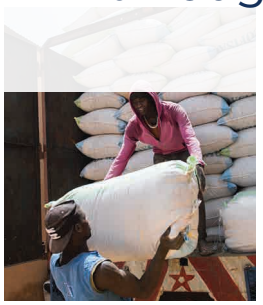




Youth for Growth:

Transforming Economies through Agriculture









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March 2018

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THE CHICAGO COUNCIL ON GLOBAL AFFAIRS

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Foreword

The world is now home to the largest youth population in history. Across Africa and South Asia, adolescents and young adults make up an increasing share of the population. This unprecedented demographic shift creates new pressures for a global food system that is already struggling to deliver food and nutrition to a growing number of people. At the same time, job creation has not kept pace with the rapid rise in the workforce—leading to economic stagnation and disillusionment, increased pressure for migration, and social unrest.

Investing in agricultural development is one of the most effective ways to generate employment opportunities, alleviate poverty, address food and nutrition security, and ensure more prosperous and stable populations worldwide. Given demographic trends, youth engagement is essential to advance agricultural transformation. Young people will shape the future of their countries. Their success or struggle will have a great impact on global economic, social, political, and food security. Young people have the potential to transform entire regions. But that is not a given. Without education, training, and employment opportunities, this surging youth population could be a major contributor to social disruption, political instability, and conflict.

A rapidly growing youth population poses new threats and brings new opportunities. American leadership has been integral in advancing global food security and agricultural development for decades. A US commitment to advancing youth livelihoods is more important now than ever before. Sound policymaking and dedicated leadership, backed by bipartisan political support, can transform threats into opportunities and lay the foundation for economic success and stability at home and abroad. *Youth for Growth: Transforming Economies through Agriculture* highlights this evolving context and the need for continued action.

This report presents recommendations for how the US government can lead global efforts to promote broad-based agricultural development as a catalyst for improving youth livelihoods, while preparing and empowering youth to contribute to that growth themselves. The report also examines the pivotal roles of the private sector, national governments, and civil society in creating a youth-inclusive agricultural transformation agenda. The findings and recommendations put forward in this report were developed by an independent task force cochaired by Reuben E. Brigety II and Bobby J. Pittman, with key thought leadership by the principal author and with valuable input from numerous subject-matter experts from government, business, civil society, and academia.

I would like to thank the cochairs for their skillful and dedicated leadership throughout this report's demanding process and the members of the task force for their insights, expertise, and commitment. I am especially grateful to Felix Kwame Yeboah, who served as the principal author of this report. Dr. Yeboah brought his great wealth of knowledge of agricultural and food system transformation, natural resource management, and youth livelihood issues in Africa to the framing of the report's agenda. He expertly led the research and writing process. Finally, I would like to thank the Bill & Melinda Gates Foundation for its generous support.

Ivo Daalder

President
Chicago Council on Global Affairs

Acknowledgments

The Chicago Council on Global Affairs is grateful for the contributions of the following individuals, who spoke with the research team during the development of this report.

In July 2017 the Chicago Council hosted a group of Mandela Fellows visiting Northwestern University as part of the Young African Leadership Initiative (YALI). This group of more than 20 professionals from across the continent set the tone for the report, providing context for the challenges young entrepreneurs face and offering examples specific to agriculture. Their contributions and enthusiasm for this research are deeply appreciated. Special thanks goes to Meghan O'Keefe for facilitating this dialogue.

In August 2017 the Chicago Council hosted a consultative meeting for the report on the sidelines of the Agricultural and Applied Economics Association (AAEA) annual meeting. We are grateful to the AAEA for allowing us to host this meeting. Special thanks are due to Felix Kwame Yeboah, Thomas Jayne, Chris Barrett, and Emilia Tjernström who facilitated the dialogue as well as more than a dozen members of the association who participated. The early input of this group was influential to the content of the report.

These group conversations were followed by consultative meetings at the World Food Prize gathering in Des Moines, Iowa, in October 2017, a corporate roundtable conversation in Chicago, and an NGO roundtable in Washington, DC, both held in December 2017. Members of these group are thanked individually below, along with representatives from a number of organizations who contributed their valuable insights and expertise to the report development process.

Young African Leadership Initiative (YALI) Fellows: Miyelani Baloyi, Cindy Bavo, Bzuayehu Shiferaw Baysassaw, Paulo Emanuel D'Alva, Cristina Duarte, Ama Duncan, Pravesh Gaonjur, Ibrahim Issoufou Oumarou, Musa Kalangahe, Mbengu Kalombo, Kalab Kebede, Rock Klahadoum, Sekouba Konate, Esther Kunda, Kwena Mabotja, Isheanesu Makambira, Maïmouna MBACKE, Titos Munhequete, Mike Mushi, Sheppard Mutarah Pasipanodya, Sicelo Ndlandla, Calvin Kebati Nyamira, Olumide Ogunlana, Nkem Okocha, Uchenna Onwuamaegbu-Ugwu.

Debisi Araba from the Center for Tropical Agriculture (CIAT); Jim Borel from Borel Farms, LLC; Saswati Bora from World Economic Forum; Gordon Conway from Imperial College London; David De La Fuente from Cornell University; Lisa Dreier from the World Economic Forum; Delia de Vreeze from Wageningen University & Research; Robert Easter from the University of Illinois/ADMI; Ruben Echeverria from the International Center for Tropical Agriculture–CIAT; Thomas Jayne from the University of Michigan; Ahmed Khan from RTI International; Jon Leafstedt from Kincannon Reed; Marshall Matz from OFW Law; Peter G. McCornick from the Robert B. Daugherty Water for Food Global Institute at the University of Nebraska; Lisa Moon from the Global FoodBanking Network; Ginya Truitt Nakata from The Nature Conservancy; Salif Niang from Malo; Nachilala Nkombo from World Wide Fund for Nature - Zambia; Riley Pagett from the National FFA Organization; Per Pinstrup-Andersen from Cornell University; Simone Ritzer from Wageningen University & Research; Stefan Schmitz from the German Federal Ministry for Economic Cooperation and Development; Paul Schickler from DuPont Pioneer; Lindiwe Sibanda from The Alliance for a Green Revolution in Africa (AGRA).

Hope Michelson and Alex Winter-Nelson from the University of Illinois; Chris Barrett from Cornell University; Emilia Tjernström from the University of Wisconsin; Jennifer

Sirangelo and Andy Ferrin from the National 4-H Council; James Oehmke from the United States Agency for International Development (USAID); Minnie Martin, Ted Adams, Karl Triplehorn, and Gordon Mengel from the Peace Corps; Chris Beyerhelm and Glenn Schafer from USDA; Louise Fox from USAID; Parmesh Shah from the World Bank; Mariana Kim from the Bill & Melinda Gates Foundation.

Jim Sumberg and Justin Flynn from the Institute of Development Studies; Lisa Lauxman and James Kahler from the National Institute on Food and Agriculture (NIFA); Mima Nedelcovych and Daniel Karanja from the Initiative for Global Development; Chris Donohue, Angelique Tuyisenge, Meralyn Mungereza, and Shingi Nyamwanza from TechnoServe; Ritu Sharma, Colin Hagans, Matthew Breman, and Susan Reichle from the International Youth Foundation; Chiji Ojukwu and Edson Mpyisi from the African Development Bank; Shanoo Saran from WFP; Mattia Prayer Galletti from the International Fund for Agricultural Development (IFAD).

David Hong from One Acre; Rose Barbuto and Stephanie Mercier from the Farm Journal; Rick Spencer from Heifer International; Sara Nitz from InterAction; Connie Veillette and Lori Rowley from the Lugar Center; Eric Munoz from Oxfam; Johanna Mendelson Forman and Maheyaar Barron from the Stimson Center; Marilyn Shapley from Mercy Corps; Eric Garduno from CRS.

Euler Bropleh from Vested World; John Ginascol from Abbott Nutrition; John McGowan from ADM; Marc Oshima from AeroFarms; David Rinneard from BMO Financial Bank; Sunil Sanghvi from McKinsey & Company; Paul Schickler from DuPoint Pioneer; Fabrizio Valentini from The Marmon Group LLC; Matthew Vander Laan from Edelman; Paul Weisenfeld, Julie Lostumbo, and Elizabeth Eckert from RTI International; Jill Wheeler from Syngenta; Kathy Pickus and John Ginascol from Abbott Nutrition; James Newlands from Ernst and Young.

Melissa Ho from the Millennium Challenge Corporation; Rod Schoonover and Erin Sikorsky from the Strategic Futures Group, Office of the Director of National Intelligence; Bruce Cameron from the Overseas Private Investment Corporation (OPIC); Victoria Kao from the Department of Commerce; Eliza Chard, Hillary Proctor, and Sarah Sladen from Making Cents International; Caitlin Welsh, Liz Buckingham and Andy Rabens from the US Department of State.

The Chicago Council is especially grateful for the ongoing support, engagement, and thought leadership of Distinguished Fellows Doug Bereuter, Dan Glickman, Catherine Bertini, and Ertharin Cousin as well as Marshall Bouton, president emeritus of the Chicago Council on Global Affairs.

Several members of the Council staff were integral to bringing this report into fruition. Alesha Black, director, Global Food and Agriculture Program, directed and oversaw the study. Vanessa Taylor, assistant director, expertly managed the report's research and development and guided all participants' engagement. Erik Pederson and Grace Burton provided essential guidance and expertise on US policy and the recommendations for US action. Marcus Glassman and Laura O'Carroll played a key role in the research and report drafting processes with unmatched dedication and accuracy. Roger Thurow, senior fellow and Michael Tiboris, global water fellow, lent their expertise and provided valuable insight. Research interns Madeleine Nicholson, Sally Park, Di Yang, and Shuhan Zhou provided research assistance and other critical support throughout the report's development. Catherine Hug of Chicago Creative Group provided valuable editorial direction, Colleen Quinn designed the report, and Caitlyn D'Aunno copyedited it.

EXECUTIVE SUMMARY

A man balances a box of tree seedlings atop his head while carrying others home in Rwanda. Credit: Hailey Tucker/One Acre Fund

The world is now home to the largest population of young people in history, with over 2.3 billion people—a third of humanity—between the ages of 15 and 34. In low- and middle-income countries (LMICs) across Africa and South Asia, a large share of the growing population is comprised of adolescents and young adults. In India about 1 million people turn 18 every month. Similarly, Africa's youth population is expected to double by 2050, with 1 billion people projected to be under 18 years old. Today, more than 60 percent of the population in Sub-Saharan Africa (SSA) is below age 25.

World leaders are at a critical juncture. If not managed properly, this rising youth population is a demographic challenge that will push fragile and food-insecure nations over the brink. Massively growing youth populations in LMICs already face high unemployment and economic stagnation. If job growth does not keep pace with youth potential and food insecurity remains a severe challenge, the environment is ripe for disillusionment and instability. If poorly handled or ignored, these factors are a recipe for social disruption, political instability, migration, and conflict. This presents a direct challenge to the national security of the United States and our allies. However, addressing these challenges now, while the tide can still be turned, could usher in economic growth.

With proactive programs, innovations, and investment that can meet food and nutrition security goals and support job growth, a booming youth population has the potential to transform entire regions, making them more prosperous, stable, and secure. The US government, in close collaboration with the private sector, national governments, and civil society, must continue to promote broad-based agricultural development as a catalyst for advancing youth livelihoods, while preparing and empowering youth to contribute to that growth themselves.

Youth livelihoods in LMICs largely depend on the successful transformation of agriculture, and agricultural and economic transformation will require strong youth engagement to succeed. Simply put, young people need agriculture, and agriculture needs young people. As these surging youth populations come of age, how we meet their needs and aspirations—and how well governments integrate them economically, politically, and socially—will shape our shared future. With the right policies and investments, along with the engagement of young people in nurturing their own potential, the largest generation of young people in human history can become the problem-solving producers, creators, entrepreneurs, change agents, and leaders of the coming decades.

Youth employment matters for global food security and stability

Global population growth is the fastest in regions where threats of food insecurity are the greatest.

Young people in LMICs constitute a large and growing share of the world's labor force and will substantially impact the global economy. Nearly 80 percent of the world's 2.3 billion young people between the ages of 15 and 34 reside in LMICs, and they constitute a large share of the population in many of the countries experiencing rapid growth.

At the same time, these regions are the most prone to food insecurity. Severe food insecurity is most prevalent and rising in SSA, reaching about 27.4 percent of the population in 2016—almost four times that of any other region. Comparatively, severe food insecurity is declining in Asia, but the region has the largest number of undernourished people.

As young people represent a significantly large share of the population and workforce in LMICs, efforts to promote youth livelihoods are critical to address the food insecurity challenges that these regions face.

Economic transformation is critical for youth livelihoods and food security, and agriculture is a key driver of this change.

To effectively contribute to social and economic development, young people need to be engaged productively in jobs that are commensurate with their abilities and skills. Yet formal sector job creation has not kept pace with the rise in the workforce. In SSA, for instance, the gap between the number of labor market participants and available paid job opportunities widens by approximately 8 million annually. Even in the most optimistic growth scenarios, less than a quarter of the people newly entering the labor market may find paid jobs. Many of these new entrants may need to create their own jobs through entrepreneurial activities to avoid the challenges associated with unemployment.

The majority of youth in LMICs still live in rural areas, and more than two-thirds of young people working in these regions are employed in agriculture. However, low productivity and underdevelopment in the agricultural sector are already major challenges, limiting the capacity—and appeal—of employment opportunities in agriculture or off-farm work in rural areas. Investing in agricultural transformation is one of the most effective ways to advance youth livelihoods, alleviate poverty, address food and nutrition security, and ensure more prosperous and stable populations worldwide.

Surging youth populations offer an opportunity for accelerated economic transformation.

The rapid increase in the number of youth will provide a significant increase in labor, creating enormous opportunity. If more of this labor is equipped and productively employed, it could spur economic growth in all sectors of the economy. An increase in youth populations, coupled with declines in fertility rates, allows for overall growth in income per capita and savings.

Harnessing the dividends from booming youth populations is not guaranteed. It requires strategic and long-term investment in the human capital of the youth labor force as well as the expansion of economic opportunities for using their skills and talents. If engaged in productive and remunerative employment, young people can be a catalyst for accelerated economic transformation.

Promoting youth livelihoods is in US economic and national security interests

Security and stability

Expanding opportunities for young people will promote social stability and peace in regions where the United States has economic and security interests. Young people who lack compelling economic opportunities to lift themselves out of poverty are more likely to participate in extremism, crime, and social unrest, which can also be powerful drivers of both rural-urban and international migration. A transformed agricultural sector will increase economic opportunities for young people and help ameliorate the global migration crisis,

minimize recruitment into terrorist and criminal organizations that threatens global and US national security, and promote food security and social stability in politically precarious regions.

Future markets

Young people in LMICs represent a significant future market for US goods and services. By 2050 about 2.2 billion people, or 23 percent of the global population, are expected to be in SSA, and another 2.4 billion will be in South Asia. Rapid economic growth is gradually expanding the middle class and increasing the purchasing power of consumers in these regions. The sheer number of people, along with rising incomes, makes these regions attractive markets for US businesses. Continued growth in these markets will depend, however, on whether economic opportunities for the burgeoning number of young people can be expanded to enable many to join the ranks of the middle class. As most of these economies remain agrarian, a thriving agricultural and food (agrifood) sector has the potential to increase incomes, expand economic opportunities for young people, and generate demand for US goods and services.

Influence

Investing in young people in LMICs can generate affinity for American values, institutions, and companies, translating into political influence and economic opportunity in the long term. US power and influence in global affairs is not only shaped by its military might, but also by "soft power," including the lives it inspires and transforms through development assistance programs, cultural exchanges, and US private investments. As leaders of tomorrow, young people are vital to their countries' development and future relations with the United States.

Inaction poses economic and security risks

The United States and global community must promote youth-inclusive agricultural transformation, or they risk seeing strategic partners weakened by rapid population growth and threatened by the instability this generates.

- **Extremism.** Rural areas with high rates of poverty and dislocation from social services can be safe havens for extremism. And young people who lack compelling economic opportunities to lift themselves out of poverty are more likely to participate in extremism, piracy, crime, and social unrest. An estimated 40 percent of people who join rebel movements are motivated by a lack of economic opportunity.
- **Migration.** Nearly 70 percent of migrant flows are people younger than 30. Between 2000 and 2010 the net influx of international migrants to Europe, North America, and Oceania was almost twice as much as the previous decade. Unless a response is mounted, many young people will continue to face increased pressure to migrate toward Europe and North America—even under life-threatening conditions.
- **Stunted economic growth due to malnutrition.** The Global Nutrition Report estimates that SSA and South Asia each lose about 11 percent of gross national product every year due to the cumulative impact of malnutrition and stunting, which currently impacts

one in three children in these regions. Individuals affected by stunting earn 20 to 40 percent less as adults.

The agrifood system is a sector of opportunity for economic growth and job creation

Agricultural growth is paramount to youth employment and to reduce food insecurity and poverty. Likewise, engaging youth in agriculture is necessary in order to address the myriad issues facing the sector.

Increased demand for agrifood products offers opportunity for investment and job creation.

Global demand for agrifood products is on the rise as a result of population growth, urbanization, and diet transformation from income growth in some geographies and demographics. Investments to help jump-start the agricultural sector in LMICs and to restructure agrifood production systems to meet food demand locally have the potential to create jobs and improve lives for young people in areas where they reside.

Agriculture is the largest employer of the youth labor force.

The agrifood sector is already the single largest employer of the labor force and young people, particularly in rural areas. This will remain so for the foreseeable future, particularly in LMICs. However, in these regions, productivity and earnings in agriculture are currently too low to provide a decent livelihood for the millions of people employed on the farm and too low to stimulate new jobs beyond the farm. Therefore, strategies that increase the productivity and profitability of agriculture offer the most powerful means to improve youth livelihoods, promote economic growth, and achieve food security.

Agricultural productivity will significantly determine the rate of job growth in the off-farm economy.

Because of its strong multiplier effects on the rest of the economy, a flourishing agricultural sector will spur job growth in the off-farm sector. Sustained and inclusive agricultural productivity growth is widely accepted as an important catalyst for economic transformation, increasing incomes and off-farm employment. Investment in agriculture is also cost-effective and has proven to effectively reduce poverty more than twice as much as investment in other economic sectors.

Support for a youth-inclusive agricultural transformation agenda is essential

A youth-inclusive agricultural transformation agenda is essential 1) to ensure that agricultural growth and development deliver on the promise to provide viable livelihoods for youth across the agrifood sector and beyond and 2) to empower youth to help fuel the transformation. Such an agenda would account for the particular needs and circumstances of youth in the design and implementation of solutions to the challenges facing the agrifood sector. However, it would also recognize that some challenges affect everyone and

must be addressed holistically if agricultural transformation is to be sustained. A youth-inclusive agricultural transformation agenda therefore seeks to:

- address overall social, economic, and biophysical limits to broad-based agricultural productivity growth to generate the income and employment multipliers for the benefit of all social groups, including young people;
- harness and maximize youth-specific strengths for the agricultural transformation process (e.g., areas where youth engagement may have comparative advantage such as the use of information and communication technology);
- address youth-specific constraints limiting young people's engagement in agriculture and their ability to build successful agricultural enterprises (e.g., cultural and social norms limiting young people's access to resources); and
- empower young people to effectively participate and share in the formulation and implementation of agricultural transformation strategies. This is necessary to ensure the transformation agenda aligns with the future that young people envision for themselves.

Renewed and refocused US investment in agriculture can catalyze youth engagement, employment, and entrepreneurship

For the past 60 years, there has been a bipartisan US commitment to end global hunger and malnutrition—not just because there is a moral imperative, but also because it is in the economic, political, and national security interests of the United States.

A two-pronged approach is needed to address the challenge of engaging youth: supporting agricultural development to spur growth throughout the agrifood system and provide better economic opportunities for youth, while preparing them to participate in this transformation. A youth-inclusive agricultural transformation agenda is what will move LMICs—and the rest of the world—toward a more secure future.

This report lays out four key actions that can be taken by the US government—in partnership with national governments, the private sector, and civil society—to develop a youth-inclusive agricultural transformation agenda.

Recommendation 1: Commit to a long-term, global food and nutrition strategy.

- The National Security Council (NSC) should include food and nutrition security programs as part of a comprehensive strategy to counter rising extremism, instability, and civil unrest in areas of strategic significance.
- The administration, particularly the NSC in coordination with the United States Agency for International Development (USAID), should update the Youth in Development Policy agenda to take account of the rising youth population, the opportunities and challenges it presents, and the impact it will have on strategically significant regions.
- US diplomatic and development representatives should lead the development of youth-inclusive food and nutrition security programs (or a strategy) in coordination with

bilateral and multilateral partners to secure common commitments on trade, development, and education.

Recommendation 2: Congress should revitalize and recommit to robust support for public-sector agricultural research and development with an emphasis on needs for the next agricultural transformation.

- Congress should increase investment in agricultural research and development (R&D) by 1 percent annually to close the gap with peer nations currently surpassing US R&D spending and to retain a lead role in advancing global food security through responsive, adaptive research for the next century.
- The Foundation for Food and Agriculture, Agricultural Research Service, and National Institute for Food and Agriculture should include an emphasis on the use of digital technology and data analysis in acceptance of future grants.
- Congress should encourage the United States Department of Agriculture (USDA), in coordination with local universities and the private sector, to create a pilot program to provide for the inclusion of a private-sector mentorship program.
- The United States should maintain existing levels of investment in the Consultative Group on International Agricultural Research (CGIAR) while encouraging stronger ties between US research institutions, CGIAR centers, and National Agricultural Research Systems in LMICs to accelerate advancements in food security.

Recommendation 3: Invest in the human capital development necessary to advance rural youth and to drive agricultural transformation.

- US food security programs and national governments must prioritize nutrition spending and policy to ensure a strong, healthy workforce.
- Using the best models of agricultural and entrepreneurial education, Congress should encourage the administration to use all levers of government to expand education through programs and exchanges that reflect labor market realities and address the skills mismatch.
- The next generation of talent must be supported by promoting emerging hubs of youth entrepreneurship as a pathway to create more innovative businesses and sustainable employment for young people.
- USAID should include youth-specific metrics in its monitoring and evaluation of programs. Data should also be disaggregated by gender and age to better understand the needs of specific segments of youth.
- In partnership with the private sector and priority countries, Feed the Future should consider investment in new models of vocational and technical training and certificate programs that support agricultural transformation and rural development.

Recommendation 4: The US government should align programs that foster an enabling environment for businesses in strategic countries. This environment should be specifically geared toward businesses that generate high-quality jobs for youth and new youth-led ventures.

- In partnership with priority countries, the private sector and multilateral partners should commit to prioritizing investment and innovation in digital infrastructure for rural areas alongside other investments like rural roads and power.
- An interagency policy working group should be established and formalized to coordinate a holistic approach to development finance tools available to private-sector investors, from small businesses to multinational corporations.
- With voice and vote, Congress should support the building of rural youth capacity through multinational development banks like the World Bank, African Development Bank, and Asian Development Bank.

INTRODUCTION

Credit: Alex Kamweru/RTI International

The world is now home to the largest population of young people in history, with over 2.3 billion people—a third of humanity—between the ages of 15 and 34.[1] In low- and middle-income countries (LMICs) across Africa and South Asia, adolescents and young adults make up a large share of growing populations.[2] In India about 1 million people turn 18 every month.[3] Similarly, Africa's youth population is expected to double by 2050, with 1 billion people projected to be under 18 years old.[4] Today, more than 60 percent of the population in Sub-Saharan Africa (SSA) is below age 25.[5]

Young people in LMICs also constitute a large share of the world's labor force. About 11 million young Africans reach working age each year.[6] By midcentury, a quarter of the world's working-age population is expected to reside in Africa.[7] In India more than half of the country is under 25, and two-thirds is under 35, with the largest populations growing in the poorer, more rural northern states such as Bihar.

In the face of this unprecedented demographic shift, world leaders are at a critical juncture. Growing youth populations—along with other factors—create new pressures for a food system already struggling to deliver food and nutrition security. And in countries

As these surging youth populations come of age, how we meet their needs and aspirations—and how well governments integrate them economically, politically, and socially—will shape our shared future.

where job opportunities are already scarce, the addition of millions more young people could exacerbate these challenges. As these surging youth populations come of age, how we meet their needs and aspirations—and how well governments integrate them economically, politically, and socially—will shape our shared future.

The labor force challenge

So far, formal sector job creation has not kept pace with the rise in the workforce. In SSA the gap between the number of labor market participants and available wage job opportunities widens by approximately 8 million annually. Even in the most optimistic growth scenarios, less than a quarter of the people newly entering the labor market may secure wage employment.[8] Many of these new entrants may need to create their own jobs through entrepreneurial activities to avoid the challenges associated with unemployment.

In addition, too many young people also lack the skills required to identify and take advantage of employment opportunities in an increasingly complex labor market.[9] As a consequence, unemployment, underemployment in low-return activities, and seasonal or permanent migration have been on the rise.[10] Especially challenging is the large proportion of the workforce employed in "poverty wage jobs." If not adequately addressed, the growing prevalence of underemployment and poverty jobs held by young people could lead to economic stagnation and disillusionment, increased pressure for migration, and social unrest that would require costly humanitarian assistance and military interventions.

In some of the poorest LMICs, lack of agricultural productivity compounds the problem. In contrast to most other regions, the majority of youth in SSA still live in rural areas despite rapid urbanization, and more than two-thirds of young people working in

these areas are employed in agriculture.[11] But a lack of agricultural productivity in many regions limits the capacity—and appeal—of employment opportunities in agriculture or off-farm work.

Young people in LMICs will shape the future of their countries, and their success or struggle will cause global economic, social, political, and food security reverberations. With proactive measures to meet food security and employment needs, a booming youth population has the potential to transform entire regions, making them more prosperous, stable, and secure. If they can be properly equipped with the requisite skills and engaged in productive employment, this growing cohort of young people can be a key asset for social and economic transformation.[12] However, if not managed properly, this rising youth population could be a major contributor to social disruption, political instability, and conflict.

Intersection of youth livelihoods and agricultural development

A thriving agricultural and food (agrifood) sector, while by no means a silver bullet, is an indispensable component of a comprehensive strategy aimed at addressing the youth employment challenge. Likewise, engaging youth in agriculture is necessary to address the myriad issues facing the agrifood sector. First, global demand for agrifood products is on the rise as a result of population growth, urbanization, and diet transformation from income growth among the growing middle class in many countries. Investments to help jump-start the agricultural sector in LMICs and to restructure agrifood production systems to meet food demand locally have the potential to create jobs and improve lives for young people in areas where they reside.

