

# AGRICULTURE, JOBS, AND VALUE CHAINS IN AFRICA

## KEY MESSAGES

- Africa's food system has significant potential to generate better and more employment. Inclusive value chain development (iVCD), which links farmers to buyers and other stakeholders, is increasingly pursued to realize this potential.
- iVCD can raise smallholder incomes and benefit the poor and women. Success factors include careful diagnosis of the competitiveness and sustainability of a product value chain, starting small, involving financial institutions, monitoring producer-buyer relationships, and sustaining capacity building.
- Many questions remain, especially on best entry points for support: whether through farmer organizations/cooperatives, large anchor firms and/or Small and Medium Enterprises (SMEs), or stakeholder platforms. More experiments are needed.
- Finally, iVCD is usually not effective for raising staple crop productivity, critical for food security and transforming agricultural jobs. Raising staple crop productivity especially requires public investment in rural public goods such as agricultural Research and Development (R&D), extension services, irrigation, and rural infrastructure.

This Jobs Solutions Note identifies approaches for development practitioners and policymakers to better integrate poor smallholders into agricultural value chains. Based on curated knowledge and evidence for a specific topic and relevant to jobs, the Jobs Solutions Notes are not intended to be exhaustive; they provide key lessons, solutions and approaches synthesized from the experiences of the World Bank Group and partners. This Note develops a conceptual framework to guide policy choices in using inclusive agricultural value chain development for better job creation in the rural space. As the agricultural iVCD agenda is still nascent and rigorous empirical evidence incipient, it refrains from nuts-and-bolts operational guidance on how to do this.

## MOTIVATION: WHAT IS THE PROBLEM?

**Africa needs more, better-paying jobs.** As in the rest of the world, creating more and better-paying jobs is the number one policy preoccupation in Africa.<sup>1</sup> Africa's 200 million young people—those aged 15 to 24 years old—looking for jobs today, will increase to 275 million by 2030 and 325 million by 2050. Most Africans are living at subsistence levels and cannot afford not to work.<sup>2</sup> The challenge is to increase returns to their labor and land, within current or new occupations.

**Africa's agriculture and food systems are central to its jobs agenda.** With more than half of Africa's

population still employed in crop and livestock production, agriculture remains the main sector of employment. Meanwhile, labor productivity in agriculture is low. Among the poor, three in four African adults work in agriculture: too large for the rest of the economy to be able to productively absorb them over the next couple of decades. Yet, by raising agricultural productivity and smallholder income, the demand for higher value foods ([Bennett's Law](#)), as well as other goods and services, will also increase, and thus the demand for off-farm labor. An important share of this [off-farm labor demand is in agribusiness](#),<sup>3</sup> which currently accounts for one-quarter to one-third of Africa's off-farm work. Much of it is better paying

and within reach of the poor, who live concentrated in rural areas and towns, as well as women.

**The absolute number of people productively employed in the food system in Africa can still increase for some time.**<sup>4</sup> An increasing share can find employment in food processing and food services as opposed to farm production (Table 1). Even so, as countries develop, the food system share of employment will steadily decline, and eventually also the absolute numbers, consistent with the increasingly larger share of spending going to non-food items and services as household incomes rise. Experience from Asia shows that poverty reduction is faster when smallholder agriculture and agribusiness create more, better paying jobs.

**Not all agricultural job transformation strategies equally reduce poverty.** To leverage food system job potential, African agriculture must transition towards a market-oriented, integrated food system, away from more staple crop<sup>5</sup> oriented, smallholder subsistence farming. This can also maximize inclusive job creation and poverty reduction. One promising approach is to increase labor productivity of the more commercially oriented smallholder farmers. Not all smallholder farmers are equally well positioned to adopt new technologies, commercialize their staples, and/or shift to higher-value crops and products, such as fruits and vegetables and dairy.

Poorer farmers can increase their earnings as wage laborers on more commercially oriented farms and especially in the expanding off-farm economy. This includes job expansion in agricultural value chains, which need to be developed to enable commercially oriented farmers to increase productivity. Large scale commercial farming, however, tends to be more capital intensive, with limited employment spillovers to local economies.<sup>6</sup>

**An integrated approach is needed to increase smallholder labor productivity.** The underutilization of farm labor, due to agriculture's seasonality and low output per hectare (low yields), keeps smallholder earnings low. There is no single overarching reason for this; it follows from myriad agricultural input and product market constraints. In the aftermath of the 2008 world food crisis, attention refocused on increasing the use of modern inputs, such as improved seeds and inorganic fertilizer. But interventions, such as the smart fertilizer subsidy programs, were often unaccompanied or poorly coordinated with other necessary initiatives, such as water and soil management, market development, and investment in rural infrastructure. This left many constraints unaddressed,<sup>7</sup> and synergies foregone. More integrated and pragmatic approaches are needed to increase agricultural labor productivity;<sup>8</sup> yet integration is complex, especially in weak capacity and poor institutional environments. Given

**Table 1**  
As African incomes rise, more food system jobs will be in food manufacturing and services

Sectoral share of employment [%]		Low-income (Eastern and Southern Africa)	Middle-income (Brazil)	High-income (United States)
Food system	Farming	73	15	2
	Food manufacturing	2	8	1
	Food services	5	8	7
Non-food system	Off-farm [non-food related]	20	70	90

Source: World Bank and IFAD, 2017.



