic Chavez / World Bank

SPOTLIGHT 1

Vietnam: Successful agricultural transformation leads to a diminishing role of agriculture in poverty reduction

Single commodities are rarely the sole or predominant 'pathway out of poverty' for rural households. Intervention strategies—by companies, governments, and development agencies—need to take into account the overall composition of 'farm household' income and their livelihood strategies. These factors will impact focal households' overall risk profile, access to financial and other resources, and, in all likelihood, level of commitment to any focal commodity.

Vietnam is a remarkable poverty reduction success story. At the time when it first started major economic reforms—in the late 1980s/ early 1990s—more than three-fourths of its population experienced extreme poverty. Within a decade, extreme poverty was cut in half. With the subsequent diversification of the economy, extreme poverty has been eliminated almost entirely and the country is now far along the path of eliminating even moderate poverty. In 2000, 70% of the population would still have been considered poor at the $3.20/day level. By 2010, this share had fallen to 17%. By 2018, it had fallen further to 7%.

For purposes of this paper, it is important to distinguish the lead role played by agriculture in driving down extreme poverty versus its more supplemental role in bringing the vast majority of Vietnamese households to a 'livable' income. Growth in agricultural productivity and output played the central role in Vietnam's successful reduction of extreme poverty during the 1990s and 2000s, ensuring an adequate and affordable supply of staple foods to the entire population and providing for the main livelihood of the majority of the population (World Bank 2012; World Bank 2016). In the two decades since, Vietnam's agriculture has continued to perform well as illustrated by its success as a major exporter of traditional and higher value commodities. Yet, as is common for countries experiencing major economic structural change, the share of agriculture in national GDP and employment has dropped sharply. This is not simply the result of urbanization and the rapid growth of urban-based industry and services. Rural economic activity has also been transformed with the growth of industries such as food processing and supporting businesses. All this has dramatically changed the composition of rural household incomes. Outside of a limited number of locations where either traditional or higher value agriculture has been especially strong, it has been growing income from non-farm sources that has pushed the greatest number of rural households over the bar of a 'livable' income.

The composition of employment illustrates this transformation story. In 2013, agricultural employment peaked at 22 million people, and 14.4 million people in rural areas were employed in non-agricultural sectors. Within five years, in 2018, almost as many people **in rural areas** were employed in non-agriculture (18.1 million) as in agriculture (18.7 million) sectors. In some areas, part of this growth in employment was in agriculture-related industries (food and agro-processing) and services (warehousing, logistics, mechanization, etc.) (World Bank 2019).

Rural households in Vietnam are, on average, now earning most of their income outside the agriculture sector, although agriculture continues to be the leading income source in major commodity producing regions such as the Mekong Delta and the Central Highlands. Nationally, even though 84% of rural households engaged in some form of agriculture in 2016—and are still referred to as 'farming households'—the sector accounted for only 41% of their incomes (down from 48% in 2010 and closer to 60-70% a decade earlier). The (majority) balance was accounted for by non-agricultural wages (27%), small business income (13%) and remittances from household members working in cities or abroad (13%). The more successful households typically have three or four important sources of income.[9]

Agricultural transformation involves major changes in what is produced, how it is produced, and how it is marketed. This is normally accompanied by major changes in demographics and employment patterns.[10] It normally includes significant structural shifts—including in average farm sizes, patterns of land and water use, the mix of labor and machines in primary production and downstream activities, and in the overall composition of agricultural output. Agricultural transformation normally also features the greater use of specialized inputs and knowledge, new forms of specialization, new uses for traditional commodities, and greater value addition. There also occurs an emergence and eventual dominance of coordinated value chains and 'modern' food retail formats. Agricultural transformation also tends to involve a very large exit of people from agriculture (and a shift to part-time farming), along with large increases in employment in agribusiness, agricultural services, food distribution, and the food services industry. In high-income countries, employment in the agro-food system is typically concentrated in the downstream functions rather than in primary production; therefore, *corporate investments into value added processing at origin can significantly help to accelerate this shift beyond primary production*.

The process of agricultural transformation usually occurs over many decades, with different countries taking somewhat different paths depending upon their own agricultural and broader economic development circumstances. Timmer (1988) has described the process as one in which the sector evolves from being primarily farm-centered and subsistence-oriented to being increasingly market-oriented and integrated into other sectors of the economy. Most low and lower middle-income countries are still at relatively early phases in this process, while many upper middle-income countries are at more advanced stages. The experiences of the latter countries have shown the complementary role of effective interventions within agriculture, and of policies and programs that have promoted more dynamic growth in the non-farm economy. Rapid growth in manufacturing and services creates additional demand for food and agricultural raw materials plus greatly influences labor markets. Spotlight 2 provides an example, from Thailand, where strong foundations for agriculture helped accelerate the pace of agricultural diversification and structural change that were catalyzed by developments outside the sector.

Photo credit: Asian Development Bank

SPOTLIGHT 2

Demand-pull agricultural transformation: Thailand from the late 1990s to early 2010s demonstrates the importance of laying the appropriate foundations for growth and investment in downstream value addition

Companies should carefully consider how value addition, such as commodity processing and local marketing, can be established at source in the context of non-agricultural sector growth, as this may strongly influence the enabling conditions for rural poverty reduction. In the case of Thailand, the growth of local processing, quality standards, and more formalized marketing channels spurred the growth of non-agricultural sectors and proved to be very catalytic, both for farmers and for a transitioning labor market.

During the 1980s and 1990s, agriculture in Thailand was adversely affected by a national public debt crisis, an overvalued exchange rate and a financial crisis which cut off access to credit. Farmers and farm workers exited the countryside in large numbers to take up employment in industry in both the formal and informal segments of the (urban) service economy. Within the agricultural sector itself, the strong foundations that Thailand had put together during prior decades—including effective investments in agricultural research and education, water resources development, and rural infrastructure—bore little fruit during this period of macroeconomic instability.

Once the economy stabilized, both agricultural growth and labor productivity surged, and levels of rural poverty plummeted.[11] This growth was built on these earlier foundations and was facilitated by newer initiatives. Agricultural growth was spurred by a rapidly expanding food processing industry, growth in the network of supermarkets and other modern retail outlets, and increased demand for an array of foods to service an expanding tourism industry. By the early 2000s, Thailand had emerged as one of the world's largest exporters of processed food products as well as one of the top ten destinations for international tourists. Favorable policies and support services spurred growth in these industries which, in turn, pulled agriculture along with them. During this period, agricultural policy was partly derailed by high-cost price guarantee schemes for rice farmers, yet very effective work was done in improving national and commodity-specific standards for quality, food safety and biosecurity and facilitating markets for land leasing and for mechanization services. This enabled Thailand to position itself well in international markets (e.g., high-quality aromatic rice) and helped boost agricultural labor productivity.

From 2000 to 2010, Thai agriculture experienced something of a consolidation, although this was difficult to discern from macro agriculture sector-level statistics. For example, from the beginning to end of this period, there was very little change in the total number of farm households (around 15 million) and no change at all in the average landholding size (3.1 ha). But averages are deceiving. With increased land leasing, the number and total area of farmers in the smallest land categories (below 1.45 ha) had fallen while those in the 'medium' category (of 1.45 to 6.25 ha) had increased in numbers and now accounted for the majority of farmland. With the spread of mechanization and the availability of off-farm jobs, by 2010, some 40% of farmers had become part-time farmers. While some very large farms/integrated operations emerged in some sub-sectors (especially for animal products and industrial crops), the more significant dynamic was the expanded numbers of family farms with 20-30 hectares (1.4 million by 2010), many of which engaged in contract farming with food processors and/or distributors. These medium and somewhat larger family farms jointly played an important part in the dynamic performance of Thai agriculture and its poverty reducing effects as a result of the employment which they provided (FAO 2021). The rate of rural poverty in Thailand fell from 40% in 2000 to 14% in 2013.

Within countries, progress in rural poverty reduction is often uneven, as is the pace of change within the agricultural sector. Even for countries that have experienced major declines in rural poverty and sustained periods of robust agricultural growth, it is common to find areas that are lagging behind. In low and lower middle-income countries, for example, there are areas in which rural poverty rates are double or triple the national average as well as others where poverty rates are a small fraction of that average. Even many upper middle-income countries continue to have 'lagging regions' or 'pockets of extreme poverty' long after national per capita income has risen considerably (FAO 2021). Multiple factors contribute to these patterns, including natural (agro-ecology, geography), political (ideology, leadership, administrative capacity), and other factors (cultural, historical, and more). Policy and investment decisions also explain these variations, leading, for example, to sub-national differences in the strength of certain enabling conditions—for rural living standards and for business—as will be discussed below. This has implications for whether and how companies invest in certain regions and to what degree companies can engage with governments to improve the enabling conditions where they already operate. Sometimes, unique agroecological conditions (e.g., rainfall, sunlight, temperature, altitude) dictate where companies can be more impactful in supporting higher agricultural productivity. Engagement with governments in locations where companies already (or would like to) operate, ideally with the support of development organizations, is critical for influencing effective policy development and investments and for setting appropriate poverty reduction targets.

It is important to stress that for agricultural transformation to contribute to broad-based rural poverty reduction, the process should be inclusive of smallholder farmers. Agricultural transformation and rural poverty reduction are not synonymous: the first can occur with little impact on the second, for example when it is driven by the formation of large plantations or heavily mechanized commercial farms that create limited numbers of low-wage jobs or when downstream players capture the bulk of added value while shifting risk upstream. Pockets or islands of excellence can generate commodity output but generally not broad-based rural poverty reduction. Experience from many countries, but especially those in Asia, has shown that well-performing smallholder-based agriculture has the greatest potential to raise rural living standards on a broad scale.[12] To do so, smallholder agriculture must be effectively supported, competition must be nurtured in input and output markets, and effective collective action must be fostered, both among farmers and between them and agro-enterprises. Even that may not be enough in circumstances where there are serious gender gaps in asset holdings, rights, and access to services and/or where young adults face especially significant barriers—for example, in land and credit markets—to taking up productive agriculture.

"Well-performing smallholder-based agriculture has the greatest potential to raise rural living standards on a broad scale. To do so, smallholder agriculture must be effectively supported, competition must be nurtured in input and output markets, and effective collective action must be fostered, both among farmers and between them and agro-enterprises."

SPOTLIGHT 3

There is a strong business case for supporting gender equity in agricultural value chains

Gender equity plays an important role in rural poverty reduction. Companies can improve gender equity within their supply chains by paying living wages and helping women gain access to financial services to have increased control over household income.

Many of the agricultural transformation processes that were reviewed for this paper began a decade or more ago, when the role of gender was poorly understood or little studied. Hard data from this time are generally not available and even qualitative examples are hard to find. Since then, however, the field has woken up to the importance of gender equity in agricultural transformation and rural poverty reduction, and literature has begun to emerge.

We can now say that higher levels of gender equality are associated with improved productivity and competitiveness and higher economic growth, while discrimination and poor treatment of women in the value chain serve as barriers affecting farmers' ability to reinvest in their farms, invest in their children's education, and improve family nutrition and health. This can undermine the sustainability of poverty reduction.

The Food and Agriculture Organization (FAO) estimates that lowering these barriers and ensuring that women have equal access to resources could increase women's yields by 20-30%, raising total agricultural production in developing countries by as much 4%. This increase could reduce the number of undernourished people globally by 12% to 17%, or 100 to 150 million people. Inequities come in many forms, including the prominence of unpaid labor in household agriculture, discriminatory practices in the hiring of labor (wage rates, continuity, skill/supervisory levels), and the lack of recognition of land rights (and its impact on access to finance and ability to contract with companies). Supporting greater gender equity requires attention not only to women's participation—as farmers, entrepreneurs, or packhouse/factory workers—but also to their remuneration, and, ultimately, their control over the income earned (Rubin et al. 2019; Njuki et al. 2019).

Opportunities to improve gender equity more effectively should be explored beyond the farm as part of a holistic rural value chain development strategy. Various studies in Africa have found that women benefit more and have greater control over income when they participate in GVCs as packhouse/factory wage earners than as farmers. The vast majority of packhouse workers in export-oriented fruit and vegetable packhouses are women and increasing pressures on companies have borne fruit to improve wages and working conditions. For traditional commodities, farm remuneration is often skewed towards men (African Development Bank 2015). For example, women make up 75% of the workforce in Ethiopia's coffee farms, yet control only 43% of the revenue. A more extreme example is where women account for 50% of the production labor in Burkina Faso's cotton sector yet receive less than 2% of the income. A recent study by the International Coffee Organization (ICO 2018) found evidence of significant productivity gaps for coffee between male and female headed households in multiple African countries as a result of lower access to finance and extension, as well as other factors. Differentials of 10-20% were not uncommon. Targeted interventions, in relation to a variety of commodities, have shown that such productivity gaps can be closed.

The private sector can play an important role in closing gender gaps by providing more equitable opportunities for participation, safe work environments, meeting gender-equality standards and using available information and communications technologies (ICTs) to provide more secure payments to women participants. Direct contracting of women and innovative contracting that does not require that the farmer own the land can ensure women manage more of the income from the contracted crop. Companies can also actively promote the formation and participation of women's groups in their supply chains and by paying living wages and facilitating access to financial services. Many collaborative projects between companies and NGOs do this. Some companies are further down this path than others. For example, Nespresso is implementing a gender equality strategy as part of its AAA Sustainable Quality Program, involving some 75,000 farmers in a dozen countries. Another partnership program in Rwanda focused on the involvement of women in coffee cooperatives and introduced improved cultivation practices. Adoption rates and productivity gains were high. A public-private partnership in Kenya successfully advanced the role and remuneration of women in the dairy sub-sector. As of 2019, some 12,000 companies operating in more than 100 countries had made commitments to abide by the Women's Empowerment Principles, jointly established by the United Nations Global Compact and the International Finance Corporation.