Second, the agrifood sector is already the single largest employer of the labor force, and this will remain the case for at least the next decade—particularly for young people

Global demand for agrifood products is on the rise as a result of population growth, urbanization, and diet transformation from income growth among the growing middle class in many countries.

in rural areas.[13] However, in these regions productivity and earnings in agriculture are currently too low to provide a decent livelihood for the millions of people employed on the farm or to stimulate new jobs in sectors beyond the farm. Therefore, strategies that increase the productivity and profitability of agriculture offer the most powerful means to improve youth livelihoods and food security and to build inclusive economic growth.

Finally, because of its strong multiplier effects on the rest of the economy, a flourishing agricultural sector will spur job growth in the off-farm sector. Sustained and inclusive agricultural productivity growth is widely accepted as an important catalyst for economic transformation, increasing incomes and off-farm employment.[14] Investment in agriculture is also cost-effective and has been proven to reduce poverty more than twice as much as investment in other economic sectors.[15]

If properly equipped, young people can be key contributors to agricultural transformation and economic growth. Beyond providing needed labor, young people today are natural adopters of technology, making them receptive to innovations that may accelerate agricultural transformation. Finally, with a long-term interest in securing their own futures, youth populations are inherently well positioned to serve as stewards of a sustainable, resilient agrifood system.

Youth livelihoods in LMICs largely depend on the successful transformation of agriculture, and agricultural and economic transformation will require strong engagement by young people. Simply put, young people need agriculture, and agriculture needs young people in order to succeed. With the right policies and investments, along with the engagement of young people in nurturing their own potential, the largest generation of young people in history can become the problem-solving producers, creators, entrepreneurs, change agents, and leaders of the coming decades.[16]

The way forward

Governments in LMICs recognize the potential opportunities and threats that large youth populations and the agrifood sector present for economic transformation and social stability. This is evident in the resurgent interest that both agriculture and youth issues

Young people need agriculture, and agriculture needs young people in order to succeed.

have garnered in national and regional development agendas over the past decade.[17] Low productivity and underdevelopment in the agricultural sector are already major challenges. Yet national agricultural policies and extension programs typically do not account for the unique challenges facing youth, including increasing land prices driven by population pressures that restrict access to land for young people.[18] Meanwhile, climate change is projected to bring acute water scarcity, outbreaks of pests and disease, and increasingly volatile weather conditions. Many regions also face natural resource scarcity and soil degradation.

In view of all these challenges, most LMICs are struggling to develop and effectively execute innovative, youth-oriented policy responses and to make the required investments to transform their agrifood sectors. The scope of the development challenge and financial requirement is wide. Governments of LMICs recognize this and appreciate the need for private investment to adequately address this challenge. As a global leader in agriculture, the US government, in close collaboration with the private sector, civil society, universities, multilateral institutions, and regional bodies, is well positioned to work with its counterparts in LMICs to transform agrifood production systems. Collaboration between these actors would expand economic opportunities for young people, promote economic growth and social stability, and open up new and expanded markets for American businesses. It would also promote the achievement of the Sustainable Development Goals (SDGs), which include advancing global food and nutrition security; alleviating poverty; and building healthier, more prosperous and stable populations in the world's poorest countries.

Box 1 – Definition of youth

There is no universally accepted definition for the term "youth." Various age-based definitions of youth are used within and across countries and programs. The United Nations defines youth as individuals between 15 and 24 years of age, while the African Union extends the upper limit to 34 years. To accommodate these two definitions and to ensure the policy relevance of the statistical analysis in different contexts, this report adopts an age-based definition that classifies young people in two categories. The first group includes individuals in the 15-to-24 age bracket, referred to in the report as "youth." The second category, referred to as "young adults," is made up of individuals between 25 and 34 years.

Since the majority of individuals in the 15-to-24 age bracket still reside with their parents or remain dependent on their parents, their current employment situation would at least partially reflect their parents' income needs. Moreover, a large share of the youth population is not employed or not looking for work because they are still in school or vocational training or are raising children. In 2014 the global youth labor participation rate was estimated at 47.3 percent, which is about a 12 percent decline from the rate in 1991. By contrast, young adults are more active in the labor force, and their activities are more likely to reflect their own, independent decisions.

In addition to the age-based definition, this report recognizes "youth" as a distinct developmental stage, a period of transition from family dependent childhood to independent adulthood with full rights as a responsible member of society. Since what is considered adulthood may differ by social and cultural context, the report's discussion of youth livelihood strategies attempts as much as possible to reflect the lived experiences of individuals at this developmental stage without regard to age. It explores avenues to equip them with the needed skills and support for a successful transition to adulthood as defined within various social and cultural contexts.

Source: UNFPA 2017

Women fish near the River Nun in Nigeria's oil state of Bayelsa. Credit: REUTERS/Akintunde Akinleye

PART I

Laborers collect rice saplings as others plant them in another field in Karjat, India. Credit: REUTERS/Danish Siddiqui

THE OPPORTUNITY AND CHALLENGE

As youth populations continue to grow in LMICs in the coming decades, the United States and the world face a dilemma: equip youth to become productive members of society and contributors to solving the challenges of agricultural development and food insecurity, or face the potentially devastating consequences of growing numbers of idle, food insecure youth who could become a globally destabilizing force.

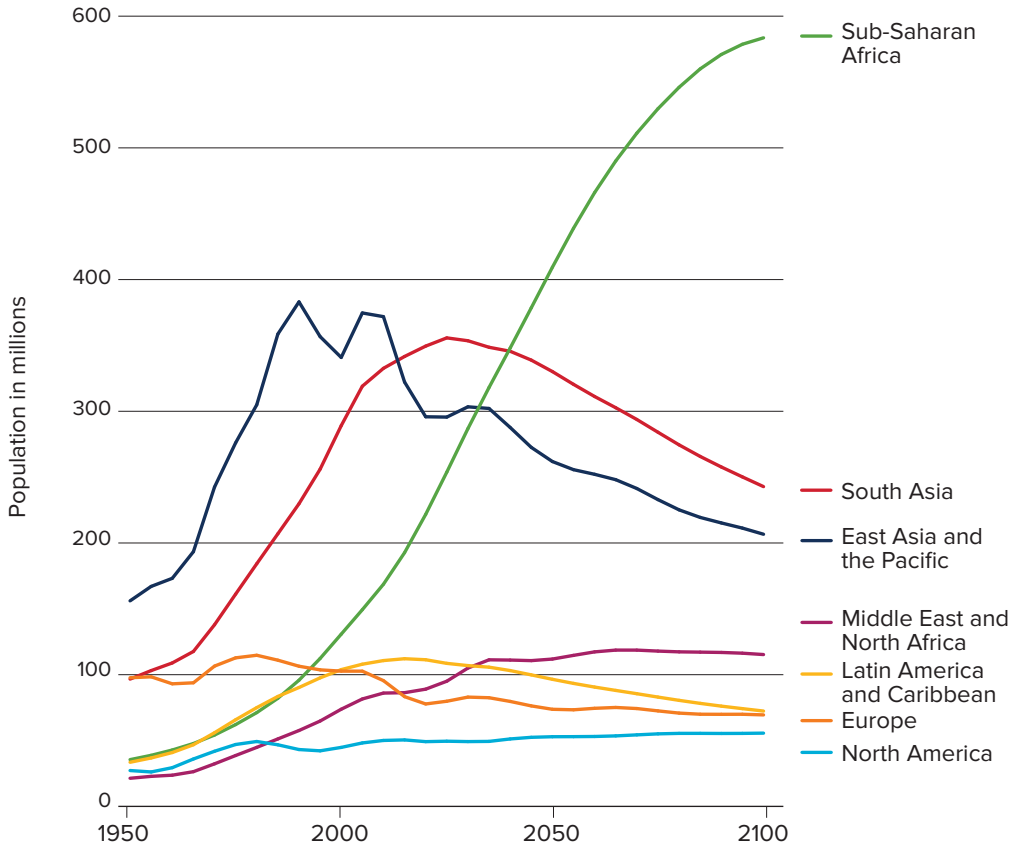
Youth employment matters for global food security and stability

Global population growth is the fastest and youngest in regions where threats of food insecurity are greatest.

Nearly 80 percent of the world's 2.3 billion young people between the ages of 15 and 34 reside in LMICs. Young people also constitute a large share of the population in many of the LMICs experiencing rapid population growth. As a region, Sub-Saharan Africa has the youngest population, with about 63 percent of the population 24 years old or younger (43 percent below age 15 and 20 percent between 15 and 24). The populations in East and South Asia, the Middle East and North Africa, and Latin America and the Caribbean regions are at 40, 50, and 43 percent, respectively, with relatively smaller shares of children below age 15 (24, 31, and 26 percent, respectively), but comparably large proportions between the ages 15 and 24 (16, 19, and 17 percent, respectively).

Figure 1 – Global youth population trends (age 15 to 24)

Africa's youth population will continue to rise over the next century.



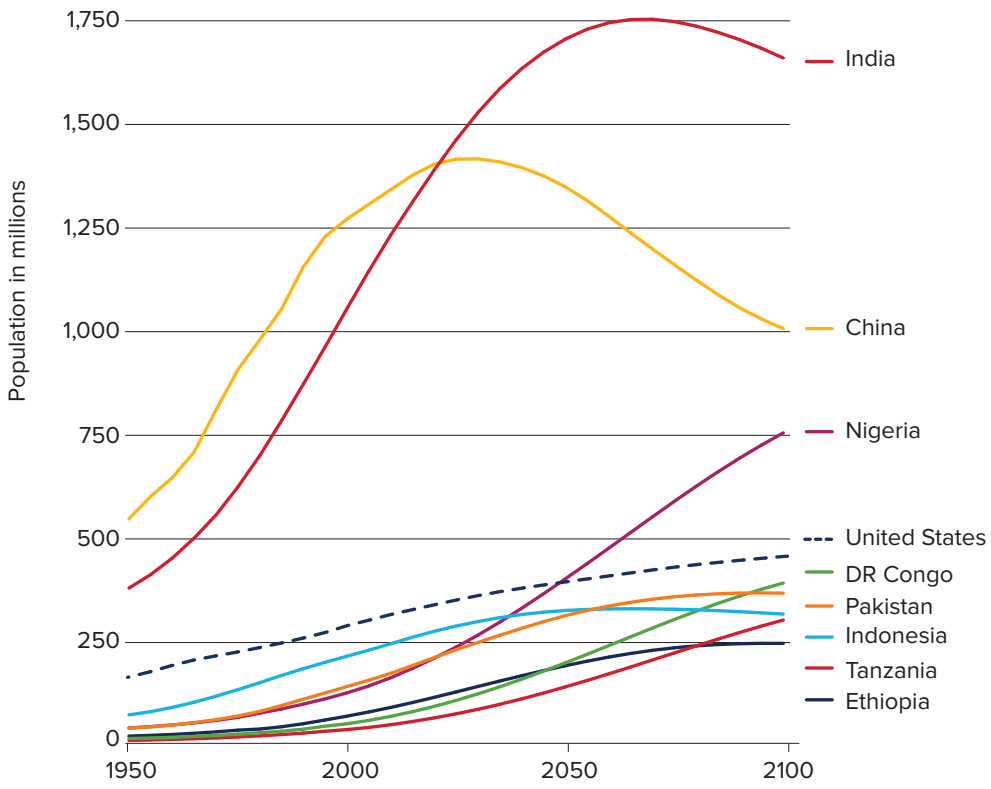
Source: UNPD 2017

Young adults (25 to 34 years) also account for an additional 14 percent of the population in Sub-Saharan Africa, 16 percent in East and South Asia, 17 percent in the Middle East and North Africa, and 16 percent in Latin America and the Caribbean regions.[19] Over the next three decades, the absolute number of young people 15 to 24 years of age living in Sub-Saharan Africa is expected to double, reaching about 407 million by 2050. In other regions the numbers will decline (East and South Asia, Europe, and Latin America and the Caribbean) or grow very slowly (North America) (figure 1). Consequently, by midcentury one in three of the world's youth (age 15 to 24) and one in four of young adults (age 25 to 34) will be African.[20] Young people will therefore constitute a significant share of the labor force and consumers in these regions, having a major impact on the global economy.

At the same time that LMICs in Asia and SSA constitute an increasingly large share of the global population, these regions are the most prone to food insecurity. According to *The State of Food and Agriculture Report 2017,* severe food insecurity is most prevalent and rising in SSA, reaching about 27 percent of the population in 2016—almost four times that of any other region. While severe food insecurity is declining as a percentage of the

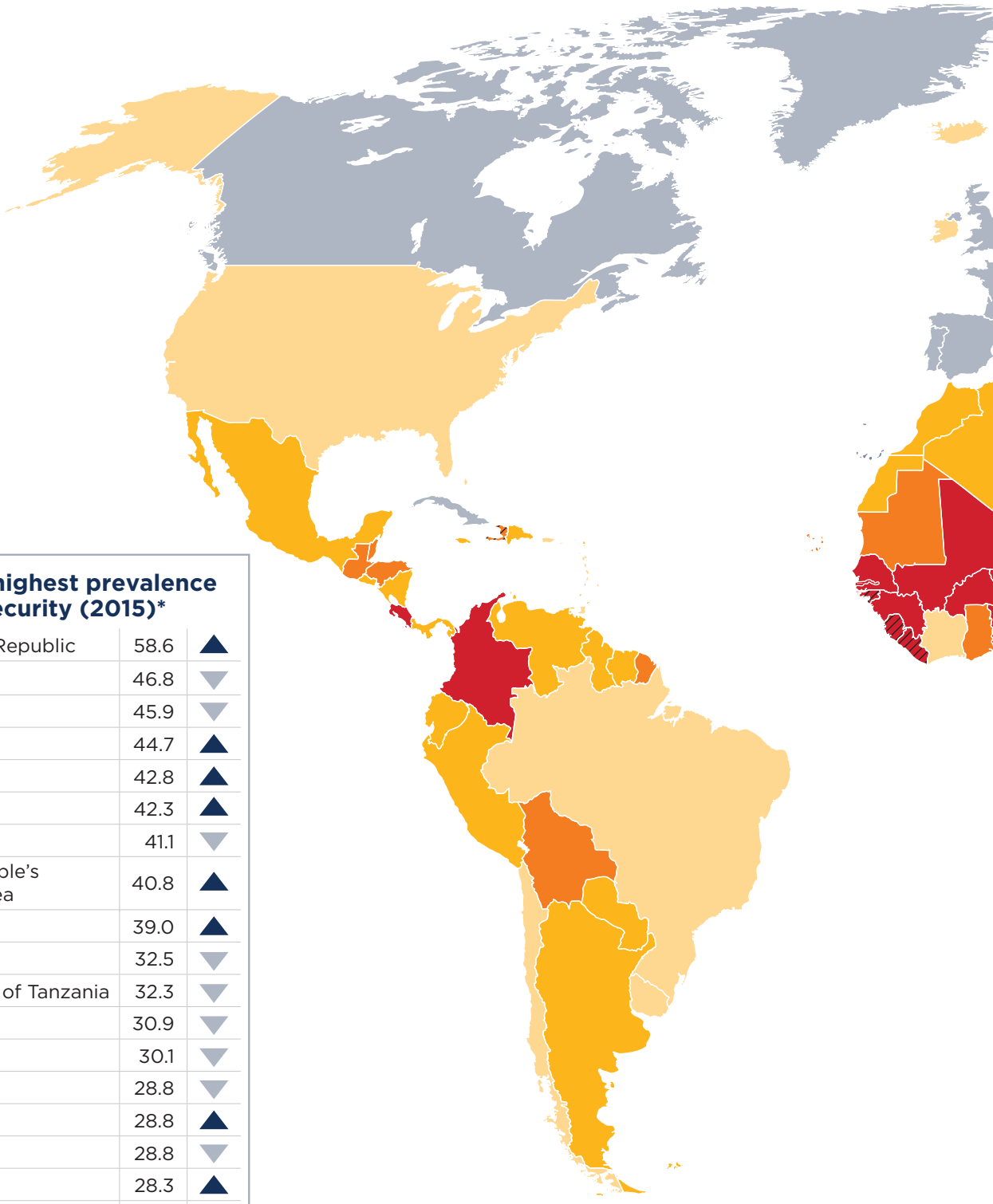
Figure 2 – Population growth in select countries of Asia and Africa

Ninety-nine percent of the projected population growth over the next century will occur in LMICs.



Source: UNPD 2015

Figure 3 – Countries with highest prevalence of youth (age 24 and below) and food insecurity, as a percent of total population

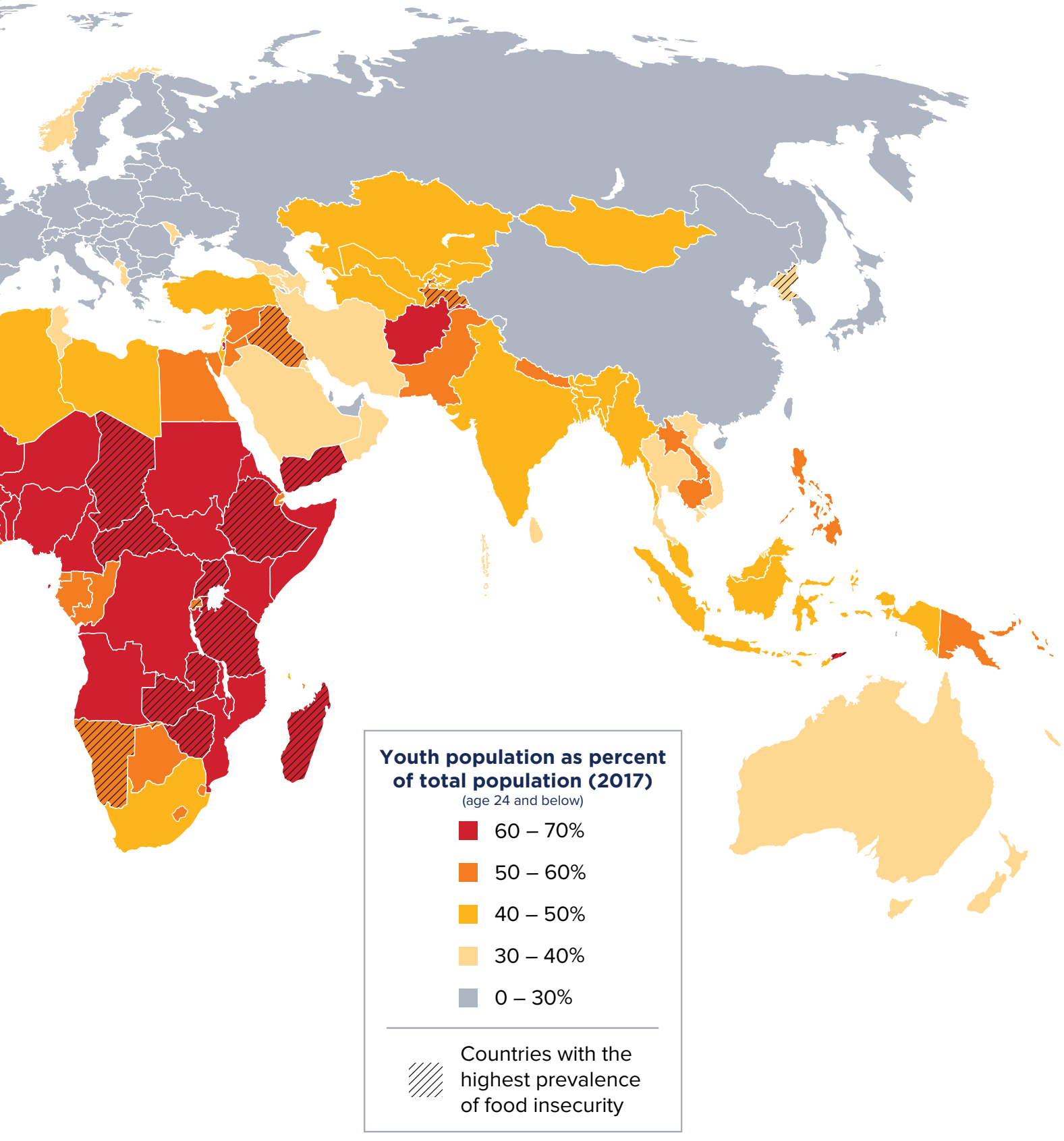


Countries with highest prevalence of food insecurity (2015)*

1	Central African Republic	58.6	▲
2	Haiti	46.8	▼
3	Zambia	45.9	▼
4	Zimbabwe	44.7	▲
5	Liberia	42.8	▲
6	Madagascar	42.3	▲
7	Rwanda	41.1	▼
8	Democratic People's Republic of Korea	40.8	▲
9	Uganda	39.0	▲
10	Chad	32.5	▼
11	United Republic of Tanzania	32.3	▼
12	Sierra Leone	30.9	▼
13	Tajikistan	30.1	▼
14	Ethiopia	28.8	▼
15	Namibia	28.8	▲
16	Yemen	28.8	▼
17	Guinea-Bissau	28.3	▲
18	Congo	28.2	▼
19	Iraq	27.8	▼
20	Timor-Leste	26.9	▼

▲ Rising food insecurity ▼ Falling food insecurity

*Change over 10-year period (from 2004-2006 to 2014-2016). Does not reflect surges in food security that occurred in 2017.
Note: While most current youth population data is from 2017, most current food insecurity data is from 2015. Data on prevalence of food insecurity unavailable for the Democratic Republic of the Congo.
Source: UNPD 2017, FAO 2015


Youth population as percent of total population (2017)
(age 24 and below)
60 – 70%
50 – 60%
40 – 50%
30 – 40%
0 – 30%
Countries with the highest prevalence of food insecurity

population in Asia, the region still has the largest number of undernourished people.[21] As young people constitute a large share of the population and workforce in LMICs, efforts to promote youth livelihoods are critical to address the food insecurity challenges these regions face.

Economic transformation is critical for youth livelihoods and food security, and agriculture is a key driver of this change.

To effectively contribute to social and economic development, young people need to be engaged productively in jobs that are commensurate with their abilities and skills. However, for many young people in LMICs, the transition from education and skill training into stable and remunerative employment is challenging, protracted, and painful. The pace of economic growth and job creation in emerging economies has been very slow, leaving many young people with poor prospects of securing formal wage employment. In fact, less than a quarter of the more than 350 million young Africans who will enter the labor force by 2035 will find formal wage employment.[22]

The slow pace of job growth reflects the pattern of economic growth and transformation as well as the labor intensity of the economic sector in LMICs. Countries in the early stages of development almost always have a large share of their labor force in agriculture. The shift from a rural, agrarian, and subsistence mode of production to a more urban,

Over time the relative share of agriculture in total employment and gross domestic product (GDP) declines, while off-farm activities and employment expand.

integrated, and enterprise-dominated mode has been strongly correlated with overall increases in productivity, living standards, and poverty reduction. This structural transformation is a broad, economy-wide process that refers to the transition of labor from agricultural to nonagricultural activities and the movement of people from rural to urban areas.[23] As this occurs, the food system also transforms, with productivity increasing and poverty often falling, although not always evenly.[24]

Agricultural transformation is considered a necessary precursor of the structural transformation process. The process begins with growth in on-farm labor productivity among millions of smallholder farmers through the adoption of new technologies, which increases surpluses and rural food security.[25] The resulting increase in farm income stimulates demand for off-farm goods and services. In turn, this generates powerful multiplier effects on the rest of the economy, expands job opportunities in off-farm sectors, and releases labor to nonfarm sectors. Over time the relative share of agriculture in total employment and gross domestic product (GDP) declines, while off-farm activities and employment expand. Hence, stimulating agricultural labor productivity growth is often regarded as a necessary condition to kick-start the structural transformation process.

Strong and sustained investments in infrastructure must be coupled with sustained increases in productivity to help the agrifood sector grow and transform. Inadequate infrastructure (i.e., energy, road networks) in many LMICs, particularly in Africa, increases the cost of production and makes the region less competitive as a destination for industrial

development.[26] Sustained productivity is essential to ensure that processors and retailers have the needed raw material to support the growth of agroindustries.

After decades of disinvestment and stagnation in the agricultural sector, most LMICs, particularly in SSA, have been unable to significantly raise labor productivity in agriculture to kick off the structural transformation process. Consequently, high productivity and growth-oriented sectors have also been slow to emerge. Expanding economic opportunities for the labor force and young people will require investments in labor-intensive sectors, particularly the agricultural sector, to raise labor productivity growth, which is essential to accelerate the structural transformation process and to generate income and employment multiplier effects. Key areas for investment to stimulate agricultural productivity are well known and are discussed in the appendix on page 108.

Surging youth populations offer an opportunity for accelerated economic transformation.

The rapid increase in the number of youth, sometimes referred to as a youth bulge, will provide a significant increase in labor and can generate enormous opportunity. If this labor force is equipped with essential skills and is productively employed, it could spur economic growth across all sectors of the economy. An increase in the youth population, coupled with declines in fertility rates, will lead to decreases in the dependency ratio[27]—the number of dependents relative to the total population—allowing for overall growth in income per capita and savings. These savings could be reinvested to create additional opportunities for accelerated economic transformation, commonly referred to as a demographic dividend. Such a demographic dividend is estimated to have accounted for about a third of the rapid economic growth in East Asian nations such as South Korea and Japan.[28] Between 1965 and 1990, the number of working adults per dependent in East Asia and the Pacific increased from one to two, with corresponding increases in output per capita. As a result, the region's GDP per capita also rose from US$1,300 to US$3,300 over the same period, with significant improvements in living standards.[29]

If this labor force is equipped with essential skills and is productively employed, it could spur economic growth across all sectors of the economy.

Reaping demographic dividends from large youth populations is not guaranteed. It requires strategic, long-term investment in the youth labor force as well as the expansion of economic opportunities that could use their skills and talents. For instance, South Korea achieved a demographic dividend by prioritizing entrepreneurship and the manufacturing of high-end consumer goods for export.[30] Preparations for the desired future began with investments in education, health care, and basic infrastructure—energy, transport, hospitals, and schools—to create a skilled labor force and a conducive business environment.[31] This was complemented with massive government support for promising private local industries (*chaebols*) such as automobile, semiconductor, and steel manufacturers.