Photo credit: Arne Hoel / World Bank

differing transaction costs and economies of scale in production, processing, and marketing across agricultural products, the best solutions to increase market participation and earnings in crop and livestock production differ by product. Especially, staple crops require a different approach. They have much less potential for quality differentiation and value addition, compared to non-staples.

## WHAT ARE WE DOING?

### **Conditions are favorable to leverage Africa's food system for higher on-and-off-the-farm earnings.**

High population growth and urbanization create robust demand for food, most of it still staples, but increasingly also for animal feed and higher-value, more protein-rich and nutritious foods, such as meat, dairy, fruits and vegetables, or more processed and convenient foods. International prices and national food policies are also supportive.<sup>9</sup> Africa's staple crop production has responded to price incentives and [transaction cost reductions](#).<sup>10</sup> Nonetheless, Africa's food supply has not kept pace with demand, resulting in increased food import costs of about US\$30 billion in recent decades. Much of this could be produced locally, or, with better regional food market integration, imported from other African countries. Agricultural export markets for nonfood crops have also been growing.

**To address the multiple market constraints that smallholder farmers face, countries are increasingly pursuing inclusive agricultural value chain development (iVCD).** In essence,

iVCD models contractually link smallholder producers with other value chain actors. These arrangements allow buyers to secure higher volumes of better and more consistent quality needed to access markets or to operate processing plants at scale. In return, producers receive access to credit, agronomic knowledge, and a reduction of production, price and/or market risks. Multiple input, factor, and product market constraints are thus addressed simultaneously. Contract arrangements can be bilateral or multilateral, involving multiple actors,<sup>11</sup> and can range from informal to fully formal. Depending on the scope of a contract, farmers may remain self-employed entrepreneurs or become quasi wage laborers, with the processor/marketing agent stipulating production modalities, as is common in poultry and pork contract farming.

**Different actors can drive iVCD.** Frequently it is firms up and down the chain that initiate value chain (VC) coordination and integration, a process labeled "pulling from the top." These firms can be multinationals but also larger domestic firms or SMEs. Large producers or smallholder producer organizations can also initiate the coordination, which is known as "pushing from the bottom." Increasingly, non-VC agents—such as governments, NGOs, and international organizations—take the initiative, which is known as "mediating from the middle." External agents are generally well placed to help overcome coordination costs and broker equitable distribution of value added. They can also provide complementary public goods and services, thereby [leveraging private sector](#) investment.<sup>12</sup>

### **iVCD interventions can be general, or selective.**

General interventions are those that focus on improving the business environment in which value chains operate. This includes the provision of hard infrastructure such as cold storage and rural roads. But it also refers to simplifying and increasing the effectiveness of bureaucratic processes—such as issuance of property rights, contract enforcement, and taxation—or reduction of corruption and administrative burdens. The objective is to improve value chains' functioning by lowering transaction costs. The World Bank's [Doing Business](#)<sup>13</sup> annual analysis and ranking of countries' business environment represents a kind of general intervention. In recent years, the World Bank has also begun to analyze and rank countries' agricultural business environment

through “[Enabling the Business of Agriculture](#).”<sup>14</sup> This information can lead to policy reforms, often supported under World Bank Development Policy Operations.

**Selective iVCD interventions target specific value chains.** Initiatives can take the form of NGO or organizational assistance to farmers or farmer organizations, for example by providing agricultural extension and credit and/or linking them with upstream and downstream actors (see Box 1). But iVCD initiatives can also directly support lead companies in the value chain by facilitating access to equity or providing matching grants and guarantee funds. While such initiatives sometimes require the larger firms to procure from smallholders, the programs often do not directly support smallholders. Working through lead firms is a common practice under the IFC-implemented private sector window of the Global Agriculture and Food Security Program ([GAFSP](#)). The World Bank’s Jobs Multi-Donor Trust Fund (MDTF)-financed [Mozambique Agricultural Aggregator Program \(MAAP\)](#) represents another example of this approach. Finally, as an

alternative to directly supporting either producers or buyers, interventions also can focus on establishing multi-stakeholder platforms, as under the [Productive Alliance](#) model.<sup>15</sup>

