

# FUTURE of FOOD

Shaping the Food System to  
Deliver Jobs



Foreword by Dr. Jim Yong Kim



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to Deliver Jobs

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## FOREWORD

Over the next 15 years, about 1.6 billion people will reach working age in low and middle income countries. Where will they work? What will they earn? The core of the development challenge will be sustaining and improving employment for billions of workers and creating jobs for the next generation.

Automation and the digital revolution are driving productivity and income growth, but they are also causing significant job losses, especially in developing countries. This trend threatens our goals to end extreme poverty by 2030 and boost shared prosperity for the poorest 40 percent of the population.

Amid these demographic and technological shifts, it's important to take a closer look at the role the food system plays in workforce development. In many countries, the food system provides more jobs than any other sector, and we expect it to remain the top employer for the foreseeable future.

The food system extends beyond agricultural production. It includes food storage, processing, distribution, transportation, storage, retailing, preparation, restaurants, and many other services. As per capita incomes increase and eating patterns shift, the demand for jobs in these off-farm segments of the food system will increase.

Even though the relative share of farm jobs will likely decline, agricultural productivity will not necessarily be lower than other

sectors, and improving agricultural incomes can have a large effect in reducing poverty.

We can do more to strengthen the impact that the food system has in providing jobs and incomes.

The report provides a framework for understanding the factors determining the number and quality of jobs in the food system. The report also highlights a set of actions to enhance the food system's contribution to jobs: supporting growth in food value chains, ensuring that policies and investments improve the quality and quantity of jobs, and facilitating the inclusion of more women and youth.

Implementing these measures will require that we prioritize efforts within countries and partnerships, especially engaging with the private sector as the key provider of jobs.

The World Bank Group is strongly committed to working with partners to help shape a food system that delivers quality jobs along the entire value chain – jobs that reduce poverty, that focus on improving sustainability, and that generate better health and nutrition from the food we grow and eat.



Jim Yong Kim  
President, The World Bank Group

“Shaping the Food System to Deliver Jobs” is the fourth paper in a series. The first, “Ending Poverty and Hunger by 2030: An Agenda for the Global Food System,” outlined the overall agenda and was released at the 2015 Spring Meetings of the World Bank and International Monetary Fund. That paper called for action on climate-smart agriculture, improving nutritional outcomes, strengthening value chains, and creating jobs, while improving market access for poor farmers. The second, “Shaping a Climate-Smart Global Food System,” focused on climate-smart agriculture and was distributed at the 2015 Annual Meetings. The third, “Shaping the Global Food System to Deliver Improved Nutrition and Health,” focused on improving nutritional outcomes and was distributed at the 2016 Spring Meetings. This paper focuses on how the food system can deliver jobs. It presents a set of action areas that countries can adopt, adapt, and apply to their circumstances (tables 1 and 2).

## Key messages:

- The food system employs the most people in many developing countries in both self and wage employment, and will continue to do so during the time period set to achieve the Sustainable Development Goals, and thereafter. Self and wage employment in farming still generates a large share of rural incomes and can have large poverty-reducing effects. Farm labor productivity on a per-hour-worked basis, and accounting for differences in human capital, is not necessarily lower than other sectors.
- The food system extends beyond farm production to include activities along value chains, such as food processing, transportation, retailing, restaurants, and other services. In many countries, the off-farm aspect of the food system accounts for a large share of the economy’s manufacturing and services sectors. While the employment share in farming tends to decline as per capita incomes rise, the share in food manufacturing and services tends to increase.
- Increasing the number and inclusiveness of jobs will require attention to food system growth, employment intensity, and inclusion of youth and women. Urbanization and per capita income growth offers significant new opportunities in non-cereal products and in new jobs in the food system beyond the farm. Inclusion of women and the growing number of youth into food system jobs can raise productivity and improve social harmony.
- Improving the quality of jobs in the food system requires attention to raising returns to labor, increasing stability in earnings, and improving working conditions.
- Priorities vary by country context. Different combinations of interventions will be needed in agriculture-dependent economies relative to transforming or urbanized economies; in lagging relative to leading regions; in land abundant relative to land scarce environments; whether “pull” or “push” factors are leading to movement of people out of farming in particular areas; and on the initial nature of skills deficits.

The four sections of this paper focus on, respectively, why the food system is important for jobs; how the food system can provide more jobs; what can be done to improve the quality of jobs; and implementation considerations.



## Why food system jobs matter

Over the next 15 years there will be about 1.6 billion people in low- and middle-income countries reaching working age.<sup>1</sup> Together with sustaining and improving the quality of self and wage employment of the billions of people already working, creating new jobs to absorb those reaching working age will be a significant challenge. All sectors will need to contribute, including the food system, particularly given its large relative size in many countries.

**The food system contributes a significant share of jobs in all countries.** The food system comprises more than just primary agricultural production. It includes food storage, processing, distribution, transport, associated logistics, retailing, preparation, restaurants, promotion, and other services that together include many enterprises and a relatively large share of jobs in the manufacturing and services industries in many

countries. The farming (or agriculture) share of total employment still dominates in many countries, accounting for about 60 percent of total employment in Sub-Saharan Africa, and almost 70 percent of total employment in low-income countries globally.<sup>2</sup> Inclusive of employment in the broader food system, these shares would be larger. For example, in Malawi and Tanzania, food and beverages account for more than 40 percent of total manufacturing employment.<sup>3</sup> Even in some high-income countries such as New Zealand, the food and beverage share of manufacturing employment is more than 35 percent, driven primarily by exports.<sup>4</sup> In the European Union, the food and beverages industry provides a larger share of employment than other manufacturing sectors, provided more stable employment during the financial crisis, and has a higher share of women employed than overall manufacturing.<sup>5</sup>

**Self and wage employment in farming still generates a large share of rural incomes, raising which can have large poverty reducing effects.**

Farming generates about 68 percent of rural income in African countries and about half of rural income in South Asia, most of which is from self-employment, with a smaller share from wage employment.<sup>6,7</sup> As 80 percent of the poor live in rural areas and most rely on agriculture for their livelihoods, improving agricultural incomes can be an effective way to reduce poverty. Indeed, cross-country evidence shows that GDP growth originating in agriculture is more poverty reducing than GDP growth originating outside agriculture.<sup>8</sup> By 2030, some of the rural poor will migrate to urban areas, but most will not, and the rural population in less-developed regions may even increase slightly. Most income gains needed to end poverty by 2030 therefore will need to come from activities in rural areas, most of which are in the food system. Average incomes of poor people will need to increase by about 60 percent in Sub-Saharan Africa and 30 percent in South Asia to lift them above the poverty line—and for those earning less than average, income gains will need to be even larger.<sup>9</sup>

**Agricultural labor productivity is not necessarily lower than other sectors on a per-hour-worked basis.**

Agriculture is often viewed as an intrinsically low-productivity sector, while manufacturing and services are viewed as higher productivity sectors, and that a movement of people out of agriculture into manufacturing and services can raise overall productivity and incomes. Indeed, historical patterns of structural transformation have reflected this inter-sectoral labor shift. However, recent survey evidence indicates

that on a per-hour-worked basis, rather than simply using national account data on the number of people employed in agriculture, and accounting for differences in human capital, agricultural labor productivity is not intrinsically lower than other sectors—in fact, it is similar.<sup>10</sup> The difference in annual and per-hour-worked productivity estimates suggests underemployment in agriculture likely due to seasonality—that is, people primarily employed in agriculture work substantially less hours on an annual basis than those primarily engaged in non-agricultural activities. Reducing seasonality effects in agriculture through irrigation use and diversifying farming activities could help reduce underemployment and raise annual productivity.