Improved agricultural performance also played a vital role in powering this industry-oriented growth. Increased productivity in the agricultural sector freed labor for employment

Box 2 – Youth development case studies

Agricultural Value Chains Development Project

According to African Migration Survey, the average age of migrants within Senegal is 32 years old, with poverty, deterioration of environment, conflicts, and lack of infrastructure in rural areas among the main reasons for migrating. In an effort to retain unemployed 18-to-30-year-olds in Senegal's groundnut basin, the IFAD-supported Agricultural Value Chains Development Project (PAFA) aims to improve the incomes and livelihoods of poor farm families, with a special focus on turning farming into a thriving business for young people.

PAFA focuses on the consolidation of profitable value chains based on local agroecological potential, and it promotes the use of local products such as maize, bissap/hibiscus, sesame, rice, poultry, and market gardening (onions, tomatoes, carrots, cabbage). With support from youth-only groups, young agricultural extension officers, and mixed-age farmer groups, youth negotiate access to land with their families and become project holders themselves. For market gardening, access to community land (along with certified seeds and fertilizers) is assigned to young people and women by village authorities. Some farmers are trained to be "family farm advisors" to educate others on good practices in family poultry production. In addition, with assistance from hotel and restaurant owners, more than 800 women and young girls were trained in processing and cooking techniques using local cereals to promote the consumption of local products.

The project also helps young people to identify and sign contracts with market operators. PAFA facilitated contracts between farmers' organizations and market operators to ensure a fair negotiation and secure prices for the producers. Other components of PAFA include sharing information on prices in reference markets through SMS messages and the construction of value chain development centers.

PAFA has provided financial support, capacity building, and access to quality inputs and equipment to 45 youth associations. More than 4,000 young men and more than 8,000 young women are now involved in agricultural value chains and have increased their incomes. For example, a small-scale rice mill business managed by youth groups was created with support from this project, providing employment opportunities for 56 young men. Young farmers have shown an increasing enthusiasm for farming, and rural out-migration in villages supported by the project has been reduced. The project also attracts young graduates, who return to their villages and engage in farming as a business.

Source: IFAD 2015

Rural Youth Vocational Training, Employment, and Entrepreneurship Support Project

The Rural Youth Vocational Training, Employment, and Entrepreneurship Support Project (FIER) funded by IFAD first began in 2014 and is intended to last until 2021. The project aims to facilitate access to attractive and profitable activities in the agricultural sector for rural young people and to allow them to eventually become actors in modern agricultural value chains responsive to market demand. In preparation for rolling out the program nationwide, an 18-month pilot project was launched in two regions in Mali: Koulikoro and Sikasso. Everyone aged 15 to 40 who lacks technical and management skills or access to financing is eligible to participate. Special consideration is given to young women.

Separated into four groups (girls 15 to 17, boys 15 to 17, young women 18 to 40, and young men 18 to 40), participants work with young facilitators from local NGOs to identify potential vocations in rural areas based on labor market demand and job prospects. After six months, youth aged 18 and older are eligible for a microcredit loan and professional training to set up their own economic ventures. The project helps rural young people overcome technical and financial barriers by strengthening access to financial services and professionalizing the initiation, formulation, and implementation phases of their economic initiatives.

Since this project is still ongoing, its impact remains to be evaluated. The project hopes to:

- strengthen women's social status through participation in local income-generating opportunities and microenterprises,
- reduce transaction costs and strengthen rural youth's incentives and capacity to save and invest by improving access to financial services, and
- increase and diversify rural youth income by promoting income-generating opportunities and participation in rural microenterprises.

Source: IFAD 2014

Credit: Xuame Olleros/RTI International

in the industrial sector, increased disposable income and savings, and expanded the tax base from which the government raised capital for investment in the industrial sector. Also, the government maintained price controls on agricultural products and invested the revenue in education, loans to promising industries through national banks, and incentive packages for *chaebols* that produced for export.[32] US support for South Korea's aggressive growth strategy was also instrumental.[33] The effective alignment of all these initiatives created the economic miracle for which South Korea is now well known.

The rise in youth populations in LMICs can also be a catalyst for accelerated economic transformation in these countries if strategic investments in agriculture and skill development are made to harness the talents of young people for more productive and remunerative employment.

Promoting youth livelihoods is in US economic and national security interests

Investing in secure livelihoods for young people in LMICs is of paramount importance to US economic and national security interests for several reasons, including security and stability, future markets, and US influence in the region.

Security and stability

Expanding opportunities for young people will promote social stability and peace in regions where the United States has security and economic interests. A lack of economic opportunities for young people is one of the greatest challenges to global security and stability. Young people who lack compelling economic opportunities to lift themselves out of poverty are more likely to participate in extremism, piracy, crime, and social unrest.[34] About 40 percent of people who join rebel movements are motivated by a lack of economic opportunity.[35] The Arab Spring in 2011, which toppled governments in Tunisia, Egypt,

A lack of economic opportunities for young people is one of the greatest challenges to global security and stability.

and Libya and sparked political unrest across the Middle East, had its roots in grievances related to high food prices and the lack of job opportunities among disaffected young people and the perception of poor government response.[36] Widespread joblessness and dissatisfaction among young people has a destabilizing effect that takes many forms, whether it be piracy off the coast of Somalia, xenophobia in South Africa, recruitment into terrorist networks, or gang activities in major cities around the world. These challenges are often compounded by weak governance and the inability to contain violence within borders, leading to fragile states and protracted conflicts with global impacts. Increasingly, this results in the need for costly humanitarian and military intervention from the global community—and the United States in particular.

A lack of economic opportunities, violence, or prolonged social unrest can also be powerful drivers of rural-urban and international migration. In the past few decades, high-income countries, including the United States, have contended with rising tides of interna-

tional migrants and refugees seeking safety or better economic opportunities. Between 2000 and 2010, the combined net inflow of international migrants to Europe, North America, and Oceania reached about 3.1 million per year.[37] The European Union has struggled to cope with this large influx of people, and the crisis is testing cooperation among member states. Immigration and refugee resettlement have also become contentious issues in the United States.

Since young people are more likely to migrate, they constitute a significant share of international movement.[38] Around 70 percent of migrant flows are people younger than 30.[39] Unless measures are put in place to expand economic opportunities and food security in LMICs, many young people will face increased pressure to migrate—even under life-threatening conditions—to Europe and North America in search of better prospects.[40] On the other hand, expanded opportunities at home will give young people fewer reasons

By 2050 about 2.2 billion people, or 23 percent of the global population, are expected to be in Sub-Saharan Africa, and another 2.4 billion will be in South Asia.

to migrate. A transformed agricultural sector could increase economic opportunities for young people and help ameliorate the global migration crisis, minimize recruitment into terrorist and criminal organizations that threatens global and US national security, and promote food security and social stability in politically precarious regions.

Future markets

Young people in LMICs also represent a significant future market for US goods and services. By 2050 about 2.2 billion people, or 23 percent of the global population, are expected to be in SSA, and another 2.4 billion will be in South Asia.[41] Rapid economic growth is gradually expanding the middle class and increasing the purchasing power of consumers in these regions. For instance, about 78 million households are expected to join India's middle class between 2016 and 2021.[42] The middle class in Latin America and the Caribbean and SSA is also projected to reach 335 million and 212 million people, respectively, by 2030.[43] The sheer number of people along with rising incomes makes these regions attractive markets for US businesses. Evidence suggests they are already impacting US exports. Since 2000 the value of US exports to SSA has increased steadily, reaching nearly US$24 billion in 2013 and supporting hundreds of thousands of US jobs.[44] Similar robust growth has been recorded in US exports to South America and Southeast Asia, where US agricultural exports alone grew by 11 percent between 2013 and 2014, reaching a record US$11.5 billion.[45] However, continued growth in these markets will depend on whether economic opportunities for the burgeoning number of young people can be expanded to enable many to join the ranks of the middle class. Since most of these economies remain agrarian, a thriving agrifood sector has the potential to increase incomes, expand economic opportunities for young people, and generate demand for US goods and services.

Influence

Investing in young people in LMICs can also generate affinity for American institutions, companies, and values, which translates into political influence and economic opportunity over the long term. US influence in global affairs is not only shaped by its military might, but also by "soft power," including the lives it inspires and transforms through development assistance programs, cultural exchanges, and US private investments. As leaders of tomorrow, young people are vital to their countries' development and to future relations with the United States. With the right investments in human capital, educated and healthy youth could be important economic and political allies to US businesses looking to expand into Asia and Africa. They could also partner with US institutions to find lasting solutions to global challenges (e.g., communicable diseases, pests, terrorism) that require international

As leaders of tomorrow, young people are vital to their countries' development and to future relations with the United States.

cooperation to regulate and control. The United States has a historic opportunity to extend its global leadership and influence by assisting governments in LMICs to transform their agrifood systems and to address pressing challenges associated with a surging youth population, thereby creating the enabling conditions necessary for US enterprises to expand and thrive in these markets. Such efforts will help accelerate economic growth, improve living standards, enhance the US reputation abroad, and facilitate the achievement of US foreign policy objectives.[46]

The rural youth employment challenge has three main elements

To effectively harness the youth bulge for economic transformation, it is useful to understand the nature of the youth employment challenge that LMICs face. The three main facets of the challenge are an oversupply of labor, lack of job readiness, and low demand for labor, or stagnant job growth.

Oversupply of labor

At the heart of the youth employment challenge is a slow demographic transition that is fueling an oversupply of labor. Improvements in access to and quality of health care have reduced child mortality and morbidity while raising average life expectancy. While fertility rates are declining overall, they have declined relatively slowly in low-income economies, owing in part to limited access to contraceptives, strict adherence to beliefs promoting large family sizes, and lower levels of female education. For instance, an estimated average of 4.7 live births per woman in SSA was recorded between 2010 and 2015. This rate is down from 6.5 children per woman in the 1950s (figure 4). This compares to fertility rates of about 1.6 in Europe and East Asia. While fertility rates are expected to continue declining in SSA, the number of births per year could reach about 53 million by midcentury as this large cohort of children and youth reaches adulthood.[47]

Box 3 – Rural youth migration

Youth populations have been migrating with increased frequency in the last several decades. According to UNICEF, the number of young migrants increased from 23.2 million to 28.2 million globally between 1990 and 2013. The motivations for migrating are varied and depend on many circumstances—conflict and food insecurity among them. But with young people ages 15 to 24 accounting for an eighth of the global migrant working population, the search for employment and entrepreneurial opportunities is undoubtedly a top factor.

The outflow of youth from rural communities is both an opportunity and a challenge. Young migrants who find gainful employment in urban areas or abroad often send remittances back to families. This can help communities improve sanitation, public health, education, and agricultural investment through a new, stable outside source of income. Yet remittances can also create greater income inequality within these communities. Similarly, while reduced person-to-land ratios from migration outflows can improve environmental health, lessen job competition, and increase availability of land, they can also mean greater work burdens for those left behind.

When young people migrate and never return, their home communities experience a brain drain as well as a lost opportunity to develop new norms, values, and knowledge from young people's experiences in other communities. Youth who leave may also have difficulty finding work, especially in urban areas, due to competitive job markets, social exclusion, and vulnerability to radicalization or human rights violations.

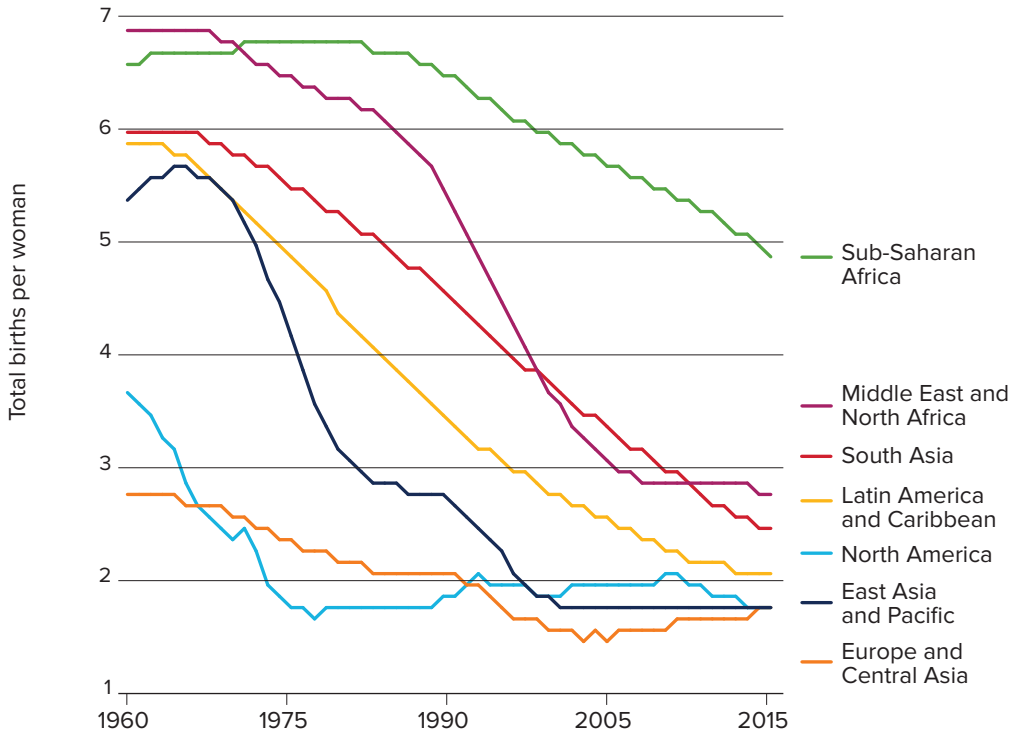
The challenges faced by rural youth highlight the need for greater support to ensure either the availability of jobs in their home regions or the skills, training, and connections needed to succeed in larger centers of employment.

Source: UNICEF 2014

Farmers walk through a paddy field beside a sugarcane field at Moynaguri village in India. Credit: REUTERS/Rupak De Chowdhuri

Figure 4 – Fertility rates (births per woman) by region (1960 to 2015)

As women gain access to education, employment, and health resources, their family sizes go down.



Note: Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with age-specific fertility rates of the specified year.

Source: World Bank Group, *World Development Indicators*, 2017

Such relatively high fertility rates are rapidly expanding the labor supply. In SSA, the labor force is growing about 3 percent per year, and an estimated 375 million young Africans will reach working age by 2035.[48] In India about 1 million people turn 18 each month, while about 900,000 young Filipinos enter the labor force each year.[49] An increasing supply of labor is not in itself detrimental to countries. The problem arises when the supply exceeds demand and labor market absorption rates, as is the case for most LMICs. Persistently high fertility rates also increase the share of the non-working-age population relative to the working-age population (dependency ratio).[50] When working-age adults have more children or seniors to care for, their financial capacity for investment in human capital (e.g., education and health) and, more broadly, enterprise development is reduced.

In the long term, addressing the youth employment challenge in LMICs would require lower fertility rates and dependency ratios. Reviews show that policy actions that promote girls' education, combat early marriages, empower women to have greater control over their fertility decisions, and make reproductive health information more accessible are effective strategies for reducing fertility rates.[51]

Lack of job readiness

Cognitive, sociobehavioral, and emotional skills—including numeracy, literacy, problem solving, and social and communication skills as well as perseverance, motivation, self-esteem, and self-control—are important determinants of lifetime earnings and many aspects of social and economic life.[52] To successfully transition into adulthood, young people need opportunities to develop their talents and acquire these skills. Access to formal and informal educational opportunities to develop these skills is therefore critical to enhancing young people's contribution to social and economic development. In order for youth education and livelihood initiatives to be successful, the needs of young people from early childhood through young adulthood must be considered, including access to healthy food, nutrition education, and health services.

Health and nutrition

Complicating the problem of employment for youth in LMICs is the question of whether a large percentage are even employable, given the impact of malnutrition and stunting. Malnutrition in the early years of a child's life, especially in the first 1,000 days from the time of conception to the second birthday, can have a profound impact on the child's ability to learn, earn, and ward off chronic diseases later in life. This is the time when the brain is growing most rapidly and needs to be fueled by good nutrition. Any prolonged period of malnutrition—be it from a shortage of food or a lack of vital micronutrients—leads to stunting, either physically, cognitively, or both. Stunting is a life sentence of underachievement and underperformance.

About one in every three children in Sub-Saharan Africa and South Asia is stunted. In these two regions, aggregate malnutrition stands at about 40 percent, and stunting is the highest in the world.

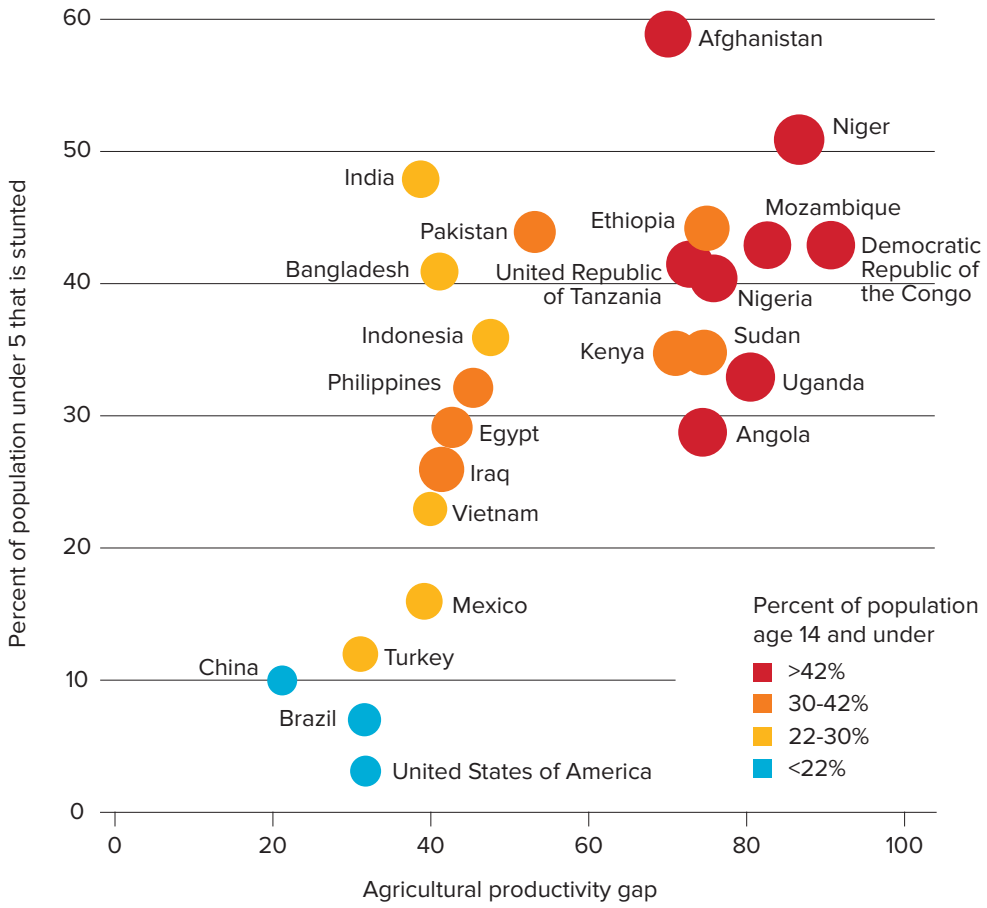
About one in every three children in SSA and South Asia is stunted. In these two regions, aggregate malnutrition stands at about 40 percent, and stunting is the highest in the world. The impact of stunting is long term, as stunted children become stunted adults. As labor pools are depleted and productivity is sapped, economic growth lags. Studies have found that stunted children spend less time in school, learn less when they are in the classroom, and earn 20 to 40 percent less as adults.[53]

Stunting could derail progress toward a potential demographic dividend. The Global Nutrition Report estimates that SSA and South Asia each lose about 11 percent of gross national product every year due to the cumulative impact of malnutrition and stunting. Other studies estimate that 43 percent of children under the age of five in LMICs are at risk of never achieving their full cognitive potential.[54]

Jim Yong Kim, the president of the World Bank, worries that stunted children will have difficulty finding a place in labor markets, which are becoming ever more automated and digital. As he campaigns for increased investments in "grey matter infrastructure," Kim warns heads of state and finance ministers, "You cannot walk into the future with 20, 30, 40 percent stunting rates and expect to succeed. . . . To compete in the new economy, it's necessary to end cognitive stunting."[55]

Figure 5 – Relationship between the percentage of the population under age five that is stunted and the agricultural productivity gap

Countries with less productive agricultural systems are associated with a greater incidence of stunting among children under age five. (The top right quadrant indicates a high rate of stunting, low agricultural productivity, and high numbers of youth, a triple threat.)



Source: Ending Rural Hunger; UNPD 2017

Access to education

Over the past few decades, access to formal education has expanded in many LMICs. Primary school completion rates for children in SSA increased from about 54 percent in 2000 to 68 percent in 2014. Several countries in Asia and Latin America have already achieved universal primary education. Enrollment at the secondary school level is also improving, with gross enrollment ratios[56] reaching about 94 percent in Latin America, 65 percent in South Asia, and 43 percent in SSA in 2014.[57] Compared to previous generations, the current cohort of young people is the most educated labor force their regions have ever experienced.

Box 4 – Rural girls: steady progress on the road to gender equality

In most countries around the world, girls still face greater challenges in accessing education than their male counterparts. UNESCO estimates that more than 130 million school-age girls are out of school and that at least 15 million girls will never spend even one day in school. Half of them are in Sub-Saharan Africa. Since rural areas are generally poorer than urban areas, rural schools face different challenges, including difficulty recruiting teachers to remote locations, dilapidated or nonexistent infrastructure, and long distances for children to travel to the school. Rural girls face additional barriers that have been well documented, including early marriage, particularly when communities face economic distress, lack of access to latrines (causing dropout at the onset of menstruation), and physical safety concerns when walking to and from school.

But many girls succeed despite these challenges, and more girls are following in the footsteps of successful girls each year as the global community prioritizes gender equality and equitable education as part of the Sustainable Development Goals (SDGs). The Global Partnership for Education (GPE), a global fund dedicated to education in LMICs, was established in 2002 and now works in 65 countries to strengthen education systems and reduce the number of children out of school. Since 2002 an additional 38 million girls were enrolled in schools in GPE countries, and the number of girls finishing primary school increased from 57 percent in 2002 to 74 percent in 2015.

However, even as more girls complete school, data show many challenges. Their transition to the world of work takes longer. They frequently face unequal pay. They may have a harder time starting a business. They may also have trouble sustaining employment in the face of family and childcare duties. A holistic approach is needed to ensure girls and young women are given the opportunity to transform their lives, thereby transforming their communities, the agrifood sector, and, ultimately, the well-being of whole nations. To do this, boys and men must also be engaged and integrated into the change process. A systems-based approach is required to address the range of constraints. The World Bank identifies eight priorities as part of their strategy. These priorities are largely aligned with the GPE and the SDGs:

- Providing conditional cash transfers, stipends, or scholarships
- Reducing distance to school
- Targeting boys and men to be a part of discussions about cultural and societal practices
- Ensuring gender-sensitive curricula and pedagogies
- Hiring and training qualified female teachers
- Building safe and inclusive learning environments for girls and young women
- Ending child/early marriage
- Addressing violence against girls and women

Progress toward many critical goals—whether it is improving nutrition in the first 1,000 days, improving productivity on and off the farm, or reducing poverty—depends on the full engagement of young people, especially girls. And while progress has been made, there must be a continued and concerted effort to close the gap for rural girls, especially in education.

Sources: UNESCO 2016; World Bank 2017; GPE 2017; ILO 2016

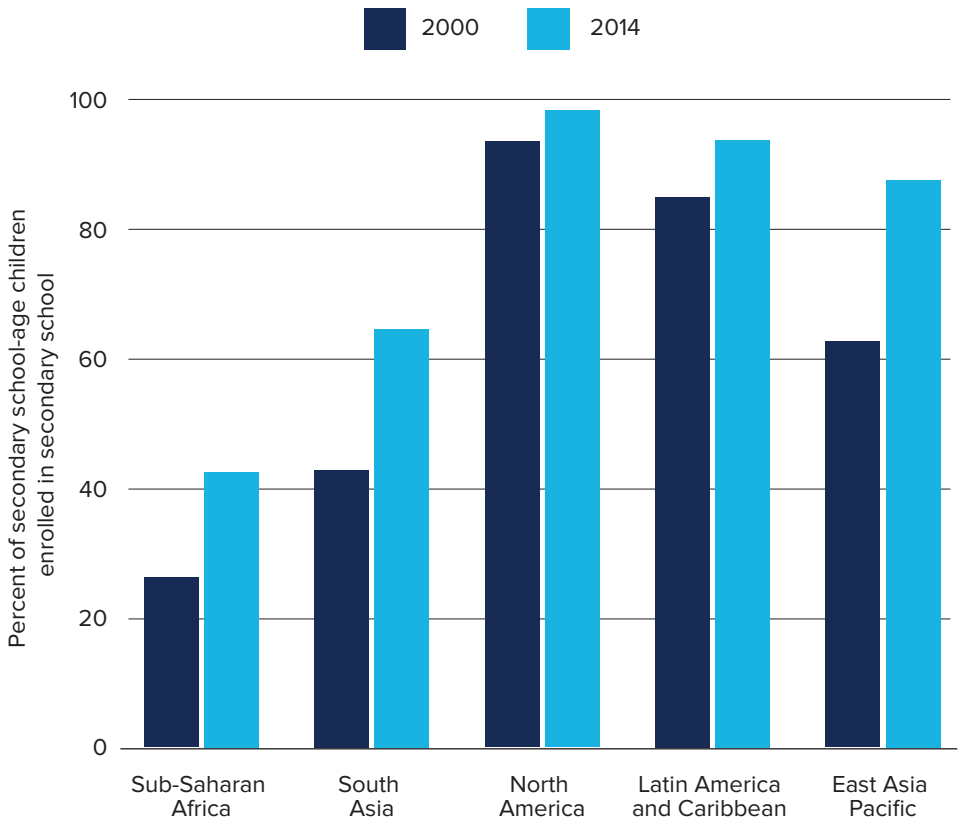
Despite these laudable improvements, much more remains to be done to improve access to education. The educational level of the labor force in most low-income economies is still very low. About two-thirds of young Africans entering the labor force do not have any secondary school education, and as much as 20 percent of youth (15 to 24) and 30 percent of young adults (25 to 34) have no education at all.[58] As of 2014, only 42 percent and 65 percent of all secondary school-age children were enrolled in secondary school in SSA and South Asia, respectively (figure 6).[59] One in five youth in Latin America and more than 200 million young people in Asia are neither in school nor employed.[60] Young girls, ethnic minorities, and rural residents tend to be unduly affected. Many rural youth still have to walk long distances from their communities to attend school, which discourages school enrollment. Therefore, rural children are about twice as likely as urban children to be out of school.[61]

Structural and cultural barriers such as early marriage and the tendency for young girls to shoulder the burden of household tasks and childcare prevent many girls, especially those in rural areas, from receiving and completing formal education and training or actively participating in the labor force. In Africa and South Asia, boys are nearly twice as likely as girls to complete secondary school, and females constitute about two-thirds of all illiterate people age 15 and above.[62] Any efforts to improve educational access and

African girls learn English in an orphanage near Nairobi, Kenya. Credit: Bartosz Hadyniak

Figure 6 – Gross enrollment ratios for secondary school

Secondary school enrollment is growing, but from a low base in developing countries.