**Support to iVCD has substantially increased across institutions, including in the World Bank Group (WBG).** In the fiscal year ending June 2016, the [IFC](#), the private sector support arm of the WBG, invested US\$3.4 billion across agribusiness value chains—from farm to retail—to help optimize production, increase liquidity, improve logistics and distribution, expand small farmer access to credit, and boost gender equality. The [Productive Alliance](#) (PA) approach to iVCD has led the effort within the World Bank.<sup>16</sup> Under this approach, the public sector seeks to broker a “productive alliance” by organizing smallholder farmers (horizontal integration) and linking them with buyers further down the chain (vertical integration). The approach has shown promise, as reflected in the number of subprojects, and as measured by positive outcomes in social

### BOX 1. LINKING RURAL YOUTH IN THE INFORMAL SECTOR TO THE POULTRY AND AQUACULTURE VALUE CHAINS IN MALI

[Inclusion of Rural Youth in Poultry and Aquaculture Value Chains in Mali](#) is a pilot project that aims to increase rural youth employment and improve nutrition. The project works through producer organizations to train rural youth—18 to 30-year-old, 50 percent women—in poultry and aquaculture production and processing, such as fish smoking, to supply local villages and larger regional markets. The project also provides financial support.

The first step in the process is to establish demonstration units for poultry and fish farming and smokehouses near the locations of producer organizations.

Subsequently, lead farmers in producer organizations are identified and trained, followed by identification and training of about 1000 rural youth, with those who have a family member guarantor also receiving a start-up loan. Funds also support a childcare center, so more women can attend trainings. In a second phase, the program will strengthen the capacity of local producer organizations and establish value chain platforms between poultry and fish organizations and upstream and downstream actors for better coordination and integration.

The project is funded under the [Missing Middle Initiative](#) [MMI] flagship program, established in 2016 under the Public Sector Window of the Global Agriculture and Food Security Program [GAFSP]. MMI funds support smallholder farmers, their organizations, and partnerships between them and the private sector. MMI had awarded US\$13.2 million to the Mali project up to the end of 2019. The implementation partners in the Mali project are the Association of Professional Farmers’ Organizations [AOPP], the National Federation of Youth [FENAFER], and the National Federation of Women [FENAJER], together with the National Coordination Agency for Farmers’ Organizations of Mali [CNOP].

Source: <https://www.gafspfund.org/missing-middle-initiative> [consulted 11 November 2019]



inclusion, socio-economic benefits, efficiency, and sustainability. Since being introduced in the early 2000s in Latin America and the Caribbean (LAC), the World Bank has provided more than US\$1 billion in financing to support 21 projects with over 3,500 subprojects in 10 countries across LAC. Between 2017 and 2020, the World Bank has further committed US\$1.5 billion to PA-driven agricultural value chain development in Africa, spread over 13 projects in 12 countries. This is up from US\$0.4 billion during 2013–2016. iVCD is further explored as an alternative vehicle to help cash transfer beneficiaries access economic opportunities and graduate from social assistance (see Box 3 below).

## WHAT WORKS?

**Value chain participants have benefited from iVCD.** Evidence suggests that both horizontal integration (farmer coordination and/or support to producer organizations) and vertical integration (contract farming between growers and downstream intermediaries) boosts the [income of smallholder participants](#).<sup>17</sup> Those participating in producer organizations or contract farming are, however, usually already somewhat better-off and are not among the poorest. The extent of spillover gains to non-participating households remains unclear.<sup>18</sup>

**Studies offer limited guidance on what specific interventions maximize gainful, inclusive employment.** Most studies offer little empirical [evidence](#) on how farmers and agri-firms might best organize and structure contracts, nor how external intermediaries can best intervene to maximize inclusive and gainful employment.<sup>19</sup> Theory provides some [insights](#).<sup>20</sup> Optimal organizational structures to generate employment and increase smallholder incomes are likely to vary by (Annex 1 explores in more detail):

- The **nature of the crop**: whether it allows for product differentiation (for example, staples versus non-staples), whether it is perishable, and/or whether its processing entails economies of scale.
- The initial **structure of the sector**: whether dominated by smallholders or a mix of smallholders and large farms.
- The **target group** of the intervention: whether subsistence-oriented, transitioning, or commercial farmers.



Photo credit: Dominic Chavez / World Bank

The following guiding principles have emerged from the decade-long [Productive Alliance \(PA\) experience in Latin America](#).<sup>21</sup>

**First, careful diagnosis of the competitiveness and sustainability of a specific value chain must precede a decision to support it.** Value chain selection criteria should include willingness of the different partners to engage. Making the selection process competitive—for example through business plan competitions, tests, or referrals—is advisable to screen out entrepreneurs and farmers or organizations with little growth potential.<sup>22</sup> VC selection should further consider expected labor market effects. The [Jobs in Value Chains Survey Toolkit](#) provides practical guidance on how to assess this (see Annex 2 for an application).

**Second, start simply and grow.** Projects involving a multi-sector approach with different institutions and components are challenging to implement. Operations with new implementation agencies should be kept simple, using piloting and evaluation with an eye toward future scale up. A good starting point is to support producer organizations when functional and where reliable output markets are present, as in the poultry and aquaculture chain project in Mali (Box 1). Focusing support on large agricultural lead firms through, for example, risk guarantees or matching grants, without direct engagement with, or project support to, producers also simplifies interventions and promotes scale. Yet, it also carries risks (Box 2).