Many of the critical foundations for broad-based rural poverty reduction must be laid by the government, and governments also tend to play major roles in the early phases of agricultural transformation. Experience has shown that the critical foundations for rural poverty reduction include secure land and other property rights, wide access to basic education and health care services, and the provision of core infrastructure including rural road networks, electricity grids, and improved water and sanitation services. Broad-based rural poverty reduction requires that access to these rights, services, and infrastructure be inclusive—across gender, ethnicity, and marginalized groups. Smallholder-based agricultural transformation is predicated not only on these foundations, but also on effective institutions and programs for agricultural innovation and for mitigating weather, production and other risks. For companies, large and small, the enabling conditions for business are also critical. These include developments related to the rule of law, regulatory quality, the application of competition policies, fiscal incentives and disincentives, measures related to food safety and biosecurity, and other interventions that may impact investments and markets.

Governments in some countries have been very effective in laying these foundations, while others have not or have failed to effectively maintain them over time. This is a multi-dimensional challenge, and there are examples of both good and bad practice with regard to policies, regulations, approaches to mobilize and deploy resources, ways of utilizing institutional capacities—at central and decentralized levels—and effectiveness in leveraging private investment and service delivery. Over the past two decades, United Nations agencies and others have given attention to developing indicators to gauge the status and progress of countries and even sub-national regions on many dimensions of sustainable development.[13] Table 1 provides examples of these indicators based upon common rural development and agricultural commodity sub-sector development processes, together with commonly used indicators for benchmarking the state of infrastructure and institutions found in databases maintained by the World Bank, the United Nations and other international organizations.

Table 1: Enablers of Inclusive Rural Development and Agricultural Commerce

Governance and public administration	Rural infrastructure and services	Conditions for (agri-) commerce
• Physical security • Political stability • Rule of law • Government effectiveness • Fiscal/administrative decentralization • Regulatory quality • Land and property rights protection • Intellectual property rights protection	• Density and quality of rural roads • Access to reliable electricity services • Access to improved water and sanitation services • Access to education and vocational training • Quality of land administration • Investment in agricultural research • Quality and reach of agricultural extension, plant protection and veterinary services • Coverage of digital/mobile networks	• Corporate tax rates • Commercial and cooperative laws • Tariffs and limits on imports and exports • Spatial restrictions on investments and/or commodity movements • Commodity/food price controls • Operations of state-owned enterprises • Quality of trade facilitation infrastructure and services

Similarly, there have been many initiatives focused on benchmarking countries according to criteria related to governance, institutions, policies, other business enabling conditions and the overall government commitment to key development objectives.[14] Companies can utilize a variety of such indicators to assess the status and progress of a country's (or sub-region's) enabling environment and the degree of poverty reduction possible in the near term. Such indicators can also help companies objectively prioritize the issues that are most critical to take up with governments, as part of a multistakeholder platform.

In the early phases of agricultural transformation, governments have tended to play predominant roles, not only in setting the objectives for the sector but also in the provision of services. In those early phases, governments tend to make investments in basic and applied agricultural research, be the predominant provider of extension, animal health and other technical services, and play an out-sized role in promoting the uptake of technologies, including through the commercialization of improved seed, and implementing some form of state-sponsored agricultural finance. To address so-called 'market failures,' many governments have provided a broad range of subsidies to protect farmers and influence their behavior. These subsidies have often been politically popular and thus difficult to withdraw or reform, even when no longer needed or effective. For example, such subsidies can create market distortions, disincentivizing innovation in low-cost inputs, mechanization, or farming methods, and potentially incentivizing overproduction relative to market demand—all at a high cost to governments. In early phases of agricultural transformation, government entities are also often heavily involved in agro-processing and commerce, either directly through state-owned enterprises or indirectly through price-related interventions, restrictions on trade, and other measures. During these phases, businesses may face an uneven playing field, if not outright restrictions on the services they can provide, commodities they can deal with or other matters. Some countries remain stuck at this juncture.[15] *Without clear government commitment to policies and investments to improve the enabling environment for private businesses, including smallholder farmers, to invest and compete on a level playing field, informed by market demand and a multistakeholder platform, scalable impact on poverty from corporate investment alone is unlikely.*

Photo credit: International Rice Research Institute (IRRI)

For developing countries that are advancing further and more swiftly on rural poverty reduction and agricultural structural change, there are typically one or more 'inflection points' during which the institutional landscape that governs and serves agriculture shifts significantly.[16] At these inflection points, the roles of government, business, and civil society change and, increasingly, align around the investments and policies needed to catalyze economic growth and a country's competitiveness in regional and global markets. Important policy or regulatory reforms may lead governments to shift their focus beyond legacy concerns and commodities to promote a more diversified agriculture sector, as well as to shift from restricting to actively facilitating private and commercial delivery of a wide range of services.[17] Essentially, the government may begin to 'lead less and facilitate more,' to re-purpose its policy goals and public spending, and to embrace the contributions the private sector can make across a wide set of functions and services (see World Bank 2016). Usually in parallel, *the center of gravity of government support to the sector also shifts from the central government to that of sub-national (provincial, state, district) agencies, often necessitating shifts in the focus of companies in terms of collaborative public-private initiatives*.[18]

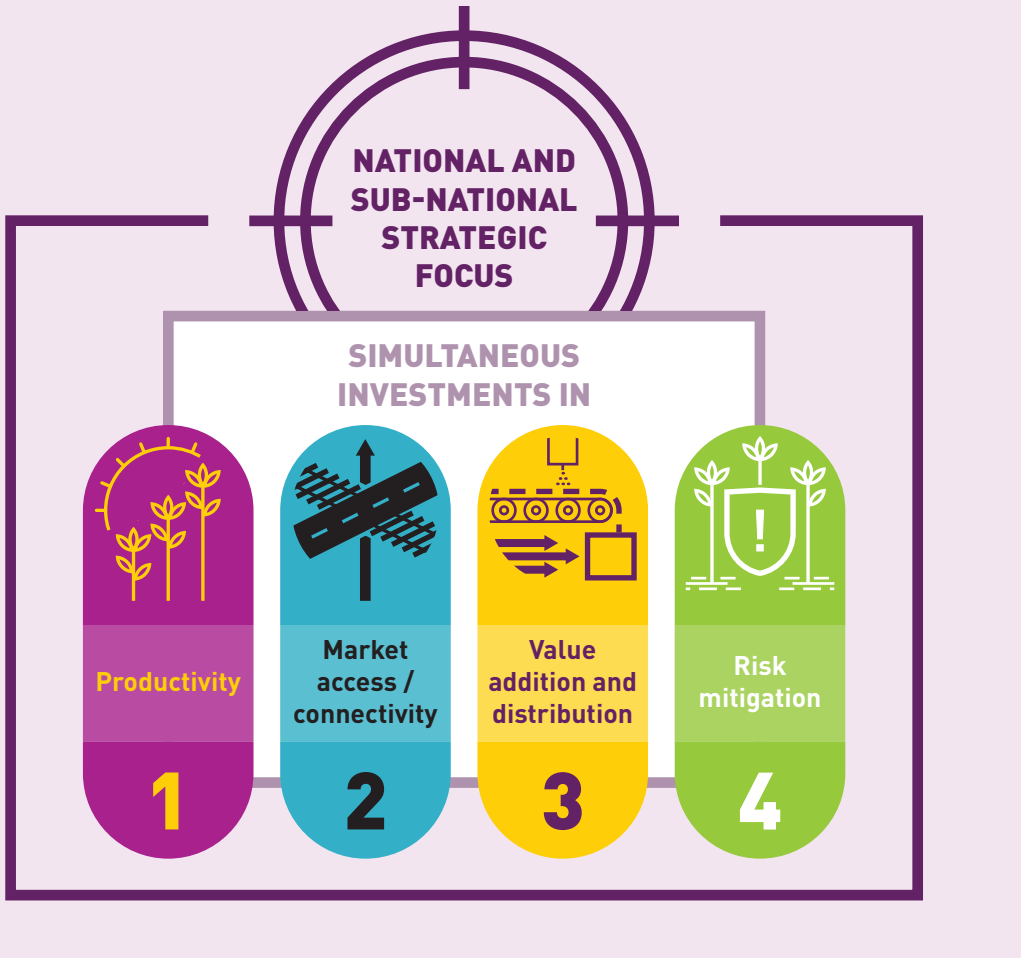
During this (or these) transition(s), food companies and agribusinesses typically become major players in the agricultural transformation process. They increasingly take on leadership roles, either individually or collectively, in driving product, process, or institutional innovations within their value chains or more generally. They also have wide scope to leverage ongoing infrastructure, research and development (R&D), and extension investments or programs undertaken by the government and development agencies. And sometimes they undertake these investments or services themselves. For example, in several large middle-income countries such as China, Brazil, and India, private companies now account for a significant and growing proportion of agricultural R&D spending (Fuglie et al. 2020). Also, agricultural extension goes beyond the paradigm of unidirectional information flows orchestrated by field-based public officials to involve a multiplicity of players and delivery channels, including via the use of information technology. The private sector—both agribusinesses and dedicated service companies—come to play major roles in the newer agricultural extension ecosystem, and the delivery of veterinary, mechanization, and other services. State-owned processing and trading companies may be partially or fully privatized or their missions may be re-directed to non-commercial functions (e.g., stocking of staple food reserves, supporting public safety net programs). Companies also grow their influence vis-à-vis policies to improve both the business enabling environment and the effectiveness of service delivery to the agricultural sector as a whole. *Collaboration between the public and private sectors becomes especially critical to success*, as will be further discussed below.

3. THE FOUR PILLARS OF SMALLHOLDER-BASED AGRICULTURAL TRANSFORMATION

To accelerate smallholder-based agricultural transformation, business and government must work together to develop a national and sub-national strategic focus and to work in tandem on four pillars of agricultural growth: productivity, market access / connectivity, value addition and distribution, and risk mitigation.

The research conducted for this paper indicates that in countries and the specific sub-national areas where the foundations are being strengthened, smallholder-based agricultural transformation has depended on two common denominators: 1) a well-defined national or sub-national strategic focus, and 2) simultaneous progress across the four pillars, as depicted in Figure 1 below.

Figure 1: Four pillars of smallholder-based agricultural transformation



National and sub-national strategic focus

Smallholder-based agricultural transformation is normally closely tied to having an effective strategic focus that leverages and nurtures a country's or sub-region's comparative and competitive advantages in serving growing markets. Such a focus aims to strengthen the region's capabilities with respect to commodities that are well-suited and responsive to serving large, growing, or emerging agricultural and food markets, based on the country's agro-ecological conditions, natural resource and labor endowments, and other factors. A country may focus on a broad or narrow set of commodities and value chains depending on its land, labor, and capital markets, socio-economic conditions, geographic location, and overall size. Yet, countries that have accelerated the pace of agricultural transformation have normally refined their approach to strategic planning to include more differentiated strategies based upon varying sub-national challenges and opportunities and more explicit attention to the policy, public investment, and enabling environment needs of particular raw material value chains.

Most 'strategic commodity' plans have initially centered on staple food crops, and it has taken an improvement in food security and several subsequent plans before the focus becomes more aligned with the country's comparative advantage. Even after food security has been achieved, countries are reluctant to walk away from traditional sectors that are no longer competitive (and may never be). There is nearly always a lag before national strategies recognize the potential of non-traditional commodities. Chile, for example, focused on cereals production for decades before transitioning to a focus on higher value commodities, based on comparative and competitive advantage such as producing exportable, high-quality horticultural crops (e.g., berries, grapes) in a growing season counter-cyclical to the major importing countries in the northern hemisphere. This shift to higher value commodities transformed its agricultural sector. Vietnam officially recognized the huge potential for its aquaculture and fruit industries long after these sub-sectors had significantly scaled to meet demand, requiring a retrofitting of a strategic framework, and the pursuit of an 'upgrading' program to address some important emerging problems. Spotlight 4 provides the examples of Peru and Taiwan, both of which applied new strategic thinking to foster agricultural growth, even in the context of rising labor costs and strong competition in output markets.

Value chain development strategies must be anchored in market demand. Efficient and reliable market access for smallholders is critical to provide sufficient incentive for smallholders to invest in their farms and be assured of a positive return on investment. Market information flows, including market research on consumer trends, are important for aligning research and development (e.g., varietal selection, crop improvement), seed systems, input supply chains, production, post-harvest handling, and processing to meet market demand and improve the competitiveness of the entire value chain. Where the priorities of public agricultural research institutes are misaligned to market trends and opportunities for farmers beyond food security, *companies have an opportunity to help ensure that public investment includes a focus on improving the productivity, quality, and differentiation of commodities with significant market potential*.

SPOTLIGHT 4

Peru and Taiwan: Re-inventing competitive advantage in agriculture

Companies have an opportunity to work with governments to develop agricultural development strategies focused on leveraging comparative advantage and realizing potential impacts on rural poverty.

Peru: Since the 1990s, Peru has used a very deliberate approach to promoting high-value non-traditional agricultural exports as the country was not well positioned to compete with neighboring large countries in bulk markets for cereals or other traditional commodities. In terms of public policy and programs, the 'Peruvian model' has featured (i) the aggressive pursuit of free trade agreements, (ii) significant investments in public infrastructure (e.g., roads and irrigation systems), (iii) the upgrading of capacity to manage phytosanitary and food safety risks, (iv) promoting a more dynamic market for agricultural land, and (v) passing labor and other laws to make producers and processors more competitive. All this was done in parallel with measures to progressively reduce the protection of and subsidies to agriculture, which freed up resources to support both larger-scale agriculture and smallholder-based value chains. Programs for the latter were implemented in both the public and private sectors.

In terms of commodity and market focus, the lead came from the private sector, with a bit of public support. Two primarily private-led cases are organic bananas and Hass avocado. In the bananas case, the opportunity to expand export supply through the organic segment was initially led by exporters COPDEBAN (a Dole subsidiary) and Biocosta S.A.C., which identified the extremely suitable agroclimatic conditions of the area, favorable trade policies (mainly to European Union (EU) countries), increasing international prices, and the 1998 MINAGRI program for the conversion of conventional to organic hectares in northern coastal regions. The avocado case, an example of late entry to the agro-export boom, was led by large-scale plantations and benefitted from the previous deployment of complementary services such as phytosanitary supervision or irrigation projects related to the early development of products such as asparagus.