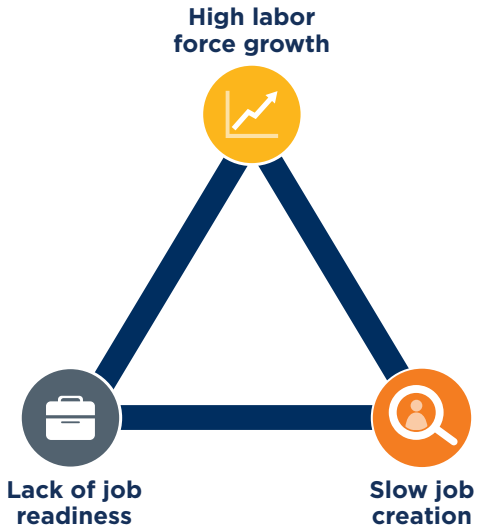
Source: World Bank Group, *World Development Indicators*, 2017

quality must therefore pay special attention to the barriers faced by rural girls in many parts of LMICs. These efforts may need to go beyond fiscal policies and may require social reforms. Without carefully targeted interventions, girls will continue to lag behind their male counterparts.

Quality of education

The quality of education must be improved if education is to be a valuable asset to young people. Educational systems in LMICs often do not adequately equip students with basic literacy, numeracy, and technical skills needed for productive employment in the modern economy.[63] Across Asia and Africa, less than one-third of those completing primary school achieve basic standard competencies in literacy and numeracy.[64] In 2014 over 250 million children were estimated to be enrolled in school but not learning, a situation the United Nations Educational, Scientific and Cultural Organization (UNESCO) dubbed the "global learning crisis."[65] For instance, after more than three years of language teaching, about 80 percent of students in Nigeria could not read simple words in English.[66] Similarly, only one in four Indian youth between age 14 and 18 cannot read basic text fluently in their own language, and more than half of this group struggle with basic arithmetic tasks—subtraction and division—that are part of the curriculum for second grade.[67]

Figure 7 – Nature of the youth employment challenge



- High labor force growth due to slow demographic transition (3% per year in SSA)
- 11 million youth to enter labor force each year in SSA until 2035 (Losch 2016)

- Job creation lags behind labor force growth
- Only 25% of 350 million new entrants will find formal wage jobs in SSA

- Low educational quality
- Skills mismatch
- Inadequate soft skills
- Low awareness and skills to spot opportunities

Source: Illustration by the author

In most low-income countries, the push to expand educational enrollment was not complemented with a commensurate expansion in infrastructure and teaching resources. As a result, many educational institutions are ill-equipped for effective teaching and learning. There is also often a gap between urban and rural schools. Many rural schools still lack adequate physical infrastructure and classroom materials, and many more have difficulty attracting high-quality, well-trained, and motivated teachers due to their remote locations.[68] Vocational and technical schools, which could impart relevant technical and industry knowledge, are often underfunded or not available in rural areas.[69] When available, technical and vocational training institutions often teach skills that are out of date or focus on oversaturated industries such as carpentry and tailoring. Poor quality education limits skills development, adversely impacting the productivity of the workforce and economic growth.[70]

Skills mismatch

There is also a general disconnect between the skills that employers demand and what educational institutions are teaching students. Competencies in "soft skills" such as critical thinking, communication, leadership, collaboration, and problem solving as well as cognitive ability, including numeracy and literacy, influence lifetime earnings and other aspects of life. Yet for young people in LMICs, there are fewer opportunities to develop these core skills through educational systems. Formal and informal educational institutions are often still using outmoded pedagogies that reward the ability to memorize and repeat information and do not encourage the analytical, creative thinking, and problem-solving skills that are increasingly essential in the modern labor market. Moreover, educational curricula in many LMICs have seen little or no reform to meet the needed range of skills required by

the modern labor market. Although agriculture remains the dominant source of livelihood for rural communities, agricultural curricula in most rural schools have either disappeared, become outdated, or are inadequate to equip rural youth with the knowledge they need to succeed in modern agricultural employment.[71] There is also little communication between private-sector employers and educational training centers to guide curriculum development, participate in training, and/or offer experiential opportunities outside educational centers.[72]

As a result of the skills mismatch, joblessness coexists with unmet demand for skilled labor. For example, despite high unemployment rates among highly educated young people in Africa and the Middle East, business leaders in the region often cite the lack of well-trained, motivated, and skilled talent as a major obstacle for enterprise expansion.[73] Along with the skills mismatch is the high search cost that both employers and job seekers experience in the labor market. Employers often do not know where to find qualified young people to fill positions, and qualified young people often have fewer social networks and do not know how to find job opportunities or how to get in the door. There is, therefore, a need for a much higher skill level as well as more systematic, private-sector engagement with educational systems to develop appropriate curricula and provide opportunities for youth to obtain meaningful practical experience and training. Measures that strengthen the information flow between employers and job seekers to reduce the search cost are equally needed.

Employers often do not know where to find qualified young people to fill positions, and qualified young people often have fewer social networks and do not know how to find job opportunities.

Technological impacts

Technological advances are also changing the nature of work. Technology will replace human workers in jobs that require rote tasks but will also increase demand for labor in other areas. The future of work is becoming less predictable, and the skill sets that the labor market of tomorrow will demand is expected to be dramatically different from what it is today. These changes compound the challenges that educational and training systems face. To effectively harness the talent and energies of a large youth population for economic transformation, policymakers in LMICs must not only address educational access and quality gaps but also prepare young people for today's fast-changing labor market.

Unlike previous generations, most young people are unlikely to hold the same job for life. Many young people in developing countries are already relying on a mix of wage labor, agricultural production, and self-employment from informal microenterprises for their livelihoods. This trend will likely continue into the future. The skill set that such a mixed livelihood strategy demands is equally diverse. In light of the uncertain future of work, young people will be better served if they are supported to acquire universal life and work readiness skills. Transferable life skills such as self-confidence, critical thinking, communication, teamwork, and personal responsibility that will serve them in any field they pursue and enable them to navigate life's challenges and opportunities of the future are critical.

Machines are less able to perform nonroutine and more complex cognitive and social tasks that require creativity and critical thinking. Investments in these life skills therefore could safeguard young people against future job losses to technology.

Stagnant job growth

After decades of disinvestment and consequent stagnation in the agricultural sector, many LMICs, particularly in SSA, have been unable to significantly raise labor productivity in agriculture to kick off the structural transformation process.[74] Consequently, high productivity and growth-oriented sectors have also been slow to emerge. For instance, labor-intensive manufacturing, which was an important source of wage employment in East Asia's transformation process, has shown little signs of takeoff in the region.[75] Indeed, manufacturing's share of total GDP in SSA is lower today than it was during the 1970s, having declined gradually throughout the past four decades.[76] Likewise, since the early 1990s, the manufacturing sector's share of total employment in SSA has hovered between 9 and 10 percent—the lowest of all regions.[77]

After decades of disinvestment and stagnation in the agricultural sector, many LMICs, particularly in Sub-Saharan Africa, have been unable to significantly raise labor productivity in agriculture to kick off the structural transformation process.

A combination of factors accounts for this slow growth in manufacturing. Notable among them is the earlier start to industrialization and competitive advantages enjoyed by other developing countries in Asia and Latin America that can manufacture efficiently at scale. Other factors include globalization, lower international trade barriers as a result of bilateral and multilateral trade agreements, and low international shipping costs, which make it cheaper to import goods from other countries. This undermines the development of nascent industries in developing countries. Also important is the general lack of adequate infrastructure such as energy and roads, particularly in Africa, which increases the cost of production and makes the region less competitive as a destination for industrial development.[78] Yet another important factor is the inability of the underdeveloped agricultural sector to support the growth of agroindustries. As noted in a recent report by the Food and Agriculture Organization (FAO), growth in the large-scale agroindustry in SSA is often impeded by the lack of a reliable supply of raw materials of consistent quality and quantity.[79]

Recent impressive economic performance, particularly in SSA, has done little to reverse the slow growth in employment creation.[80] For example, Africa's fastest-growing economies made the least progress in employment growth and poverty alleviation.[81] This is partly because much of the direct investments and resulting growth occurred in capital-intensive sectors such as mining and mineral exploration, which despite being associated with high labor productivity have low demand for labor. This highlights the challenge most African countries face to diversify their economic bases and to mobilize both public and private investments, which would build the productive base of other key sectors such as agriculture.

Box 5 – Tale of two tractor services: mechanization for rent

The Uber for tractors

Hello Tractor, Inc. is bringing labor-saving and income-generating innovation to farmers in Nigeria. The tractor-sharing service provides "smart tractors" to smallholder farmers. The tractors, which are available in several different models, are equipped with a GPS antenna and an international SIM card. The technology enables owners and operators to monitor tractor performance, track equipment location, book services, and even assess maintenance needs through a simple online platform.

To access smart tractor services, local farmers send a request via SMS text message to a Hello Tractor provider. The provider then connects the farmers with the nearest available smart tractor operator, who dispatches the requested equipment.

Hello Tractor's service addresses an enormous demand for mechanization in Africa. According to Harvard's Belfer Center for Science and International Affairs, there is an average of 200 tractors for every 100,000 square kilometers worldwide. In Africa, that average is just 13 tractors for every 100,000 square kilometers. Efficient, low-cost mechanized innovations like smart tractors improve overall productivity and crop yields, making the most of Africa's fertile lands for a fraction of the cost and physical toll of human labor.

Source: Diaz 2016

Pay-for-use innovation brings tech to agriculture

Even though 90 million households are directly engaged in agriculture, India's agricultural productivity is dangerously low. The founders of EM3 Agri Services seek to address this through improved access to technology and mechanization for smallholder farmers.

EM3's pay-for-use model, FAAS (farming as a service), establishes a network of farm centers called Samadhan Kendras throughout various northern states. The centers are staffed with agri-professionals and equipped with machines and tools. EM3 works with existing equipment owners to rent out the machines in their downtime, helping to generate more revenue to pay for them. Farmers can request services from the closest Samadhan Kendra through the EM3 smartphone app, on the company's online site, or by phone. Once requests have been submitted, EM3 professionals will be dispatched with the necessary equipment to assist the farmers and help them monitor the work completed and produced. Farmers pay for services on either a per-hour or per-acre basis and can even submit payments through the company's online portal.

EM3 is expanding rapidly, covering more than 35,000 acres of land in the last two years alone. As the service's popularity grows, its founders hope to use franchising to establish Samadhan Kendras in more isolated locales. Future improvements in technology and automation offer even greater potential for company growth in the coming years to improve the access to efficient agriculture technologies for all farmers.

Source: EM3 Agri Services

Young people face greater challenges in the labor market and are unduly affected by low job growth

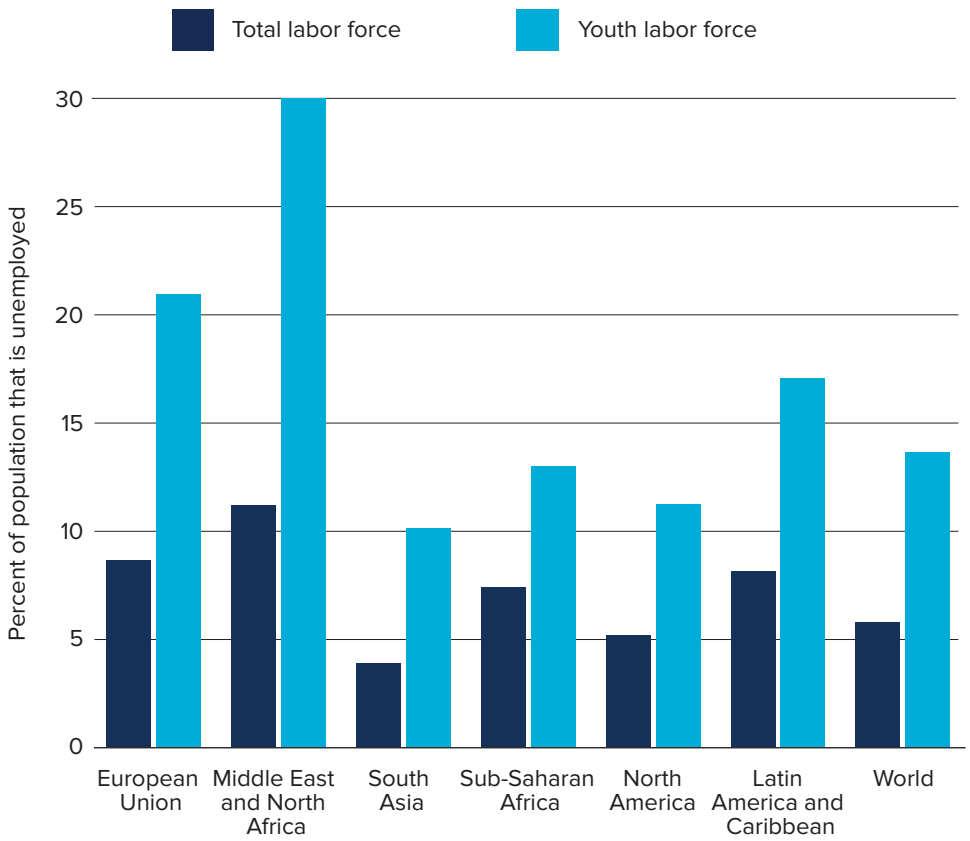
Although low demand for labor is a challenge for all workers in low-income economies, young people are often disproportionately affected by slower job growth and therefore deserve particular policy attention.

Unemployment is more pronounced among young people.

In many regions of the world, youth are often more than twice as likely as adults to be unemployed (figure 8).[82] About 60 percent of Africa's unemployed population are youth, and about one-third of the youth labor force in the Middle East is unemployed. Unemployment also remains pressing in South Asia, where nearly 14 million economically active youth were without a job in 2017, representing about 20 percent of unemployed youth worldwide.[83] Youth unemployment rates are generally higher in urban areas than in rural areas.[84] Contrary to what might be expected, unemployment is relatively high among university

Figure 8 – Unemployment rates for total labor force and youth (2016)

Youth unemployment exceeds the general workforce across regions.



Source: ILO 2015

graduates in many emerging economies.[85] For instance, unemployment rates among university graduates in Nigeria and Kenya are estimated at 23 percent and 16 percent, respectively.[86]

This is not to say that getting higher education leads to unemployment. Rather, this pattern reflects the slow expansion of jobs relative to the rate at which graduates are entering the labor force. The absence of a vibrant private sector coupled with increased cuts in public-sector jobs due to policies aimed at reducing government payrolls has limited employment opportunities for recent graduates.[87] This pattern also likely reflects a growing mismatch between the skills universities teach and the skills private-sector employers demand as well as a general unwillingness of university graduates to pursue non-white-collar jobs.[88] Nonetheless, high youth employment underscores the need to ensure an increase in jobs commensurate with labor force growth as well as the need for greater coordination between educators and employers in preparing young people for the labor market.

Unemployment has a scarring effect on young people and limits their contribution to national development. Youth unemployment increases the probability of future unemployment, lowers lifetime earnings, and reduces future job satisfaction.[89] Young people who are unable to secure a job by their mid-20s face a higher risk of never being employed.

Youth unemployment increases the probability of future unemployment, lowers lifetime earnings, and reduces future job satisfaction.

Any additional year of unemployment during this period could lead to a 23 percent lower salary compared to their peers 10 years later.[90] The unemployed or underemployed have less to spend as consumers and less to invest as savers. They are therefore unable to contribute to the demand for goods and services or capital formation that spurs enterprise growth and economic development.

Young people are more likely to be underemployed and to engage in vulnerable employment.

In developing economies, unemployment rates do not adequately reflect the extent of joblessness. Because social protection for the unemployed is often lacking, millions of working-age individuals, including young people, have been forced into the unregulated, informal sector, where wages are not sufficient to cover the cost of living. Even for those young people who are fortunate to secure formal or salaried employment, the conditions of work for many of them fall short of the standards for decent work.[91] They are often not guaranteed job security and have very few viable avenues, if any at all, to seek redress against exploitative actions from their employers. This situation partly arises from the lack of enforcement of labor market regulations. Yet it is also a consequence of the imbalance between supply and demand in the labor market, giving employers undue power over their employees.

Unemployment rates therefore mask the large number of people in vulnerable employment, often characterized by informal working arrangements, inadequate earnings, low

Box 6 – Definition of vulnerable employment

The vulnerable employment rate measures the share of unpaid family workers or own-account workers as a percentage of total employment. Workers are less likely to have formal work arrangements and are therefore more likely to lack adequate social security and "voice" through effective representation (trade unions and similar organizations). Vulnerable employment is often characterized by inadequate earnings, low productivity, and difficult working conditions that undermine workers' fundamental rights.

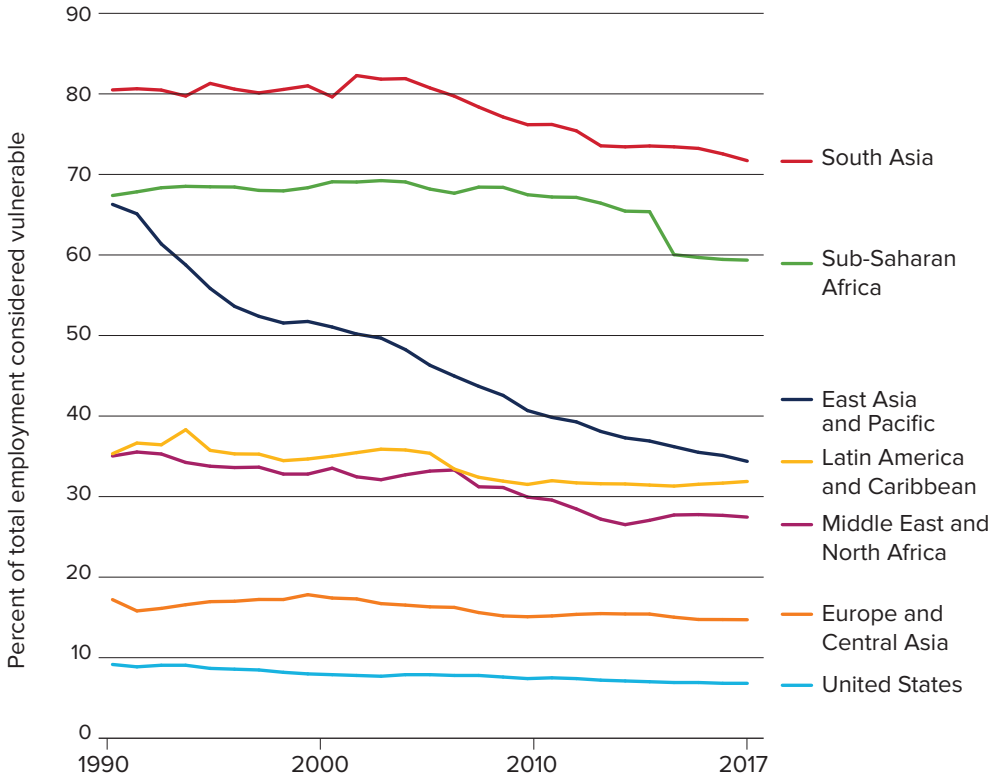
Source: ILO, "Vulnerable Employment," 2010

Boys in Mchinji, Malawi, some 130 km south of the capital Lilongwe. REUTERS/Antony Njuguna

productivity, and difficult working conditions,[92] or those who are underemployed, working shorter hours than they would like or reaping little economic gain from their activities. Despite relatively modest unemployment rates, South Asia and SSA have the highest rates of vulnerable employment, estimated at 73 percent and 60 percent, respectively (figure 9).[93] The majority of vulnerable employment positions are held by young people, with as many as 80 percent of working youth in SSA in vulnerable employment.[94] Household surveys show that about 43 percent of all unpaid jobs in Rwanda, 50.8 percent in Nigeria, and 63 percent in Tanzania and Ghana were held by youth 15 to 24 years old. Similar trends are observed in LMICs in South Asia and Latin America and the Caribbean.[95] Consequently, nearly two-thirds of working youth live in poverty globally, compared to half of the adult population.[96] As a region, SSA has the highest rates of working youth living in poverty. An estimated 65.8 million young people, or about 69 percent of working youth, live below the poverty line. The incidence of working poverty among youth in Southern

Figure 9 – Share of total employment classified as vulnerable

A large share of total employment in SSA and Asia is vulnerable employment. Vulnerable employment is often characterized by informal working arrangements, inadequate earnings, low productivity, and difficult working conditions that undermine workers' fundamental rights.



Source: World Bank Group, *World Development Indicators*, 2017

Asia also remains high, at 54.2 percent in 2017.[97] Therefore, for most developing economies, the key challenge to improving youth livelihoods lies not just in increasing the number of jobs but also the supply of better quality jobs that can help young people leap out of poverty.

Women face greater challenges in employment than men in most regions.

Globally, women are unemployed at higher rates than men, but this trend is particularly striking among young women. This trend is most severe in North Africa and the Middle East, where unemployment among young women is nearly double that of young men, exceeding 40 percent in some countries. In LMICs 60 percent of women work in agriculture, and much of that work—either on the farm or in caregiving—is unpaid. Women engage in unpaid care work in the home at a rate nearly two-and-a-half times that of men, shortening the potential hours of paid work they can pursue. They also often face a longer and more difficult transition from education to work. Pay gaps persist in nearly every country around the world, further reducing the earning potential of young women. And while gender gaps

Unemployment among young women in North Africa and the Middle East is nearly double that of young men, exceeding 40 percent in some countries.

in labor force participation are narrowing in nearly every region, they are widening in East and Southeast Asia.[98] For these reasons, strong attention to girls' education and the deliberate inclusion of young women in vocational education and mentorship opportunities is critical to ensuring their participation in economic transformation.

Young people are also most severely impacted during economic crisis.

Because young people are often treated as secondary workers, they are also first to lose their jobs and the last to be hired during periods of low labor demand. Consequently, the recovery of youth employment after economic shocks often takes longer than the estimated average of four to five years among the general population.[99] For instance, 10 years after the global financial crisis of 2008, the global youth employment rate is yet to return to its precrisis level of 11.7 percent and is projected to remain at 13 percent well into 2019.[100] Employment issues related to young people—particularly young women—therefore deserve significant attention.

Ultimately, youth livelihoods cannot be enhanced without addressing systemic challenges in the labor market. Without overall improvement in the supply of jobs, youth-targeted interventions aimed at improving employment opportunities for young people will only displace other people from their jobs. Such displacements will reduce the net benefits and cost effectiveness of the interventions.[101] Moreover, with young people between 15 and 34 constituting more than half of the labor force in most LMICs, any interventions focused on addressing the structural and policy constraints to employment will automatically benefit young people.

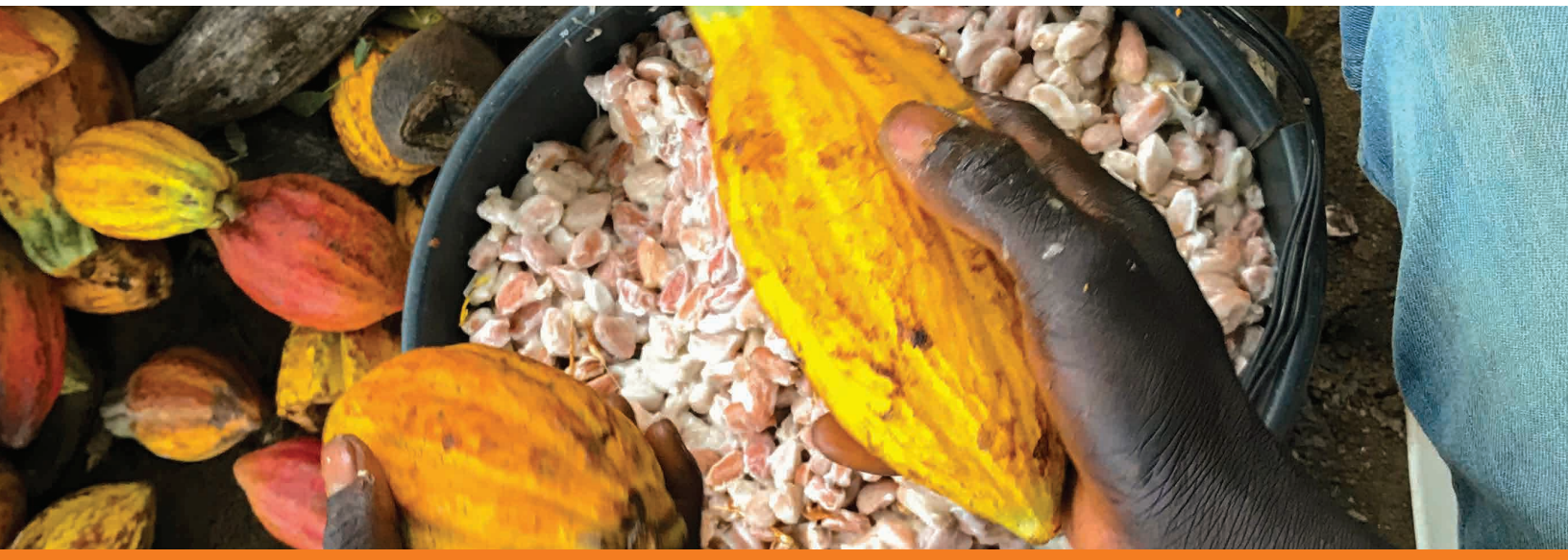
Box 7 – Recognizing child labor

Preparing young people to succeed in the world of work, particularly in agriculture, is critical for their futures and for the transformation of agriculture. However, forced labor and modern slavery are all too common and must be combated by governments, the private sector, community leaders, and NGOs. An estimated 73 million children are forced to work, often in hazardous conditions. Unfortunately, 71 percent of this labor is concentrated in the agricultural sector, primarily among children aged 5 to 11 who work on family farms. Boys are at greater risk of child labor, representing 58 percent of children involved in child labor. Farmwork often involves operating machinery, using sharp tools, and applying pesticides. This leaves children at greater risk of injury. Girls are more often involved in fetching water or wood, which leaves them vulnerable to musculoskeletal injuries and the threat of sexual violence.