**Lastly, the PA experience points to three additional practices that can make iVCD more sustainable.**

## BOX 2. PUBLIC SUPPORT TO PRIVATE VALUE CHAIN ACTORS RISKS ADDITIONALITY AND FAIRNESS

Donor governments and IFC often provide concessional loans to large processors in developing countries to establish or increase capacity. Working through large lead firms guarantees scale, but carries risks:

- Public support to VCD initiated by the private sector might not **add to initiatives** that would have been carried out by them anyway, eroding any effects on the labor market.
- Public finance for private VCD might create **dependency**, especially when farmers train to comply with company-specific standards. This makes it more difficult for the farmer to profitably side-sell their produce to other buyers and reduces the incentives for the lead company to offer a price premium.
- Small farmers may have difficulty getting a **fair share of value** added when VCD projects are designed and implemented by a large lead firm; bigger firms may not reach out to smaller or more remote farms, and small farmers will have limited bargaining power. In response, some private sector development programs, such as the [Facility for Sustainable Entrepreneurship and Food Security](#), require NGO involvement to represent the interests of farmers and wage laborers.

- Regular monitoring of the producer-buyer relationship, built into project design, is essential for reliable contract arrangements.
- Involving third-party financial institutions, for example through guarantees, as opposed to full reliance on the project for financing, increases sustainability of arrangements. Co-financing from producers, through cash or bank loans, encourages stronger buy-in.
- Finally, sustained building of beneficiary producer capacity over an extended period enables them to grow and mature.

**“Horizontal integration” through producer organizations can spur agricultural job transformation.** Cooperative farmer organizations to coordinate and provide input and service delivery is especially important where institutional and public provision of rural services is weak, as in post-conflict settings. Producer organizations can improve [smallholder integration](#) in high-value chains through several inter-related mechanisms:<sup>23</sup>

- **Reduce transaction costs** in contract arrangements: coordinate searching, screening and contracting, provide quality control, establish trust against contract breach, and facilitate aggregation and delivery to processors or buyers.
- Improve **access to technology**: foster collective savings and credit schemes, and increase knowledge exchange.

- Increase **farmers’ bargaining power** and the price they receive.<sup>24</sup>

**Nonetheless, the exact mechanisms through which producer organizations contribute in practice remain poorly understood.** Despite the many potential benefits, farmer organizations often struggle to carry out these roles. As in contract farming, it is typically the better-off farmers who participate in producer organizations. The benefits for poverty reduction of [organizing farmers](#) are thus not clear.<sup>25</sup> The governance and constitution of producer organization also matter. [Study results from Ethiopia](#) show that NGO and government initiated cooperatives are less efficient than community initiated ones, implying that governments and NGOs should not interfere too strongly in cooperative formation.<sup>26</sup> Given weak rural infrastructure and marketing systems, complementary public investments can however incentivize downstream companies in the value chain to work with producer organizations, as opposed to larger farms, as documented in the [dairy sector in India](#).<sup>27</sup>

**Smallholder farmer producers are more likely to benefit when land is more equally distributed and demand for quality consistency and volume is not too stringent.** Smallholders can gain from iVCD by participating as self-employed, smallholder, contract producers; or they can benefit indirectly by being employed as wage workers on larger farms or



*Photo credit:* Lakshman Nadaraja / World Bank

in the agro-food sector. They can also benefit through spillover effects in the local economy. Smallholder direct gains are more likely when smallholder production is dominant in the region and larger farms are absent. In a mixed production structure with both smallholder and larger farm enterprises, buyers are more likely to contract with larger farms given lower transaction costs. Including smallholders is more common when sourcing from them is not more expensive. This is more likely when [production is more labor-intensive](#), as with many cash crops.<sup>28</sup> Monitoring farm wage labor is costly given spatial dispersion of activities and poor observability of the link between laborers' effort and final outcomes. As a result, for such crops, smallholder contract farming is often preferred over full vertical integration of production on larger farming entities.

**In iVCD initiatives, poor people and women often benefit through getting wage jobs and improved labor conditions.** Certain factors—such as consumer quality or volume demands, or economies of scale, or timely processing—necessitate tight control over production. The presence of these factors drives production concentration in larger farming entities, and full production vertical integration in the chain is more likely than development of contract farming with [smallholders](#).<sup>29</sup> In this case, the poor can benefit as wage workers on farms or along the value chain, but also from spillovers in the local economy. They can also benefit from increased on-farm labor demand by contract farmers, which are typically better off. An increase in wage jobs is more likely if employment is complementary to the poor's small-farm activities

and requires relatively low skills. Women often take advantage of these opportunities. These processes have been well documented, as in the context of export oriented horticulture estate farms in Senegal, among other countries.<sup>30</sup> Export firms' adoption of labor standards can also help [improve labor conditions](#).<sup>31</sup>