International cooperation in Peru was also instrumental in laying the foundations for programs to promote organic coffee production and cooperatives and to develop native varieties of cocoa as an alternative to coca production. In another location, a project helped to identify and fulfill latent demand for a native variety of potato, essentially converting a 'low value' product into a higher value one sought out by segmented market players. While much of the promotion of non-traditional agriculture exports in the 1990s and 2000s centered on the coastal region and on medium or larger-scale irrigated farms, there have subsequently been many initiatives to integrate midland or highland-based smallholder farms into these value chains. Peru's success in reducing poverty has been partly related to the expansion of non-traditional agricultural exports. In 2001, more than three-fourths of rural households were at least moderately poor and just over 50% were extremely poor. By 2015, overall levels of poverty had fallen to 42%, with the most impressive gains occurring in reducing extreme poverty, down to 9%.

Taiwan: Within the span of a single decade, from the mid-1970s to the mid-1980s, Taiwan achieved a historically unprecedented feat, reducing poverty in its then sizable rural population from 40% to less than 5%. The initial foundations for this were laid in the prior two decades with a major land reform, investment in irrigation and rural infrastructure, and development of an effective agricultural innovation system. Productivity and income gains were steady, yet rural living standards were capped by the pattern of production, featuring a dominance of smallholder rice monocrop systems, supplemented by a few long-standing agro-industries. The transformation of Taiwanese agriculture was sparked by developments outside of the sector—specifically the accelerated growth of labor-intensive manufacturing. This created enormous employment opportunities, both in rural and urban areas. Rising labor costs would force changes to Taiwanese agriculture to remain competitive, yet also yielded great opportunity as the country's expanding middle class looked to diversify its diet.

At the farm level, the area under rice monocropping dropped sharply, with the introduction of rotation crops or increased specialization in the production of vegetables, fruit, small livestock and aquatic products. Farm sizes remained very

small (typically around 1 ha), yet household income grew as a result of farm diversification and off-farm employment. Mixed livelihood strategies became the norm and by the late 1980s, some two-thirds of the total income for 'farming households' came from non-farm sources. A successful program to promote rural, natural resource-based industries enabled people to remain in their communities and mitigated against a mass rural to urban migration, which often occurs during phases of industrialization. Farmers wishing to shift out of rice production benefitted from different forms of technical and financial support. Fruit and vegetable cooperatives and farmer associations received subsidies to invest in marketing facilities and benefitted from the development of an effective market information system. Pork production benefitted from government-backed credit programs, technical assistance, price guarantees, and marketing support via cooperatives. And, agro-industrial investment was strongly supported through R&D programs related to agricultural and food processing machinery, and investments in education and training which supplied large numbers of SMEs with trained technicians and managers. An extended period of macroeconomic stability enabled companies to take a long-term, market-oriented approach.

Based on Ranis et al. (1999), Liu (2004), World Bank (2017), and other sources

Simultaneous investment in productivity, market access / connectivity, value addition and distribution, and risk mitigation

International experience shows that tackling the challenges of productivity, market access / connectivity, value addition and distribution, and risk mitigation, in tandem, is an effective approach for accelerating smallholder-based agricultural transformation. Progress on one or two pillars is insufficient. For example, raising farm productivity through strategies that cause farmers to incur huge transaction and logistical costs moving products to markets undercuts the returns to farmers. Where farmers have low productivity and little surplus production, it may be difficult to justify investments to improve rural market access and connectivity. One can differentiate commodities through various means and add value through processing, yet the benefit of this for farmers may be modest or fleeting in the absence of parallel gains in productivity. Without effectively mitigating risks associated with weather, pests and diseases, price volatility, and other sources, farmer assets, ability, and/or motivation to re-engage in producing or selling a particular raw material may be lost.

1. Productivity

Smallholder-based agricultural transformation is predicated not just on (sustainably) increasing yields, but also on increasing returns to labor. Smallholder farmers, by definition, have small farms—and they must be able to grow enough to both meet their own household need and to sell the surplus to earn an income. But land productivity (yield per hectare or output per animal) is only one piece of the equation. Increasing labor productivity (returns per day of work) is just as important, and from the household's perspective, should be the ultimate measure of productivity—the one that guides decisions on how to allocate one's time and other resources. Labor productivity in agriculture may be influenced by many factors beyond crop yields and is often more dictated by what farmers are producing and the role of labor-saving technologies for production and post-production functions. An illustration of both these factors is provided in Spotlight 5.

SPOTLIGHT 5

Labor productivity, not just land productivity, is a critical factor in poverty reduction

Land productivity improvements from improved crop and animal varieties, good agricultural practices, and effective input use are critical components of improving the efficiency of farming operations. At the same time, companies should explore ways to help farmers increase labor productivity—for example through mechanization and production choice—as this is also critical for increasing farm profitability and freeing up a family's time for diversifying household income through on-farm and off-farm opportunities.

Table 2 compares labor use, mechanization and financial returns, per hectare and per person day, in five major 'rice bowl' areas in Asia. Mechanization has advanced far in three of the five locations. Even though rice farmers in Indonesia and the Philippines have been heavily subsidized and their net returns per hectare are comparable with those in the other three countries, the returns per unit of labor are a small fraction of that in the other countries. A smallholder farm household engaged in rice monocropping in either the Philippines or Indonesia is trapped in poverty unless it has substantial off-farm income sources. Partly as a result of mechanization, the net returns per person-day for rice producers in Suphanburi, Thailand are seven times higher than those of farmers in the hinterland of Jakarta, Indonesia.

Yet, in much of rural Asia, it has been shifts in land use (and labor allocations) which have driven considerable increases in agricultural incomes. This is illustrated in Table 3 for Vietnam which shows labor productivity to be many times higher for aquaculture and for industrial or horticultural crops than for traditional rice production. As a result, in areas which remain especially suitable for continued rice cultivation, the trend has been to diversify production within farming systems, including through rice-aquaculture and rice-vegetable rotations.

Table 2: Labor, Mechanization and Returns to Labor Among Major Asian 'Rice Bowls'

	Labor days per ha (#)	Four-wheel tractor use (%)	Combine harvester use (%)	Net returns per ha ($)	Returns per person-day ($)
Thailand (Suphanburi)	10	58	100	606	63
Vietnam (Can Tho)	22	88	100	1076	49
China (Zhejiang)	35	87	100	728	21
Philippines (Nueva Ecija)	69	2	5	723	11
Indonesia (West Java)	96	0	0	850	9

Source: Bordey et al. 2014

Table 3: Vietnam: Comparative Labor Effort and Productivity, 2014-2017

	Cultivated area, ha	Labor inputs, days	Labor productivity, '000 VND/day
Shrimp	n/a	261	400-3,000
Pepper	58,527	360-500	520-1,830
Oranges	46,214	350-415	600-1,000
Mango	84,691	200-300	500-900
Coffee	589,041	120	500-700
Dragon fruit	55,000	700	550-650
Rice paddy	7,816,476	46-150	174-276
Cassava	552,760	185-220	118-135

Source: World Bank and Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD) staff estimates from Vietnam Household Living Standards Survey (VHLSS) 2014 and farm survey 2017

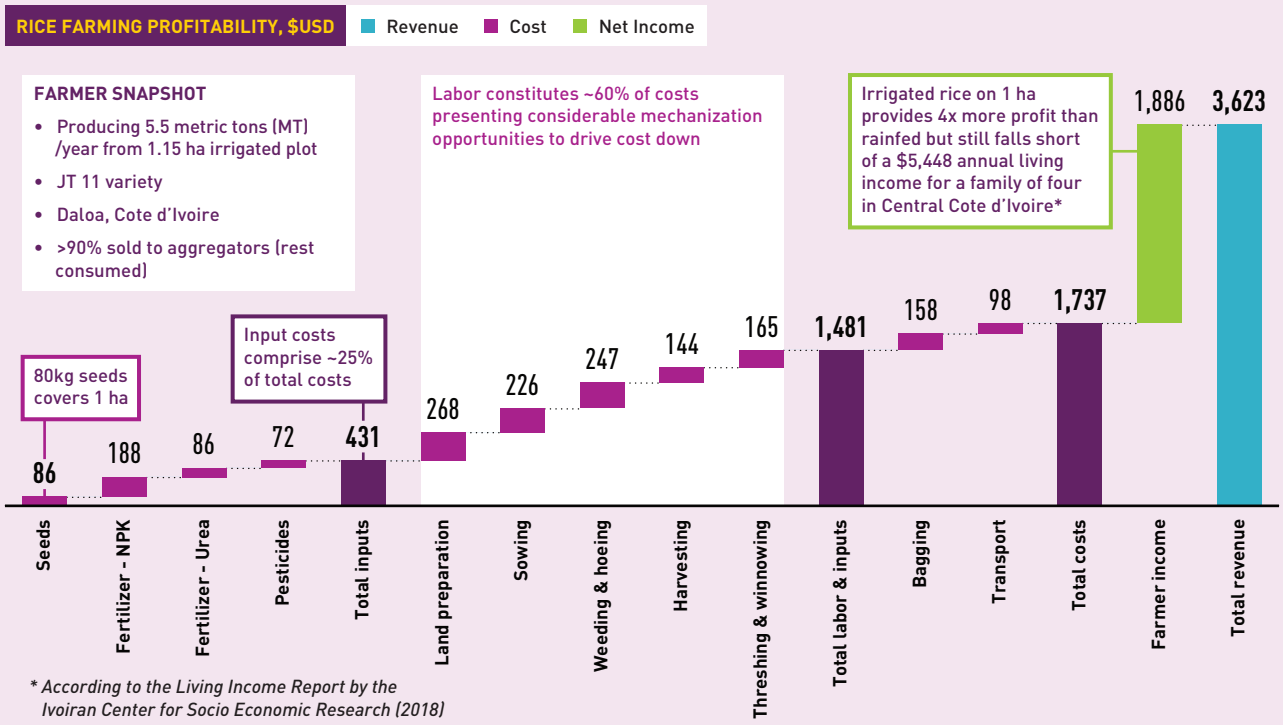
A detailed economic analysis of overall household profitability and cash flow can identify opportunities for both land and labor productivity, as well as highlight their limitations. For a particular farm size, even significant productivity improvements focused on a specific commodity will not necessarily allow a small farming household to reach a living income. In such cases, strategies must include opportunities to supplement income through diversification of production (e.g., horticulture, aquaculture) that also takes into account off-farm employment income and remittances. Where these approaches are still insufficient for farmers to achieve a living income, approaches for a socially beneficial transition from farming into employment along the food and agricultural value chain or in other sectors should be explored. Figure 2 provides an example of the detailed farm-level economic analysis required to generate targeted, relevant, and effective support strategies for specific segments of farmers based on a distinguishable factor such as land size, cropping system, or irrigated vs. rain-fed. In this example, a detailed analysis of cost drivers identified labor as comprising 60% of the farmer's cost of production, which highlighted the need to prioritize access to affordable mechanization services. Second, the analysis showed that even with irrigation, the profit from 1 hectare of rice production alone did not allow a household to achieve a living income, nor did it allow for sufficient cash flow to cover expenses throughout the year. Therefore, an income diversification strategy is critical to help this cohort of farmers to supplement income and smooth cash flows to help cover expenses such as school fees, inputs, and hired labor throughout the year.

"For a particular farm size, even significant productivity improvements focused on a specific commodity will not necessarily allow a small farming household to reach a living income."

Photo credit: Daniella Van Leggelo-Padilla / World Bank

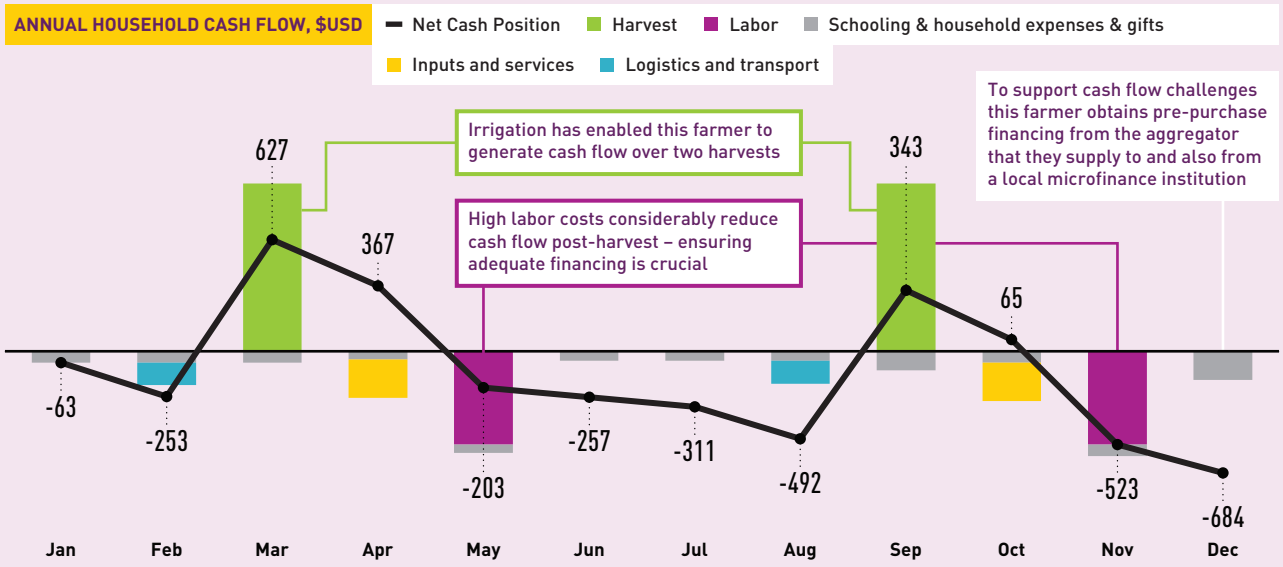
Figure 2: Example of a detailed farm-level economic analysis critical for identifying priority needs

WHILE IRRIGATION OFFERS AN OPPORTUNITY FOR A 1-ha RICE FARMER TO GENERATE 4X MORE PROFIT...