**Food system transformations accompany structural transformation and offer more job opportunities beyond farm production.**

Changes in local consumer demand that occur as per capita incomes rise, urbanization, and export opportunities change the structure of the food system and the broader economy. Diets change as per capita incomes increase, with the share of the income increases spent on cereals declining relative to other fresh, processed, and convenience foods, even as overall expenditures on food continue to rise. Urbanization widens the gap between the location of food production and consumption. The resulting increase in food management and transformation beyond the farm creates new enterprise growth and job opportunities in the broader food system. For example, an analysis of six African countries (Ethiopia, Malawi, Mozambique, Tanzania, Uganda, and Zambia) shows that the food system across these countries is projected to add more jobs than the rest of the



economy between 2010 and 2025, but within a transforming food system. The projected employment shares in farming (own and wage labor) is projected to decrease from 75 percent to 61 percent, while the share of jobs in the broader food system (food manufacturing, food marketing, transportation,

and food preparation), most of which will be in rural areas, is projected to increase from 8 percent to 12 percent over the same period.<sup>11</sup> As per capita incomes rise, the share of food manufacturing and services jobs tends to increase relative to farming (box 1) and often account for a large share of the initial

**BOX 1: As Per Capita Incomes Increase, More Food System Jobs Will Be in Services and Manufacturing, and Many Will Be in Rural Areas**

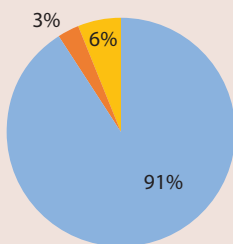
In *low-income countries*, the food system tends to dominate total employment in both rural and urban areas. For example, the findings of a recent review of six Eastern and Southern African countries shows that the food system accounts for more than 80 percent of all jobs. Within the food system, over 90 percent of jobs are in farming (including self and wage labor), and most non-farm jobs in the food system are in food services (transportation and marketing), accounting for 6 percent of food system jobs, which is double those in food manufacturing/industry. These shares are a reflection of dominance of staple grains in production and consumption in these countries. In addition, about 75 percent of food manufacturing jobs and 60 percent of food services jobs are in rural areas.

In *middle-income countries*, within the food system, farming accounts for closer to half of the jobs, with off-farm jobs in food manufacturing and services accounting for the other half. There is also a more even share of jobs in each food manufacturing and food services (for example, about 25 percent each, in the case of Brazil). There is a large variation across countries. For example, in countries where the share of primary agricultural commodity exports is large (such as in Argentina), the food services share (inclusive of logistics [transportation and ports]) is likely a larger share.

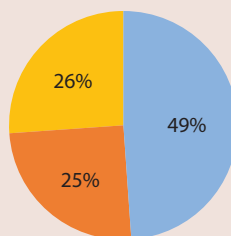
In *high-income countries*, within the food system, farming accounts for a smaller share of jobs, while food services accounts for most jobs. For example, in the US, farming accounts for about 20 percent over overall food system jobs, food manufacturing accounts for 14 percent of jobs, while food services accounts for about two-thirds of jobs in the food system. Part of the contribution is restaurant services, as half of household income spent on food is on consumption away from the home.

**Examples of the composition of jobs in the food system in low-, middle-, and high-income countries**

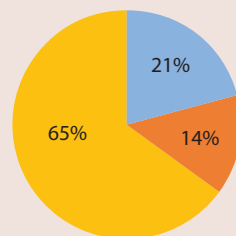
**Low Income:** Eastern and Southern African countries



**Middle Income:** Brazil



**High income:** US



■ Farming ■ Food manufacture/industry ■ Food services

Sources: Derived from D. J. Tschirely et al., “Africa’s Unfolding Diet Transformation: Implications for Agri-food System Employment,” *Journal of Agribusiness in Developing and Emerging Economies* 5, no. 2 (2015): 102–36; V. Moreira et al. “Assessment of the Economic Structure of Brazilian Agribusiness,” *The Scientific World Journal* (2016), <http://dx.doi.org/10.1155/2016/7517806>; and USDA based on data from 2012 (farming includes farms [16%], and forestry, fishing, and related activities [5]%).

growth in the manufacturing and services sectors, and thereby in overall structural transformation.

**New technology is shaping how food value chains are organized, offering new opportunities.** New technology and innovations are creating new opportunities for income gains, entrepreneurship, and higher skilled jobs in the food system. Technical innovations, such as new information and communication technologies (ICT), are increasingly connecting small farmers to markets, reducing transaction costs, and raising food system efficiencies and inclusion. Rural youth are well-placed to benefit from jobs created by these innovations since they are more likely than adults to own mobile phones as well

as adopt financial, training, and extension services which use these digital platforms. Solar power is providing new job opportunities for agro-processing in off-grid areas. Remote sensing technologies are being used for the “uberization” of mechanized services in some African countries, enabling many tractor owners and drivers to provide services to small farmers at remote locations. Digital finance, such as M-Pesa and many variants in other countries, is increasing financial inclusion and facilitating microentrepreneurship. E-commerce platforms are linking small entrepreneurs in rural areas with national and global markets as in China’s Tao Bao villages. With these advances, future jobs in food systems will have a higher knowledge and technology content.





## How can the food system provide more jobs?

### The framework and context for job creation

The number of jobs in the food system, including for youth and women, is a function of the initial size of food value chains (inclusive of farming, and associated food manufacturing and services), their projected growth, employment intensity, and inclusion, as follows:

- **Initial size:** In many countries food staples still dominate the overall food system. For example, agricultural GDP in low-income countries is commonly comprised of about two-thirds staples, with the remaining share comprised of traditional export crops (such as cocoa, coffee, cotton, and tea), livestock, fisheries, and horticulture. As a result, most people in agriculture are self-employed in cereal production. Given the current relative size of staple crops, it will continue to be

an important source of employment, even though growth in non-staple crop segments will likely be larger. In addition, in low-income countries, the share of farming in total food system employment is currently much larger than employment in food services and manufacturing, while in middle-income countries, they are of similar size (box 1).

- **Growth:** Food demand is projected to grow by about 25 percent in developing countries during the next 15 years, with demand growing in Sub-Saharan Africa by 55 percent.<sup>12</sup> Non-cereal food demand is projected to grow faster than cereal demand, and food services and manufacturing jobs will likely grow faster than farm jobs. Food consumption patterns are changing in both rural and urban areas. With urbanization, food demand growth will be more rapid in urban areas than rural areas, thereby increasing job

opportunities in off-farm food management and transformation.