**Finally, staple crops are less suitable for contract arrangements through either VCD or cooperative organizations.** Integrating value chains is more likely to be effective for non-staple cash crops and products with high transaction costs and high potential for value addition, such as coffee, tea, or dairy. Staple crops are typically less suitable as their homogeneous characteristics leave less room for quality upgrading and value addition. This reduces buyer incentives to pay suppliers a premium for consistent high quality and volume. There are also many potential buyers for staple crops, making contract enforcement more difficult. The risks of both producer opportunistic side-selling and buyer strategic contract breach are higher. Limited economies of scale in procurement, storage, processing, and marketing also reduce incentives for traders and processors to invest in chain coordination. Some experimentation with rice and maize contract farming to overcome market constraints is ongoing (Box 3), but, overall, contract farming in staples remains unusual.

**Raising labor productivity in staple crops requires public investment in public goods, which remains a policy priority.** Raising staple crop productivity lies at the heart of structural transformation and transformation of agricultural jobs.<sup>33</sup> Investment in rural public goods is especially needed. This includes agricultural R&D and extension; rural infrastructure such as electricity, roads, health, and education; and water and soil management. Yet government spending in the agricultural and rural sector has remained at about 3 percent of total spending, well below the 10 percent spent by East Asian countries in the early 1980s when at similarly low levels of development. In Africa, a substantial share of public [investment still subsidizes private goods](#)—for example, in the form of input subsidies—instead of providing public goods.<sup>34</sup> At the same time, climate change threatens current production systems raising the importance and return of public investment in water management and solar energy to boost small-scale irrigation.

### BOX 3. EXPERIMENTING WITH iVCD IN STAPLES

While staple crops are typically less suitable for contract farming arrangements, income growth and urbanization have added complexity to quality and quantity requirements for staple foods. In response, VCD initiatives in staple crops, especially rice and maize, have emerged. An evaluation from [Benin](#) shows how smallholder rice contract farmers, who are also stakeholders in a rice mill, increased area cultivated, intensified rice production, commercialized more output, and increased farm income. However, in a project initiated by private sector input providers in [Ghana](#), smallholders in maize contract farming saw their maize profits decline as higher production costs were not sufficiently offset by higher productivity. Success of contract farming in rice is arguably more likely compared to maize because there is more scope for quality differentiation, and thus a price premium, which reduces the risk of side-selling.

Third-party intermediaries coordinating a chain can help establish trust and promote contract compliance between farmers and other stakeholders. To test this approach, a World Bank Jobs MDTF pilot rice contract farming model in Côte d'Ivoire is underway. Other similar initiatives include the German Development Agency (GIZ) financed [Competitive African Rice Initiative](#) under the [Agricultural Value Chain for Sustainable Development \[A4SD\]](#) program.

For the Côte d'Ivoire World Bank Jobs MDTF pilot, smallholder farmers, small to medium-sized mills, and a national micro-finance institution are collaborating under an agreement: smallholders receive inputs on credit from the financial institution based on having a contract with the mill to deliver a certain amount of rice, of a certain quality, at a certain price at harvest. The mill also receives working capital credit from the micro-finance institution to buy the rice at harvest. The mill hires a liaison agent to provide basic extension services and maintain regular contact with farmers. The World Bank supports the platform by facilitating exchange between partners in different localities through local and national coordinators. It also provides technical assistance to mills and pays for one agricultural liaison officer in the micro-finance institution to reduce transaction costs. No guarantee funds for loans are provided. In return, the partners offer the opportunity to participate in the pilot to all rice growers with some form of water control, including the poorest. Pilot progress is described in a [blog series](#),<sup>32</sup> and labor effects on farmers and along the value chain, especially in the mill, are under evaluation.

A unique feature of the experiment is that poor households in randomly selected villages in the pilot are also receiving cash transfers three times per year for three years. This will enable examination of synergies between a market creation program along with provision of cash transfers. Carefully targeted iVCD could provide an [alternative path to economic opportunities for cash transfer beneficiaries](#). This approach differs from the standard [Productive Economic Inclusion](#) programs that seek to graduate cash transfer beneficiaries from assistance through a combination of entrepreneurship and life skill training, access to finance, and sometimes also saving programs. This assumes sufficient demand for the goods and services the beneficiaries will produce.

### WHAT'S NEXT?

**iVCD holds promise for better job outcomes in agricultural value chains.** iVCD is an increasingly popular market-based organizational solution to overcome the many market constraints agricultural smallholders face. It also holds promise to create formal and informal wage jobs and off-farm self-employment; agribusiness typically accounts for one-quarter to one-third of off-farm employment in low and low-middle income countries. Many VCD models exist, including bilateral contract, tri-partite, as well as special purpose vehicles. There are also

a number of different kinds of support: direct to stakeholders, platforms, and public goods provision.