** According to the Living Income Report by the Ivoiran Center for Socio Economic Research (2018)*

...NEGATIVE CASH FLOWS AND INSUFFICIENT PROFITABILITY REQUIRES SUPPLEMENTAL, DIVERSIFIED INCOME



KEY TAKEAWAY

While a focus on improving productivity of a target commodity can improve incomes, for these farmers to reach a living income and positive cash flows throughout the year, they will require additional income through diversification (e.g., horticulture, aquaculture), off-farm jobs, and/or remittances.

Source: Rogers MacJohn LLC field research and analysis on behalf of the Bill & Melinda Gates Foundation (2020)

2. Market access / connectivity

Smallholder-based agricultural transformation requires facilitating more efficient transactions, strengthening relationships among value chain actors, and opening up access to new markets. Smallholder-based production is associated with an array of market access and connectivity challenges related to the physical aggregation and traceability of goods, the transmission of information, the actual matching of supply and demand, and the development of trust within the supply chain. Transaction costs can be high, and unequal bargaining power may give rise to inequitable results or trigger compensating opportunistic behavior. Unless such issues can be overcome, gains in productivity will not translate into higher incomes for farmers. Good and bad connectivity is equivalent to healthy and clogged arteries. They determine how well the individual parts or organs work together as a well-functioning system. The quality of market access and connectivity is a function of the presence, quality, and access to physical infrastructure, market and non-market institutions, and information.

Improving market access / connectivity in smallholder-based value chains requires the upgrading of infrastructure, management systems, and institutions to facilitate efficient market transactions. Examples of infrastructure investments include rural access roads, information technology services, logistical services, and market information services. Management systems are required for raw material traceability and quality management, while transactions can be made more efficient through marketplaces, warehouse receipt systems, and contractual arrangements. In markets that are under-developed, and when there is a high degree of interdependence between farmers and off-takers, more complex and continuous relationships among value chain players tend to emerge. Effective communication throughout the value chain is also critical to ensure the timely supply of the right varieties at the right quality specifications—from retailers, to processors, farmers, and seed companies.

Photo credit: Kubat Sydykov / World Bank

SPOTLIGHT 6

Better to be connected than not: Indonesia's smallholder oil palm producers

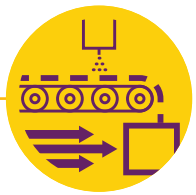
Companies providing formal contracts and support services to farmers to supply raw materials can improve the quality and reliability of supply while helping farmers to improve incomes. However, price transparency to improve trust and careful farm-level economic analysis are required to ensure that those farmers entering into contracts have the capacity to improve their profitability and cash flow while reducing financial and food security risk.

While most international attention focused on Indonesia's oil palm sector has been given to its plantation companies and their mixed record on environmental management, the sector also features some 1.7 million smallholder producers who account for more than one-third of the cultivated area and production. Since 2000, smallholder cultivated land has expanded at a faster pace than either private or state-owned plantations, mainly owing to the comparatively higher returns to oil palm relative to other crops or alternative livelihood activities. The smallholder oil palm producers can be categorized into three broad types: tied, independent, and tied+. Tied smallholders participate in outgrower or contracting schemes—evolving from government-promoted schemes since the 1970s—and supply their produce to the plantation company's palm oil mill under contract, while the company provides technical assistance, inputs, fruit bunch collection, and processing. Independent smallholders are not contractually bound to a plantation company and operate independently through all phases of production. Some smallholders may own both tied and independent plots (i.e., 'tied+'); these are smallholders who participated in earlier government schemes and were able to save sufficiently to obtain loans and expand their plantation area. They keep their options open when selling their output.

Independent smallholders continue to underperform in productivity, income levels, and sustainable practices, and the tied+ farmers' independent plots perform worse than their tied plots. Independent farmers often lack the agronomic understanding to establish and maintain their palm, lack access to credit or other methods to satisfy their short-term consumption needs while they are establishing oil palms (which take several years to produce fruit), and often lack access to high-quality planting material. Once farmers achieve their harvest, selling the fruit poses a further challenge. Farmers must have access to a mill, and typically they must contend with significant price variability. In addition, the immediate (48-hour) requirement to process ripe fruits can make independent farmers vulnerable to middlemen. Contractual and other arrangements between plantation companies and smallholders can help farmers to overcome some of these constraints. For example, contracted farmers normally receive financial support for plantation development, quality control services, and price support, although power imbalances limit farmer bargaining power over prices. One study found that contract farmers use double the quantity of fertilizer, achieving significantly higher yields (15%), and receive higher prices for their fruit. Other benefits that farmers may receive from contracting with a plantation company are more secure income and oil palm companies' social responsibility-related investments in health and education for local communities.

Yet, it is important to assess the capacity and risk of farmers to participate as well as to build trust and price transparency in the contract farming relationship. In Jambi, a random sample of 245 smallholders found negative effects of participation for poor households and strongly positive effects for non-poor households. Poor smallholders are able to join the schemes, but their financial and technical capacity is insufficient to allow them to pay off the debt associated with planting a crop that doesn't bear a commercial yield for multiple years. Poorer farmers may also suffer disproportionately from the income shocks associated with producing a cash crop, as they would have less land set aside in food crops to serve as a buffer. Non-transparent means of determining farm gate prices for contracted supplies has been one reason why some farmers have remained independent or hedge their bets by transacting both under contract and via spot markets. Independent suppliers may also have been better able to skirt around regulatory or industry measures to address environmental concerns (e.g., burning of foliage for land clearance, planting in protected areas or on peat soils).

Based on IFC (2013) and Havemann and Kusumajaya (2015)



3. Value Addition and Distribution

Value addition, and ensuring its benefits accrue to both companies and farmers, is an important part of increasing competitiveness, efficiency, and socio-economic impact in an agricultural value chain. Value addition can take three primary forms, each with its own distinct benefits:

- **Differentiation** on the basis of variety or breed, quality attributes, production process (standards), and/or source or geography of origin. Differentiation, or 'de-commoditizing' the commodity, can help farmers and firms stand out in a saturated market (especially in low-value agricultural commodities), experience somewhat lower market price volatility than for generic commodities, and help access, if not create, more lucrative market segments. If the benefits are well distributed, this may provide an important boost to smallholder farmer incomes.
- **Processing**, meaning conversion of agricultural commodities into different and multiple product forms. Processing helps to overcome the seasonality of supply, allows for more consistency in attributes the market requires (e.g., kernel size, percent of broken grains), serves the growing market for convenience foods, allows countries to industrialize or otherwise find industrial uses of agricultural commodities[19] (see Spotlight 7 on Uganda below), and helps a country take advantage of a shift in comparative advantage from primary agriculture to manufacturing. It is also crucial for reducing post-harvest losses of highly perishable commodities.
- **Utilization of waste or by-products** for economic uses, such as energy generation. The utilization of by-products is less widely recognized as value addition, but this can be an important boost to efficiency—by converting some costs into revenue streams—while also aiding in environmental regulatory compliance.

It is important to note that value addition does not always benefit smallholder farmers and their rural communities. For instance, over the years, Argentina has taxed and periodically banned exports of raw soybeans in order to protect and promote its processing industry. These episodes have come at the expense of farmers in the form of lower prices. Several countries with nascent cashew processing industries have run into similar circumstances, where the early investments needed protection and support before realizing efficient operating scales, with this sometimes translating into lower (rather than higher) prices for farmers. In the specialty coffee sub-sector, patterns of industry organization have generally impacted the distribution of the benefits from the realization of price premia. And, sometimes, well-intended government interventions have had unintended distributional consequences. For example, one African country applied an arrangement for exclusive procurement zones in order to enhance business confidence, prevent farmer side-selling to competing companies, and facilitate many investments in quality-enhancing coffee washing stations. But, by making this a permanent rather than time-bound measure, this served to erode any bargaining power smallholder farmers may have been able to mobilize and employ by having the freedom to sell to the highest bidder. As a result, the initial boosts in farmer profitability associated with increased participation in the specialty coffee market have not continued to improve. Most of the profits have been captured by value chain participants beyond the farm gate and farmer productivity growth has stagnated. *Therefore, companies should ensure that any gains realized from value addition are also distributed, at least in part, to farmers to improve incomes and to incentivize farmers to make continued investments into the productivity and quality of production.*

SPOTLIGHT 7

Industrial value addition drives the commercialization of 'traditional' smallholder food crops in Uganda

Companies can be instrumental in catalyzing expanded markets for traditional food crops, such as developing innovative uses for consumer or industrial products. In developing new uses for surplus food crops, however, care must be taken that this new form of value addition does not exacerbate any food availability or affordability issues facing domestic consumers. Uganda has had several examples of complementary, value-adding initiatives that have proven to be beneficial both for farmers and consumers—as well as the companies involved.

Uganda has been a laboratory for many externally financed projects aimed at increasing the competitiveness of both traditional and non-traditional agro-food exports. While different approaches have been used in various donor-funded projects, results have generally fallen short of expectations, with interventions often failing to promote sustained gains in productivity, product quality or logistics management. In contrast, more transformative impacts have come from collaborative public-private programs that have brought substantial value addition to traditional, low-value smallholder crops. Two examples relate to sunflower and sorghum.

Sunflower has been grown in Uganda's northern and eastern regions for many decades. Farmer yields were generally low, oil-pressing was done in backyards, and Uganda came to rely upon imported crude palm oil to meet much of its vegetable oil needs. In the late 1990s, national agricultural agencies collaborated with the International Fund for Agricultural Development (IFAD) on a program that helped spread the use of higher-yielding varieties and that organized farmers into groups enabling improved knowledge transfer. The new variety, however, had low oil content and was therefore unattractive to larger scale vegetable oil processors. This changed with the mid-2000s collaboration between the Mukwano Group, United States Agency for International Development (USAID), and Uganda's National Agricultural Advisory Service. A high-yielding and high oil content hybrid variety from South Africa was tested and more than 2,000 demonstration sites were set up to promote its adoption. An outgrower system was developed by Mukwano which, by 2008, included more than 50,000 farmers. Another private company developed a parallel scheme in other localities involving another 35,000 farmers. As a result of these and other interventions, yields increased by 40-50% and national production rose from about 80,000 tons in 2000 to 225,000 tons in 2009. Smallholder farmer surveys found sunflower producers to have higher incomes and better access to advisory services than non-participants in the same locations and gross profits per acre were three times higher for farmers participating in the contracting schemes than those selling sunflower in the open market (Elepu and Nalukenge, 2007).

Sorghum is a traditional staple food in Uganda, grown in relatively low rainfall areas in multiple regions of the country. In addition to being eaten in rural communities, sorghum was used in artisanal brewing. During the 1980s and 1990s, national production rose, although this was primarily due to the expansion in planted area with very limited improvements in yield. In 1995, the national research agency released a white-seeded sorghum hybrid with considerable yield potential that was also highly suitable for milling and baking. This variety, Epuripur, provided the basis for an attractive innovation in the commercialization of sorghum. A local subsidiary of South African Breweries (SAB) Miller was looking for a local ingredient to reduce reliance on imported malt. Epuripur was found to have excellent brewing qualities. Its use gave rise to a new product, Eagle Lager, which would soon become the second largest brand for the company in Africa (and is now the largest). SAB Miller entered into a partnership with several national agricultural institutions to promote farmer uptake of the Epuripur hybrid, the production of which is four to five times traditional varieties. A contract farming scheme was developed which, by 2009, included some 6,000 farmers (and currently involves 9,000 farmers). Farmers have utilized only a small proportion of their land to grow the crop, but this has generated an important supplemental income. Harvesting is done manually and with the introduction of double season cropping, seasonal labor demand has been created for some 60,000 rural workers. Early success in this initiative led SAB Miller to replicate the model, initially in Zambia, Tanzania and India, and more recently in Zimbabwe, Mozambique and Ghana. Across these countries, hundreds of thousands of households have benefitted. Use of locally procured raw materials (instead of imported malt) has resulted in lower cost, reduced transportation, and lower greenhouse gas emissions.

Source: Jaffee et al (2012) and SABMiller website

4. Risk mitigation

Smallholder-based agricultural transformation requires strategies and tactics to reduce the likelihood or to blunt the effects of the many risks involved in agricultural production and supply chains. Effective risk management allows smallholder farmers to invest in their farms, while it allows industry to invest in, and commit to sourcing from, those farmers. Smallholder farming households are exposed to many types of risk, including extreme weather events, pests and diseases, illness, and theft. Price volatility—specifically, unexpected price declines—is also one of the most serious risks that smallholder farmers face. According to the International Coffee Organization (ICO 2019), 50% of Nicaraguan coffee farmers, 44% of Cameroonian farmers, and 30% of Tanzanian farmers dropped below the extreme poverty line of $1.90/day as a result of price declines between 2017 and 2019. A drop in global market prices can easily drive farmers back into poverty even after prior income gains are made; therefore, mechanisms to hedge farmer income risk, such as household income diversification or changes in corporate procurement practices (e.g., cost-plus pricing, which ties farm gate prices to the cost of production) are worth exploring. The consequences of unmitigated risk can either be temporary or permanent, with the latter including the loss of productive assets (when animals or land must be sold to cover costs) and the loss of human capital development (when the education of children stops as a result of unaffordable school fees or the choice to replace paid labor with household child labor).

Companies sourcing from smallholder farmers, either directly or indirectly, also face multiple risks, including inadequacy of supply, unrecovered finance from input provision (due to 'side-selling'), sub-standard quality of supply, the presence of harmful chemical, antibiotic or other contaminants in the delivered product, and a host of reputational risks associated with human rights issues such as child labor. Some of these may entail short-term costs (i.e., needing to source from elsewhere to fulfill orders, or disposing of sub-standard quality produce); others may harm the value of a company's brand in the marketplace.

While contributing to economic growth, market-oriented agriculture has also contributed to the degradation of ecosystem services, including deforestation and greenhouse gas emissions, biodiversity loss and wetland destruction, soil erosion and degradation, and surface water pollution and depletion of aquifers. This situation not only creates problems for society and the planet, but also calls into question whether a production model that draws so heavily on environmental resources can be sustained over time. Recent analyses have drawn attention to these issues in the context of export-oriented (Scherr et al. 2015) and domestic (Cassou et al. 2017) agriculture in rapidly transforming countries in Asia. The environmental costs have sometimes been enormous. Yet, these impacts are not inevitable, and a wide range of instruments can and are being used throughout the developing world to reduce agriculture's environmental footprint and benefit from consumer demand for more environmentally friendly products. Spotlight 8 illustrates some of these measures in the context of the Chinese tea industry.