- **Employment intensity:** Employment intensity varies across different food system value chains and at different stages of the value chain. In addition, mechanization and automation, while raising incomes per job, reduce the number of jobs per unit of output. There is an ongoing debate on the extent and speed at which machines and automation will displace jobs in low- and middle-income countries during the next 15 years, and the role of policy.
- **Inclusion:** Inclusion of youth and women into food system labor markets will be paramount for equity and social stability. The population below the age of 24 accounts for the largest share of the population in almost all countries in Sub-Saharan Africa, but also in many countries in South Asia, East Asia, Latin America, and the Middle East and North Africa. Yet, youth aged 15 to 24 years old

are two or three times more likely than adults to be unemployed. Youth can bring energy, entrepreneurial talent, and innovative ideas that can help raise growth and incomes. However, if a large share of youth cannot find jobs and earn satisfactory incomes, they may become a source of social tension.

The remainder of this section will focus on actions to increase the food systems' contribution to jobs through promoting the *growth* of food value chains, reflecting *employment intensity* considerations in policy decisions, and facilitating *inclusion* (table 1).

## Promote growth in food value chains

### *Raise agricultural productivity growth*

### **The fortunes of much rural economic activity depend on agriculture's performance.**

Improved agricultural performance helps raise farm incomes and boosts the demand

**TABLE 1:** Spectrum of Action Areas in the Food System to Deliver More Jobs

General areas	Specific actions
Promote <b>growth</b> in food value chains in response to consumer demand	<ul style="list-style-type: none"> <li>■ Raise agricultural productivity growth</li> <li>■ Invest in complementary infrastructure</li> <li>■ Improve the rural investment climate and trade</li> <li>■ Promote competition, private sector participation, and entrepreneurship</li> <li>■ Upgrade skills to facilitate food system transformation</li> </ul>
Ensure policies don't undermine <b>employment intensity</b> relative to long-term market trends	<ul style="list-style-type: none"> <li>■ Promote high-value agriculture in response to shifting demand</li> <li>■ Policy considerations on mechanization</li> </ul>
Facilitate <b>inclusion</b> of women and youth	<ul style="list-style-type: none"> <li>■ Develop skills and facilitate job matching</li> <li>■ Improve access to land</li> <li>■ Increase access to affordable finance</li> <li>■ Improve inclusion in policy dialogue and program design</li> </ul>

for non-farm goods and services. As a result, there are increased prospects for output growth and employment generation in the associated rural enterprises that provide these goods and services, much of which is food-system-related. These effects can be large. For example, in Ethiopia each \$1 of output generated in agriculture stimulates a further \$1.23 in economic activity in other parts of the economy; 40 percent of this growth comes from higher demand for inputs in agriculture and the use of agricultural outputs in other industries such as food processing; and 60 percent is from increased demand for goods and services resulting from higher agricultural incomes and the associated spending effects.<sup>13</sup> In Bangladesh, a 10 percent increase in farm incomes generated a 6 percent increase in non-farm incomes through strong forward and backward linkages.<sup>14</sup> Gains in staple crop productivity have particularly large impacts in early stages of development, as evidenced by their poverty-reducing effects in Cambodia, Ethiopia, and Rwanda.

**A more climate-smart agriculture will be needed.** Droughts, floods, and rising temperatures are already cutting crop yields, threatening food, fish, and meat supply, and pushing people deeper into poverty.<sup>15</sup> Climate change and the effects of climate shocks are dampening the prospects for future productivity growth. Without adaptation, many developing countries, regions, and areas in Africa, Asia, and Latin America and the Caribbean will suffer particularly severe yield declines by 2030—such as wheat in South Asia, rice in Southeast Asia, and maize in southern Africa.<sup>16</sup> Weather and commodity prices are linked to demand

for and remuneration of labor. Scaling-up climate-smart agriculture is needed—by raising productivity, enhancing resilience, and reducing greenhouse gas (GHG) emissions. In Vietnam, adopting alternative wetting and drying practices in rice production has raised yields, lowered input costs and water use, and reduced methane emissions. In Uruguay, close to 3 million hectares of land are now under sustainable land management practices that are also reducing GHG emissions.

**Action areas to raise agricultural productivity growth** include as follows: (i) increase the development and adoption of improved crop and livestock technology and access to complementary inputs; (ii) improve animal health; (iii) reduce gender inequality<sup>17</sup> by working with governments to reflect gender equality in laws and regulations, educating community leaders, and promoting gender-inclusive research and extension services; (iv) improve water management and its sustainable use, including in irrigated and rainfed areas; (v) strengthen land governance, including increasing the functioning of land rental and sales markets; (vi) reduce land degradation; and, (vii) strengthen farmer skills and knowledge. Across all intervention areas to raise agricultural productivity scale-up climate smart-agriculture.<sup>18</sup>

### *Invest in complementary infrastructure*

**The current lack of infrastructure in rural areas constrains farm and rural non-farm employment growth in food systems.** Rural roads and communications infrastructure help to better link consumer demand with rural producers; electrification

can help facilitate rural-based food processing and value addition; on-farm storage and warehousing infrastructure can help smoothen seasonality in producer prices and food consumption; cold storage can reduce the perishability of higher value crops for market; and port infrastructure can facilitate exports. Each can help support jobs, including for youth, in farm and non-farm activities. For example, in Vietnam, road rehabilitation increased the variety of goods that households sold to market—primarily fruits, vegetables, and meat—and encouraged greater participation in trade and services. In Georgia, the construction and rehabilitation of roads increased the opportunities for off-farm and female employment.<sup>19</sup> Given the significant scope of infrastructure needs, prioritization should consider the jobs impacts. For example, earlier analytical work in Tanzania simulated the rural enterprise employment effects for various types of rural infrastructure.<sup>20</sup>

**Action areas to invest in complementary infrastructure** include as follows: (i) promote investment in quality infrastructure in rural areas; (ii) support the expansion of alternative energy (such as solar and biogas) in areas with no connectivity to the electricity grid (as in Kenya, Rwanda, and Uganda); (iii) encourage entrepreneurship in ICT-related activities, including considerations for startup or roll-out grants; (iv) integrate youth and women into the decision-making processes for local prioritization, planning, and design of rural infrastructure (for example, as in the Malawi Forum and the Peru Rural Infrastructure Program); (v) integrate youth into rural infrastructure public works programs that can offer temporary

employment opportunities (as in the Sierra Leone Rehabilitation and Community-Based Poverty Reduction Project, and the Peru Rural Roads Project), skills development, and support to microenterprises; and, (vi) invest in infrastructure that can reduce women's burden and time constraints so they can engage in learning and productive activities.

### *Improve the rural investment climate and trade*

**The investment climate affects job creation.** Nine out of 10 jobs are created by the private sector, and a vibrant private sector creates more jobs.<sup>21</sup> Evidence shows that the investment climate impacts private enterprises and associated job creation.<sup>22</sup> In this context, a predictable and business-friendly investment climate is a key component of a policy framework to create food system jobs.

**Action areas to improve the rural business climate and trade** include as follows: (i) work to ensure political and macroeconomic stability and reduced conflict; (ii) promote local, cross-border, and international trade (reduce local taxes, including payments at road blocks; and reduce burdensome procedures for cross-border trade), in compliance with World Trade Organization rules; (iii) shift the regulatory quality of agribusiness towards best practices, with the greatest scope for gains in Sub-Saharan Africa, South Asia, and East Asia and the Pacific, as reflected in the *Enabling Business of Agriculture* report;<sup>23</sup> (iv) reduce entry barriers to the formalization of local enterprises; (v) recognize the

informal sector's significant scale and work to improve its connectivity with markets, improve access to services, and strengthen skills; and, (vi) ensure a matching of budget needs for administrative decentralization with adequate national budget transfers and fiscal decentralization policies that don't lead to a local taxation system that undermines incentives of rural enterprises to invest and participate in markets.