**There is also a fruitful agenda for experimentation and more systematic “learning while doing” with iVCD.** Theory and practical experience provide some guidance on the likely performance of different organizational models and interventions in maximizing gainful and inclusive employment based on the specific contexts of the situation (nature of the crop: staples/nonstaples; nature of the agrarian structure: mixed versus smallholder production; nature of the target groups: poor subsistence versus commercial



smallholders). But more specific guidance is needed. Many practical questions remain concerning the:

**Organizational and contracting arrangements.**

What are the optimal services and contract stipulations firms should offer? What best role can producer organizations play and how to best support them, especially in contexts or crops where organizations have been largely absent, as in staples? What is the degree of competition and market power needed to sustain innovation and VCD?

**Skill formation.** Agri-business development requires new skills, while the optimality of different extension modalities for smallholder farming remains poorly understood. The ongoing digital revolution, with applications within African agriculture and its chains rapidly expanding, only exacerbates the need for upskilling. This concerns both basic as well as digital skills. Africa's agricultural education and extension is in dire need of renewed public attention and investment.

**Different forms of support to financial intermediaries.** Without financial intermediaries, external financiers, or foreign direct investment (FDI), the sustainability of iVCD interventions remains questionable. It is important, therefore, to also understand what instruments best incentivize financial institutional participation and what maximizes job creation of private sector investment; that is, whether through technical assistance and capacity building, matching grants, or guarantee funds.

**Territorial development.** While sometimes spanning large geographic territories, iVCD does not happen in a spatial vacuum. The agricultural sector interacts intimately with the towns and cities where products are assembled, transformed, and redistributed, and requires good connectivity with hinterlands where products are sourced and with markets in which they are sold. This requires creation of functional territories, with business-friendly environments that entice establishment of agri-businesses and enable them to flourish. Often this happens in intermediary urban centers, which



Photo credit: Arne Hoel / World Bank

are also more accessible to poorer populations. The nexus between iVCD, secondary town development, and policies needed to strengthen the agricultural sector that includes these spatial issues remains poorly understood.

**Finally, greater policy attention to and investment in raising labor productivity in staple crop production is needed.** Experimentation with contract farming in staples should be pursued, but raising staple crop productivity will require, especially, more and better public investment in rural public goods. Governments and donors should not lose track of this agenda. Without higher labor productivity in staple production, the transition to increased production and employment generation around non-staples will be limited. The entry points to tackle low staple crop productivity are well-known: modern input adoption, extension, irrigation, mechanization and the availability of risk management tools. However, new digital technologies can help reduce transaction costs, accelerating the adoption of better agronomic practices and increasing the rate of commercialization.

## ANNEX 1: EXPECTED AGRARIAN STRUCTURE BY CROP GIVEN TRANSACTIONS COSTS IN PRODUCTION AND DOWNSTREAM PROCESSING / MARKETING

Table A1.1

Expected agrarian structure by crop given transactions costs in production and downstream processing/marketing

Crop / product	Transaction costs arising in		Predominant forms of production in Africa <sup>2</sup>
	Production / technology <sup>1</sup>	Processing / marketing <sup>1</sup>	
Coarse grains	0	0	IS
Small ruminants	0	1	IS
Root crops	1	0	IS
Swine (backyard)	1	1	IS
Poultry (backyard)	3	1	IS
Rice	4	1	IS, CF
Wheat	4	1	LF
Oilseeds	2	3	IS
Sugar cane	3	2	CF, LF
Cattle	4	1	CF, LF
Bananas (sweet)	4	2	LF, IS
Cotton	4	3	CF
Robusta coffee	3	4	LF
Pineapple	4	3	LF, CF
Cocoa	4	4	CF
Swine/poultry (industrial)	4	4	LF
Palm oil	4	4	LF
Aquaculture	4	4	CF
Tobacco	3	5	CF, LF
Export vegetables		5	CF
Arabica coffee	4	5	CF
Dairy	5	4	CF
Tea	5	5	CF
Cut flowers	5	5	CF

**Note 1:** Scored on a range from 1 (lowest) to 5 (highest);

**Note 2:** IS = Independent smallholder; CF = small operators contracting with processors (such as producer coops, contract farming, out grower schemes, etc.); LF = large (more specialized) farm, ranch or plantation, with vertical links to processing, marketing.

**Source:** Delgado 1999.

## ANNEX 2: MEASURING POTENTIAL JOBS EFFECT OF A VALUE CHAIN INTERVENTION—THE LEBANESE POTATO SECTOR

The World Bank's Jobs Group's [Jobs in Value Chain Toolkit](#) lays out a step-by-step approach, using a series of surveys, to explore and quantify potential labor market effects of a value chain intervention. Assessment of the job potential of the north Lebanon potato value chain illustrates the method. It draws on: (a) 109 structured surveys with different actors in the chain, including input suppliers, small and large farmers, traders, and processors; (b) Six semi-structured interviews with key informants before and after the structured surveys; and (c) focus group discussions with stakeholders.