The term "child labor" is often defined as work that deprives children of their childhood, their potential, and their dignity, and that is harmful to physical and mental development; however, not all work done by children should be classified as child labor that is to be targeted for elimination. Youth participation in work is generally regarded as positive if it contributes to their development and to the welfare of their families, provides them with skills and experiences, and helps to prepare them to be productive members of society during their adult life.

Vocational training and apprenticeships are an effective way to equip youth with the right tools and skills to properly prepare and protect them for work in agriculture. Promoting professional certification programs in agriculture would help youth gain the experiences and qualifications needed to compete in the modern-day job market and help reduce the risks of child labor. Agricultural jobs that involve operating machinery should require proof-of-age certificates. Additional protections must be in place to ensure that farmwork does not harm the health, safety, or school attendance and achievement of youth under age 18.

Source: ILO, "Child Labor"



A farmer prepares to open a cocoa pod in Ntui village, Cameroon. Credit: REUTERS/Ange Aboa

The agrifood system is a sector of opportunity for economic growth and job creation

Investments in the agrifood system offer an unparalleled opportunity to expand youth livelihoods in developing countries for several reasons. Historical experience and emerging global trends support this approach. First, population growth, urbanization, and diet transformation arising from income growth are driving up global demand for agrifood products. Boosting investment and restructuring agrifood production systems across the value chain in LMICs have the potential to create jobs for young people. Second, the agrifood sector is and will remain the single largest employer of the labor force and young people, particularly in rural areas. Given its high capacity to absorb labor and the sheer number of young people engaged in the sector, the agrifood sector provides the most likely entry point for creating inclusive economic growth and improving youth livelihoods. Third, because

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of the linkages between strong growth in agriculture and the rest of the economy, the performance of agriculture will significantly determine the rate of job growth in the off-farm sector. While the agrifood system is by no means a silver bullet for addressing the youth employment challenge, it is a crucial and indispensable component of the solution.

Increased demand for agrifood products offers an opportunity for investment and job creation.

Growing populations and urbanization are fueling demand for agrifood products. Urbanization is occurring most rapidly in LMICs, where population growth is the fastest. By midcentury the share of populations living in urban areas in Asia and Latin America is expected to increase by at least 10 percent. About 1.1 billion Africans, 55 percent of the projected population in the region, will be residing in urban areas, a threefold increase from 2015.[102] Urban populations demand more food per capita on average, stimulating demand for a robust agrifood sector and creating potentially attractive employment opportunities for young people all along food supply chains, from food production on the farm to management, processing, and distribution beyond the farm.[103]

In addition, rising incomes and changing diets among some segments of the population in LMICs are fueling increased demand for diverse, high-value, and processed food, including meat, fish, dairy, fruits, vegetables, and oilseeds.[104] This rising "middle class" is projected to reach 4.9 billion globally by 2030.[105] Although a large share of this new middle class will be located in Asia—primarily China, India, Indonesia, Malaysia, Thailand, and Vietnam—evidence suggests a sizeable and rising number will be in Africa (figure 10). Since production of high-value products is labor intensive, the demand for them has the potential to transform the agrifood system and expand employment opportunities for many young people along the food supply chain.[106]

Countries like Vietnam and Thailand have expanded their agricultural production and developed export-oriented agroenterprises to take advantage of the new global market for food that the growing middle class offers. However, the same cannot be said of developing economies in SSA, where a slow response of the local food production systems to growing demand has resulted in increased reliance on food imports.[107] And, while the sharp incline in population growth can absorb both increases in domestic production and increases in imported food, without a domestic production response, the positive impact of rising incomes in cities may fail to benefit rural areas and the agrifood system the way it should. With food demand projected to expand by 55 percent in SSA and 25 percent in South Asia by 2030, there are great prospects for income growth and job creation in local food production and marketing if domestic productive capacity could be enhanced.[108]

If agricultural productivity growth occurs among only a small share of farms, the strength of the transformative income growth and employment multipliers will be weak. Promoting inclusive forms of agricultural productivity growth during the structural transformation process is therefore essential to increasing the scale of nonfarm employment opportunities. Given that a large share of the labor force and young people in LMICs are engaged in smallholder agriculture, the relative impact of the agricultural transformation process on employment, poverty alleviation, and food security depends on the extent to which the transformation process is inclusive of young people and smallholders. If income growth in SSA is broad-based, then stronger growth and multiplier effects can be expected.

A woman carries a child while collecting tea leaves in northern Thailand. Credit: REUTERS/Sukree Sukplang

Box 8 – New solutions for livestock loss

Like crops, livestock can be a temperamental and risky investment. Disease, weather disasters, and theft contribute to billions of dollars in losses each year in the agriculture industry. In an effort to help protect small-, medium-, and large-scale livestock farmers in Ghana, AniTrack created a radio-frequency identification device (RFID) that tracks the health and development of cattle. The wearable tag, usually attached to the ear, monitors the animal's temperature. If any inconsistencies are detected, the farmer is immediately notified and connected with a veterinary service to assess the animal. The quick intervention prevents losses if the cattle were to die and protects the health of the farmer and consumer from disease.

Aside from monitoring health, the AniTrack tag saves farmers time and energy in regularly counting and identifying each animal. By equipping each animal with a RFID, farmers can be sure their investments are protected and accounted for at all times. The tracker currently records movement within a 500-meter range but does not offer location identification services. The device is currently being piloted with livestock farmers in Ghana's Volta region.

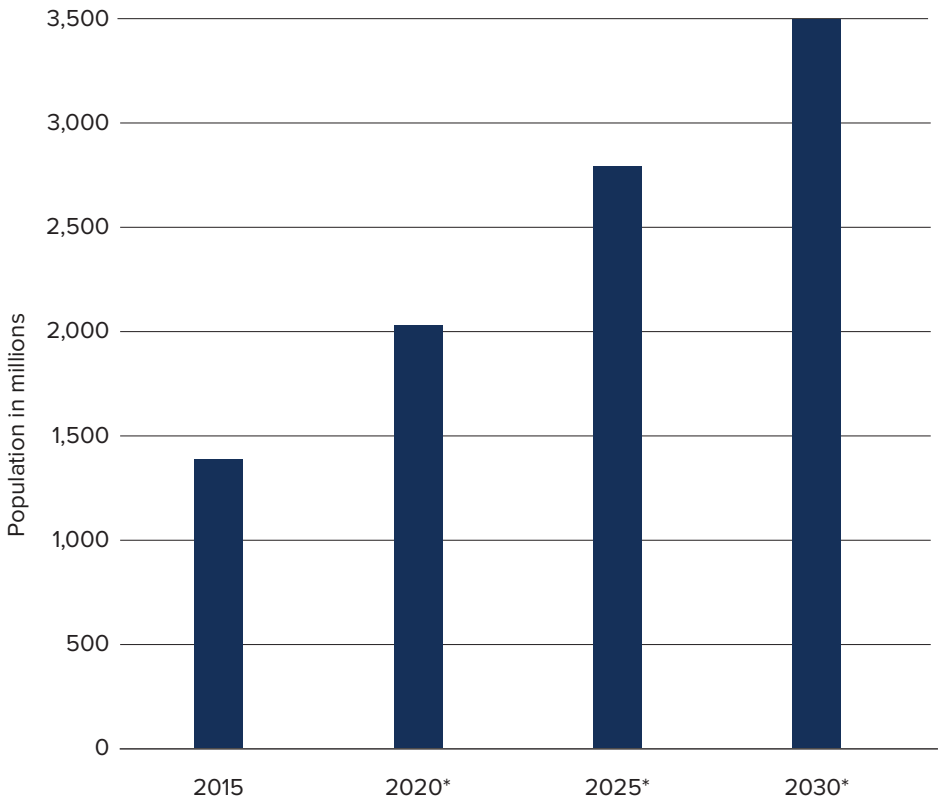
AniTrack is a part of the Kosmos Innovation Center's six agricultural start-ups aimed at bringing information and communications technology to Ghana's agricultural sector. The start-ups are in an incubation period and are expected to be scaled in the coming years to improve outputs and make the sector more appealing to innovative and creative young workers.

Source: Anitrack

A farmer uses his oxen to till his land in Narayangaon in India. Credit: REUTERS/Vivek Prakash

Figure 10 – Forecast of the middle-class population in Asia (2015 to 2030)

The middle class is expected to continue growing in the coming decades.



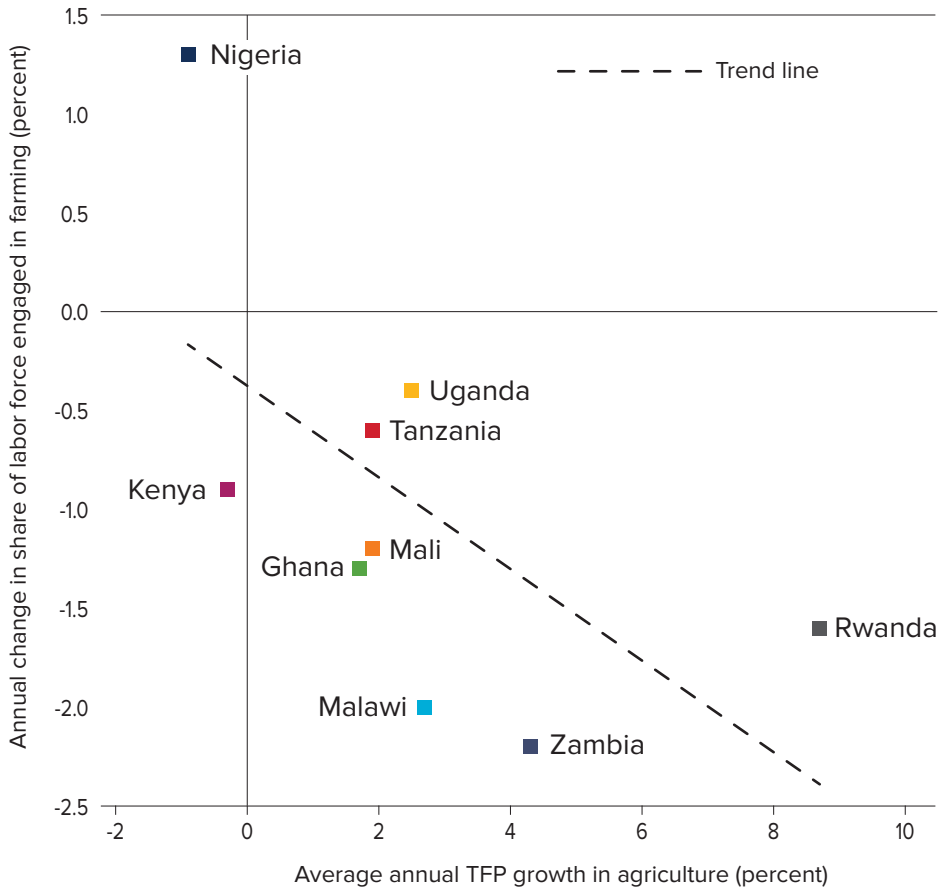
*Projected

Source: Kharas 2017

Similarly, if local production can successfully meet most of the rising food demand, significant employment growth can be expected all along the food value chain, from input distribution, farming, farm finance, and insurance to extension services, small-scale irrigation, transport, marketing, value-added processing, and retailing. However, in LMICs in SSA, the slow response of local food production systems to growing demand has resulted in increased reliance on food imports.[109] The value of Africa's food imports therefore has risen about sevenfold since 2001, reaching about US$68 billion in 2017.[110] Estimates suggest this could rise to US$110 billion by 2025 if current trends prevail. The value ratio of food imports to agricultural output for the region has also been steadily rising since 2000, from 9.2 percent in 2001 to 24.1 percent in 2014. The largest share of total food imports is coming from countries outside of SSA. These patterns fundamentally reflect the subcontinent's inability to increase local food production fast enough over the past three decades to keep up with its rapidly growing populations and increasing food demand.

Figure 11 – Relationship between total factor productivity (TFP) growth and share of labor force engaged in agriculture

In general, as TFP growth increases, the share of the labor force working in agriculture decreases.



Note: Mean annual agricultural TFP growth rates for 2003 to 2012 from USDA TFP dataset (Fuglie 2015); Spearman Correlation coefficient = -0.6862, prob > |t| =0.0412.

Source: Yeboah and Janye 2018

If imports fill most of the increased food demand, the upstream stages of the food system will not grow nearly as fast, and employment growth in the agrifood system will be impeded. The only exception to this is the retail food sector, which will still grow rapidly since it is tied to the distribution of imported food.

Future job opportunities will depend on whether policy and investments can address the capacity and productivity constraints in local production systems to enable them to meet the growing demand for food. Building the capacity of local production systems will not only create jobs for young people in LMICs but will also expand the demand for agricultural inputs (improved seeds, farm machinery, fertilizer), which will open up new business opportunities for the private sector, from local entrepreneurs to American multinational companies.

Agriculture is the largest employer of the youth labor force.

While the industrial and service sectors are increasing rapidly, the agricultural sector remains the single largest employer of the labor force and young people in most LMICs. Even as the share of on-farm employment in total employment declines as economies diversify and more opportunities for productive off-farm employment become available, the number of working-age individuals and young people engaged in farming in many LMICs is still increasing in absolute terms due to rapid population growth.

The latest available data from the International Labour Organization (ILO) show that farming accounts for about 55 percent and 44 percent of total employment in SSA and South Asia, respectively.[111] A higher proportion of youth are engaged in agriculture relative to young adults and the entire working-age population. A recent analysis of nine SSA countries found that the share of youth 15 to 24 years of age engaged in agriculture—even when accounting for the actual time they spend in farming (in full-time equivalent terms)[112]—ranges from 40 percent in Ghana to 63 percent in Tanzania. Although a large

A young woman from the Erbore tribe in Ethiopia carries grasses. Credit: hadynyah

number of rural youth are leaving farming, a significant and sizeable proportion of the rapidly growing youth population is still engaged in farming. This large youth population is putting downward pressure on the average age of the farming population. For the nine countries studied, the mean age of individuals aged 15 and above engaged primarily in farming ranged from 34 years in Uganda and 42 in Nigeria. Unlike other regions and the widespread perception of an aging farming population, the average age of farmers in most of the SSA countries examined has either declined slightly or remained stable over time.[113]

With job growth in off-farm sectors generally starting from a low base, the farm-based sector will likely remain the single largest employer in most LMICs for many years. This is particularly true for SSA, where about 68 percent of rural income is derived from farming, and rural populations are expected to continue growing beyond 2050.[114] However, most farmers are engaged in a kind of farming that is less productive and not sufficiently profitable to ensure a decent livelihood. Raising the amount of income that workers can earn from farming therefore offers an important entry point to improving livelihoods for the majority of the youth population and will contribute considerably to inclusive and broad-based economic growth.

Agricultural productivity will determine the rate of job growth in the off-farm economy.

Experiences from around the world show that sustained gains in agricultural productivity growth, especially if broad-based, are an important catalyst for economic transformation. In much of Asia, Green Revolution technologies and supportive government policies

Experiences from around the world show that sustained gains in agricultural productivity growth, especially if broad-based, are an important catalyst for economic transformation.

kick-started rural economic growth, primarily in irrigated lowland areas. As millions of rural farmers had more cash to spend, this stimulated the demand for off-farm goods and services, created new jobs in the off-farm economy, and pulled millions of people off the farm into more productive jobs. Over time, the gradual shift of the workforce from farming to off-farm sectors transformed the economic and demographic structure of much of Asia.

A recent cross-country analysis identified agricultural productivity as an important driver of Africa's economic resurgence over the past 15 years. It demonstrated that African countries that effectively promoted growth in agricultural productivity also experienced the most rapid exit of labor out of agriculture and the highest growth in labor productivity in the nonagricultural sector.[115] In other words, the more productive farms are, the fewer the people who need to be farmers, freeing them up to enter into other employment opportunities that help drive economic growth.

Investment in agriculture is also cost-effective and has proven to effectively reduce poverty more than twice as much as investment in other economic sectors. Because the economies of most LMICs still depend largely on the performance of agriculture, public investments in agricultural productivity growth will be an important component of any effective youth employment strategy.

Box 9 – Agricultural productivity and economic growth in Burkina Faso

Abundant evidence demonstrates that agricultural policy and public investments in agriculture significantly affect agricultural productivity and hence the rate of job growth in the rest of the economy. Burkina Faso is a striking example of how productivity gains in staple crops alone can profoundly affect youth livelihoods. As part of an integrated agricultural development program, high-yielding cereal crop varieties developed by the nation's agricultural research system were made available to millions of farmers. Distribution of the new varieties was combined with efforts to promote the adoption of integrated soil fertility management practices, including planting basins and tree planting. As a result, the country doubled its average cereal yield between 1990 to 1995 and 2010 to 2014. Self-employed farmers were able to meet their household food needs from less land, helping free up more land and labor for fodder production. This eventually enabled many households to switch from the traditional transhumance system of livestock production to a more intensive, yearlong system of raising livestock locally. This further facilitated the development of an integrated cereal-legume-livestock production system that promoted sustainability and resilience, improved nutritional outcomes, increased farmer incomes, and expanded employment opportunities in the rest of the economy. Therefore, in countries where national economies largely depend on the performance of agriculture, agricultural policies and public expenditures supporting agricultural productivity growth may be one of the most powerful means to expand youth livelihoods.

Source: Fan, Gulati, and Thorat 2007; FAO 2016; Reij, Tappan, and Belemvire 2005; IFAD 2016

Credit: One Acre Fund

PART II

A woman spreads out fodder for rescued cattle at a "goushala," or a cow shelter, in India. Credit: REUTERS/Shailesh Andrade/Files

EMPOWERING YOUTH FOR AGRICULTURAL TRANSFORMATION

Agricultural transformation is an indispensable step toward building broad-based economic growth and improving food security and youth livelihoods in LMICs. However, this transformation will not occur spontaneously. It will require supportive policies and pragmatic investments in strategies that effectively address constraints in the agricultural sector and that give special attention to young people as a crucial part of the solution.

A youth-inclusive agricultural transformation agenda is needed

Young people can be vital change agents to facilitate the agricultural transformation process. They have a longer time horizon and are generally receptive to technological changes required to transform agriculture. Young people also make up a large share of the labor force in most LMICs and represent a significant source of labor for agricultural activities. However, agriculture is widely considered laborious and unprofitable, and many young people do not see a future in agriculture—a reflection of decades of disinvestment in the sector. Even young people with a predilection for agriculture often lack the required knowledge and skills to build successful agricultural enterprises and face greater challenges in accessing productive resources and services such as land and finances. Without deliberate efforts to mitigate the effects of these human capital and resource constraints, opportunities to harness young people's energy and innovativeness for accelerated agricultural transformation cannot be realized.

If human capital and resource constraints are not addressed, opportunities to harness young people's energy and innovativeness for accelerated agricultural transformation cannot be realized.

A youth-inclusive agricultural transformation agenda is essential 1) to ensure that agricultural growth and development delivers on its promise to provide viable livelihoods for youth across the agrifood sector and beyond and 2) to empower youth to help contribute to the transformation. Such an agenda therefore incorporates the particular needs and circumstances of youth in the design and implementation of solutions to the challenges facing the agrifood sector. A youth-inclusive agricultural transformation agenda also recognizes that the challenges young people face do not exist in a vacuum. They are part of systemic structural challenges that need to be addressed holistically if such an agenda is to be achieved and sustained over time. With this recognition, a youth-inclusive agenda therefore seeks to:

- address overall social, economic, and biophysical limits to broad-based agricultural productivity growth to generate the income and employment multipliers for the benefit of all social groups, including young people;
- harness and maximize the youth-specific strengths for the agricultural transformation process (i.e., areas where youth engagement may have comparative advantage, such as the use of information and communication technology (ICT));
- address youth-specific constraints limiting young people's engagement in agriculture and their ability to build successful agricultural enterprises (e.g., cultural and social norms limiting young people's access to resources); and
- empower young people to effectively participate and share in the formulation and implementation of agricultural transformation strategies. This is necessary to ensure the transformation agenda aligns with the future that young people envision for themselves.

Elements of a youth-inclusive agricultural transformation agenda

Creating a youth-inclusive agricultural transformation agenda will require a concerted effort from all stakeholders (i.e., governments, the private sector, and civil society). National and local governments in LMICs that are experiencing surging youth populations have a decisive role to play and must be an integral part of all efforts to secure youth livelihood. While concerns about governments being inefficient and/or corrupt may be valid in certain circumstances, their role in advancing systemic changes cannot be overemphasized. Governments set the rules for private-sector engagement in the economy through policies, legal frameworks, and investments in security, infrastructure, and education. Governments also help to institutionalize interventions, which promote long-term sustainability.

Moreover, the youth employment challenge requires investments on multiple fronts and across sectors. Governments need to coordinate and ensure a coherent response across all levels and actors and create a conducive environment for reforms. It is noteworthy that the governance landscape in developing countries has changed dramatically from what it was during the 1980s. Despite uneven progress across the region, most SSA countries are now ruled by democratically elected governments, and there has been significant improvement in the quality of governance. Democratic regimes have ushered in a new generation of more skilled leaders and policymakers as well. Across the developing world, ministries are increasingly being populated by technocrats and individuals with strong analytical and technical abilities, many of whom were trained in Europe and North America. In fact, Africa's recent impressive economic performance is partly attributed to improvements in macroeconomic management arising from its growing number of skilled policymakers.[116] This new generation of leadership presents new opportunities for effective partnership that will find lasting solutions to pressing local and global challenges, such as youth unemployment.

The private sector is a vital engine of innovation and job creation and can play a complementary role to governmental efforts by suggesting ideas, debating possible outcomes, and investing capital.

But governments cannot do it alone. It is crucial they collaborate with a vibrant private sector and civil society. The private sector is a vital engine of innovation and job creation and can play a complementary role to governmental efforts by suggesting ideas, debating possible outcomes, and investing capital to take advantage of market opportunities. Civil society also performs a critical role to advocate, support, and showcase good policies and best practices. Civil society holds governments and the private sector accountable, and it assists in building the capacity of young people, especially vulnerable groups, by enabling them to participate and equitably share in economic opportunities.

Achieving a youth-inclusive agricultural transformation would require a concerted effort from all stakeholders to develop and effectively execute strategies in that address 1) young people's need for human capital development; 2) promote broad-based agricultural productivity growth and private-sector investments to stimulate job creation; and 3) engender

young people to be active participants in the policy dialogue and create conditions for responsive youth employment policymaking.

Human capital development: empowering and preparing young people for the labor market

In an era of transformative developments in ICT, high-quality education and skills are indispensable for securing employment, whether as a self-employed farmer, an employee of a company, or an off-farm entrepreneur. The future labor market is expected to be knowledge and technology intensive, demanding a range of technical, business, and soft behavioral skills that go beyond what educational and training systems in LMICs are currently delivering.[117] Successful farmers, entrepreneurs, and wage workers of the future will need significantly upgraded education and skills. Educated and highly skilled individuals can more easily adopt and use improved technologies and are more inclined to take advantage of opportunities to increase their incomes. Low levels of education are associated with low skills and earnings and could hinder overall economic transformation.[118] Empowering and preparing young people for this rapidly transforming labor market of the 21st century requires key actions.

Educated and highly skilled individuals can more easily adopt and use improved technologies and are more inclined to take advantage of opportunities to increase their incomes.

Expand access to education

Education and training are the basis for building the foundational, technical, and soft skills required for productive employment. Access to education is an important first step to prepare young people for the labor market. Thanks to initiatives aimed at achieving educational targets of the Millennium Development Goals, significant progress has been made to expand education and to narrow the gender gap in primary education.[119] While much more work remains to ensure universal primary education, more attention is needed for secondary and tertiary education, where young people receive subject-specific and skill-oriented instructions. Despite significant progress over the past decade, the educational level of the average person in the SSA labor force is less than secondary education. Such low levels of education are not enough for productive employment in an increasingly knowledge-intensive labor market. Expanding access to education is therefore critical to prepare young people for the labor market. Social interventions, such as conditional cash transfer programs, which make direct cash payments to targeted poor households conditioned on prespecified household actions for preschool children (e.g., school attendance and regular health-care checkups) and tuition-free schools, which reduce the financial burden and opportunity cost of schooling, have been proven effective at expanding educational access both at the primary and secondary school levels in many countries.[120]

Special attention needs to be paid to young people from marginalized communities, including rural youth, ethnic minorities, and out-of-school youth, who may not benefit from investments in the formal education system. In addition, access to education for girls

remains lower than for boys, and while gains have been made at the primary school level, at the secondary level the gender gap widens in many regions, including Sub-Saharan Africa and South Asia.[121] The private sector and civil society can play a role through advocacy or direct provision of job-relevant skills in formal or informal workshops.

Reform educational curricula to reflect labor market realities and address skills mismatch

The challenges of educational quality and skills mismatch also need to be adequately addressed. Improving quality will require investments in stronger learning systems with clear learning standards, good teachers, resources, and a proper regulatory environment that emphasizes accountability. Efforts are needed to restructure and update educational curricula to reflect 21st-century labor market conditions and to supply the skills employers seek in employees. This will require greater commitment and partnerships between governments, the private sector, and education providers. Governments can bring these actors together. Given that private businesses are the largest market for such scarce skills, it is in the interest of private businesses to partake in the revision of school curricula to focus on equipping youth with the knowledge and skills they need to be successful employees. Companies could also provide temporary employment opportunities through internships to help students gain practical skills. A number of private firms have started training young people and providing models to address the skills mismatch. An example is the Global Apprenticeship Network, a network of private-sector companies, business federations, and associations that partner with educational institutions to share best practices as well as advocate for and provide apprenticeship and internship opportunities to enhance youth employability and skills development.[122] Such private-sector engagement in the education process is needed to improve the educational experiences of young people and to ensure that the technical and soft skills being delivered at educational training institutions align with what enterprises demand.

Addressing the skills mismatch may also demand investment in technical and vocational education and training to provide technical skills necessary for the future labor market.