### *Promote competition, private sector participation, and entrepreneurship*

#### **Increasing competition and private sector participation can help create jobs.**

Competition can open new job opportunities and help shift labor to more productive employment, which, in turn, can increase wages.<sup>24</sup> Economywide evidence shows that competition laws enhance overall economic growth, an effect that seems particularly pronounced in low-income countries and is induced through higher levels of investment (and lower levels of perceived corruption).<sup>25</sup> In agricultural markets there is a long history of efforts to get the right level and mix of public sector support to spur private sector investment along agricultural value chains, and to reach poor smallholder producers.

#### **Reducing high transaction costs and risks in agricultural markets can help facilitate private investment:**

The spatial dispersion of producers and consumers, lags between input application and harvest, sensitivity to weather extremes, variable perishability and storability of agricultural products, and political sensitivity of basic food staples makes agricultural markets prone to

high transaction costs, significant risks, and frequent government intervention.<sup>26</sup> Infrastructure investment, including ICT, can better link producers and consumers; producer organizations can help aggregate input demand and product supply; drought and flood tolerant crops and weather index insurance can reduce sensitivity to weather extremes; investment in post-harvest infrastructure can improve storability; and more predictable government policies can reduce political risks.

#### **Government intervention has often extended beyond providing public goods and services necessary to underpin and facilitate private transactions, to direct participation in agricultural input and output markets.**

In early efforts to ensure food security, government entities—primarily marketing boards, at times controlled every stage of the marketing chain including input and credit provision, pricing, processing, and internal and external trade, with little scope for private sector participation. As these operations expanded they often became fiscally unsustainable, which together with management concerns and perverse private sector incentives led to reductions in government intervention in these markets. Given the extent of private underinvestment in transport and storage, inadequate commercial skills training, and limited access to finance, the private sector was often slow to fill the void following the withdrawal of marketing boards.<sup>27</sup> And where the private sector did enter markets, they often did not reach poor smallholder farmers. In addition, market development coordination efforts were largely absent.<sup>28</sup> There has been a recent re-emergence of government

interventions in agricultural input markets to spur agricultural productivity and improve food security, with recent expansion in Sub-Saharan Africa.<sup>29</sup>

**The design of government programs should consider opportunities for private sector inclusion and service provision.**

Government input programs are increasingly promoting private sector development with varying forms of private sector engagement as part of “market-smart” subsidy programs (as in Ghana, Malawi, Nigeria, Tanzania, and Zambia).<sup>30</sup> However, these input programs sometimes displace commercial input purchase, as they often benefit wealthier farmers who would likely have purchased inputs in the absence of government support.<sup>31</sup> The less developed the private sector, the smaller the displacement effect.<sup>32</sup> E-vouchers help improve targeting, reduce costs, and create end-user demand for private provision of inputs (as in Nigeria and Rwanda). In addition to input programs, there have also been efforts to include private sector provision in agricultural advisory and extension programs.<sup>33</sup>

**Secondary towns can help connect segments of agricultural value chains to stimulate private sector activity and bring local employment benefits.** Secondary towns provide centers of demand for agriculture produce and can strengthen connections between different segments of agricultural value chains—such as production, storage, processing and packaging, transport, and marketing. Locating some of these segments in secondary towns can stimulate local private sector activity and provide significant employment

opportunities for rural people. The growth of secondary towns also has significant poverty reducing effects.<sup>34</sup>

**Developing an entrepreneurship ecosystem can help facilitate private sector growth and improve the quality of jobs in food value chains.**

This development will require an enabling environment for the private sector and micro and small enterprises, including access by entrepreneurs to mentors and advisors; business enablers (such as incubators); improving the ease of doing business; upgrading business, management, and technical skills; as well as new instruments for mobilizing investments. A good example is the Africa Agriculture Innovation Network (AAIN); the AAIN has developed a business agenda that targets the establishment of more than 100 business incubators in over 50 African countries to help new and startup agribusinesses. Public sector ministries, including the ministries of agriculture, need to help facilitate and promote small- and medium-size enterprise (SME) development in the food system, an activity that requires new skill sets and organization.

**Entrepreneurship programs that combine interventions (access to markets, finance, mentoring or coaching, and training) are more effective in helping small-scale entrepreneurs,<sup>35</sup> as are programs that engage the private sector in design and delivery.** Successful entrepreneurship programs typically provide a package of services<sup>36</sup> to youth that is associated with their needs and the multiple constraints they face. These services generally include trainings, access to inputs, finance and markets, and some type



of mentoring and coaching. The effects of entrepreneurship training or business development services has tended to be stronger than effects of finance interventions.<sup>37</sup> In addition, involving the private sector in program delivery is associated with improved impacts, in the context of well-designed partnerships. Producer organizations, non-governmental organizations and social enterprises are increasingly playing a major role in designing and delivering entrepreneurship programs. They engage in different ways, such as by providing capacity building and mentorship services, as well as access to land, finance, and markets.

**Action areas to promote competition, private sector participation, and entrepreneurship** include as follows:

(i) Give due consideration to the impact of government programs on private sector development, competition, and jobs. More specifically, consider the trade-offs and balance needed between investments in public goods and services to reduce transaction cost and risks as a way of crowding the private sector into agricultural value chains; and direct government participation in these markets based on concerns about the absence of private sector activity; (ii) use “market-smart” program design, including e-voucher programs, to help improve targeting of input programs, reduce costs, and promote private sector development; (iii) create an environment for firms in the food system to locate in secondary towns, inclusive of policy-incentive considerations, and provision of necessary infrastructure (access roads, energy, and communication) to help stimulate local jobs; (iv) foster

entrepreneurship ecosystems to help facilitate private sector growth and improve the quality of jobs in food value chains; (v) use a combination of interventions (such as access to finance and markets, mentoring, and training) and approaches, such as incubators, to support SME development; and, (vi) provide equal access to information, resources, and trainings for business start-up and expansion, such as through gender-sensitive technical vocational education and training (TVET) and grants (such as in the youth employment in agriculture program in Nigeria), and support the formation of women’s cooperatives and business associations.

***Upgrade skills to facilitate food system transformation***

The current curriculum of agriculture universities and training institutes is mainly geared towards agricultural production technologies and has not fully incorporated the changes in the technology landscape and advent of ICT tools, which most youth are using in their daily lives. In addition, skills beyond agricultural production, including in food storage, grading, processing, and alternative energy, also need to be developed to facilitate food systems transformations and private investment in response to changing consumer demand.

**Action areas to upgrade skills** include as follows: (i) incorporate more entrepreneurial and technology content in the curriculum of agriculture universities and training institutes, together with associated faculty staff; (ii) encourage education institutions to develop food hubs and incubate development

of enterprise and business ideas (such as the Urban Food Hubs Program being managed by the University of the District of Columbia); (iii) improved accessibility through distance learning via use of digital approaches; and, (iv) supplement investment in higher education with more attention to vocational education training for skills needs in the broader food system beyond food production.