"Smallholder farming households are exposed to many types of risk, including extreme weather events, pests and diseases, illness, and theft. Price volatility—specifically, unexpected price declines—is also one of the most serious risks that smallholder farmers face."

SPOTLIGHT 8

Companies, in collaboration with government, must collaborate on efforts to protect the long-term environmental sustainability of agricultural production: Yunnan (China) tea example

While investments in environmental sustainability may not contribute to companies' profitability in the short term, the consequences of brand erosion and the market's acceptance of a company's—and even a region's—raw materials are dependent on long-term environmental sustainability investments. Governments can support these investments through policies that take a long-term view and level the playing field through standards.

China is one of the world's leading tea producers and consumers. Yunnan, a hilly and mountainous province, is one of the country's leading tea producing areas. It is known for its high-quality and very wide diversity of tea. Tea from its 'ancient' tea gardens is recognized for its health benefits. Over time, however, the region's reputation for 'green' and 'healthy' tea began to take a hit. The biodiverse tea gardens had been supplemented by investments in larger tea monoculture farms which displaced forests and made much wider use of chemical fertilizers and pesticides. Those chemicals were showing up in marketed tea and in community water sources. Land clearing made the area more vulnerable to soil erosion. The clearing of the forest cover was deemed to have played a role in a severe drought that hit the area in 2010. Thus, as a result of expanding tea and other raw material production (e.g., rubber), the area's environmental health was deteriorating, and Yunnan tea's market position was becoming vulnerable (Havemann 2015).

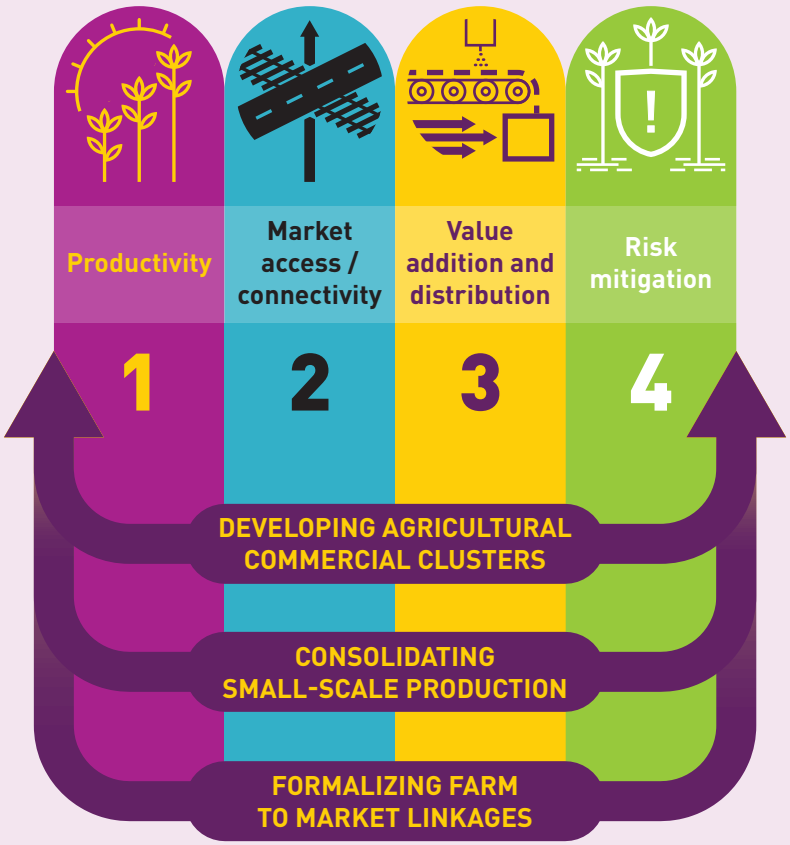
Over the period of a decade, from the early 2000s to the early 2010s, the response took multiple forms and involved several actors. Several national-level measures provided the enabling conditions for more localized and tea-specific interventions. These national measures included the introduction of Payment for Ecosystem Services policies and programs, guidance on the development of provincial and local Land Use Master Plans, the development and promotion of different types of 'green' and 'safe' food labelling, efforts to support food labelling and trademark protections for so-called 'famous products,' and the roll-out of a national program to reduce agricultural chemical use. At the local level, subsidies were provided to support reforestation of hillsides and for tea replanting involving improved land use practices. Support programs were established between growers and tea processing and distribution companies involving microfinance, provision of advisory services, and fostering longer-term commercial relationships. One intervention involved the Ethical Tea Partnership working with a local tea research institute to train farmers on improved practices for pest management, including through non-chemical means. The progress made thus far has helped restore the 'green' and 'healthy' reputation of Yunnan teas in the Chinese marketplace, supported the emergence of a local agro-tourism industry, and attracted attention to the area's natural growing conditions—which have proven to also be ideal for the growing of high-quality Arabica coffee. This is all part of an increasingly diversified local economy in a region where the Chinese government has now officially declared the eradication of extreme poverty.

4. APPROACHES FOR DRIVING SIMULTANEOUS PROGRESS ACROSS ALL FOUR PILLARS

While these pillars of smallholder-based agricultural transformation have been a common denominator in the success of many countries and sub-national regions in alleviating rural poverty at scale, approaches to supporting progress across these pillars has been varied depending on geographic, social, and regulatory contexts. In all cases, progress has been driven by economies of scale and scope.

In the context of smallholder-based agricultural transformation, different approaches have been taken to drive progress across productivity, market access / connectivity, value addition and distribution, and risk mitigation by increasing economies of scale and scope. A fragmented pattern of production is often not efficient for delivering agricultural commodities to markets. High transaction costs either reduce the competitiveness of the value chain and/or result in lower farm gate prices. A synthesis of this research indicates that countries transforming their agriculture in a smallholder-based way are utilizing multiple approaches to realize economies of scale and reduce transaction costs to drive improvements across all four pillars in tandem. These three approaches include (i) developing agricultural commercial clusters, (ii) consolidating small-scale production and (iii) formalizing farm to market linkages.

Figure 3: Driving progress across the four pillars of growth by realizing economies of scale in smallholder-based agriculture



1. Developing agricultural commercial clusters

Agricultural commercial clusters (ACCs) can improve coordination and realize economies of scale in smallholder-based agri-food systems. Clusters have helped drive progress on:

Productivity by co-locating research, support services to farmers and processors, and irrigation

Market access / connectivity by improving marketing and logistical infrastructure for lower transaction costs

Value addition by co-locating primary and/or secondary processing, increasing competition, and crowding in agricultural R&D and product development

Risk mitigation by increasing the number of off-takers for farmers' produce where supportive local government can help all parties facilitate contractual arrangements and mitigate disputes

Successful clusters are more than simply areas of concentrated production. When effective, they involve a network of service providers, shared facilities, and regularized horizontal and vertical relationships based on co-opetition—a blend of competition and cooperation. Most agricultural commercial clusters emerge spontaneously, mature over time, experience ups and downs and gradually adopt various forms of collective action and gain government support. Cluster upgrading initiatives normally take the form of public-private collaborative partnerships. Experience has shown that central ministries are largely ineffective in creating or managing cluster initiatives and that more effective government engagement comes from specialized agencies, either ones focused on particular commodities or ones with dedicated mandates for plant and animal health protection. Within the developing world, nearly all successful cluster initiatives have centered around high-value, export-oriented commodities (Galvez-Nogales 2010; Murphy 2017).

In recent years, there have been a number of interesting cluster initiatives that have combined spatial and value chain interventions in pursuit of multiple objectives—social, economic, and environmental. Sometimes, these are referred to as 'integrated landscape initiatives.' There is a rich and growing literature on this subject that highlights opportunities for collective action as well as the complicated governance of such multistakeholder initiatives.[20] Some of these initiatives center on the sustainable production of individual commodities, others pertain to mixed agricultural systems, and still others are motivated by the sustainable management of a particular resource such as fresh water. Spotlight 9 below highlights a few of these that are operating at significant scale or have the potential to do so in the future.

While governments can lead the formation of agricultural commercial clusters, they should do so as part of a multistakeholder public-private collaborative effort. Development agencies and companies should work with communities, local government, input suppliers, farmers, traders, and industry players along the value chain to help governments determine the optimal location of ACCs, deploy resources for critical infrastructure and sustainable resource (water, soil) management, and support national ag research institutes to open satellite facilities and extension services. In addition, national and local governments and companies should work with banks to open lines of credit for trade/input finance in these areas, co-located with processing facilities. Companies can ultimately leverage this confluence of public and private investment to strengthen their own value chains and drive poverty reduction.

SPOTLIGHT 9

Clustered approaches to meet both commercial and environmental objectives

By working with governments and other industry stakeholders, a cluster approach can help to crowd in the required public investment in infrastructure and research, as well as investment along the value chain, to improve synergies, grow and diversify farmer incomes, and drive rural economic growth through greater value addition and market access.

The Vietnamese shrimp aquaculture cluster in parts of the Mekong Delta region has experienced significant growth over the past two decades, transforming some of the local economies and generating billions of dollars of annual export earnings. At the same time, shrimp aquaculture has produced multiple adverse environmental impacts, including water pollution (from poor wastewater management) and both biosecurity and food safety risks (due to excessive use of antibiotics).

An initiative to address these problems combined a spatial and value chain approach in specific areas of concentrated production. Farmers were organized into groups and some 50 'good aquaculture practice zones' were created, involving nearly 10,000 producers and nearly 13,000 ha of production. The good practice zones and producer groups enable a range of public (and private) services to be delivered more effectively, including improvements to (community) infrastructure for biosecurity, the provision of veterinary and extension services, the provision of improved seedstock, testing and demonstration of improved methods and/or technology, training and farmer schools, marketing assistance, and Good Aquaculture Practice (GAP) certification (and product promotion). Farmers adopted the improved GAP methods because of the services provided to GAP groups and zones and because of their demonstrated benefits (reduced losses, higher returns). A subset of producers has come into the orbit of contract farming arrangements with companies and have been provided guaranteed (and somewhat premium) pricing and payments for environmental (protection) services. The GAP groups were required to take active roles in early disease monitoring and reporting and to address water pollution and disease problems promptly when they occurred.

Monitoring results from the country's Coastal Resources for Sustainable Development Project show profound impacts with much reduced incidence of disease, resulting in yield improvements of nearly one-third. Over a four-year period, the net return per hectare increased from less than $1,900 to more than $3,100. Before the initiative, there was no concept of GAP groups or zones, and good practices were not systematically applied in small-scale aquaculture or in extensive fish farming systems. After several years of experimentation and success with this model, the GAP group-and-zone concept is being adopted in many other parts of Vietnam. The more extensive mainstreaming of GAP, an extension of contract farming arrangements, and a further shift towards the export of value-added products are expected to lead to a doubling of Vietnam's shrimp export value by 2025.

China has also combined landscape and value chain approaches in agricultural cluster initiatives to deliver transformative changes and realize wider social benefits. For example, a package of new initiatives is targeting the value chains for pork, vegetables, and aquatic products in and around five municipalities in Guangdong Province. Efforts are geared toward modernizing these value chains, with a particular emphasis on greening production and improving the management of food safety risks. Aside from improving integrated One Health regulatory systems, interventions support investments by farmers and enterprises in better primary production, logistics, quality assurance, and waste management.[21] Another initiative, of longer standing, promotes high-quality, 'ecologically produced' tea near Pu'er City in Yunnan Province. The area's traditional 'tea agro-forests' are recognized as a Globally Important Agricultural Heritage Site. A combination of advanced research and development, farmer training, subsidies for eco-friendly practices (especially related to pest management), and product certification and traceability systems have contributed to a more sustainable production cluster that realizes premium prices in domestic and international markets and is also associated with a successful agro-tourism initiative. National level agencies, local government authorities and both farmer and industry organizations have played very active roles in the various initiatives (Havemann 2015). Developments such as these have been important in China's recent success in virtually eliminating rural poverty in the mountainous tea-growing areas of Yunnan and Fujian Provinces.

2. Consolidating small-scale production

Consolidating small-scale production has helped increase economic viability by growing economies of scale, driving simultaneous progress on:

Productivity by facilitating some degree of mechanization that increases the returns to labor

Market access / connectivity by improving storage and logistics for farmers and buyers in contiguous areas

Value addition by facilitating consistent variety and quality from planting to post-harvest handling

Risk mitigation by making it easier for farmers to diversify their farming and other income sources

Critically, consolidating small-scale production is only a viable strategy for agricultural transformation that reduces poverty at scale if certain conditions hold. First, consolidation must enable those farmers who remain in farming to earn greater returns on their investment, something that depends on the crop and context. Second, the wider economy must offer attractive alternatives for those who decrease their involvement in farming (for example, by leasing out their land) or exit farming altogether. Consolidation must be a choice that smallholder farmers make in their own economic best interests.

It is important to note that what constitutes an economically viable farm size cannot be defined in general terms, as this depends enormously on local and often farm-specific circumstances. Very small farms are often efficient in their use of available land, water, and other resources. But economic viability depends on a host of additional factors ranging from climate to land quality and location to the availability of supplemental off-farm employment opportunities and more. Some very small farms will be economically viable while others will not. Importantly, there is little evidence that very small farms producing low-value commodities have emerged out of poverty in significant numbers based on income from the sale of those commodities alone. Therefore, it's critical to assess whether the targeted commodity has the potential, even at maximum productivity, to sufficiently contribute to a farming household's ability to reach a living income and manage risk through improved profitability, cash flow, financial resilience and food security. Companies can conduct these assessments for various farm types, along with a sensitivity analysis across multiple market and weather conditions, to assess whether and how improvements in specific farm management practices can lead to sustainable poverty reduction, or if other strategies are required.