The assessment found that about three-quarters of the jobs are on-farm, most of them low-skilled, seasonal, and performed by migrants and, more recently, refugee workers. Demand for low-skilled

labor is also common in other segments of the chain (72 to 84 percent) (Table A2.1). Youth occupies most of the low-skilled, permanent positions in input supply and trading nodes (92 and 81 percent of all positions respectively) (figures not shown in Table B2.1). Women are very prevalent in low-skilled permanent positions in the processing node (41 percent of the positions).

To explore the employment effects of investment in the chain, the team considered two scenarios:

- Overall job gains from expansion of fresh (unprocessed) exports by 25,000 ton (equivalent to half the European export quota that had opened to Lebanese exporters from the north and Bekaa);
- Overall job gains from expansion of potato processing capacity by 25,000 ton.

**Table A2.1**  
Findings of the Lebanon potato value chain jobs estimation analysis

	Jobs in current VC		Share of total jobs [%]		Share of FTEs [%]		Value chain job creator: permanent (+ seasonal) jobs	
	Total	FTE	Perma- nent	Seasonal	High skill	Low skill	Export scenario	Processing scenario
Input suppliers	250	126	41	59	28	72	71 [+104]	71 [+104]
Farmers	7,284	2,137	16	84	19	81	254 [+1,367]	206 [+1,051]
Traders	1,247	510	31	69	16	84	30 [+75]	46 [+115]
Processors	215	132	53	47	20	80	0	800 [+596]
<b>Total</b>	<b>8,996</b>	<b>2,905</b>					<b>355 [+1,546]</b>	<b>1,123 [+1,966]</b>

**Note:** Export scenario is based on expansion of fresh exports by 25,000 tons (capture of half of the European export quota). Processing scenario is based on attraction of investment to a processing facility with equivalent (25,000 ton) capacity.

**Source:** Farole and Konishi, 2017.

Expansion of exports would have a larger direct jobs effect, in this case more on farm jobs, than investment in the processing plant (1,621 jobs versus 1,496), but given that every job generated in the processing plant generated an additional 1.06 jobs in the rest of the chain  $(=(3089/1496)-1)$  compared with only 0.17  $(=(1901/1621)-1)$  additional jobs per job generated under the export scenario, the anticipated employment effect under the processing scenario is much larger

(3,089 versus 1,901). Moreover, the quality of jobs in the processing sector is systematically better in terms of higher wages and more permanent employment. Differences in the actual costs of the investments, as well as other considerations such as economies of scale and capital-labor substitution in farmers' and firms' supply response must be incorporated. These are elaborated in the Toolkit.

## KEY REFERENCES

A full bibliography of underlying evidence can be found at [www.Jobsanddevelopment.org](http://www.Jobsanddevelopment.org).

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## ENDNOTES

<sup>1</sup> Africa is used as shorthand for Sub-Saharan Africa.

<sup>2</sup> In 2015, about two in five Africans [41 percent] were living on less than \$US1.93 per day, the international poverty line for extreme poverty [expressed in 2011 purchasing power parity terms].

<sup>3</sup> Allen, Heinrigs, Heo [2018]. Agriculture linked activities include the provision of agricultural inputs [backward linkages] as well as food processing, storage, transport, and marketing and food services [restaurants, food delivery] [forward linkages].

<sup>4</sup> "In Africa, More Not Fewer People Will Work in Agriculture" Jobs and Development Blog Post, November 12, 2018. <https://blogs.worldbank.org/jobs/africa-more-not-fewer-people-will-work-agriculture>

<sup>5</sup> Staple crops are the crops that constitute the dominant portion of the standard diet, supplying a large fraction of the energy needs. In Africa, they include coarse grains [millet, sorghum, maize], wheat and rice, as well as roots and tubers [especially cassava and yam].

<sup>6</sup> Beegle and Christiaensen [2019], Mellor [2017]. Given the difficulty of identifying potential commercially oriented farmers from the lot, a practical strategy is to put in place mechanisms and strategies that support farmers through self-selection to either progress through different stages of farming orientation—subsistence, net buyer, net seller, semi-commercially oriented, fully commercial farmers, value addition/primary processing etc. or to move rapidly out off farming altogether.

<sup>7</sup> Mechanization and irrigation remained underdeveloped, markets to sell the produce are still hard to access and production and price risks continue to challenge farmers to invest.

<sup>8</sup> The case of Ethiopia is illustrative. The Ethiopian government worked simultaneously on 1) increasing smallholder staple crop productivity, including through the deployment of 45,000 extension agents [three per district], facilitating access to credit, and water



and land management; as well as 2] on improving market connectivity through rural road investment and 3] providing a form of insurance through a Productive Safety Net Programs. Since the mid-1990s, smallholder cereal yields more than doubled; extreme poverty more than halved. [There was also greater attention to the provision of sexually reproductive health services and fertility declined].