## **Ensure policies don't undermine employment intensity**

### *Promote high-value agriculture in response to shifting demand*

**While staple crops continue to account for the largest share of consumption in developing countries, diets tend to shift to higher value and processed products as per capita incomes increase.** The continued predominance of staple crops in consumption patterns across low-income countries and its dominance in the crop production structure in smallholder agriculture have made its contributions to poverty reduction significant.<sup>38,39</sup> While staple crops will continue to be important, as incomes increase, diets tend to shift to higher value and processed products. Corresponding production diversification from cereals to vegetables, horticulture, livestock, and fisheries, together with a deepening of value chains with more food distribution, processing, value addition, and food preparation and services, will enable newer employment opportunities in the food system.

**The labor use per hectare of higher value crops in larger scale farm production is many**

**times that of staple foods.** Opportunities in high-value agricultural production are often taken initially by larger scale producers, some of whom rely on local agricultural farm workers or outgrowers. Research shows that for larger scale producers,<sup>40</sup> horticulture crops have multiples times higher labor use per hectare than staple foods. In countries where labor is relatively abundant, and where land and capital resources allow, larger scale producers in those more labor-demanding crops can play an important role in generating new jobs, via direct employment or outgrower arrangements.

**Governments do not invest enough in improving access to markets, education, and the technology needed to strengthen production, processing, logistics, and marketing patterns to meet new emerging market demands in non-grain agricultural subsectors.** Domestic price policy and public spending are often biased to the production of staple grains.<sup>41</sup> While grain crops continue to play an important role in food security and poverty reduction, markets for non-staple crops are often poorly developed, having received little investment in transport systems, cold storage, and information systems that allow for better functioning of markets for perishable products such as fruits and vegetables, and livestock products.<sup>42</sup> The lack of such investments makes it difficult to respond to changing consumer demand to a more diversified mix of products.

**Action areas to promote high-value agriculture in response to shifting demand** include as follows: (i) align farmer incentives to respond to changing market demands that includes: (a) removing price

policies that are biased against production of high-value, non-cereal crops, as such policies provide a disincentive for farmers to produce non-cereal crops; and, (b) remove or reduce restrictions on land use tied to specific staple crops, opening the possibility for greater crop diversification towards higher value crops that can expand employment prospects, while protecting healthy diets; (ii) reduce risks for farm households to access staple food supplies for own consumption; (iii) promote infrastructure and investments in technologies that respond to the needs of high-value crops, for example, higher yield varieties, cold storage for horticultural products, and upgrading of agricultural marketing information systems (such as specialty fruits in the Mekong Delta, Vietnam);<sup>43</sup> and, (iv) adopt market-based approaches to integrate smallholders in value chains, such as through outgrower schemes or productive alliance programs.<sup>44</sup>

### *Policy considerations on mechanization*

There has been ongoing debate about agricultural mechanization and automation, recognizing that it could improve agricultural labor productivity, downstream job creation in the food system, and free up labor to participate in other activities; it also raises concerns that higher levels of mechanization and automation could displace jobs overall and lead to a lower overall net effect on employment. This section addresses these issues in more detail with a primary focus on mechanization.

**Machinery use in the food system varies significantly across countries and regions, and extends beyond just tractors.** In Africa,

even with a relative abundance of land, more than 60 percent of farm power is human power, about 25 percent animal power, and about 10 percent is from machinery power.<sup>45</sup> This level of farm mechanization has not changed much over the past several decades. In contrast, the number of farm tractors in Asia has increased multiple times. In addition, use of power tillers has expanded rapidly in East and South East Asia, particularly for wetland rice production systems. While tractors bring the ability to power other machinery such as ploughs, planters, and reapers; standalone machine use—such as pumps, threshers, grinders, and mills—has also expanded. Analysis across six African countries (Ethiopia, Malawi, Niger, Nigeria, Tanzania, and Uganda) indicate that only about 2 percent of households own or rent tractors, while 32 percent own and 12 percent rent other mechanized farm equipment.<sup>46</sup> In contrast, in Bangladesh the vast majority of household use some form of mechanization, with the dominant implement being power tillers.<sup>47</sup>

**Mechanization differences across countries can be largely explained by differences in the returns to mechanization and the relative price of machinery and labor.** Earlier literature suggests a particular evolution of farming systems and associated sequence of power use linked to population density and market access. Areas with low population density and no market access, resulting in low-yield subsistence farming systems, rely on human power. Improved market access and higher population density lead to growing demand for agricultural products and increasing returns to animal power and machinery use that induces an increase in

their use. Efforts to bring tractors into low-yield subsistence production systems, where they are not cost effective, have consistently failed.<sup>48</sup> The relative prices of machinery and labor also matter. In labor-scarce environments (with a high labor cost), there is substitution towards labor-saving technology (such as machinery), while in land-scarce environments, there is substitution towards land-saving technology (such as biological or “yield”-enhancing technology). Indeed, there is significant past<sup>49</sup> and recent<sup>50</sup> evidence that substitution between machinery and labor is driven, in part, by their relative prices. As real wages rise as part of overall economic development and structural transformation, machinery use in agriculture tends to increase.

**Policy biases to mechanization can prematurely reduce agricultural employment.**

Policies that significantly lower the machinery price relative to labor can artificially displace labor. A significant example of this is South Africa pre-1980 where Pass Laws restricting labor mobility, subsidized farm credit (with negative real interest rates), tax concessions for machinery ownership, and appreciation of the exchange rate led to a significant decline in machinery prices relative to labor with a corresponding displacement of labor for machines. Removal of these favorable credit and tax policies, together with a devaluation of the Rand in the 1980s, made labor cheap relative to capital and led to a dramatic reversal with substitution away from the more expensive capital to higher labor use.<sup>51</sup>

**Some mechanization does not reduce labor use.** Irrigation infrastructure, facilitated

by mechanized pumps, often allows two or more crops to be grown on the same plot of land per year. The first crop is often harvested during the rainy season, where mechanical threshing can help reduce spoilage by getting this task completed shortly after harvest. Power-tillers help prepare land quicker for second season crops.<sup>52</sup> In these situations, mechanization does not necessarily reduce farm labor use per hectare and may even increase its use. In addition, the vast majority of farmers are smallholders and predominantly use family, rather than hired, labor. Labor displacement would be a larger issue if the majority of farm workers were hired wage workers.

**While demand constraints to mechanization remain important, there are rising supply-side constraints in some contexts.**

Growing demand for agricultural products, together with rising real wages, lead to higher mechanization demand. Higher demand does not always lead to adequate supply response, particularly for smallholder farmers. For example, in Ghana, there have been supply-side challenges to meeting demand for tractor services for land preparation.<sup>53</sup> Assessments of supply-side constraints should consider the full supply chain from machinery importers, manufacturers, providers of machinery-hire services to farmers, and services provided for machinery maintenance and parts.