Multiple strategies have been used to foster the development of economically viable farm units and otherwise incrementally consolidate production within smallholder-based systems where land rights are secure. Governments have normally played active, if not leading, roles in these efforts. The three strategies most commonly observed are: (i) facilitating the development of active markets for the sale or, more commonly, the lease of land, (ii) supporting the emergence of joint or cooperative farming in which farmers retain their land rights, but clusters of farms are jointly managed as one, and (iii) supporting mechanization by promoting equipment sharing, leasing, or, more commonly, the development of a market for mechanization services. Risks associated with the sale or lease of land, such as landless farmers falling deeper into poverty or migrating to become urban poor, must be analyzed in each case.

Across most of East and Southeast Asia, the agrarian structure is dominated by very small farms, and average farm sizes have been declining over an extended period in most countries. Only Japan and China have seen recent increases in average farm size, but these are still very small and just a fraction of typical farm sizes found in Europe, North America or Australia/New Zealand (Yamauchi et al. 2020). While this fragmented agrarian structure did not prevent these countries from experiencing robust agricultural growth and productivity gains in the past, the persistence of (widespread) micro-scale farming poses challenges for assuring economically viable farm operations and value chains in the context of demographic and economic changes and the modernization of agro-food systems. And, with a shift to high value perishables and specialized commodities, continued fragmentation may be associated with high physical losses and transaction costs.

SPOTLIGHT 10

Successful approaches to achieving economies of scale in land use have taken varied forms across Asia

Several Asian countries have been actively promoting land consolidation, either by facilitating a more active market in land sales or leases, or by encouraging one form or another of joint or cooperative farming in which farmers retain ownership/use rights of their land yet farm it jointly or cede its management to a commercial entity on the basis of some form of compensation (e.g., paying rent to farmers). Companies and government can learn from these approaches to improve economies of scale while ensuring that proper due diligence is undertaken to minimize any risks to farmers in a particular cultural, economic, or political context.

China has been particularly active in promoting consolidation, and evidence suggests that this has both led to increased investment for agricultural production and facilitated temporary or permanent migration to urban areas among people who no longer wish to remain on the land (Huang and Ding 2015; Huang 2017). Prior to reforms resulting in the issuance of land certificates that confirmed a person's entitlement to land, farmers were reluctant to migrate for fear of losing their land access to expropriation. The new system permits sale and lease of land rights. Since then, around 25% of rural households have rented out their cultivated land. Compared with past practices of only renting to friends and relatives, recent transfers have included leases to farmers' professional cooperatives, as well as private companies. This land consolidation has been driven by rising labor costs and out-migration and has been facilitated by: (i) the emergence of local government land transfer services (providing information, contract design, and dispute settlement services); (ii) policy support in the forms of loan guarantees and subsidies for larger farm investments; and (iii) the emergence of an active market in mechanization services.

In South Korea, government-facilitated purchases, leases, and sales of land have sought to increase the size of many rice farms and fruit orchards, facilitating the transfer of farm ownership or management from retiring or 'non-professional' farmers to a new generation of farmers who see farming as a business. In one scheme, the government simply provides a lump sum payment to an older (more than 65 years old) farmer to lease the farm to someone else. Another long-standing program is the Farm Successor Program in which the government has sought to establish one or more new entrepreneurial farmers in each village. Long-term low-interest loans, together with training and mentors, are provided to the new farmers. Over a 20-year period, some 130,000 successor farmers were supported. They now account for about one-tenth of all Korean farmers.

Vietnam has taken a different approach, as most farm households have been reluctant to sell their land or even lease it to people other than family members or neighbors. The emphasis has instead been to promote block farming based on a so-called 'Small Farmers, Large Field' (SFLF) approach. Here, farmers have been assisted (through infrastructure investments, improved access to finance, and facilitation services) to integrate their small rice areas into one large field. The benefits include greater bargaining power with buyers and input suppliers, an increased use of on-farm and post-harvest mechanization, an aggregated supply of just one rice variety, and improved storage. Under the SFLF, participating farmers organize themselves into groups, usually with assistance from the local authorities.

While governments need to lead any efforts in facilitating land consolidation via land titling and institutions to facilitate the transfer, sale, and leasing of land, this should also ideally be done as part of a multistakeholder platform, where farmers, their communities, and civil society can help determine the impacts of such efforts to ensure they are in the farmers' best interests. Companies can leverage these efforts, where farmers will benefit, to improve the efficiency, volume, and quality of supply and to use the company's influence in helping to secure contracts with low-cost mechanization providers and banks to ensure farmers have access to equipment, parts, and financing.

3. Formalizing market linkages

Formal farm to market linkages have helped to drive progress on:

Productivity by incentivizing farmer investment and facilitating access to finance, inputs and services

Market access / connectivity by increasing information flows, reducing transaction costs and providing an improved basis for quality management and compliance with regulatory requirements

Value addition by ensuring reliable supply of the right variety and quality, and enabling processors to access supply, improve competitiveness, grow market share, and meet sustainability standards

Risk mitigation by supporting more stable, or at least predictable, prices and market outlets for farmers' produce, while also reducing risk to buyers and creditors from side-selling and default.

Cooperatives and contract farming are two prevalent forms of formalizing market linkages, each with its benefits and caveats. For example, while a large number of studies conclude that smallholder farmer cooperatives have delivered clear benefits to their members,[22] experience with cooperatives is not uniformly positive. This explains why no more than 20% of farmers worldwide are members, despite the many reported positive impacts of membership.[23] Studies report that marginalized groups in particular, including female-headed and geographically distant farm households, participate in and benefit from cooperatives to a lesser extent (Bizakova et al. 2020). Contract farming, for its part, can help reduce the transaction costs involved in sourcing raw materials and getting products to market—but it works better for some raw materials than others,[24] and for some farmers and companies than others. Companies that are well-managed, have ample finance, have a strong competitive position, communicate effectively, and have a commitment to rural development make the best partners for farmers.[25] Contract farming has been most effective when facilitated by government and/or development agencies that can deploy grant resources help strengthen the value chain, enforce contracts and mediate disputes.

Formalizing value chain linkages is an area where companies are best positioned to lead the effort. Companies should help farmer cooperatives strengthen their governance and business plans and explore value-added primary processing opportunities that more fairly distribute value and risk in a way that is favorable to farmers. To monitor the distribution of value, the farm gate price as a percentage of free on board (FOB) or local market price should be used as a benchmark relative to other origins to flag discrepancies and to troubleshoot where the distribution of value or supply chain inefficiencies are out of line with best practices. Companies should also develop stable, long-term (e.g., minimum three to five year) contracts with farmers and explore cost-plus pricing models to ensure farmers can cover their cost of production and help them profitably invest in their farms with lower risk.

"To monitor the distribution of value, the farmgate price as a percentage of FOB or local market price should be used as a benchmark relative to other origins to flag discrepancies and to troubleshoot where the distribution of value or supply chain inefficiencies are out of line with best practices."

SPOTLIGHT 11

Productive alliances in support of smallholder commercialization: A tripartite relationship

Given the trust issues in most agricultural value chains, companies can enter into productive alliances between multiple partners, including the government, to ensure that farmers produce the right varieties, quality, and volumes of raw materials needed while ensuring farmers receive the right financial and technical support for improving productivity and quality to grow profitability, competitiveness, and market share.

One approach to consolidating a critical mass of smallholder producers and anchoring them better to buyers has been called 'productive alliances.' Productive alliance programs typically involve three core actors: a group of organized smallholder producers, one or more agro-enterprise buyer(s), and the public sector. The approach aims to promote horizontal alliances among the producers as well as a vertical alliance between the producers and the buyer(s). Typically, a business agreement is signed between the agency in charge of the program or project (for example, a government ministry), the commercial partner, a service provider, and a producer organization. The agreement specifies product characteristics (such as varieties to be grown), the quantity to be purchased, production methods, and logistical arrangements (such as how and when the product will be delivered). It also defines how the price is set and payment made and indicates any contributions of the buyer, such as input provision and technical assistance. Most programs include some provision of grant resources, usually for technical assistance, build relationships between the farmer groups and the buyer, and sometimes also help co-finance infrastructure and equipment (for example, related to irrigation or commodity storage).

A typical productive alliance program might involve support to several hundred partnerships, either focused on a few commodities or a wide set of value chains. As with contract farming, the productive alliance approach is not suitable for the poorest smallholders. Projects generally work with 'transitional' smallholders who lack well-established linkages to buyers but have the willingness and capacity to engage in modern markets. The participating companies are generally small and medium processors, produce packers, seed companies, and commodity exporters, although sometimes larger companies are involved. Since 2000, the World Bank has supported nearly two dozen productive alliance programs across 10 Latin American countries, plus Vietnam and the Philippines, with the aggregate investment totaling about $1.5 billion.

Available evidence shows that productive alliance programs have generated significant positive impacts in terms of productivity, overall production levels, sales, income and employment. This is not to say that all individual alliances are successful—in fact, up to one-third of the partnerships have broken down during or after program support for a variety of reasons related to the producer group, the buyer, the commodity market, or other factors.[26] Across the breadth of projects, multiple lessons have been learned about how to target farmers and enterprises effectively, the forms, scale and longevity of partnership support, how to transition from project support to conventional financial or technical services, and the commodities and market settings that are more or less suitable for these partnerships. Successful programs have involved significant cost-sharing by farmers or farmer groups, demonstrating their commitment. Such programs have also tended to form synergies with other rural development initiatives, especially related to access to financial services and the upgrading of infrastructure.

The most rigorous assessments of impact come from productive alliance programs in Bolivia and Colombia, where control groups were included in the evaluation. In Bolivia, the nearly 50,000 participating producers experienced an average income increase of just under $2,400, or 39%. At the end of the project, participating producers had agricultural incomes one-third higher than those of non-participants. In Colombia, among the different partnerships, the net income gains for participating farmers increased by 12-32%, and participants had incomes 29% higher than non-participants. These and other productive alliance programs have had impact at scale, benefitting large numbers of farmers and commodity companies, across countries characterized by wide differences in terms of public and private institutional capacity.

See World Bank (2016) for a review of Latin American experience.

5. IMPLICATIONS FOR GLOBAL FOOD AND AGRICULTURE COMPANIES

To build thriving rural communities and more sustainable, resilient agricultural supply chains, where do companies and their partners go from here?

The lessons from places where smallholder farmers have been able to transition out of poverty at scale suggest a number of implications and preliminary recommendations for companies seeking to reduce poverty in their agricultural supply chains while meeting their commercial objectives.

Companies need to perform a rigorous assessment of the potential to reduce poverty, use their findings to develop a strategic plan in collaboration with other stakeholders in the sector, and then work together to implement that plan, track progress, and course correct as needed along the way. A multistakeholder platform can be useful in this regard.

1. Evaluate poverty reduction potential

In countries and/or sub-national regions where companies source critical raw materials, it is critical to understand the extent to which the foundations for rural poverty reduction are in place and what more is needed to enable meaningful increases in smallholder farmer incomes and value chain competitiveness. A rigorous assessment should cover the agroclimatic conditions, market competitiveness, enabling environment, and political will necessary for rural economic growth as well as smallholder farmer economics and profitability potential. This assessment will help companies calibrate internal and external stakeholder expectations about realistic timelines and outcomes as well as develop effective strategies for achieving those outcomes.

At the farm level, economic analyses are required to understand the potential to improve household profitability, cash flow, and financial resilience for different types of farmers. Farmers can be grouped or 'segmented' based on land size, cropping system, irrigation, or any other key differentiating factor impacting their ability to achieve a living income. The potential for impact will depend on factors such as farm size, potential yields, value of the commodities grown, market price volatility, opportunities for income diversification, and the costs of production, transport, storage, and finance. All sources of on-farm and off-farm income should be taken into account.

Understanding each farmer segment's key cost and revenue drivers, as well as these farmers' risks, gender dynamics, and adaptability to climate change will influence the strategic options available and allow companies to target different types of farmers with the most appropriate support structures. In some cases, companies will be able to change farmer economics enough to achieve a living income through unilateral action. If the analysis highlights a very wide gap to living income, even with optimistic assumptions regarding price levels, productivity gains, and climate adaptation, then companies will need to complement unilateral action with longer-term, more collaborative measures to effect structural change that improves competitive market dynamics, strengthens the broader rural economy and enables members of farming households to find more lucrative off-farm employment opportunities. Human rights due diligence should also be undertaken to ensure that farmers (especially women) are not negatively impacted by participating in companies' supply chains and to develop support programs to help farmers transition when companies shift sourcing locations.

2. Develop a strategic plan via a multistakeholder platform

This paper has shown that government plays a central role in laying the foundations for increasing smallholder farmer incomes at scale. There are few examples in which companies have created pathways to a living income for smallholder farmers at scale on their own, especially where farmers have started off very far from that benchmark. The most significant impacts on agricultural transformation and rural poverty are likely to come through collective action, where both public and private investments can be focused on those value chains, locations, and farmers where progress can be made across all four pillars.

Companies can work with government agencies, farmer groups, and other stakeholders to develop a joint vision, key objectives, and strategic plan for smallholder-based agricultural transformation through consultative platforms that are inclusive of all key stakeholders across the value chain. These platforms can then pivot from being consultative and strategy-oriented to collaborative and implementation-oriented, serving to coordinate and align the actions of different stakeholders, monitor progress, learn, and update the strategy as needed.

The strategic plan, developed as part of the multistakeholder platform, for agricultural transformation and rural poverty reduction should outline how to best leverage a given region's comparative advantage and competitive positioning to either grow global market share, substitute imports, and/or to simply meet growing local demand. It should focus on agribusiness growth and farmer support systems that help farmers deliver quality product, achieve living incomes, and access basic services.

As outlined in Section 4, there are several approaches to explore during the development of the strategic plan for making progress against the four pillars depending on political, geographic, economic, and social contexts. First, agricultural commercial clusters can be explored to determine if the co-location of public and private investments in proximity to farmers can create synergies in R&D, production, storage, processing, and logistics services. Next, opportunities for economies of scale in production can be assessed alongside opportunities for employment in the wider economy, to determine the potential for consolidating small-scale production. Finally, opportunities to formalize market linkages such as through farmer organizations or productive alliances can be explored for improving value chain efficiency and value distribution to farmers.