Addressing the skills mismatch may also demand investment in technical and vocational education and training (TVET) to provide technical skills necessary for the future labor market. TVET refers to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding, and knowledge relating to occupation in various sectors of economic life.[123] Technical and vocational studies are chronically underfunded, and negative perceptions of them persist. TVET skills are important for self-employment and income generation. However, in many LMICs these programs and skills are often dismissed as less professional and only suitable for the less educated. Therefore, stakeholders must educate the public on the capacity building as well as the employment and income potential of TVET in order to change this negative mindset and encourage youth to venture into artisanship and other vocational and technical fields.

Box 10 – "Generation" initiative: bridging the skills gap

Worldwide, more than 75 million young people are unemployed, yet employers have difficulty finding people with the skills they need. Generation is a youth-employment initiative founded in 2014 by McKinsey & Company to help bridge this gap. This successful model promotes collaboration between businesses, educational institutions, the government, and social investors to enable a critical mass of youth to be trained for available jobs in the market. This model has been implemented in five countries, including Kenya, the United States, and Mexico, with more than a 90 percent success rate of trainees getting jobs upon completion.

Generation training has seven components:

1. Jobs and direct employer engagement from the start
2. Student recruitment based on intrinsics, effort, and employment standards for the profession
3. A short and intensive "boot camp" covering relevant technical, behavioral, and attitudinal skills
4. Support all along the way, including daily monitoring, weekly feedback, and mentoring
5. A community that follows graduates into the workplace
6. Return on investment for employers and students
7. Data tracked throughout to ensure continuous learning and improvement

Initiatives like Generation demonstrate how public-private partnerships can offer innovative solutions to enhance youth livelihood opportunities and incentivize investment in skills. The outcome is twofold: young people are empowered to build thriving, sustainable careers, and employers are provided with the highly skilled, motivated talent they need.

Source: Generation, "Why Generation?"

Credit: Xuame Olleros/RTI International

This is exemplified in South Korea's Miester Schools program. As part of the efforts to address the negative social stigma associated with technical work, the South Korean government worked with the private sector to transform a subset of their vocational and technical schools into Meister schools. Under this program, the government covered educational expenses of students and engaged a network of industry partners, including large, private firms (*chaebols*), to provide extensive input into the curriculum and guarantee students a job upon graduation. These changes are believed to have generated increased interest in technical and vocational training in the country.[124]

Introduce agricultural science and business in the curriculum

Many students in LMICs drop out before secondary school and are subsequently employed in agricultural or household enterprises. However, in most instances, agricultural curricula are not part of their training. The poor quality of their education and lack of adequate agricultural training often limit the ability of these young people to take advantage of emerging opportunities in the agriculture and broader agrifood system. It is crucial that agricultural curricula be included earlier in young people's education to help those who will likely end up in the sector acquire the skills they need to succeed. Students must be exposed not only to quality curricula, but also to successful role models and practical opportunities to exchange knowledge and experiences with others. Curricula focused on agriculture that present the sector as a business could help change the negative image of agriculture among young people and motivate them to take advantage of emerging opportunities in the sector.

Students must be exposed not only to quality agricultural curricula, but also to successful role models and practical opportunities to exchange knowledge and experiences with others.

To jump-start strong agricultural education, government investment should focus on teacher-training colleges, which train agricultural instructors to effectively implement good curricula. Agriculture is an experiential rather than theoretical subject. Neither advancements in technology nor good curricula can overcome the necessity of "learning by doing" in agriculture. Teachers must be trained in the proper pedagogy of the agricultural education model, a proven model that trains young people in the hard and soft skills necessary for careers in and out of agriculture. In addition, current agriculture instructors should receive training on how to teach more experientially. Teachers must feel empowered to use school farms and gardens as teaching laboratories. Supervised, hands-on projects must become an integrated component of all agricultural education.

Promote youth entrepreneurship

Better education increases aspirations for formal employment.[125] However, employment opportunities are limited in largely agrarian countries structured around family farms and firms.[126] Barring an astronomical increase in growth-oriented enterprises, which is unlikely, the employment prospects for most young people in LMICs may appear challenging. However, many may be able to create their own jobs or rely on their household farm or related enterprises for their livelihoods. Also, since earnings from wage employment may not

always be enough to cover basic needs, a diversified livelihood strategy, of which self-employment is an important component, may be needed to support young people. In these situations, the promotion of youth entrepreneurship may be critical for sustainable youth livelihoods. In addition to job creation, the promotion of youth entrepreneurship offers an important means to address pressing social challenges. Numerous social enterprises across LMICs are tackling a range of issues in agriculture, education, and health.[127]

To succeed as entrepreneurs, young people need a combination of foundational skills (literacy, numeracy, and cognitive skills), soft skills, and industry-specific technical skills. These are often acquired through formal and informal educational/training programs. Restructuring the educational systems to ensure that these skills are imparted is a necessary step to promoting youth entrepreneurship and employability. Training courses must be designed with the needs of industry in mind. One successful youth-employment initiative led by McKinsey & Company promoted collaboration between businesses, educational institutions, the government, and social investors to train young people for available jobs in the market. This model has been implemented in five countries, including Kenya, the United States, and Mexico, with more than a 90 percent success rate of trainees getting jobs upon completion. Youth also need to be able to access specialized training and assistance to address downstream agrifood business challenges, including meeting local and international food safety standards and developing appropriate, low-cost packaging.

To succeed as entrepreneurs, young people need a combination of foundational skills (literacy, numeracy, and cognitive skills), soft skills, and industry-specific technical skills.

At the very least, entrepreneurship training should be incorporated in educational curricula through dedicated courses, opportunities for hands-on learning, and business incubation units. An example is the Young Entrepreneurs Scheme for Schools, an initiative of the Singapore government aimed at integrating structured entrepreneurship learning programs across all educational levels.[128] Entrepreneurship clubs can be set up in schools to encourage youth to venture into business modeling, innovation, and the creative industry. Entrepreneurship competitions also can be held on a regular basis to stimulate innovation and critical thinking among youth, give them the opportunity to showcase their work, and establish important networks for their clubs and businesses.

Skill-development training alone, however, is not enough. To be effective, training must be complemented with an enabling business environment and access to relevant productivity resources, labor-saving technologies, finance, and land. Successful programs combine a broad range of interventions such as linking training with access to finance and direct placement of jobs.[129]

In recent years, agribusiness incubation programs have emerged to help young people acquire entrepreneurial skills and facilitate access to productive resources (land, finance, technology). Many of these programs provide a range of interventions, including direct financing (or facilitating access to finance), technical training, financial literacy and management skill development, business coaching and mentorship (including business planning and strategy formulation), access to product[130] and market information, and access to work facilities and storage space.

Box 11 – School-based agricultural education models enhance existing curriculum

School-based agricultural education is critical for preparing the next generation to engage in the agrifood system. It is also a means for youth to gain the leadership and soft skills necessary for success in any job. In the United States, the Smith-Hughes National Vocational Education Act of 1917 created a federal pathway for agricultural education. Established in 1928, the Future Farmers of America became the primary agricultural education model under the act. The model has three components: classroom/laboratory instruction, supervised agricultural experience (home entrepreneurship experience), and leadership development. This model has already been adopted in many locations around the globe and could be shared with countries grappling with agricultural productivity and large youth populations as they look for tools to support integrated training and education.

In Ghana, for example, it is compulsory for junior high students to take integrated science, a course that integrates agriculture into the natural sciences. In class students learn the same scientific systems that students learn across the world, including photosynthesis, the water cycle, soil science/health, states of matter, and the scientific method. However, because there is a strong 4-H program in Ghana, students who choose to participate have additional opportunities to build on the basic sciences and discover a world of opportunity in agriculture.

For example, many schools have farms that serve as laboratories for learning. Not only do they learn the theory of the water cycle and fundamentals of soil health, but they also get to experiment on the farm and observe the effects. Then, with the knowledge learned in class and on the school farm, they can start their own agricultural experience at home, supervised by the integrated science instructor. This may, for example, involve cultivation and marketing of produce from a home garden plot or rearing a small number of poultry for market. This experience with a small enterprise allows them to develop soft skills such as hard work and responsibility alongside basic business, marketing, and record-keeping skills. Finally, through the leadership structure of 4-H Ghana, students can compete with each other on their proficiency, leadership, and technical skills across the agriculture value chain. Fairs and competitions incentivize students to work hard, think critically, and maximize the resources on hand.

Through this integrated model, students have a stronger grasp of the science curriculum, become equipped with important vocational and business skills, and learn the necessary soft skills for a career in any field.

Source: FFA

Box 12 – Private-sector-led youth programs engage the next generation

The private sector will be the primary employer within the agrifood space, yet despite strong employment opportunities in many companies, the recruitment of young people can be a challenge. Increasingly, companies are developing their own programs to attract youth to the sector in partnership with NGOs and governments. For example, the Agriculture Student Connections Program, supported by a partnership between the United States Agency for International Development (USAID) and Syngenta, is helping to inspire young students to exchange their knowledge and talents with smallholder farmers in Southeast Asia.

The program provides students from Bangladesh, Cambodia, Laos, Myanmar, Nepal, Thailand, and Vietnam and students from Australia, New Zealand, and South Korea with an immersive, two-week cross-cultural experience in the Mekong Delta. Through lectures, field visits, and contact with local farmers, 20 students each year learn the ins and outs of agribusiness in the region and the role that NGOs, governments, and other stakeholders play in productivity and output.

Using insights they gain throughout the experience, students develop and present their own solutions to food security and sustainability challenges for the program's Innovative Solutions for Smallholder Farmers Challenge at the end of the two-week period. The winning idea receives $2,000 for its development in partnership with local organizations.

With the Asia-Pacific region's youth population expected to grow rapidly in the coming years, the Agriculture Student Connections Program harnesses the creative power and energy of young local talent to transform the state of agriculture and food security in the region. Similar programs can be developed to inspire a new generation of agripreneurs and provide them with the necessary resources to succeed in the field.

Source: Syngenta 2016; USAID, "Asia-Pacific Youth Leaders," 2016

Local students attend English lessons at their school in Cambodia. Credit: Yongyuan Dai

A notable example is the Empowering Novel Agri-Business-Led Employment (ENABLE) youth program developed by the African Development Bank. The program trains young entrepreneurs operating within agricultural value chains, *agripreneurs*, through incubation units and provides successful graduates with business development and finance assistance to support new enterprises.[131] In addition, the African Development Bank has sponsored the African Youth Agripreneur Forum, a platform for "aggregating agripreneurs across Africa and escalating the impact of their activities."[132]

Another example is the Strengthening Rural Youth Development through Enterprise (STRYDE), a youth development program by TechnoServe in partnership with the MasterCard Foundation. STRYDE includes three months of intensive training in entrepreneurial and soft skills, followed by a nine-month program that includes business mentoring and counseling, employment linkages, and linkages to financial institutions. The program also uses business plan competitions and job fairs to promote STRYDE graduates. An impact assessment of the first phase of the project reveals that 54 percent of STRYDE graduates are currently running micro- and small enterprises, 14 percent are engaged in farming, 21 percent have found wage employment, and 9 percent have returned to school.[133] Most of these incubator programs are in the initial stages of implementation and have not yet undergone independent evaluation. It will be important to track participants in agribusiness incubator programs over time to learn how many survive and thrive as agripreneurs (and whether their enterprises are profitable and sustainable), how many workers (particularly youth) they employ, and whether there are positive spillovers in their communities and verified effects.

Young women in LMICs typically face many structural and cultural barriers that may hinder their participation in youth entrepreneurship programs.

As part of these efforts, enabling environments for women entrepreneurs must also be created. Young women in LMICs typically face many structural and cultural barriers that may hinder their participation in youth entrepreneurship programs. A World Bank study from 2015 found that the vast majority of countries (155 of the 173 they studied) had at least one legal barrier to women's entrepreneurship.[134] Barriers range from obstacles in opening bank accounts to lack of property ownership and business registration. In addition, their traditional role as primary caregivers along with household responsibilities often leave them with little time for entrepreneurship-related activities. It is necessary to understand these structural barriers and adapt program designs to adequately accommodate and target young women. Without attention to these constraints, the transformative power of women's entrepreneurship on economic development will be limited. Training and coaching that build self-confidence, are mindful of cultural norms and pressures, and engage young women in collective economic activities are likely to have a positive payoff. In well-organized and cohesive groups, women are more likely to negotiate effectively to procure inputs and sell products, access finance, lobby local government officials, and protest discriminatory practices.[135]

Modify educational approaches to impart the array of skills needed for productivity employment

Effective teaching and learning in LMICs require training more teachers, improving teaching skills among teachers, and updating teaching methods to modern, more effective standards. Educational institutions in LMICs need to rethink current pedagogical approaches to learning that reward rote memorization of information, as these approaches have been proven to be ineffective.[136] An educational approach to developing soft skills should include three main ideas. First, it must encourage students to reflect on the information they are receiving and, in the process, integrate the new knowledge with concepts they already

An evaluation of the 4-H program suggests the program is successful at equipping young people with life skills such as leadership, responsibility, perseverance, and communication.

know. Second, it should require students to apply their knowledge. Third, it should transform students from passive recipients of information to active experimenters who cocreate knowledge and take ownership of their learning.

These ingredients of learning have been fundamental to the Future Farmers of America agricultural educational model and the 4-H educational program in the United States. The programs combine out-of-school learning, leadership experiences, and adult mentoring. An evaluation of the 4-H program suggests the program is successful at equipping young people with life skills such as leadership, responsibility, perseverance, and communication.[137] Other after-school programs, such as the Future Farmers of America's agricultural education model and FAO's Junior Farmer Field and Life Schools that teach agricultural and life skills through a unique participatory learning methodology and curriculum, are important examples of approaches that bridge the skills mismatch. To enhance the job readiness of students, educational institutions in LMICs need to incorporate these essential ingredients of learning in the design and delivery of educational training. Government investments and leadership through policy directives will be critical in reforming educational curricula and learning approaches.

Improve access to healthy foods, nutrition education, and health services for the early stages of children's development

Good nutrition is necessary for healthy physical and cognitive development. Poor nutrition stunts human growth and development and reduces the future productivity of individuals. Studies show that stunting and reduced cognition arising from malnutrition adversely affect educational performance and school completion rates.[138] Early childhood development interventions that make healthy food, nutrition education, and health services accessible to mothers and children—particularly in the first 1,000 days—could have long-term impacts on academic achievement, productivity, and earnings. Therefore, stakeholders (i.e., governments, the private sector, and other development partners) must endeavor to prioritize nutrition education and the expansion of health services for mothers and children at that critical developmental stage to safeguard their employment potential.

Box 13 – FarmerLine: minipodcasts for modern extension

Like all of us, farmers around the world are now accessing information in new ways with the advent of greater connectivity. Since many small-scale farmers do not have access to a smartphone or regular access to the internet but likely have access to a basic cell phone, many companies and social enterprises are finding ways to assist farmers in getting information in ways that work for them. FarmerLine, based in Accra, Ghana, is one such example. The company also operates in Cameroon, Malawi, Nigeria, and Sierra Leone, and countries including Mexico and Peru have expressed interest in the technology. FarmerLine offers market-driven solutions that connect more than 200,000 farmers to production and weather information, markets, and services using short audio messages in local languages that are delivered directly to basic cell phones. These are, in effect, minipodcasts. Given the dozens of languages spoken in the regions in West Africa where FarmerLine works—and the 1,000 to 3,000 spoken on the continent—this is a powerful innovation. With messages readily available to them, farmers can listen at their convenience. Data are also collected from farmers to enable improvements. Company data suggest using FarmerLine for one season increases per-acre return by 55 percent.

Source: Cuthbertson 2016

Credit: Xuame Olleros/RTI International

Box 14 – Social media for crowd-sourced information sharing

Like the rest of the world, social media is providing new avenues for sharing information and creating community. Farmers learn from other farmers and are interested in exchanging experiences, so it is no surprise that social media platforms such as Facebook, WhatsApp, and Twitter are becoming popular to share information and request advice. In some cases, governments are joining farmers in utilizing these platforms. Farmer-driven WhatsApp groups, or group chats, have been steadily gaining traction as a mechanism for networking and aiding farmers affordably in many countries, with India leading the way. In the district Uttara Kannada, WhatsApp groups have been established with existing cooperatives (now more than 200) to enable better service and access to information through official channels.

In Kenya a private group called Digital Farmers Kenya demonstrates how this social media platform can become not only a marketplace of ideas but also a hub of commerce. More than 180,000 users are members at the time of publication, nearly double that of a year ago. On this platform, farmers swap photos of plants with suspicious spots, ask questions about where to get the best seeds, advertise products for sale, and share other valuable information like employment opportunities. With nearly 90 percent cell phone penetration across the country and the world's leading mobile money platform, mPesa, this Facebook group is a great resource to find new opportunities and respond in real time, whether they are around the corner or across the country.

Sources: DW 2014; Times of India 2017

A farmer reads a message on a cell phone while working in a rice paddy field outside Hanoi, Vietnam. Credit: REUTERS/Kham

School programs that provide children with healthy and nutritious diets could improve cognition, reduce dropout rates, and raise the quality and quantity of youth educational retention. Such interventions could be designed to support local businesses and indirectly expand employment opportunities. For instance, governments could use their procurement power to engage local businesses in the production of healthy food for schools. In Ghana researchers have developed omega-3-fatty acids fortified eggs that promote brain development in children.[139] In South Africa, a young entrepreneur popularly known as the "Spinach King" has integrated spinach into bread production to enhance its nutritional content.[140] Government procurement practices could promote these local solutions.

Stimulating job creation through broad-based agricultural productivity growth and improved business environment

Sustained improvement in youth employment requires measures that promote job-rich, inclusive economic growth. Without overall improvement in the rate of job growth, youth-targeted employment interventions will only displace other people from their jobs. Such displacements will reduce the net benefits and cost effectiveness of the interventions.[141] Moreover, with young people between 15 and 34 constituting more than half of the labor force in most LMICs, any interventions focused on addressing the structural and policy constraints to overall employment will automatically benefit young people.

Because the economies in most low-income countries is agricultural-based, increasing agricultural productivity growth and strengthening the linkages between agriculture and the rest the economy through agro-based manufacturing and services remain critical to income growth and job creation. It is essential that strategies promoting agricultural productivity growth are designed in ways that allow the millions of smallholder farmers to participate in and contribute to the economic transition. This would help ensure broad-based and inclusive agricultural growth with greater multiplier effects on the rest of the economy. Specific actions to promote broad-based productivity growth and improved business environment may vary across countries but will include the following:

Investments in research and institutional capacity building would help create the knowledge and innovations—such as climate adaptation strategies—needed to address location-specific constraints to agricultural productivity growth.

Invest in agricultural research, institutional capacity building, extension systems, and infrastructure

Increasing and sustaining productivity growth requires the efficient use of existing resources and technologies and the development of new and improved technologies that are adaptable to local contexts. Investments in research and institutional capacity building would help create the knowledge and innovations—such as climate adaptation strategies—needed to address location-specific constraints to agricultural productivity growth.

Research and development (R&D) will need to be complemented with a robust and effective extension system that can facilitate access to productivity-enhancing technol-

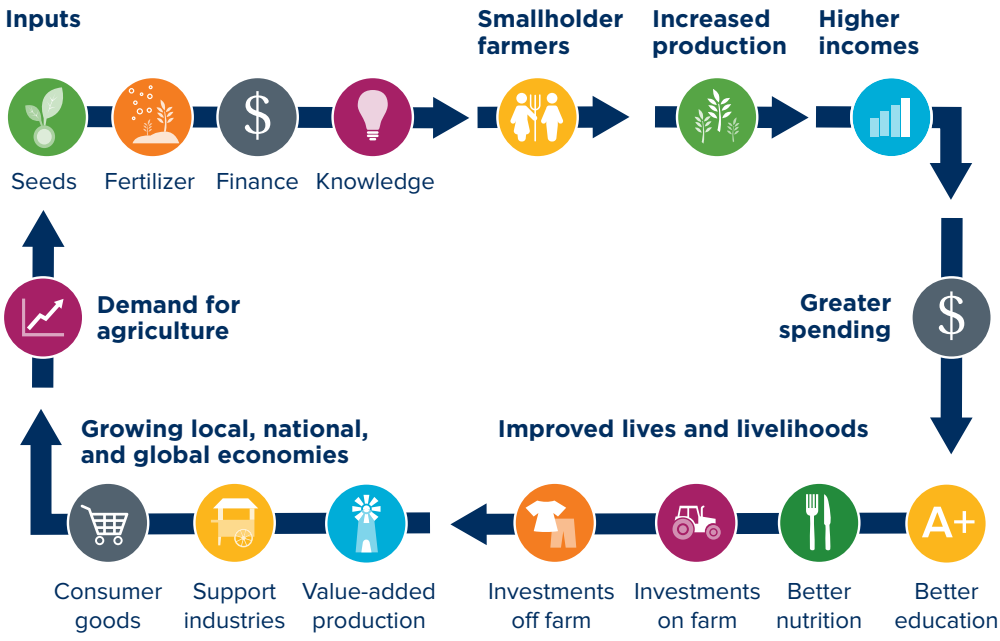
ogies (e.g., fertilizer, improved seeds, agronomic practices), financial instruments, farm management strategies, and marketing know-how. A broad-based agricultural productivity growth strategy must also include improvements in the coverage and quality of physical infrastructure (e.g., roads, reliable and low-cost energy, communication) to reduce the cost of doing business, facilitate market access, strengthen rural-urban linkages, and enhance competitiveness.[142]

Infrastructure investments must include the development and use of digital technologies to help address inadequate access to information, financial services, and markets. Young people are attracted to these technologies and may be more receptive to financial training and extension services that use digital platforms. They are also well suited to take advantage of entrepreneurial opportunities arising from the current wave of technological change. Thus, digital technology offers an entry point to engage young people to help transform the agrifood sector and to create more information and communication technology jobs in both rural and urban areas. More information on these key areas for investment to stimulate agricultural productivity growth can be found in the appendix.

Figure 12 – Access to inputs breaks the subsistence cycle

When 65 percent of impoverished working people earn their living through agriculture, investments to make their work more productive can transform entire economies.

Sustainable employment loop—Sustained agricultural productivity growth arising from access to improved inputs and agronomic practices increases outcomes.



Source: Illustration by the Chicago Council on Global Affairs

Box 15 – Mechanization can improve productivity and make agricultural jobs more attractive

For many young people, agriculture is synonymous with the traditional hand hoe farming of their parents and grandparents, which is associated with drudgery, low returns, and poverty. Consequently, agriculture is widely considered unattractive, and many young people do not consider it a viable way to earn a decent living. Labor-saving technologies such as mechanization and herbicides have the potential to make agriculture profitable and less physically arduous—two key factors in attracting young people to the sector. They increase labor productivity and incomes through timely field operations that free up young people's time for off-farm income-generating activities. Mechanized irrigation systems can address seasonality in agriculture and allow for year-round cultivation, which increases farm incomes. Mechanization can also stimulate employment opportunities for young people through manufacturing and importation of machinery, mechanized service provision to farmers, fabrication and distribution of attachments and spare parts, and machinery repair and maintenance services.

Sources: Ommani 2011; Biggs and Justice 2015

Credit: Patrick Adams/RTI International

Improve access to productive services (finance, insurance, and markets)

Access to finance is crucial for starting and sustaining any enterprise. In agriculture financing is required to procure inputs (e.g., improved seed varieties, fertilizer, livestock) and to cover operational expenses (e.g., land preparation, weeding, harvesting). Research shows that access to finance is an important catalyst for growth in both new and existing enterprises.[143]

Despite recent efforts to promote financial inclusion, only about 29 percent of rural adults in SSA had an account with a financial institution or mobile money provider in 2014 as compared to 69 percent globally.[144] An even greater number of people lack access to formal credit and insurance services. The situation is particularly acute for individuals who are young and/or live in rural areas and who are venturing into agriculture. Agriculture is perceived as a risky enterprise because of its long production cycle and susceptibility to variable weather conditions. Hence, financial service providers are often unwilling to lend to agricultural enterprises. Similarly, the operational cost for financial institutions to work with people in scattered rural communities makes them less attractive clients.

Young people are also perceived as less credit worthy and thus high risk. They are inexperienced, and they have no land, savings, or other assets that could serve as collateral to guarantee loans. Consequently, young people and agricultural entrepreneurs in rural areas are often forced to rely on informal sources of credit (i.e., family and friends, local money lenders), sometimes at high interest rates.[145] If agriculture is going to provide a viable pathway for improving youth livelihoods, proactive measures to expand access to credit for young people and agriculture in general is essential. This could be achieved through risk mitigation strategies such as loan-back guarantees to incentivize financial providers to lend to farmers and agricultural enterprises. Promoting financial products to assist young people, particularly in rural areas, to access start-up capital and credit to expand existing businesses will also be critical to improving youth livelihoods in LMICs.

If agriculture is going to provide a viable pathway for improving youth livelihoods, proactive measures to expand access to credit for young people and agriculture in general is essential.

Promote diversification opportunities for high-value crops

With urbanization and rising incomes fueling demand for more diverse and high-value food products, the diversification of agricultural production in response to this demand could create new employment opportunities for young people. Research shows that the large-scale production of high-value products is more labor intensive than staple crops. Large-scale production of horticultural products such as tomatoes, apples, and oranges have been shown to require about 10 to 100 times more labor per hectare than the large-scale production of staple crops such as grains, sorghum, and soybeans.[146] Therefore, where capital and land will allow, providing a supportive environment for large-scale production of these labor-intensive crops could absorb many young people into employment. Large-scale production could also facilitate entry for these products into international markets, which are also growing rapidly as the global middle class increases. Therefore, building

and sustaining a diversified economy would require investment in transport systems, cold storage, and information systems to improve the functioning of markets for perishable and high-value products. These systems are currently weak or absent in LMICs. Strengthening these value chains are central to opening up opportunities for private investments.

Employment opportunities can also be expanded by strengthening the linkages between farming and the off-farm sector through the development of value-added agricultural products. Many LMICs are still reliant on the export of raw agricultural commodities, which are often associated with low returns and are susceptible to global price fluctuations. Value addition in the agroindustry remains far below its potential. Less than 40 percent of agricultural value added in most SSA countries comes from agroprocessing, compared to over 80 percent in Brazil.[147] Most manufactured agricultural inputs (e.g., fertilizers, pesticides, farm implements) are imported. Promoting value addition and agro-based manufacturing is a necessary next step to expanding employment opportunities, improving farming incomes, and reducing postharvest loss, which is estimated at 25 percent in developing countries.[148] Doing so, however, will require industrial and private-sector development policies that create a conducive business environment to actively attract investments from agribusiness investors (e.g., agroprocessors, farm input manufacturers, agro-based service providers). Among other things, such policies must 1) support specific agricultural value chains of high promise as part of the overall agricultural development program to ensure a reliable supply of produce in the quantity and quality that industrial processors require, 2) promote growth and expansion of local small- and medium-scale agroenterprises by facilitating their access to productive services (e.g., finance, reliable energy) and integrating them into supply chains of large industrial processors, and 3) expand markets for value-added products through greater regional integration.[149] An agro-based industrialization stimulates the manufacturing sector and expands wage employment opportunities for young people.