**Sustainable supply-side approaches to mechanization.**

Early public sector-led efforts at addressing supply-side constraints in the 1970s and 1980s largely failed,<sup>54</sup> as they were often introduced in contexts where mechanization was not

cost-effective and service charges in these programs were set to only cover operating costs, thus undercutting private providers and resulting in weak capacity in the supply chain. In Bangladesh, removal of import restrictions on small-scale power tillers and opening imports by the private sector significantly reduced the imported machinery cost. As a result, a vibrant machinery-hire market developed with the bulk of machinery use being through this mechanism. Most farmers in Bangladesh, even with very small plots of land, now use some form of mechanization. In India, most tractor-hire services are provided by medium- to larger-scale farmers, which was key to expanding mechanization. In China, there has been an emergence of non-farmer entrepreneurs who provide professional machinery services to farmers for harvesting. China's vast farmland, across agro-ecological zones, results in the same crop needing to be harvested at different times of the year and allows mobile service providers to operate for about eight months of the year.<sup>55</sup> In Nigeria, ICT is being used to better match the supply of tractor services by tractor owners with demand from farmers who need to hire tractor services, similar to Uber. This business model is now being expanded to other countries in Africa.

**Action areas for mechanization** include as follows: (i) Open trade to different types of machinery imports (as in Bangladesh); (ii) crowd in (rather than crowd out) private sector provision of mechanized services; (iii) don't promote machinery in environments with no/limited access to markets and low returns to machinery use; (iv) avoid policies that artificially make machinery

cheap relative to labor (such as credit/tax policies, and labor movement restrictions); (v) ensure the types of machinery provided are demand, not supply, driven; and, (iv) facilitate innovation and participation of youth (for example, expanding services such as "Hello Tractor" currently operating in Nigeria, including training, and finance for youth).

## **Facilitate inclusion of women and youth**

### *Develop skills and facilitate job matching*

**Skills development can help improve earnings and job prospects.** Evidence suggests that more educated and skilled individuals are more likely to adopt and effectively use modern technologies, respond to market opportunities, and increase their earnings. Since skills development builds on the existing stock of human capital, policies intended to prepare young men and women for jobs in a transforming economy need to design age-differentiated interventions that sequentially address constraints from primary school completion to job search frictions. In an age of transformative ICT developments, investments in high-quality basic education are critical for the success of school-leaving youth such as farmers,<sup>56</sup> employees, and entrepreneurs. Well-educated rural youth and women trained in business development and vocational skills are likely to benefit from the increasing knowledge intensity of the food system, with significant opportunities in high-value agriculture and associated agro-processing and value addition.

### **Action areas to develop skills and facilitate job matching**

include as follows: (i) Pre-existing school feeding programs should be leveraged to provide nutritious and fortified food to improve cognition among young children, reduce school dropout, and raise educational attainment; (ii) innovative after-school programs designed to provide adolescents the skills needed for agricultural entrepreneurship should be scaled up; (iii) integrated skills training for out-of-school rural youth should be targeted carefully, with strong linkages between employers and training providers, to match the demand for skills with the youth labor supply; (iv) TVET programs packaged with geographically targeted transport subsidies should be promoted to enhance the ability of rural youth to take up jobs in secondary towns and urban centers; and, (v) scalability of ICT technologies should be used to link young farmers with agricultural extension specialists, with an emphasis on two-way communication and community participation to encourage the adoption of modern inputs and management practices. A comprehensive approach to skills for rural youth is needed to enable transitions from school to work.

### ***Improve access to land***

#### **Access to land is one of the key determinants of youth involvement in agriculture.**

In six Sub-Saharan African countries accounting for 40 percent of the total population of Sub-Saharan Africa, land size was found to be positively related to time spent by youth in agriculture.<sup>57</sup> In Ethiopia, for example, where land purchases and sales are prohibited, only 9 percent of youth in rural areas plan to pursue farming. Their

decision to pursue non-agricultural livelihoods or migrate to urban areas is mainly determined by the lack of access to land.<sup>58</sup> African countries have the youngest population in the world and the largest share of the world's available arable land—paradoxically, youth rarely own land and average plot size is declining.

#### **Youth do not typically own land, whether land is scarce or abundant.**

In land-abundant countries, land is often difficult to acquire because of ambiguities and costs associated with land transactions through purchase, sale, leasing, and assignment under traditional rules. When constraints on the operation of land markets raise the cost of accessing new land, a young person reaching adulthood may simply farm a portion of the family's original holding rather than secure a new allotment.<sup>59</sup>

#### **Land is even more difficult to acquire for young women.**

In every developing region, women own substantially less land than men.<sup>60</sup> Analysis from 10 African countries found that customary land systems were discriminatory against women, with only 20 percent of registered land being in their names.<sup>61</sup> Women also find it difficult to hold on to land in the case of divorce or death of their husband.<sup>62</sup> Although men inherit land in the more common patrilineal systems, young men have to wait until marriage or when fathers die to access and manage plots. Early intergenerational land transfers often don't occur because land serves as a substitute for social protection for elderly landowners,<sup>63</sup> whose life expectancy has increased. Where land obtained from parents through inheritance or gift is the only system

of intergenerational land transfer, youth are often left with smaller and less viable plots with each generation.

**Action areas to improve access of youth and women to land** include as follows:

(i) support countries in their efforts to implement the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries, and Forests in the Context of National Food Security*; (ii) take advantage of low-cost ICTs to establish digital land registries and build on experience from other countries; (iii) remove remaining constraints on land rental markets; (iv) design market-based land reform with incentives that increase the bargaining power of land-poor buyers relative to land-rich owners; (v) strengthen tenure rights for women through land inheritance rights (such as in India<sup>64</sup>), individual titling for women farmers, and joint titling for married couples (joint titling helps protect women's rights to land in the event of separation, divorce, or widowhood)<sup>65</sup>; and, (vi) facilitate intergenerational *in-vivo* land transfers coupled with social protection for elderly landowners controlling community land.

*Improve access to affordable finance*

**Rural youth are financially excluded, particularly in Sub-Saharan Africa.** As of 2014, 62 percent of adults had an account at a financial institution or with a mobile money provider worldwide, but with wide variation across regions. Across 42 African countries in 2014, the corresponding figure was only 29 percent among *rural adults*,<sup>66</sup> despite the widespread use of mobile

money in East Africa. Since rural youth are less likely than older adults to have an account,<sup>67</sup> it is highly likely that less than one in five rural African youth had access to formal *or* informal finance. While the number of banked youth in Sub-Saharan Africa who are able to borrow is increasing rapidly, these increases are from a small base and it is not clear if these gains are shared by rural youth. Even as the agenda of financial inclusion—the sustained access to financial services and products such as savings, loans, insurance, and payment systems at an affordable cost<sup>68</sup>—has made large gains globally, significant progress is still needed among rural population in low-income countries in general, and among youth in particular.<sup>69</sup>

**Young women have even lower access to formal finance.**

Gender dynamics constrain women's access to finance. Women are often time constrained due to multiple household activities and are less likely than men to have a formal land title that is often needed to open a bank account. These constraints manifest themselves in the gender gap in account ownership, access to savings, and credit globally.<sup>70</sup> While the share of young African women with a bank account has increased at the same rate as young men recently,<sup>71</sup> a significant gender disparity persists in ownership and access to savings and credit. In India, the self help group model, reaching more than 33 million members, has been largely successful in linking groups of 10–20 poor women to bank accounts and obtaining microloans.<sup>72</sup>

**Action areas to improve access to affordable finance** include as follows: (i) encourage

collaborations between governments, central banks, and telecommunications partners to enable the creation of mobile money platforms to deliver last-mile financial products and services; (ii) consider removing legal restrictions on using alternative forms of collateral<sup>73</sup> to lower the cost of credit in rural areas; (iii) consider implementing and using biometric identification instead of land titles to open bank accounts for rural youth and women to increase access to the formal banking system, and reliably link credit history to individuals; (iv) replicate and scale programs that combine access to financial services with advice or mentoring targeted at rural youth and women; and, (v) transition youth and women savings groups to offer credit.