Photo credit: CTA ACP-EU

3. Clarify roles and track progress

It is also essential that value chain stakeholders, national and local governments, and others (e.g., development agencies, civil society, research institutes) determine and agree on the roles and responsibilities for implementing the strategic plan, as well as who will drive the policies, standards, and investments needed.

The public sector must take a leading role in improving the enabling environment. This includes enacting policies and making investments that strengthen agricultural R&D and extension systems, improve infrastructure, support the enforcement of contracts, and ensure the benefits of economic growth accrue to smallholders and their communities. In many cases, different government ministries will be required to coordinate different policies and investments. For example, the Ministry of Agriculture may need to direct public research institutions to spearhead crop improvement and extension investments based on market needs identified by the Ministry of Trade and Industry.

Development agencies should play the important role of convening multistakeholder platforms—especially where the level of trust in the value chain and between the public and private sectors is low. Once these platforms are constituted, development agencies, serving as honest brokers with no political or commercial agendas, should help to ensure that government policies create a level playing field for all actors along the value chain, rather than only catering to the interests of the companies with the greatest market share and influence. Development agencies are well-positioned to help to ensure that the voices of smallholder farmers, women, and marginalized groups are heard and that efforts are tailored to their needs and capabilities. They also play a role in deploying more risk-tolerant capital to help fund the start-up costs of the platform, value chain/market studies, pilot projects, and monitoring and impact evaluation prior to scale-up. These agencies can also engage with civil society to provide the needed due diligence on the benefits and risks any strategies pose to smallholders, their communities, and the environment.

Companies have a critical role to play in leading on strategy development, procurement practices, and investments needed in market research, value addition, and logistics that will enable agricultural products to competitively meet the quality and cost expectations of the market while improving smallholders' incomes and share of value created. They are also well positioned to leverage the co-location of investments by other supply chain partners, governments, and development agencies to ensure they work synergistically and strengthen the competitiveness of the entire value chain. Finally, in areas where governments or development agencies must lead, businesses can help influence key investment and policy decisions to ensure they create the right enabling environment for farmers, and the businesses supporting them, to become competitive and thrive. Examples of activities are illustrated in the table below.

"Development agencies should play the important role of convening multistakeholder platforms – especially where the level of trust in the value chain and between the public and private sectors is low."

Table 4: Illustrative areas where agri-food companies can lead, leverage and influence

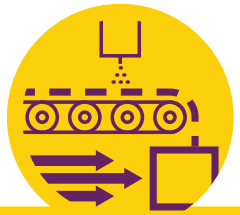
	 Productivity	 Market access / connectivity	 Value addition and distribution	 Risk mitigation
Lead	• Farmer training • Mechanization services • Farmer access to quality inputs and finance	• Productive alliances • Traceability systems • Contract farming	• Procurement practices • Product development/ differentiation • Profit-sharing schemes in processing/ marketing	• Sustainable landscape initiatives • Codes of conduct • Production, quality, and food safety standards
Leverage	• Block farming • Irrigation services • Public extension systems	• Farm to market infrastructure • Government investment incentives • Agribusiness incubation	• Agricultural commercial cluster initiatives • Agri-industry parks • Development agency programs for value chain strengthening	• Early warning systems • Pest/disease controls • Loan guarantees • Government contract enforcement and dispute mediation
Influence	• Agri-finance policies • Public agricultural research and extension priorities • National seed system strengthening	• Trade and investment policies • Market information systems • Warehousing and storage systems	• Farmer cooperative business plans and governance • National breeding programs • National branding	• Biosecurity policies • Climate change mitigation • Livelihood diversification

Table 5 provides a summary of the recommendations made in this section along with the recommended roles of companies, governments, and development agencies. In addition to the objectives of each recommendation, several example activities have been included.

As the multistakeholder platform shifts from planning to implementation management, companies should work through this platform to track progress. First, it's important to establish a set of common SMART (specific, measurable, achievable, relevant, and time-bound) indicators that will ensure that investments and policies are coordinated and synergistic as well as allow stakeholders to hold each other accountable, evaluate performance, institutionalize learning, and update strategies when necessary. Companies can also help to establish social and environmental standards, as well as traceability systems, to ensure that such standards and systems serve both the companies' and farmers' interests. In addition, development agencies, with guidance from companies, should ensure that the government's institutional capacity is strengthened, where necessary, to translate the insights and recommendations from the multistakeholder platform into the policies and public investments required to meet the needs of farmers and their communities as well as the needs of a growing, competitive industry.

Table 5: Summary of recommendations for facilitating smallholder-based agricultural transformation at scale

Steps	Objectives	Key activities	Roles
Evaluate enabling environment	In current and potential sourcing origins, assess the enabling environment and political will, as well as farmer and value chain economics, to determine scale of impact potential	• Determine gaps in the required enabling conditions—both for poverty reduction and agri-business growth • Assess agro-climatic conditions and varieties for quality and value addition opportunity • Determine measures to grow competitiveness • Segment and target farmers based on farm economics: profitability, cash flow, and financial resilience needed to reach a living income • Conduct due diligence on human rights issues	COMPANIES LEAD Government leverages Development agency influences
Develop a strategic plan with government and key stakeholders	Form a multistakeholder platform to develop a joint strategic plan for rural economic growth that leverages the region's comparative and competitive advantages	• A neutral development agency should form a multistakeholder platform, where companies should inform local and national government and civil society on how to improve the enabling conditions • Explore approaches for driving progress on the four pillars of smallholder-based agricultural transformation • Develop a focused strategy and implementation plan for agribusiness growth and farmer support systems to help farmers deliver quality product, achieve living incomes and improve competitiveness	Development agency leads Government leverages COMPANIES INFLUENCE
Create agricultural commercial clusters (ACCs)	With the support of government infrastructure investments, co-locate sourcing, storage, input supply, mechanization services, processors, logistics, and research facilities	• Work with input suppliers, farmers, communities, local government, traders, and peer industry players to determine optimal location of ACCs and plan for sustainable farmer livelihoods • Work with government to deploy resources for critical infrastructure and sustainable resource (water, soil) management • Support national agricultural research institutes to open satellite facilities and extension services • Collaborate with banks to open up lines of credit for trade/input finance	Government leads COMPANIES LEVERAGE Development agency influences
Consolidate small-scale production where relevant	Based on the minimum farm size for economic viability, support culture-appropriate approaches for facilitating the consolidation and mechanization of production	• Work with civil society, development agencies to support government capacity to facilitate land leasing or selling • Conduct human rights due diligence and develop plans with government, civil society, communities and farmers to consolidate land holdings, where appropriate, to improve production efficiency • Secure agreements with mechanization providers for locally-adapted equipment, parts, and service	Government leads COMPANIES LEVERAGE Development agency influences
Formalize value chain linkages	Strengthen the value chain to improve productivity, profitability, and risk management of farmers to become reliable long-term suppliers of quality produce	• Work with government to strengthen governance and business plans of farmer cooperatives • Develop trust-based productive alliances with coops and others to explore value-added processing and distribution of value and risk favorable to farmers • Benchmark farm gate price as percentage of FOB competitive to other origins • Establish stable, long-term contracting with farmers to help them profitably invest in farm with lower risk	COMPANIES LEAD Government leverages Development agency influences
Clarify roles and track progress	Define key investments and activities needed by government, companies, research institutions, farmers, and others; monitor progress, learn, and course correct as needed	• Determine roles and responsibilities for implementation of strategy, policies, standards, and investments needed • Develop environmental and social sustainability standards along with traceability systems with industry and value chain stakeholders • Work with governments to integrate recommendations into policy and institutional capacity-building to meet the needs of farmers and their communities	Development agency leads Government leverages COMPANIES INFLUENCE

Optional approaches to explore as part of strategic plan

6. CONCLUSION

In the context of current trends, the issue of smallholder farmer poverty will only increase in importance. Further discussion and action—most critically through new, more strategic relationships between business and government—are needed to create a future in which all agricultural raw materials are sourced from profitable, socially responsible, and environmentally sustainable farming enterprises.

With millions of smallholder farmers and their families still living in poverty, and forward-looking food and agriculture companies seeking new strategies capable of making an impact at scale, this paper has identified lessons from places where major gains in smallholder farmer livelihoods have already been achieved. Experience in these countries has shown that a strong government role is key and cannot be replaced; that collaboration between government and business is critical; and that collaboration must include a simultaneous focus on four pillars of agricultural transformation: productivity, market access / connectivity, value addition and distribution, and risk mitigation. This means that in countries where they source agricultural raw materials, companies need to perform a rigorous assessment of the potential to reduce poverty, develop a joint strategic plan as part of a multistakeholder platform, and then work together to implement that plan, track progress, and course correct as needed along the way.

Helping to address and alleviate smallholder farmer poverty will only become more important for global food and agriculture companies. A number of trends in the operating environment are pushing the issue up the agenda. For instance, demand for food is increasing sharply even as environmental limits to supply, such as climate change and water scarcity, become more serious. Consumers, governments, and investors are all expecting companies to do more to manage the social and environmental impacts and risks associated with their operations and supply chains. And new technologies are radically increasing traceability and transparency, both making it possible for companies to do more and enabling stakeholders to hold them to account.

In this context, this report contains valuable insights from historical experience that can help to shape discussion about how to improve the plight of smallholder farmers in global agricultural supply chains.

Historical experience does not offer us all the answers, of course. For example, we still need to know more about how to empower women in the process of agricultural transformation, how to ensure an effective transition for smallholder farming households (or household members) towards alternative employment or other sources of income, and how to make the business case for investing in new approaches to increasing smallholder farmer incomes. Experimentation, as well as research, will be needed to find the answers.

History does tell us that creating pathways out of poverty for smallholder farmers sustainably, at scale, will require the patient cultivation of new, more strategic business-government relationships focused on creating value for all, rather than capturing value for a few. This is where experimentation and action must start. Ultimately, this is what is needed to achieve the vision of the Farmer Income Lab: *a future in which all agricultural raw materials are sourced from profitable, socially responsible, and environmentally sustainable farming enterprises that contribute to rural economic growth and poverty reduction—enabling rural communities and natural ecosystems to thrive.*

ENDNOTES

1. In 2019, these higher value food exports comprised 22% of Africa's agro-food exports. These products are much more prominent in the agro-food trade of Latin America (43%) and, especially, Asia (66%). China, Vietnam, South Africa, Peru, Chile and Costa Rica are among the major agricultural commodity exporting countries whose trade is now dominated by higher value foods (accounting for more than two-thirds of their total) (calculations based on UN COMTRADE data). For other countries, there are also quite a few notable success stories—cutting across all regions—in relation to particular commodity groups, including Brazil and Thailand for poultry products, Mexico for fruits and vegetables, Kenya and Colombia for cut flowers, Turkey for nuts and dried fruit, Bangladesh for shrimp, etc.

2. It is important to put this proportion into perspective. In 2019, only 29% of the developing world's population had per capita income levels below $3.20 (World Development Indicators). But this proportion differed greatly among country income categories and regions. Among low-income countries, 73% of people are below this standard of 'moderate poverty'. The respective shares for lower middle-income and upper middle-income countries are 34% and 4%. While the incidence of moderate poverty is now below 10% in Latin America and East/Southeast Asia, it is still 52% in South Asia and 67% in sub-Saharan Africa.

3. While we draw attention here to persistent poverty in tightly organized value chains, it is important to note that the vast majority of the world's rural poor have little or nothing to do with such value chains. There are more than 500 million smallholder farm households worldwide, the majority of which combine subsistence and market-oriented production. Their market transactions are often either direct to (rural or urban) consumers or involve small-scale traders or other intermediaries.

4. This is one reason why the World Bank is estimating that some 150 million have reversed backward into extreme poverty in 2020/21 as a result of health effects and economic dislocations associated with the COVID-19 pandemic. Very large numbers of people, especially in South Asia, had in the prior few years just advanced slightly above the $1.90/day standard.

5. For a discussion of these emerging procurement practices, see Farmer Income Lab 2019a.

6. Argentina, Brazil, Chile, Costa Rico, Ecuador, Mexico, and Peru.

7. China, Malaysia, Thailand and Vietnam.

8. The leading pathways are farming (for subsistence and for income), rural labor market participation, microenterprise revenue and the migration of family members (and remittances), although in some countries these household strategies have been supplemented by social protection transfer payments from governments. Several pathways may operate simultaneously or be called upon to withstand periodic shocks affecting one or more livelihood sources (World Development Report 2008).

9. Similar major shifts in the composition of rural employment and incomes have been observed in other rapidly growing and urbanizing countries. In a soon to be finalized paper, Huang (forthcoming) tracks the transformation of China's rural economy over the past four decades. He finds that productivity and other gains in traditional food and industrial crop sub-sectors played the lead role in reducing poverty in the 1980s and 1990s, yet much of the (substantial) gains in rural household incomes since then are attributable to a combination of agricultural diversification (especially towards fruit, vegetable and livestock production) and non-farm rural labor employment. Provinces that have experienced major growth in both of these dimensions have experienced the most significant gains in rural per capita income and were the first to reach single digit incidences of (extreme, and, later, moderate) poverty.

10. There is a rich literature documenting the historical process of agricultural transformation in many countries. Three recent books provide very good overviews of the way the process has played out and a variety of pertinent policy issues in Latin America (Morris et al. 2020), Africa (Resnick et al. 2020) and Asia (FAO 2021).

11. Over the 2000 to 2010 period, agricultural labor productivity grew by an average of 7.3% per year, more than three times the growth rate experienced in the 1980s and 1990s and far in excess of the labor productivity gains achieved in industry and services during that decade.

12. World Bank (2008), Chapter 3. Also, a special issue of World Development in 2018 includes several papers exploring the relationship between agriculture and poverty. https://www.sciencedirect.com/journal/world-development/vol/109/suppl/C.

13. See, for example https://unstats.un.org/sdgs/indicators/database/.

14. See, for example, https://info.worldbank.org/governance/wgi/.

15. These are based on a collection of observations from publications outlining the changing mix of state and private functions from Inter-American Institute for Cooperation on Agriculture (IICA)/World Bank (1993), Byerlee et al. (2009) and the summaries of country agricultural diversification experiences in Asia provided in FAO (2021).