Improve business climate (regulatory environment) to foster private-sector participation and investment

The private sector is widely seen as the engine for enterprise growth and job creation. About 90 percent of job creation occurs among private small- and medium-scale enter-

Customers shop at an open air vegetable and fruit market in Ahmedabad, India. REUTERS/Amit Dave

prises.[150] Providing an enabling environment for the private sector is therefore an important component of any youth employment intervention. Excessive regulations raise transaction costs for private-sector businesses and serve as major disincentives for the much-needed transformative innovations that would create quality job opportunities for youth. The regulatory environment should promote stable and predictable macroeconomic conditions, financial and banking systems, and structured market systems, which are extremely important for attracting and sustaining a vibrant private sector. Improvement in macroeconomic conditions (legal, fiscal, monetary, and exchange rates) is partly credited with the agricultural productivity witnessed in SSA over the past decade.[151] Equally important is political stability, the maintenance of the rule of law, and policies that recognize and enforce intellectual property rights. Despite improvement from previous decades, indicators from the Enable Business of Agriculture show lower levels of regulatory quality than the global average in SSA and South Asia.[152] Thus, there is significant room for improvement in the regulatory environment to facilitate enterprise development and job growth in these regions.

An agro-based industrialization stimulates the manufacturing sector and expands wage employment opportunities for young people.

Invest in secondary towns and cities to make them attractive destinations for private firms

Urbanization patterns in LMICs have been characterized by a proliferation of secondary towns and cities as opposed to the rapid agglomeration into megacities witnessed in current industrialized countries. Secondary towns serve as important interfaces between rural and urban centers.[153] They provide an important avenue to diversify rural economies and promote job creation for young people. Their proximity to rural areas positions them as attractive destinations for rural migrants, especially poor young people who do not have the needed capital to migrate and transition into megacities, where the cost of living is often higher. Moreover, rural migrants, including youth, are more likely to find off-farm employment commensurate with their skills in secondary towns than megacities. Secondary towns also foster cyclical migration between rural and urban areas, allowing rural workers to combine farm-based employment in rural areas with seasonal off-farm employment in urban areas.[154]

Secondary towns and cities are also important sources of demand for agricultural produce from rural areas and could be essential points for production and distribution of goods and services to rural areas. Secondary towns offer a means to connect rural and urban businesses, prioritizing labor-intensive activities in agricultural value chains. The relatively rich supply of cheap land and labor, proximity to sources of raw material, and rapidly expanding urban labor market of secondary cities position them as potentially suitable destinations for siting labor-intensive, agro-based industries. For this to happen, urban infrastructure (power, water, sewage/waste removal) and roads linking secondary cities to rural areas and larger markets in megacities will need to improve significantly. If the gains in enterprise growth and employment are to be realized, significant public investments to improve infrastructure in secondary towns and cities are sorely needed.

Box 16 – Vietnam agricultural transformation case study

A series of agricultural reforms in the 1980s known as *Doi Moi* transformed Vietnam economically in the latter half of the 20th century. Through Green Revolution technology and land reform, Vietnam moved from net food importer status to become one of the world's top exporters of agricultural commodities such as rice and coffee.

The *Doi Moi* reforms introduced necessary liberalization to the Vietnamese agricultural system. Moving away from earlier efforts to collectivize land, set pricing, and centralize decision making, policymakers gave local people a stronger say in their own affairs and allowed for 20-year leases for smallholder farmers. While rice could only be exported previously through state-approved companies, which paid the farmers far under global market prices, by 1990 farmers could sell on the open market.

In addition to these policy reforms, Vietnam has also increased production on high-potential land, developed irrigation with the support of foreign investment, and utilized high-yielding, new varieties of rice. Vietnam has seen one of the highest GDP per-capita growth rates globally and is now the world's largest exporter of black pepper and cashews, the second leading exporter of coffee and cassava, and the third largest exporter of rice and fishes.

Agriculture currently accounts for nearly 20 percent of the country's GDP, and the agroindustry is expected to continue to grow. Policymakers have continued to preserve private land rights, encourage private investment, and open markets. These reforms allowed agricultural production to rise in response to domestic and international demand, with production more than tripling in volume between 1990 and 2013. However, Vietnam still wrestles with obstacles such as rural-urban income divides, environmental degradation, and a lack of value-added agricultural products. Despite these challenges, Vietnam's experience offers important lessons for other developing nations seeking prosperity through agricultural development.

Sources: World Bank Group 2016; OECD 2010

A woman from the Hmong tribe carries a grass basket in a rice paddy field in Mu Cang Chai, Vietnam, northwest of Hanoi. Credit: REUTERS/Kham

Box 17 – Emerging challenges may hinder agriculture's role in youth livelihoods if not addressed proactively

The agricultural sector faces a number of pressing social, economic, and environmental challenges that could derail its job creation potential for young people unless proactively addressed.

Land access and scarcity

Despite fairly rapid urbanization and economic transformation over the past decades, most regions in low-income countries are still rural and agrarian. In these areas, access to land remains extremely important to generating income and social status. Besides its role as an important factor of production, land can serve as security and collateral to access credit. In some communities, land ownership upgrades one's status in society. Despite the widespread perception that land is abundant in Africa, growing land scarcity persists in much of the region. One study estimates that about 91 percent of Africa's uncultivated arable land is concentrated in nine countries (Angola, Cameroon, Central African Republic, Congo, the Democratic Republic of Congo, Gabon, Mozambique, Sudan, and Zambia), most of which are politically fragile states. The remaining 45 countries are either land constrained or approaching the full extent of their arable land area.[155]

In addition, farm sizes in much of the region are declining, driven largely by rapid population growth and the intergenerational subdivision of land. Recent estimates suggest that the average farm size for smallholder farmers in more than 40 countries in SSA has declined by about 30 to 40 percent since the 1970s.[156] In Kenya, Zambia, Malawi, and Mozambique at least 25 percent of smallholder farms control less than half a hectare and are approaching landlessness.[157]

At the same time, rising interest in arable land from both international investors and local, urban-based elites in LMICs is resulting in the rapid concentration of land. In particular, SSA has experienced a precipitous rise in the number and amount of land controlled by medium- and large-scale farms owned by urban-based African elites. Estimates from the Demographic and Health Survey (DHS) and the Living Standard Measurement Study (LSMS) show that urban-based households now control between 25 and 35 percent of all agricultural land in the five to six African countries for which data are available. These shares have risen fairly rapidly over a short time span.[158] While the impact of these changes remains uncertain, the rapid concentration of land exacerbates the challenges that many rural youth face in accessing land.

With rising land scarcity and longer life expectancies, many rural young people can no longer expect to inherit land. Indeed, evidence from Ethiopia and Tanzania shows access to land as an important factor shaping rural young people's decision to either stay in agriculture or migrate to urban centers.[159] Women in particular face greater difficulties in securing land due to customary land tenure systems that bar land ownership rights for females. Efforts to promote youth livelihood through agriculture must therefore recognize increasing land scarcity and develop effective strategies that would allow young people with an interest in farming to access land—with particular attention to access for women.

Soil degradation

Rising land scarcity across the developing world is forcing many farmers into continuous cropping, which restricts options for crop rotation or sustainable soil management practices to improve soil quality. These practices are rapidly depleting soil micronutrients and organic carbons, with deleterious effects on yields and returns from farming. An

estimated 30 percent of the world's soil is already degraded, and low-income countries are most affected.[160] In 2014 a Montpellier Panel report estimated that about 65 percent of arable land in SSA has already been degraded, costing more than 180 million smallholder farmers about US$68 million of lost income annually.[161] Without an effective policy response, this trend of degradation could undermine future agricultural productivity gains and weaken the sector's ability to create jobs for young people. The future of agriculture and its contribution to youth livelihoods will depend on how quickly this trend could be reversed through effective soil and land management practices such as sustainable intensification.

Climate change and water scarcity

Water scarcity is escalating rapidly for much of the planet. Global demand for fresh water has grown at more than double the rate of population growth for more than a century.[162] Since 1970 alone, the world's fresh water capacity has dropped by more than 37 percent.[163] Scarcity has already begun to have measurable negative effects on GDP and employment in LMICs.[164] The most immediate consequence has been personal water insecurity for more than 663 million people.[165] Although significant progress has been made in access to drinking water since the Millennium Development Goals were set in 2000, sanitation progress lags significantly behind.[166] Poor drinking water and sanitation access are ultimately responsible for a substantial part of the global disease burden.

Agriculture accounts for more water consumption than any other sector of the economy (about 70 percent globally and 80 percent in Africa).[167] Increasing water scarcity creates a difficult challenge: the need to more heavily exploit planetary water resources to irrigate crops can have significant environmental and social costs and even compete with drinking water and sanitation gains. Urbanization exacerbates this trend because city dwellers consume more water per capita, especially as they become wealthier and develop more water-intensive diets.[168] Climate change further complicates future water security, creating greater variability in the quantity and timing of precipitation.[169]

It is very likely that water resources will be severely stressed in many parts of the world over the next 50 years, and there is substantial overlap between high-stress areas and areas of projected high population growth. The best chance at responding to this challenge lies in significantly more water-efficient agriculture and forward-thinking governance. Efficient irrigation is available, from low-energy spray irrigation to drip irrigation, but it is much more dependent on infrastructure, including pumps, than inefficient flood irrigation methods. Water-efficient and salt-tolerant seeds can also extend agricultural efficiency in water scarce places.

Available technology, however, is not sufficient. Education about methods, financing, and maintenance are all essential and require additional investment on top of infrastructure itself. National governments are chiefly responsible for funding the expansion of their large-scale infrastructure development, which has historically created problems for irrigation expansion in poorer nations. This continues to be a major obstacle, even though there are real opportunities to employ many people in the research, development, construction, and maintenance of agricultural water infrastructure. Places that do not currently have heavily centralized infrastructure could create a novel economy in more sustainable agriculture.

A group of African children use a laptop in Kenya. Credit: Bartosz Hadyniak

Conditions for responsive youth employment policymaking

The success of youth employment programming also depends on the extent to which interventions are grounded in the evolving realities of the young people they serve. Systems for understanding and adequately responding to the changing needs of young people must be created. Some measures for doing this are outlined below.

Investing in actionable research on labor market conditions

To be successful, educational reforms should be backed by a comprehensive understanding of the labor dynamics in each country and the needs of various demographics represented in the labor force. Research of labor dynamics in LMICs is often hampered by the scarcity and quality of available data. The general lack of reliable data limits understanding of the employment challenge and undermines the effectiveness of interventions addressing it. Investment to improve data collection and dissemination of information is critical in areas such as labor market trends, conditions of work, and examples of proven strategies that address particular vulnerabilities in the workforce.

In the past few years there has been an avalanche of donors, development partners (private firms and NGOs), and academic interest and investment in youth and employment in agriculture and agroenterprise. Yet there is little hard evidence of which programs and interventions work and which do not. Most analyses are strongly normative but do not

Governments and donors can help bridge the current knowledge gap by integrating rigorous evaluation in project design and implementation.

marshal survey research or in-depth case studies to support their conclusions. Enthusiastic promotion of youth entrepreneurship is clearly a rising priority, but many programs have not been subjected to rigorous evaluation. There appears to be a significant underinvestment in monitoring and evaluation and impact assessment. There is a need to expand the evidence base with increasing investment in monitoring and impact assessment of youth employment programs. Governments and donors can help bridge this current knowledge gap by integrating rigorous evaluation in project design and implementation. They can also provide platforms for mutual learning and knowledge exchange on what works or does not work and in what context.

Strengthening youth voice in policy dialogue and program design

To effectively account for their unique policy needs, young people must be equipped with the resources, skills, and space to participate in the decision-making process and shape the design of interventions on issues of concern to them. Civil societies can take a leading role in testing innovative youth empowerment programs that government and social investors can scale up. Civil societies can increase youth voice in policy issues by organizing young people into groups and providing them with a platform to share their ideas, challenges, and plight with policymakers. The YouthConnekt forum of Africa is a notable

Box 18 – Business expansion through entrepreneurship training and access to finance

In Zimbabwe, where the formal economy is currently very limited, the International Youth Foundation (IYF) has focused on the growth of youth-run small businesses. In rural areas, the development of these micro- or small businesses has centered around food production and food processing, which helps improve the food supply and nutrition locally while helping youth grow their businesses, creating additional jobs. The holistic (technical) training packages emphasize soft skills, along with bookkeeping, marketing, and financial education. Business and financial literacy training is a critical component of the training to help youth grow and diversify their small businesses.

Beyond training, access to finance is helping youth realize their business and growth plans. Close coordination and communication between business development services, training providers, and microfinance institution partners also help ensure they are sharing the same information and expectations with young people seeking loans.

To grow small businesses, IYF has also worked with microfinance institutions to adapt loan products for young people. This required adjusting eligibility and terms, including being more creative about collateral to include items young people and young women are likely to own, removing requirements for a male cosigner, starting with the right loan amount based on the nature of the business, and providing longer time frames for repayment. Such changes allow youth across Zimbabwe, particularly young women, to receive loans and successfully repay them without detriment to their business.

IYF's Zimbabwe:Works (Z:W) initiative prepares the country's young people to enter the workforce. For example, Lucia Mukwamiri, 35, is a Zimbabwe:Works (Z:W) graduate and proud owner of a flourishing poultry enterprise. She received entrepreneurship training through the project, which improved her financial management and record-keeping skills, helping her to assess the viability and profitability of her ventures. After her business training, Lucia was referred to Virl Microfinance for financial support and invested a $1,200 loan in her poultry business. She purchased 800 day-old chicks, a significant increase from her previous 100 chicks.

She also used the marketing skills received under Z:W to enter new markets like restaurants and butcheries instead of selling just to local individuals. Lucia also increased her asking price from $4.50 to $6.00 per chicken. Returns on her business have also improved, as she is now earning $2,300 per cycle of 800 birds, up from $120 per cycle from her 100 birds before.

Through hard work and smart money management, Lucia bought a car to assist with deliveries to customers and has also diversified her business. She is now buying and selling goats and cattle, where she earns additional income of $200 per month. As a result of growing her business, she now contributes meaningfully to her family's household expenses.

Source: IYF

example of a youth forum that supports peer youth entrepreneurs and policy dialogue with key policymakers and business leaders that leads to action.[170] To successfully engage youth, policymakers must use media and culturally appropriate tools with which young people are most comfortable. For example, social media platforms such as Facebook and Twitter offer an important avenue to solicit input from young people. Also, it is essential to incorporate youth issues in all aspects of social and economic policies to ensure that the plight of young people is adequately accounted for in policy discussions.

Educating the public to help reform social norms that limit youth livelihood development

Youth employment strategies must also acknowledge and address social and cultural barriers that limit opportunities for young people. Reforms of social norms such as those that limit girls' access to education and young people's ability to inherit and own land are needed to ensure sustainable livelihoods. To achieve systematic reforms, families and traditional authorities have to understand and accept the need for change. Policies could facilitate reforms through public education and campaigns promoting equitable access to land for women and men and address regulatory or traditional rules that inhibit access through inheritance or customs.

Youth employment strategies must also acknowledge and address social and cultural barriers that limit opportunities for young people.

Recognizing that youth are a heterogeneous group of people and that there is the need for a diversified strategy

Many of the current youth-related policies and the narratives that support them present young people as a homogeneous group. Analysts often group young people into broad age categories that are undifferentiated by gender, age, social class, religion, or broader social relations. The failure to consider youth in their social context leads to policy scenarios that do not reflect the realities of young people. For instance, the needs of a 16-year-old girl enrolled in secondary education are different from those of a 16-year-old girl who is a teenage mother. To be effective, youth-oriented policy must consider the diverse needs of young people and tailor interventions to their needs.

PART III

A young Indian woman sorts red chilli peppers in Jodhpur, India. Credit: Bartosz Hadyniak

RECOMMENDATIONS FOR THE US GOVERNMENT

Burgeoning youth populations present a challenge and an opportunity for the United States and the world. They create new pressures for a food system already struggling to deliver food and nutrition security. And in countries where job opportunities are already scarce, the addition of millions more young people will exacerbate these challenges. However, if these young people can be successfully integrated economically, politically, and socially, they can become a powerful force in driving development and putting an end to the food insecurity that has threatened not just their livelihoods but also the security of their countries and the world.

A two-pronged approach is needed to address this challenge—supporting agricultural development to spur growth throughout the agrifood system and provide better opportunities for youth, while preparing youth to participate in this transformation. This youth-inclusive agricultural transformation agenda is what will move LMICs and the world toward a more secure future.

The United States must therefore continue to lead efforts to support agricultural development. Investments in agricultural development are the building blocks of rural youth livelihoods and are thus essential for the economic security of rural communities. At the same time, additional actions that target the needs of large and growing youth populations are vital for the full potential of agricultural development to be realized. Youth-focused investments can ensure that young people have the necessary skills and education to drive development on and off the farm.

Credit: Xuame Olleros/RTI International

Box 19 – Global Food Security Act: codifying a whole-of-government food and nutrition security strategy

When the Global Food Security Act (GFSA) passed with overwhelming bipartisan support in July 2016, authorizing funding for FY2017 and FY2018, it codified into law the US "whole-of-government" approach to global food and nutrition security programs. By drawing on the agricultural, investment, and policy expertise of 11 agencies—including USAID, USDA, MCC, and OPIC—this approach effectively leverages the best and brightest of the US government.

The GFSA required the completion of a whole-of-government, five-year strategy. Each agency was required to prepare and submit agency-specific implementation plans. Together these plans formed the Global Food Security Strategy, which was submitted to Congress in September 2016. The strategy lays the groundwork for how the United States can draw on strengths and know-how across the government and work in close partnership with the private sector, universities, and civil society. The strategy also establishes a framework for transparency and accountability through 2021. Additional reports on the progress of the five-year strategy must be submitted to Congress yearly.

Finally, the legislation requires specific selection criteria for target countries and beneficiaries of assistance. Based on the level of need, country commitment to food security investment and policy reform, opportunity for partnership, the potential for agricultural growth, opportunity for regional integration, and US government resource availability, the US government selected 12 countries for targeted investments under the new strategy: Bangladesh, Ethiopia, Ghana, Guatemala, Honduras, Mali, Kenya, Nepal, Nigeria, Niger, Senegal, and Uganda.

The GFSA authorized funding through FY2018, so it will require congressional reauthorization and the president's signature by September 30, 2018, or the authorization will lapse.

Sources: InterAction 2016; USAID, *US Government Global Food Security Strategy*, 2016

RECOMMENDATION 1 & 2

A young farmer plants rice at Gokarna in the Nepalese capital Kathmandu. Credit: REUTERS/Gopal Chitrakar gc/TW

Recommendations for promoting broad-based agricultural development as a catalyst for improving youth livelihoods

To catalyze broad-based growth and employment opportunities for both rural and urban youth, agricultural growth must accelerate. Investing in agricultural development is proven as one of the most effective ways to generate employment opportunities, alleviate poverty, address food and nutrition security, and ensure more prosperous and stable populations worldwide. Increased agricultural productivity stimulates growth in the off-farm rural sector as farmers become more prosperous. Over time, it helps create jobs and increase incomes in the broader agrifood sector as demand grows for processing, transportation, and related services.

Bipartisan US leadership and commitment have been integral to sustained progress in agricultural development and resilience, particularly in the last decade under Feed the Future. In 2017 this commitment was reinforced with the release of the updated US National Security Strategy in which the administration stated it would continue prioritizing support for "youth empowerment programs" and "food security and health programs that save lives and address the root cause of hunger and disease."[171]

In alignment with the strategic goals of the National Security Strategy, the US government's global food security efforts under Feed the Future have achieved noteworthy success. They have helped millions of people build better lives for their families and

Bipartisan US leadership and commitment have been integral to sustained progress in agricultural development and resilience, particularly in the last decade under Feed the Future.

communities through improved productivity and nutrition, access to financial services and markets, reduced shocks, and increased resilience. In 2015 alone Feed the Future programs enabled more than 9 million smallholder farmers and other producers to adopt innovations and practices that boosted their incomes from agricultural sales by more than US$800 million.[172] That same year the initiative also reached more than 18 million children with nutritional interventions, resulting in impressive reductions in poverty and childhood stunting rates.[173]

Congress is to be commended for the bipartisan passage of the Global Food Security Act (GFSA) of 2016. The approach outlined in this legislation and implemented by many agencies working together have resulted in stunning and important gains. Consistent and sustained support from Congress is critical to achieve these results and to eliminate the worst forms of poverty and hunger.

The following recommendations are critical steps toward maintaining and furthering the progress that has already been made toward sustainable agricultural productivity growth and food security. Without such measures, the United States and the world risk the destabilizing political, economic, and social consequences of too many unemployed and food insecure youth in areas that are already struggling to move up the ladder of development.

Recommendation 1: Commit to a long-term, global food and nutrition strategy.

The creation of the five-year US Global Food Security Strategy was a critical step in ensuring a single vision and coordination between the 11 US agencies fighting global food insecurity. However, without consistent programming, goal setting, and metrics, advancement will be stymied by uncertainty in the short term. Congressional commitment to long-term global food and nutrition security remains the most important action the US government can take to move the world toward a food-secure future. Strong leadership, smart investments, effective global cooperation, and sound policy choices will help fight hunger and malnutrition as well as strengthen US national security. A long-term strategy on global food and nutrition security would provide a sustainable foundation for demand-driven economic opportunities and income generation for smallholder farmers and youth through increases in productivity and market access.

Action 1A: The National Security Council should include food and nutrition security programs as part of a comprehensive strategy to counter rising extremism, instability, and civil unrest in areas of strategic significance.

Food and nutrition security are inextricably linked to national security and stability. Because of their vulnerability in the face of challenging socioeconomic circumstances, young people are particularly susceptible to migration, extremism, economic instability, and acts of civil discontent. Food security is crucial in mitigating these risks. The 2017 National

Congress should request a regular report from the administration that incorporates intelligence modeling of the impact of food insecurity on international stability and US national security.

Security Strategy acknowledges the need to unlock the economic potential of citizens in developing nations through efforts targeted at land tenure, access to financing, infrastructure improvements, and the promotion of an enabling environment. Agriculture is a key industry that is ripe for innovation, and the United States should continue to recognize that bold and smart investments in agriculture and food security will lead to increased regional stability and economic prosperity.

Given the importance of food and nutrition security for national security, the National Security Council should prioritize these issues. There should be a representative within the National Security Council dedicated to examining the impact of agricultural development on stability in regions that are strategically significant to the United States. This individual could potentially be enlisted from agencies such as USAID or USDA.

Congress should request a regular report from the administration that incorporates intelligence modeling of the impact of food insecurity on international stability and US national security. As part of the report, Congress should request that the administration develop and prioritize strategies to improve food security in weak and fragile states, particularly in regions of SSA and South Asia that are experiencing a youth bulge. Congress

should also request that the intelligence community focus on the connection between food security and national security within the report. The report could use or expand upon the interagency assessment of global food security released periodically by the Office of the Director of National Intelligence. Both a classified and unclassified version of the report should be provided.

Action 1B: The administration, particularly the NSC in coordination with USAID, should update the Youth in Development Policy agenda to account of the rising youth population, the opportunities and challenges it presents, and the impact it will have on strategically significant regions.

USAID should update the 2012 Youth in Development Policy agenda to reflect the new reality and create a strategy to address the coming challenges for developing countries where US programs are engaged. The strategy should be a coordinated, cross-government foreign policy agenda specifically focused on the challenges and opportunities posed by a surging youth population in LMICs. A whole-of-government approach is the foundation of effective and efficient US global food security programs, and interagency coordination must be continually improved. The administration should bolster efforts to improve interagency planning, align investments, and more effectively draw on the comparative strengths of various agencies to ensure that US government food security programs are more closely aligned with youth livelihood priorities. This integrated foreign policy agenda should be incorporated into a report, which would identify mutually reinforcing goals for youth engagement.

A whole-of-government approach is the foundation of effective and efficient US global food security programs, and interagency coordination must be continually improved.

Updating the youth policy agenda will highlight the rising importance of youth globally. Without commitment and productive engagement with this rising demographic, the United States will be unable to seize the economic opportunity they represent and ensure future regional stability. A comprehensive youth strategy that reflects US security, development, and diplomatic goals will also be critical to fostering future leaders who share American values and the vision of an open, democratic, and free world.

Action 1C: US diplomatic and development representatives should lead the creation of youth-inclusive food and nutrition security programs (or a strategy) in coordination with bilateral and multilateral partners to secure common commitments on trade, development, and education.

Creating a youth-inclusive food and nutrition strategy requires a concerted effort between the United States and global partners. The US government must work closely with bilateral and multilateral partners to keep food and nutrition security high on the global agenda.

Strong US leadership has been crucial to achieving collective goals and establishing future commitments. Priority should be placed on setting achievable yet ambitious targets for youth engagement in agricultural development for the short, medium, and long term.

The G7 and G20 summits provide a forum for the United States to ask global leaders to build on their previous commitments, incorporating new dimensions that reflect current demographic trends and strategic priorities. In 2017 under Italian leadership, the G7 prioritized food and nutrition security, resulting in particularly impactful financial commitments from both public and private sources for interventions in the first 1,000 days, from pregnancy through the first two years of a child's life. Under German government leadership, the G20 emphasized a number of issues related to food and nutrition security, particularly elevating the importance of youth in rural areas as critical actors in the long-term achievement of a prosperous, well-nourished, and safe world.

The US government should use its influence to collaborate with Canadian leadership at the upcoming G7 Summit and with Argentinian leadership at the G20 Summit to build on these agendas and commit to establishing the essential building blocks of long-term peace, security, and economic opportunity. Catalyzing a youth-inclusive agricultural strategy and national commitments would be a tremendous contribution. Strong US leadership is fundamental to advancing this agenda.