### *Improve inclusion in policy dialogue and program design*

**Young people, in particular rural youth, are often excluded from policy-making processes.** While there is wide recognition of the importance of youth participation in policy dialogue, particularly smallholders, a 2012 survey by the United Nations Inter-Agency Network on Youth Development covering 186 countries found that young people have limited opportunities for effective participation in decision-making processes.<sup>74</sup> In particular, rural youth are generally excluded

from the formulation of policies concerning them,<sup>75</sup> and it is even more challenging for women who face traditional norms excluding them from any decision-making process and position.<sup>76</sup>

### **Action areas to improve rural youth and women participation in policy dialogue and program design**

include as follows: (i) build individual and organizational skills and the capacity of young women and men making use of ICT and interactive tools (as is being done by the Pacific Youth in Agriculture Network), and support their participation in decision-making processes of producer organizations (as in Nepal and Togo); (ii) facilitate systematic engagement of rural youth in policy dialogue and program design (as in Brazil),<sup>77</sup> with particular attention to young women's participation, such as through quotas, women-only preparatory meetings, and engaging men in building young women's leadership acceptance;<sup>78</sup> and; (iii) support government efforts to design and implement national youth policies (such as the Ghana and Nigeria Youth Policy), in consultation with rural youth (such as the Rural Youth Employment Strategy in Guatemala, the Magna Carta of Young Farmers in the Philippines, and the National Rural Youth Employment Policy in Senegal),<sup>79</sup> including efforts to coordinate between ministries to ensure policy coherence.





## What can be done to increase the quality of jobs?

### The framework and context for increasing the quality of jobs

The quality of jobs in the food system, among other factors, is a function of: incomes; stability; and working conditions, including safety and health measures, as follows:

- **Incomes:** Higher incomes in the food system can help lift people out of poverty. Currently 80 percent of the poor live in rural areas and most rely on agriculture for their livelihoods. Average incomes of the poor will need to increase by about 60 percent in Sub-Saharan Africa, and 30 percent in South Asia to lift them above the poverty line.
- **Stability:** Seasonality in agricultural production can lead to underemployment at different times of the calendar

year. Significant weather shocks and associated incomes effect can lead to loss of household assets due to distress sales. More stable and secure jobs can enable households to maintain minimum household consumption levels and to accumulate assets.

- **Working conditions:** These conditions include strengthening labor policies and institutions to protect rural workers, providing a safe work environment, and ending child and forced labor.

This paper now turns to the above-mentioned aspect of improving the quality of jobs in the food system, specifically on actions to increase the returns to labor, promote farm diversification to reduce seasonality in jobs and incomes, support social protection and safety net programs and access to social services, and improve working conditions (table 2).

**TABLE 2:** Spectrum of Action Areas in the Food System to Deliver Better Quality Jobs

General areas	Specific actions
Raise <b>incomes</b>	<ul style="list-style-type: none"> <li>■ Increase returns to labor</li> </ul>
Improve <b>stability</b> of jobs	<ul style="list-style-type: none"> <li>■ Promote farm diversification to reduce seasonality in jobs and incomes</li> <li>■ Support social protection and safety net programs, and improve access to social services</li> </ul>
Improve <b>working conditions</b>	<ul style="list-style-type: none"> <li>■ Strengthen labor policies and institutions to protect rural workers</li> <li>■ Reduce the misuse of pesticides and improve working conditions in off-farm aspects of the food system</li> <li>■ End child and forced labor</li> </ul>

## Increase returns to labor

**Increasing the returns to labor in the food system can help raise incomes and thereby improve an element of job quality.** Improving land productivity and access to markets are important elements of improving labor productivity, together with improvements in education and health. Mechanization can also improve labor productivity, together with expanding farm size. Food system jobs beyond production that focus on value addition, including in food processing, transport, associated logistics, retailing, and restaurants, are often higher paying than farm jobs. The associated action areas are similar to those highlighted in the previous sections of this paper but several points are worth reiterating.

**Action areas to increase returns to labor in the food system** include as follows: Implement the earlier referenced actions to promote growth and inclusion in food value chains. Particularly important will be adaptation to climate change, improving land productivity and access to markets, and improving the functioning of land markets.

Skills development can better match the changing demand for different types of labor skills, particularly in the food system’s off-farm aspects.

## Improve the stability of jobs

*Promote farm diversification to reduce seasonality in jobs and incomes*

**Farm diversification can reduce seasonal underemployment in agriculture.** While analysis in Sub-Saharan Africa shows that, on a per-hour-worked basis, labor productivity in agriculture is similar to other sectors, the hours worked in agriculture are lower than other sectors, likely due to the seasonal nature of labor demand. This situation results in underemployment in agriculture at varying times of the calendar year relative to other sectors. Reducing seasonality effects in agriculture through irrigation use and diversification of farming activities could help reduce underemployment and raise annual productivity. This should also be viewed within a broader approach of facilitating diversification and expansion of new opportunities within the

broader food system, as reflected in earlier sections of this paper.

**Action areas to promote farm diversification to reduce seasonality in jobs and incomes** include as follows: (i) promote irrigation investments in areas where it is subsequently possible to produce two crops per year. In environments with favorable temperature, water availability, and product demand, using irrigation to produce multiple crops a year with differing temporal labor demands can reduce “underemployment” throughout the year; (ii) facilitate farm diversification into products that have different labor demands at different times of the year or more constant labor demands throughout the year to help reduce underemployment and raise overall productivity (for example, in response to market demand, diversify into livestock products—such as poultry for egg production or livestock for milk production—as they are less seasonal than crops); and, (iii) design the timing of rural public works programs to operate in seasons with low labor demand to help smoothen the effect of seasonality on labor demand in rural areas.

*Support social protection and safety net programs and improve access to social services*

**Social protection plays a key role in building resilience and increasing incomes and food security; it can enhance employment generation for rural people.** Improvements in rural employment have been observed from social protection, either in directly creating jobs<sup>80</sup> and/or prompting indirect effects on rural labor

markets.<sup>81</sup> However, most of the world’s population still have no access to social protection measures, particularly those living in rural areas.<sup>82</sup> In addition to social protection, increasing access to high-quality schools and health services in rural areas can help make these areas attractive to youth and entrepreneurs.

**Action areas to improve social protection, safety nets, and social services** include as follows: (i) design social protection programs that are responsive to rural settings and are gender sensitive, giving particular consideration to the employment challenges of rural youth; (ii) design social protection programs that combine protective, preventive, and promotional interventions, taking into account context-related opportunities;<sup>83</sup> (iii) integrate social protection programs with broader growth, investment plans, and employment policies, in particular with agricultural programs (such as Brazil’s Zero Hunger Program and Ethiopia’s Productive Safety Nets Program); (iv) integrate a gender and youth employment lens in the monitoring and evaluation systems of social protection programs to better understand impacts and what works for whom; and, (v) expand coverage of health centers, and schools, particularly in dynamic agricultural areas.