- <sup>9</sup> Climate change and resurging conflict pose new challenges, but there is substantial variation across regions and not all climatic change is detrimental.
- <sup>10</sup> Agriculture can, and has responded to better prices, but high transaction costs stand rapidly in the way [Magrini, Balie, and Moreales-Opazo, 2018].
- <sup>11</sup> Bilateral arrangements between producers and upstream suppliers or downstream buyers are common. Increasingly one also observes triangular approaches, including financial institutions as a third party. These then provide the credit to producers and/or the VC chain actors [working and/or equity capital] based on their contractual arrangements. At times, special purpose vehicles [SPV] are created, whereby the different actors in the chain set up a jointly owned stand-alone company, which then contracts with the farms. This distributes the risk of contract breach formally across the actors, stimulating investments by companies that would otherwise abstain.
- <sup>12</sup> This is in the spirit of the [2015 Addis Ababa Financing for Development Action Agenda](#), the [World Bank's Maximizing Finance for Development approach](#) and the [European Investment Plan](#).
- <sup>13</sup> <https://datacatalog.worldbank.org/dataset/doing-business>; [https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report\\_web-version.pdf](https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report_web-version.pdf)
- <sup>14</sup> <https://eba.worldbank.org/>. In 2019, EBA covered 47 countries.
- <sup>15</sup> World Bank 2016
- <sup>16</sup> World Bank 2016
- <sup>17</sup> Bellemare and Bloem [2018]. Nonetheless, most empirical studies struggle to establish that the link is causal, i.e. that it is participation in contract farming or producer organization that increased incomes, as opposed to something else, such as their greater creditworthiness or greater managerial capacity and entrepreneurial spirit, which often go unobserved.
- <sup>18</sup> In fact, the biggest impacts from agri-food chain transformations are likely to accrue to consumers. With food demand relatively price inelastic, given people's limited metabolic range, aggregate supply expansion tends to drive food prices down. This generates welfare gains for consumers, with the welfare effects for producers often ambiguous, as in the Green Revolution, which in turn facilitates the [productive] exit out of farming.
- <sup>19</sup> Most studies focus on estimating the welfare effects on participating smallholders without specifying or examining the effects of the scope and particularities of the contracting arrangements. An interesting exception is Arouna, Michler and Lokossou [2019] who find that rice farming contracts in Benin that only offer price guarantees raise incomes of smallholders as much as those that also add extension training and input loans. In addition, a good number of good practice examples exist, but they are usually not comparable. More broadly, it is hard to causally establish the link between different organizational structures and their effect on the earnings of the participating populations, given the complexity and limited number of organizational structures typically available for direct comparison. Partly as a result, there has been insufficient attention to measuring the impact of iVCD in general, and even more so regarding labor market outcomes, including with alternative methods [Devaux et al. 2016; Barrett et al. 2019].
- <sup>20</sup> Swinnen and Kuijpers 2020
- <sup>21</sup> World Bank 2016
- <sup>22</sup> Buba and Aterido, forthcoming
- <sup>23</sup> Fischer and Qaim 2012; Swinnen and Kuijpers 2020
- <sup>24</sup> This is not necessarily due to enhanced bargaining power. Price levels depend on the quality of the produce, the type of product, and the level of transaction costs [all potentially influenced by the producer organization] and do therefore not necessarily follow from better bargaining power.
- <sup>25</sup> Swinnen and Kuijpers 2020
- <sup>26</sup> Gezahegn et al. 2020. Producer organizations also function more efficiently if they incentivize committee members through monetary compensation.

- <sup>27</sup> Janssen and Swinnen 2019
- <sup>28</sup> Delgado 1999
- <sup>29</sup> Delgado 1999; Swinnen and Kuijpers 2020
- <sup>30</sup> Van den Broeck and Maertens 2017
- <sup>31</sup> Schuster and Maertens 2017
- <sup>32</sup> <https://blogs.worldbank.org/jobs/rising-rice-c-te-d-ivoire-3-contours-pilot-project>
- <sup>33</sup> China and Vietnam achieved already 2.5 to 3 ton/ha when they introduced their “Household Responsibility System” and “Doi Moi” reforms in 1978 and 1986, respectively, which led to initial boost to yields and poverty reduction. Virtually no country has been able to develop without substantially increasing its staple crop yields.
- <sup>34</sup> Pernechele, Balié, and Ghins 2018

This Jobs Note was prepared by Luc Christiaensen [[lchristiaensen@worldbank.org](mailto:lchristiaensen@worldbank.org)], Jobs Group, World Bank. It develops a conceptual framework to guide policy choices in using inclusive agricultural value chain development for better job creation in the rural space. As the agricultural iVCD agenda is still nascent and rigorous empirical evidence incipient, it refrains from nuts-and-bolts operational guidance on how to do this. It is part of the broader **Knowledge Program for Jobs: From Jobs Analytics to Support for Jobs Operations** [P170399].

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