16. Major changes in agricultural strategy and policy do not normally occur all at once, but rather in the course of a few successive sectoral or national multi-sector development plans. We use the concept of 'inflection point' simply to denote important points of transition which open up new opportunities and which may present a different set of strategic or tactical options to companies for engaging in rural areas and in agro-food systems more generally.

17. Chile, New Zealand, and Turkey are among today's major commodity exporting countries that earlier undertook radical reforms in agriculture which set their agricultural sectors up for an entirely new trajectory. Chile's reforms took place in the 1970s and involved a shift from protecting import-substituting grain production to focusing attention on promoting competitive high-value agriculture. In the early to mid-1980s, New Zealand responded to a macroeconomic crisis by removing a wide array of agricultural subsidies and accelerating a shift toward the private delivery of many agricultural services. Also, in response to macroeconomic pressures, in and around 2000 Turkey moved to rein in a plethora of state-owned agricultural companies and shift its financial support to farmers away from commodity-based subsidies to payments based on social and environmental criteria. More recent 'inflection points' have been observed in China and Vietnam, where, since the late 2000s, successive agricultural strategies have shifted from a dominant focus to expanding output to an increasing focus on farmer economic viability, the sustainability of agriculture, and the development of agri-food commerce.

18. Even as the roles of government in agricultural services and commerce tend to narrow, other public programs may become more prominent. The agricultural transformation process also involves dislocations as when mechanization lessens the demand for labor or where the removal of some subsidies or other programs makes some farm operations financially unviable. Governments typically need to initiate programs to help those transitioning out of agriculture, including through various forms of vocational training, support for microfinance programs and social safety nets.

19. Especially notable examples of this are Malaysia's conversion of natural rubber into high-quality tires and medical gloves and China's development of a multi-billion-dollar industry of flooring and construction materials made from bamboo.

20. See, for example, Milder et al. 2014, Scherr et al. 2017, and Carmenta et al. 2020.

21. For details, see World Bank (2021), "China Food Safety Improvement Project." Project Appraisal Document.

22. A recently completed scoping review—spanning 239 studies focused on Africa and South Asia—found a very large number of cases in which cooperatives reportedly helped improve members' incomes through the kinds of channels described above; some studies found that cooperatives also played a role in increasing members' specialization in more remunerative raw materials (Bizakova et al. 2020).

23. Impact studies generally tell only part of the story, focusing narrowly on cooperatives that are still in operation and that provide commercial services that would be expected to generate economic benefits. There are a number of reasons why cooperatives may fail to meet members' expectations. Cooperatives are mostly small businesses, and like all small businesses, they have a high failure rate. Many have difficulty weathering any significant market or financial shock. Many are poorly managed and struggle to provide valuable services to members even in stable market settings. At some time or another, many farmers have had negative experiences with cooperatives, either for the reasons just cited, or because of political interference or the diversion of the organization from its intended purpose. In one country after another, perennial efforts to revive, revitalize, and professionalize smallholder farmer cooperatives suggest that fairly broad and deep-seated problems have emerged with these organizations over the years.

24. Generally, contract farming is more common for raw materials that are of high value, difficult to grow, perishable, require prompt processing (for example, dairy, oil palm, tea, sugarcane, tobacco), or subject to strict standards. Contract farming is common in poultry value chains, somewhat common for dairy products, but less so for other animal products. It also seems to work more efficiently when there are few alternative markets for participating smallholder farmers, thus limiting the chances of side-selling. In the case of vegetables, contract farming is usually less risky for a company when it is working with farmers on crops for which there is little local demand or on specialized products such as organic crops, for which the company is able to pay a premium (Little and Watts, 1994). Within Asia, rice has not traditionally been grown under contract, especially for domestic markets. Yet, the expansion of both domestic and international markets for specialty varieties, sustainably produced, is leading to a greater incidence of contracting, including in Vietnam, Cambodia, Laos, and India.

25. In choosing farmers, companies are first likely to consider factors such as agronomic suitability of the land; climate, pests, and diseases; the location of the farm; the presence of functioning producer organizations; and suitability of infrastructure such as roads, electricity, and communications.

26. This two-thirds 'success rate' is certainly higher than that of contract farming schemes in the developing world solely involving companies and the farmers that they organize. Failure rates are especially high in competitive markets (involving multiple potential buyers) and where the commodity can be eaten or otherwise directly utilized by farmers. Side-selling or other practices inconsistent with a 'contractual' relationship commonly occur in such settings. Contract farming has proven to be more sustainable under monopsony or oligopsony market conditions (i.e., only one or very few accessible buyers), yet conflicts over pricing, distribution of risk, and what farmers are/are not allowed to do (including additional uses of their land) are quite common.

REFERENCES

African Development Bank (2015) Economic Empowerment of African Women through Equitable Participation in Agricultural Value Chains. Abidjan, Côte d'Ivoire.

Aksoy, A. (ed) (2012) African Agricultural Reforms: The Role of Consensus and Institutions. Washington, D.C.: World Bank.

Bizikova, L., E. Nkonya, and others (2020) A Scoping Review of the Contributions of Farmers' Organizations to Smallholder Agriculture, Nature Food, V. 1, October.

Bordey, F., Moya, P., and others (2014) Benchmarking the cost and profitability of paddy production in selected Asian rice bowls. Presented at the 8th meeting of Asian Society of Agricultural Economics. Dhaka, Bangladesh.

Byerlee, D., D. de Janvry, and E. Sadoulet (2009) Agriculture for Development: Toward a New Paradigm, Annual Review of Resource Economics, Vol. 1.

Carmenta, R., D. Coombes and Others (2020) Characterizing and Evaluating Integrated Landscape Initiatives. One Earth, V.2, Issue 2, p. 174-87.

Elepu, G. and I. Nalukenge (2007) Contract Farming, Smallholders and Commercialization of Agriculture in Uganda. Study commissioned by the Uganda Programme for Trade Opportunities and Policy. Kampala.

Farmer Income Lab (2018) What Works to Increase Smallholder Farmers' Income? A Landscape Review.

Farmer Income Lab (2019) Race to One: Mobilizing Business Action on SDG 1. Pre-read for an event held on September 26, New York, NY.

Farmer Income Lab (2021) Disrupting Commodities: Building Thriving Rural Communities and More Sustainable, Resilient Agricultural Supply Chains.

Food and Agriculture Organization (2011) The State of Food and Agriculture Report. Bangkok, Rome: FAO.

Food and Agriculture Organization (2021) Agricultural Transformation in Asia: Policy and Institutional Experiences. Bangkok: FAO.

Fuglie, K., M. Gautam, A. Goyal, and W. Maloney (2020) Harvesting Prosperity: Technology and Productivity Growth in Agriculture. Washington, D.C.: World Bank.

Galvez-Nogales, E. (2010) Agro-based Clusters in Developing Countries: Staying Competitive in Globalized Economy. Agricultural Management, Marketing and Finance Occasional Paper 25. Rome: FAO.

Gereffi, G. (2018) Global Value Chains and Development: Redefining the Contours of 21st Century Capitalism. Cambridge: Cambridge University Press.

Havemann, T. (2015) "Tea Landscapes in Yunnan, China" in Steps Toward Green: Policy Responses to the Environmental Footprint of Commodity Agriculture in East and Southeast Asia, S. Scherr, K. Mankad, S. Jaffee, and C. Negra. Washington D.C.: Ecoagriculture Partners.

Hazell, P., C. Poulton, S. Wiggins, and A. Dorward (2007) The Future of Small Farms for Poverty Reduction and Growth. Washington, D.C.: International Food Policy Research Institute.

Huang, J. (2017) Land Transactions Service Centers in China: An Institutional Innovation to Facilitate Land Consolidation. Beijing: China Center for Agricultural Policy.

Huang, J. (Forthcoming) Rural Transformation and Policies in China. Paper prepared for the World Bank.

Huang, J. and J. Ding (2015) Institutional Innovation and Policy Support to Facilitate Small-Scale Farming Transformation in China, Presented at the International Conference of Agricultural Economists, Milan.

Inter-American Institute for Cooperation in Agriculture and World Bank (1993) Public and Private Sector Roles in the Provision of Agricultural Support Services, Proceedings of the International Symposium, San Jose, Costa Rica, May 17-19.

International Coffee Organization (2019) Survey on the impact of low coffee prices on exporting countries. International Coffee Council 124th Session, held at Nairobi, Kenya, March 25 to 29.

International Finance Corporation (2013) Diagnostic Study on Indonesian Smallholders in the Oil Palm Sector. Jakarta: IFC.

Ivanic, M. and W. Martin (2018) Sectoral Productivity Growth and Poverty Reduction: National and Global Implications, World Development 109 (September), p. 429-39.

Ivoirian Center for Socio Economic Research (2018) Living Income Report – Rural Cote d'Ivoire, Cocoa Growing Areas – Final Draft for the Living Income Community of Practice. CIRES. Abidjan.

Jaffee, S., S. Henson, and L. Diaz-Rios (2012) Making the Grade: Smallholder Farmers, Emerging Standards and Development Assistance Programs in Africa. Washington, D.C.: World Bank.

Jaffee, S., S. Henson, L. Unnevehr, D. Grace, and E. Cassou (2019) The Safe Food Imperative: Accelerating Progress in Low- and Middle-Income Countries. Washington, D.C.: World Bank.

Lerner, D.G., H.M.F. Pereira, M.S.M. Saes, and G.M. Oliveira (2021) When Unfair Trade Is Also at Home: The Economic Sustainability of Coffee Farms. Sustainability 13, 1072.

Little, P. and M. Watts (ed) (1994) Living Under Contract: Contract Farming and Agrarian Transformation in Sub-Saharan Africa. Madison: University of Wisconsin Press.

Liu, C. (2004) "Diversification of the Rural Economy: The Case of Taiwan," in Priorities and Strategies in Rural Poverty Reduction: Experiences from Latin America and Asia, D. Alarcon et al. (eds). Washington, D.C.: Inter-American Development Bank.

Milder, J., A. Hart, P. Dobie and J. Minai (2014) Integrated Landscape Initiatives for African Agriculture, Development and Conservation: A Region-wide Assessment. World Development (February), p. 68-80.

Morris, M. and co-authors (2020) Future Foodscapes: Re-imagining Agriculture in Latin America and the Caribbean. Washington, D.C.: World Bank.

Murphy, K. (2017) "Agricultural Clusters," in Territorial Tools for Agro-Industry Development: A Sourcebook, E. Nogales and M. Webber (eds). Rome: FAO.

Njuki, J., C. Doss, and S. Boote (2019) "Women's Control Over Income: Implications for Women's Empowerment and the Agricultural Sector," in Gender Equality in Rural Africa: From Commitments to Outcomes, A. Quisumbing, R. Meinzen-Dick, and J. Njuki (eds.) Washington, D.C.: International Food Policy Research Institute.

Paredes, H. and R. Fort (2018) En los márgenes del boom agroexportador: articulación de los pequeños productores a las cadenas de valor globales, Libro Sepia XVII (29).

Ranis, G., Hu, S., and Chu, Y. (1999) Political Economy of Taiwan's Development in the 21st Century. Cheltenham, UK: Edward Elgar Publishing Ltd.

Resnick, D., X. Diao, and G. Tadesse (eds) (2020) Sustaining Africa's Agrifood System Transformation: The Role of Public Policies. Annual Trends and Outlook Report. Washington, D.C.: International Food Policy Research Institute.

Rogers MacJohn LLC (2020) ECOWAS Rice Observatory – Investment Case Summary on behalf of the Bill & Melinda Gates Foundation. Seattle: Rogers MacJohn LLC.

Rubin, D., B. Boonabaana, and C. Manfre (2019) "Building an Inclusive Agriculture: Strengthening Gender Equality in Agricultural Value Chains," in Gender Equality in Rural Africa: From Commitments to Outcomes, A. Quisumbing, R. Meinzen-Dick, and J. Njuki (eds.) Washington, D.C.: International Food Policy Research Institute.

Scherr, S., Mankad, K., Jaffee, S. and Negra, C. (2015) Steps toward Green: Policy Responses to the Environmental Footprint of Commodity Agriculture in East and Southeast Asia. Washington, D.C.: EcoAgriculture Partners.

Timmer, P. (1988) "Agricultural Transformation," in Handbook of Development Economics, H. Chenery and T. Srinavasan (eds). Amsterdam: Elsevier.

Tschirley, D., C. Poulton, and P. Labaste (2009). Organization and Performance of Cotton Sectors in Africa: Learning from Reform Experiences. Washington, D.C.: World Bank.

Woodhill, J., S. Hasnain, and A. Griffiths (2020) What Future for Small-Scale Agriculture. Environmental Change Institute. Oxford: University of Oxford.

World Bank (2008) Agriculture for Development. World Development Report. Washington: D.C.: World Bank.

World Bank (2012) Well Begun; Not Yet Done: Vietnam's Remarkable Progress on Poverty Reduction and the Emerging Challenges. Hanoi: World Bank.

World Bank (2016) Transforming Vietnamese Agriculture: Gaining More from Less. Vietnam Development Report. Hanoi: World Bank.

World Bank (2016a) Linking Farmers to Markets through Productive Alliances: An Assessment of the World Bank Experience in Latin America. Washington, D.C.: World Bank.

World Bank (2017) Gaining Momentum in Peruvian Agriculture: Opportunities to Increase Productivity and Enhance Competitiveness. Washington, D.C.: World Bank.

World Bank (2018) Piecing Together the Poverty Puzzle. Washington, D.C.: World Bank.

World Bank (2019) Vietnam Poverty and Shared Prosperity Update. Hanoi: World Bank.

World Bank (2020) Trading for Development in the Age of Global Value Chains. Washington, D.C.: World Bank.

World Bank and the Government of Rwanda (2019) Future Drivers of Growth for Rwanda: Innovation, Integration, Agglomeration and Competition. Washington, D.C.: World Bank.

Yamuachi, F., J. Huang, and K. Otsuka (2021) "Changing Farm Size and Agricultural Development in East Asia," in Agricultural Development: New Perspectives in a Changing World, K. Otsuka and S. Fan (eds). International Food Policy Institute.