**Improve working conditions**

**Strengthen labor policies and institutions to protect workers in the food system.**<sup>84</sup> The challenge with labor policies is to promote the protection of vulnerable populations without raising the implicit cost of labor to a point that induces significant shifts to

mechanization and away from labor-intensive agricultural practices. In some cases, collective actions can increase the bargaining power and wage negotiations of rural workers. Linking to global agricultural value chains that serve developed markets can bring higher labor standards, resulting in better working conditions and wages for agricultural workers.<sup>85</sup> Minimum wage legislation, even if poorly implemented, can influence the level of provided wages<sup>86</sup> and can help the poorest segments of the population, including youth.

**Reduce the misuse of pesticides and improve working conditions in off-farm aspects of the food system.** When used correctly, pesticides can contain pest populations and improve crop yields, quality, and storability. The misuse of pesticides—including improper mixing, dosing and timing; unsafe application, handling, and storage; and the use of highly toxic or persistent chemicals—can be harmful to human health, the environment, and animals. A combination of approaches can lead to more judicious use of pesticides. These approaches include: training farmers in the techniques of integrated pest management in which natural control measures are emphasized; making technical changes in how pesticides are formulated or applied; removing existing pesticide subsidies and support the development of markets for organically grown produce; and strengthening the enforcement of national regulatory systems for pesticide use and distribution. More attention is also needed to improve working conditions in the food system between the farm gate and consumer, such as improving sanitation, reducing worker risks, and the safe use of materials.

**End child and forced labor.** The Sustainable Development Goals call to end all forms of child labor by 2025, and to eradicate forced labor. While the share of children that are child laborers has declined globally over the past decades, 10.6 percent of children worldwide were still child laborers in 2012, equating to 168 million children.<sup>87</sup> The share of children in employment in low-income countries was higher than in middle- and high-income countries, and about 60 percent of child labor is in agriculture. In addition, 20.9 million people worldwide are victims of forced labor, of which 14.2 million are in economic activities such as agriculture, construction, domestic work, and manufacturing.<sup>88</sup> Key drivers of the long-term decline in child labor are rising household incomes, expansion in coverage and quality of education, and social protection. A recent review of the effects of public policy on child labor show that programs aimed at reducing the vulnerability of households tend to reduce child labor.<sup>89</sup> The review also showed that policies aimed at increasing adult household members' participation in the labor market or in entrepreneurial capabilities of the household can sometimes generate additional demand for adolescent and child work. Integrating these programs with additional interventions can help offset adverse effects on child labor.

**Action areas to improve working conditions** include as follows: (i) consider the spectrum of policy options to improve the working conditions of wage employment in the food system, including: collective action arrangements; facilitating exports to markets with higher required standards for

working conditions; and minimum wages to help the poorest segments of the population;<sup>90</sup> (ii) reduce the misuse of pesticides through training, removing policy biases, promoting integrated pest management, and strengthening regulatory systems; (iii) work to end child labor by reducing the vulnerability of households, including through social protection programs; expand the coverage of quality education, and work to raise

household incomes; recognize in program design that improvements in adult participation in labor markets may increase demand for child work and integrate, as necessary, complementary interventions to offset adverse effects on child labor; and, (iv) work to end forced labor through empowering vulnerable people to resist coercion at work and addressing factors that currently allow employers to profit from forced labor.<sup>91</sup>





## Implementation considerations

**Institutional arrangements:** While the agenda includes actions needed by ministries of economic development, education, finance, health, local government, social protection and labor, and trade and commerce, ministries of agriculture also need to play a more prominent role in promoting employment in the food system. They need to engage with other ministries and provide a voice on policies and investments related to jobs in the food system, such as infrastructure, the investment climate and trade, skills development, entrepreneurship programs, labor policies, and social protection. More broadly, an example of related multi-stakeholder approaches is the integrated country approach for promoting decent rural youth employment.<sup>92</sup>

**Priorities vary by country context** reflecting differences in binding constraints

to enterprise development and job creation across countries and across regions in countries. General considerations guiding prioritization could be: (i) outreach: the number of people, including youth and women, that would benefit from an initiative; (ii) urgency: addressing areas or constraints that are most pressing for food system employment, including in areas with large youth outmigration from the region or country; and, (iii) results: aiming at concrete effects on material living conditions of young people.

Other examples of prioritization include the following:

- In agriculturally dependent countries, it is hard to create non-farm jobs in the food system without first growing the profitability of agricultural tradables, the

income from which stimulates demand growth in rural and urban areas. Past efforts that didn't give consideration to this demand side, but focused solely on supply-side interventions to stimulate employment growth, often stumbled.

- Targeting job-growth oriented interventions to areas where “pull factors” prevail (opportunities in dynamic value chains that are pulling workers out of farming into better paid jobs in the food system) can have high returns. Social protection coverage would perhaps be effective in areas where there are persistent shortfalls in production to meet subsistence needs, resulting in household members being “pushed” off the farm in desperation to find off-farm income sources.
- Lagging regions in countries have lower rates of economic growth and poverty reduction than leading regions in the same countries. In addition to policies that spur growth in lagging regions, interventions—such as lowering costs of transport and movement to leading regions—can increase access of rural youth in lagging regions to jobs in leading regions.
- In land-abundant countries, improving land rental markets can provide an avenue for greater rural youth engagement in agricultural production.
- While the need for skills development for youth cuts across all countries, the nature of skills deficits varies. In some countries basic education (such as reading and writing) is more of a priority, while in others it may be entrepreneurial skills development.

The variance in context, with differing policy and investment response implications, calls for programs that target inclusive employment growth in the food system to clearly identify the binding constraints that they are trying to address.

## A Call to Action

The world has set ambitious Sustainable Development Goals. There is an immense global challenge to provide jobs needed to end poverty and improve shared prosperity. Slowing global growth, concerns about automation, and inequality in incomes and opportunity are adding urgency and attention to the jobs agenda. The food system can play a significant role. Indeed, it is the largest employer in many countries, and improved incomes in the food system can have large poverty-reducing effects. This paper outlines action areas to promote growth in food value chains, to ensure that policies don't undermine employment intensity, and to facilitate inclusion of women and youth. It also highlights actions needed to improve the quality of jobs in the food system. The agenda is large and will require prioritization within countries and partnerships to implement. Ministries of agriculture need to play a more prominent role in shaping broader public policies and investments related to food system jobs. This process will also require engaging with the private sector as the key provider of jobs. Development partners need coordinated and multi-sectoral efforts around country programs. Together we can help enhance the food systems' contribution to jobs.

## Endnotes

- 1 The current cohort of the population of low- and middle-income countries below the age of 15 is from United Nations Population Division data.
- 2 International Labor Organization (ILO) data.
- 3 United Nations Industrial Development Organization (UNIDO) data.
- 4 *Ibid.*
- 5 Based on 2013 Eurostat data that separates manufacturing into 24 sub-sectors, and Food Drink Europe 2016. Data and Trends: EU Food and Drink Industry 2016.
- 6 B. Davis, S. Di Giuseppe, and A. Zezza, “Are African Households (not) Leaving Agriculture? Patterns of Households’ Income Source in Rural Sub-Saharan Africa,” *Food Policy* 67 (2017):153–74.
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