Farmers carry wheat in the El-Menoufia governorate north of Cairo, Egypt. Credit: REUTERS/Mohamed Abd El Ghany

Recommendation 2: Congress should revitalize and recommit to robust support for public-sector agricultural research and development with an emphasis on needs for the next agricultural transformation.

Strong and sustained long-term investment in agricultural research and development (R&D) is a fundamental building block of agricultural transformation and is therefore essential to the health, resilience, and productivity of the food system the world over. Investments in public-sector-led R&D breakthroughs often take decades to come to fruition and cannot simply be shouldered by the private sector alone. Investments in R&D must therefore be a priority for global food and nutrition security and for the resilience of US agriculture. R&D is directly responsible for building the intellectual capacity of youth on and off the farm.

Harnessing the unparalleled expertise of US research institutions and partner organizations globally is crucial to solve the most pressing challenges of the global food system. First, US research institutions, chiefly led by the land-grant university system, are innova-

Harnessing the unparalleled expertise of US research institutions and partner organizations globally is crucial to solve the most pressing challenges of the global food system.

tors, driving not just American competitiveness but solutions that build resilience in the food system around the world. Second, they are a natural conduit for youth engagement—both by training tomorrow's agriculture workers and by building the capacity of bright and promising young scientists in the United States and around the world (increasingly through online programs). Finally, these institutions also partner with research and educational institutions in LMICs to build long-term capacity.

Action 2A: Congress should increase investment in agricultural R&D by 1 percent annually to close the gap with peer nations currently surpassing US R&D spending and to retain a lead role in advancing global food security through responsive, adaptive research for the next century. Focus areas should include increasing productivity, protecting against invasive pests and diseases, and increasing sustainability and innovation.

As the food system faces new and growing pressures, research investments are more important now than ever before. Yet US investment in agricultural R&D has fallen significantly behind our global competitors. The United States was the global leader in support for public research in agriculture for the majority of the 20th century, but it has been surpassed by China in recent years, which has been increasing its support. By 2009 the US share of total global public spending on agricultural R&D had fallen from 21 percent in 1960 to 13 percent, while China's grew from 13 to 19 percent of total spending. The United States has

one of the most advanced agricultural systems in the world. However, in many cases our farmers and ranchers are benefiting from advances that were last made in the 1980s.

USDA should request from Congress an increase in funding for agricultural R&D. Not only is increased investment critical to ensure American farmers, ranchers, and agribusiness remain the most innovative, profitable, and sustainable in the world, but an investment in public agricultural research has one of the highest rates of return. For every dollar invested in agricultural research, more than $20 is returned to the US economy.[174] The President's FY2019 Budget Request expresses support and awareness of how important agricultural research is for continued US advancement. However, the funding increase proposed does not match what farmers, ranchers, agribusiness, and universities need to remain competitive with rising powers like China.

The USDA Economic Research Service estimates that a 1 percent increase in agricultural R&D spending each year would result in an annual rate of overall agricultural productivity growth of 1.46 percent, which is roughly commensurate with the 1.42 percent annual productivity increases from 1948 to 2011 as measured by total factor productivity (TFP).[175] This rate of publicly funded R&D investment would enable the US farm economy to maintain year-over-year productivity.[176] This would be the minimum to maintain competitiveness.

Increased investment in agricultural R&D is critical to ensure American farmers, ranchers, and agribusiness remain the most innovative, profitable, and sustainable in the world.

Greater priority should be given to basic research—which creates a foundation for future innovations and broader solutions to food systems challenges—research on the intersection of digital technology and agriculture, and transdisciplinary research more generally in support of food security. Such critical investment in public research would complement increasing contributions from the private sector. The United States should encourage private-sector collaboration on innovations for the next agricultural transformation, including quantitative and qualitative gains and improved nutrition, in partnership with American institutions and global partners.

Action 2B: The Foundation for Food and Agriculture, Agricultural Research Service, and National Institute for Food and Agriculture should include an emphasis on the use of digital technology and data analysis in acceptance of future grants.

Investing in digital innovation is critical for the continued development of agriculture in the United States and abroad. New technology can enable greater reach, reduced costs, and improved accountability. Breakthroughs in digital technology are allowing significantly larger data sets to be analyzed more quickly and easily, which can be applied in agriculture to everything from crop breeding to soil science and pest and disease control. However, the value of digital tools is not just in the biological sciences. Digital information management has the potential to transform agricultural extension by analyzing big data for patterns and best practices, improving agricultural trading through greater market transparency, and giving more stakeholders the ability to monitor weather and natural resource changes

in real time. Investing more in digital science for agriculture would not only increase the potential for innovation, but may also attract talented young people to careers in agriculture who would not otherwise connect their interests in technology and computer science to this field.

As with other public R&D investments, breakthrough innovations in this domain could generate common public data platforms as well as new norms and standards that could drive greater efficiency. LMICs have recently been innovators in digital advancement because they have been able to leapfrog older technologies and adopt modern technology first. Finding ways to collaborate and engage with priority low-income countries on digital agricultural research may, therefore, have mutual benefits in the long term, including data sharing and the use of common platforms to understand global agricultural trends and progress on achieving food security.

A woman and her daughter arrange branches of khat into small bundles in Mogadishu, Somalia. Credit: REUTERS/Feisal Omar

Action 2C: Congress should encourage USDA, in coordination with local universities and the private sector, to create a pilot program to provide for the inclusion of a private-sector mentorship program.

Most jobs in the emerging agrifood sector will be in the private sector. Private-sector research plays an irreplaceable role, and career paths into research and other innovation careers in the private sector are needed to keep the field robust. Using the model of the Foundation for Food and Agriculture Research's fellowship program, a program should be created to reflect the rising need for business and private-sector knowledge by the agriculture community. The program should identify rising young stars in agriculture sciences at prominent universities in developing countries and match them with US private-sector companies to form a yearlong distance mentorship program. USDA could use already established public-private vehicles such as the New Alliance for Food Security to enlist private-sector participation.

Action 2D: The United States should maintain existing levels of investment in the Consultative Group on International Agricultural Research (CGIAR) while encouraging stronger ties between US research institutions, CGIAR centers, and National Agricultural Research Systems in LMICs to accelerate advancements in food security.

The CGIAR has played a critical role in advancing food security globally and protecting the United States from the shared global threat of pests and diseases that move across regions without respect for borders. Agricultural R&D is one of the strongest investments for agricultural resilience, and it is also one of the best investments for reducing poverty globally. Nearly 60 percent of cropland used for food production globally is planted with improved varieties that utilize germplasm from one of the approximately 7,250 varieties developed with CGIAR research. Independent analysis estimates that every dollar invested in the CGIAR system's research generates a $17 return.[177] Returns from these investments range from reductions in poverty to greater crop disease resistance to productivity increases. For every dollar invested in CGIAR research, $9 worth of additional food is grown in developing countries. There have also been returns for American farmers. From 1970 to 1993 it was estimated that the initial $134 million investment by the United States in CGIAR wheat improvement research generated $3.8 billion in added value for wheat farmers per year.[178] Contemporary analysis is available on the benefits of CGIAR research for food security, productivity, and policy improvement, particularly as they relate to LMICs. However, comparable analysis on the benefits to the United States should be updated by the CGIAR.

Agricultural R&D is one of the strongest investments for agricultural resilience, and it is also one of the best investments for reducing poverty globally.

While the CGIAR system has historical and present-day connections to the US land-grant university system, and most Feed the Future labs directly link to CGIAR centers,

these are often loose affiliations. Ties should be deliberately strengthened, and needed reforms to enhance efficiency and effectiveness could be conditioned on US contributions. Greater partnership between the CGIAR and US universities could accelerate R&D breakthroughs. Furthermore, increased collaboration could also improve research capacity in LMICs, creating greater efficiency and less duplication of effort. One example is the CGIAR-US Universities Linkages Program, which provides travel, sabbatical, and research support for US faculty and graduate students working with a CGIAR center. CGIAR centers and land-grant universities also support long-term capacity building for agricultural research entities in LMICs that could benefit from this exchange and partnership.

African girls and women sort coffee beans in East Africa. Credit: Bartosz Hadyniak

RECOMMENDATION 3 & 4

Credit: Heifer International

Recommendations for preparing and empowering youth to contribute to agricultural transformation

Tapping into the potential of surging youth populations requires strategic and long-term investment in human capital as well as increased access to productive services. Young people must be nourished and educated to have a strong foundation to succeed and to take advantage of opportunities in the agrifood sector and beyond.

The US government, in collaboration with researchers, policymakers, civil society, practitioners, and the private sector, should undertake the following policy actions to promote youth engagement and success as participants in agricultural transformation.

Recommendation 3: Invest in the human capital development necessary to advance rural youth and to drive agricultural transformation.

The labor market of the 21st century is rapidly transforming and is increasingly knowledge—and technology—intensive. High-quality education and entrepreneurial skills will be indispensable for youth to secure employment in careers in and beyond agriculture. To capitalize on the emerging opportunities to increase their incomes, young people will need a range of technical, business, and soft behavioral skills. To help youth attain these skills, efforts focused on strengthening educational and training institutions as well as capacity building opportunities will be required. Since students learn best when they have a well-prepared and knowledgeable teacher, resources must be spent on pedagogical training for existing and future teachers.

Existing US programs dedicated to training future farmers such as AgriCorps and 4-H should be leveraged as models for youth-led agricultural development in order to reach and engage rural youth in LMICs. Additionally, the United States should assist national governments to build strong educational systems geared toward lifelong learning. Partnerships with the private sector to teach youth vocational and business management skills needed on and off the farm should be part of this effort. Programs that connect

High-quality education and entrepreneurial skills will be indispensable for youth to secure employment in careers in and beyond agriculture

trained youth who have established skill sets in agriculture with private-sector vocational opportunities should be explored. If designed effectively, these programs have the potential to enhance agricultural productivity and create a pipeline of talent between education and entrepreneurship programs and future employment opportunities.

Investments in human capital development must also take into account the needs of young people from early childhood through young adulthood. Access to healthy food and nutrition education and health services is tied to the future productivity of the labor force and must also be addressed for youth education and livelihood initiatives to be successful.

Box 20 – Stunting, malnutrition, and the importance of the first 1,000 days

The single most important period in human development is the first 1,000 days—from a woman's pregnancy until the second birthday of her child. During this time, the foundations for physical growth, neurological capacity, cognitive ability, social skills, and overall health are set for life—largely by the nutrition that mother and child receive during the 1,000 days. When pregnant mothers and infants are malnourished during this period, the ramifications may be severe and largely irreversible.

Malnutrition comes in many forms: undernourishment, or the consumption of too few calories; overweight/obesity, or overconsumption; and micronutrient deficiency, or lack of specific nutrients, regardless of caloric intake. Today, one in four children worldwide is stunted—either physically or cognitively—as a result of malnutrition. These children, along with the 50 million who are wasted and the 41 million who are overweight, are likely to perform poorly in school and on the job as they age. They will be more susceptible to chronic conditions like heart and respiratory disease, diabetes, and certain types of cancer. Many will not even survive to face these challenges. Malnutrition still causes 45 percent of all deaths of children under five.

Given the scale and societal implications of global child malnutrition, efforts that promote food security and agricultural development are ever more important to secure a healthy and more prosperous world. Without proper nutrition, many of tomorrow's young people will not be able to reach their full potential.

Sources: Global Nutrition Report 2016; Thurow 2016

Indigenous children who live in the Isiboro Secure Territory sit and eat outside in La Paz, Bolivia. Credit: REUTERS/Gaston Brito

Action 3A: US food security programs and national governments must prioritize nutrition spending and policy to ensure a strong, healthy workforce.

Stunted children become stunted adults, and this leads to stunted economies. The World Bank utilizes a method called "development accounting" to calculate the impact of stunting on schooling, cognition, height, and ultimately income. The findings illustrate the profound economic cost of stunting: the average country's GDP per capita is 7 percent lower than it would have been if none of its current workers had been stunted in childhood. In Africa and South Asia, the average is even higher at 9 to 10 percent.[179]

Great strides have been made in recent years to incorporate nutrition education and research across food security programs. At the 2017 Global Nutrition Summit, an additional $3.4 billion was committed by a combination of philanthropies, NGOs, multilateral institutions, and national governments.[180] However, better coordination and prioritization

Stunted children become stunted adults, and this leads to stunted economies

is needed to ensure countries stay on track to meet the goals established in the Global Nutrition Report. Also, recent years have seen the emergence of innovative nutrition investment funds such as Power of Nutrition and the Global Financing Facility, which seek to unite resources from corporations, philanthropies, and governments of both developed and developing countries.

The United States should continue its leadership on these critical issues while encouraging donor partners to meet their commitments. The inclusion of gender as part of a cross-cutting nutrition strategy is commendable, and the United States should continue to prioritize women and girls in future nutrition spending and policy.

Action 3B: Using the best models of agricultural and entrepreneurial education, Congress should encourage the administration to use all levers of government to expand education through programs and exchanges to reflect labor market realities and address the skills mismatch.

Education and training are essential for building the soft skills needed for productive employment and entrepreneurship. The success of government-funded, US school-based agricultural education such as Future Farmers of America and 4-H has led this model to be replicated worldwide.

Independent, country-led programs like 4-H Ghana utilize the model as a guide to build strong agriculture leaders in developing nations and emerging economies. However, legislative limitations on 4-H, for example, prevent greater coordination and outreach by the United States to these global 4-H chapters and networks, which means the United States is failing to take advantage of the vast global network of young people involved. Strengthening these relationships could have food security benefits for these regions and

could lay the groundwork for trade networks and influence for future American agribusiness professionals and farmers.

Congress should expand 4-H authorizing legislation to include coordination and partnerships with already thriving international agricultural education models in Feed the Future countries. Domestic leaders like the 4-H Council would be well positioned to help foster the growth of similar organizations internationally through technical transfer, program support, and collaboration. Young US leaders would benefit from interacting with their international colleagues. Food security efforts internationally would benefit greatly from the leveraging of these existing 4-H and similar school-based education networks and clubs within local communities.

The United States should also review opportunities to formally link Feed the Future and the Global Adolescent Girl Strategy. This could create more opportunities for rural girls, including through agricultural education models. The girl strategy is implemented by USAID, the State Department, the Millennium Challenge Corporation (MCC), and the Peace Corps, and it highlights opportunities within existing work to better empower and engage adolescent girls. Since Peace Corps volunteers often engage in agricultural education efforts and MCC is beginning to include technical and vocational education programs

The United States should review opportunities to formally link Feed the Future and the Global Adolescent Girl Strategy to create more opportunities for rural girls.

within some country compacts, there may be opportunities to consider more deliberate strategies to engage adolescent girls, who are more likely to miss school or may not have access to such programs.[181]

Exchange programs are also an important way to empower young agricultural leaders. The US government, through various departments, funds a variety of fellowships, exchanges, and opportunities for advancement. Youth and agricultural expertise in particular should be a priority for these types of programs. For example, the State Department Bureau of Education and Cultural Affairs (ECA) should work closely with USDA to incorporate agriculture entrepreneurship exchanges and education as part of its entrepreneurship programming. The United States should create a one-year or multiyear agricultural specialization program for US students and faculty that focuses on strengthening agricultural education and agricultural extension systems in LMICs. The program could be created under the current Peace Corps program and operated in partnership with 4-H and Future Farmers of America (FFA). Additionally, the Department of Education should consider opportunities to increase Fulbright scholarships that are specifically related to agricultural education, strengthening the exchange of agricultural expertise between partner countries while also solidifying the US sphere of influence.

Box 21 – Youth development: 4-H around the world

4-H is a network of youth development organizations that enable young people to learn by "doing," building proactive leadership roles for their futures. The roots of 4-H reach back to 1902, when American land-grant universities realized that rural communities were not adopting new technologies and farming practices at sufficient rates. At the same time, youth populations were growing; the nation faced a dual problem of needing to transfer scientific advancements to the field and equip rural youth populations with practical, entrepreneurial skills to thrive in rural life.

Young people were thought to be more open to new agricultural techniques and the hands-on learning offered by 4-H programming, including small business skills, food preservation, and overall citizenship and leadership, found to be critical assets in enabling the success of rural populations. 4-H has evolved a great deal in the last 100 years, now working with urban and suburban youth with a curriculum that supports skill development far beyond the farm. And it has grown. In the United States alone, 4-H has more than 6 million participants and 25 million alumni.

Today, 4-H has become global, now exceeding 7 million participants, half of them girls, in more than 70 countries—in places as diverse as China, Ghana, and Finland. In African countries 4-H is a perfect match for areas that may resist updates to traditional production practices and view agriculture as offering little economic opportunity. However, participation in 4-H can change minds. Surveys of participating young people in Kenya, Ghana, and Tanzania found that 80 percent of 4-H participants wanted to pursue both a career in agriculture and a tertiary education to assist them in doing so.

As youth populations grow steadily and the future of the workforce shifts, young people need programs like 4-H to help them adapt and take advantage of opportunities wherever they exist. Global 4-H has a goal of reaching 25 million participants by 2020, but with youth populations estimated to reach nearly 1.3 billion by 2030, the need is far greater. Expansion of 4-H programs could be more intentionally driven through the Peace Corps, which already supports many in-country programs, or through other mechanisms. For example, materials could simply be made available in local languages for clubs to form on their own. It may be that the symbol of the next (agricultural) revolution could be a four-leaf clover.

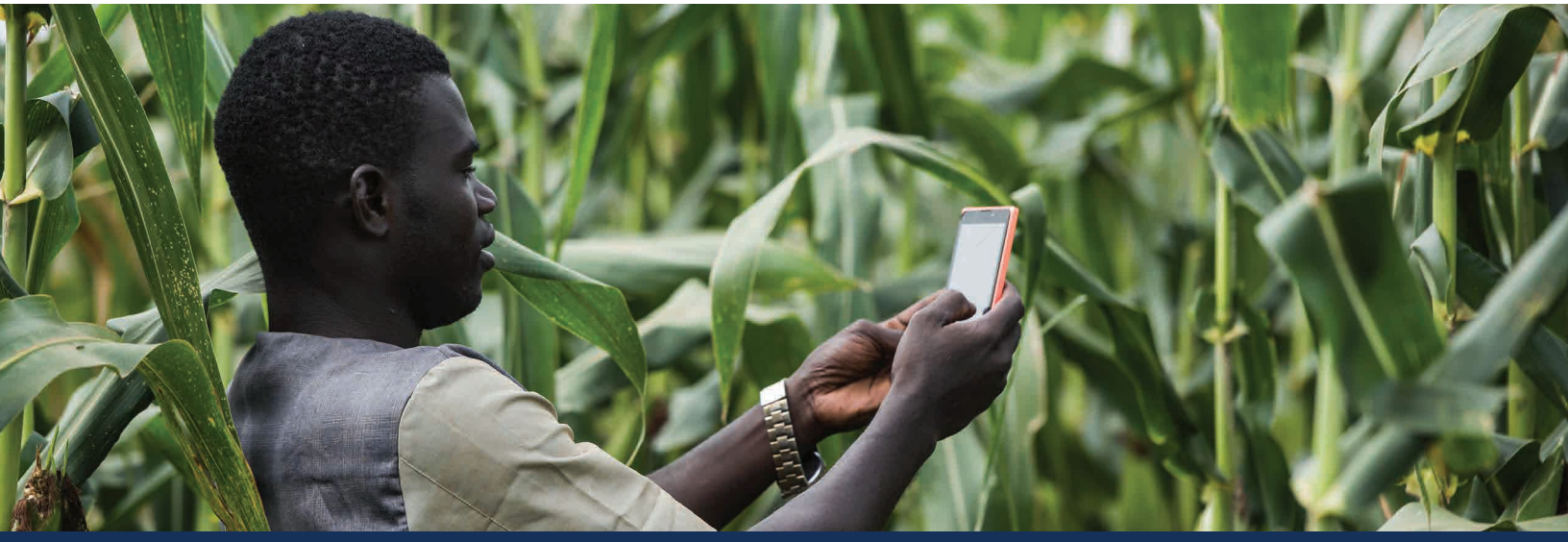
Sources: 4-H Ghana, "About Us"; National 4-H Council 2016

Box 22 – Incubators and accelerators taking root: Kosmos Innovation Center

Incubators and accelerators have demonstrated their value as hubs for innovative thinking and business development. Not only do these hubs provide common resources like office space and fast Wi-Fi, with costs shared among entrepreneurs, but they also provide a space for people to interact and build on each other's ideas and a place for investors to source new deals. While they are more often associated with the technology sector, there is an opportunity for this model to serve the agribusiness sector as well.

Sponsored by the oil and gas company Kosmos Energy, the Kosmos Innovation Center is located in Accra, Ghana. The Innovation Center opened in 2016 with the aim to provide support for Ghana's next generation of leaders. It is focusing on various industries, beginning with the agricultural sector. In partnership with DAI, a US-based development organization, Kosmos has initiated "boot camp-style" programs that support existing small- and medium-sized enterprises in need of support, helping them expand, holding business pitch competitions, and providing seed funding and technical assistance. The focus of the Innovation Center is the intersection of agriculture and technology. Many exciting businesses have already begun to emerge, ranging from mobile phone farm or agribusiness management platforms, RFID-based animal health trackers for livestock, and labels that help track and trace quality inputs from the farm throughout the supply chain to help reduce fraud or damage. Ensuring these incubators are connected to agriculture programs at universities and to the farmer will be essential to improve the feedback loop as more innovations emerge. As growing secondary cities will play an important role in rural transformation, they may also become important hubs for incubator and accelerator activity beyond capital cities. Connectivity and infrastructure must also accelerate to help make this happen.

Source: Kosmos Innovation Center, "About KIC"



Credit: Xuame Olleros/RTI International

Action 3C: The next generation of talent must be supported by promoting emerging hubs of youth entrepreneurship as a pathway to create more innovative businesses and sustainable employment for young people.

In addition to education, the promotion of youth entrepreneurship is important for sustainable youth livelihoods. The United States should play a leadership role in supporting the future generation of talent through innovative, experiential entrepreneurship opportunities and the development of entrepreneurial skills designed for the needs of industry.

Skills training must be complemented with access to critical resources. Mentorship support, technical training, risk mitigation tools, and physical "hubs" with access to professional services are all needed, but access to potential investors is also needed. Because all entrepreneurs need a similar basic package, incubators and accelerators have become a popular model for supporting entrepreneurship development.

As a leader in excellence and innovation, especially in using the incubator and accelerator model, the United States, in partnership with private-sector leaders, should promote partnerships between the existing hubs of innovation in the United States and those emerging abroad to build business relationships and transfer technical skills. Some of this is already planned or under way. For example, the World Bank is currently working with

As a leader in excellence and innovation, the United States should promote partnerships between existing innovation hubs in the United States and those emerging abroad.

FINTRAC to build business incubators in Africa based on successful models in Silicon Valley. Considering secondary and tertiary cities as potential locations for these hubs over the long term will also assist agrifood entrepreneurs outside the major cities to pursue innovative business ideas. Universities, including the land-grant university system, are also increasingly adopting the approaches of the start-up community to create an atmosphere conducive for entrepreneurship. Consequently, university-led partnerships may be another opportunity to provide support to agrifood entrepreneurs.

In order to be effective, policies and initiatives should target the needs and desires that young entrepreneurs identify for themselves. Challenge funds, pitch competitions, and business incubators can allow youth to develop skills while receiving peer-to-peer training.

Action 3D: USAID should include youth-specific metrics in its monitoring and evaluation of programs. Data should also be disaggregated by gender and age to better understand the needs of specific segments of youth.

The success of youth employment programming depends on the extent to which interventions are grounded in the evolving realities of the young people it is serving. Systems must be built to understand and adequately respond to the changing needs of young people. Investing in actionable research on labor market conditions is critical. Examples like the Global Youth Wellbeing Index, created by the International Youth Foundation, establish

baseline indicators for youth empowerment. To improve efficiencies of youth-targeted programs, data collected should be disaggregated by gender, age, and other relevant factors.

Additional measures for responsive youth employment policymaking include strengthening the youth voice in policy dialogue and program design. To effectively account for their particular realities, young people must be equipped with the resources, skills, and space to participate in decision-making processes and to shape the design of interventions.

Action 3E: In partnership with the private sector and priority countries, Feed the Future should consider investment in new models of vocational and technical training and certificate programs that support agricultural transformation and rural development.

Most of the employment opportunities for youth in low-income countries are in the informal sector and will remain so in the coming decades. While entrepreneurship training through school-based models is of critical importance, so is investment in educational models that can support shorter and more tailored learning opportunities that quickly help young people transition to the workforce. Rapid urbanization is changing the nature of food systems in many low-income countries, and this will generate a need for specialized skills all along the supply chain. Short-course training that leads to certification and formal vocational education can contribute greatly to long-term career success and employment. However, programs are scarce. Areas in which skills are of particular importance include food processing, food safety and testing, cold chain and agricultural machinery maintenance, and paraveterinary services. Models that include or are provided by the private sector may ensure that the skills gained are the skills needed, increasing employability and potentially helping share costs with national governments.

Rapid urbanization is changing the nature of food systems in many low-income countries, and this will generate a need for specialized skills all along the supply chain.

Recommendation 4: The US government should align programs that foster an enabling environment for businesses in strategic countries. This environment should be specifically geared toward businesses that generate high-quality jobs for youth and new youth-led ventures.

The United States is already a leader in supporting the enabling environment for development and for the acceleration of business and trade. This work is led by MCC and USAID, among others, and by strong US support for multilateral finance institutions that coordinate investment and lending across development partners like the World Bank. These investments are necessary to support agricultural transformation because they support

Box 23 – Digitizing value chains in Africa

Agriculture in Africa is an approximately $300 billion per-year sector, driven largely by smallholder farmers. Improving the production and productivity of smallholders will be critical for the economic growth of African countries. However, agriculture financiers (e.g., governments and donors) and private companies find it challenging to reach smallholders to enable and incentivize production, provide inputs and liquidity, and procure produce. In Nigeria, for example, the government only had a 10 percent success rate on its annual fertilizer subsidy program to farmers nationwide due to process inefficiencies and loopholes created by unscrupulous actors across the agriculture value chain. By implementing a digital payment platform developed by Cellulant, the Nigeria government has been able to achieve a success rate of more than 90 percent for its fertilizer subsidy program.

Cellulant is a pan-Africa payments platform provider headquartered in Kenya. Cellulant developed the agriculture e-wallet platform, called Agrikore, and connected more than 2,000 agrodealers in Nigeria to serve as "agents" for transaction points. Farmers transact with the agents to receive subsidies in their mobile phone e-wallets with which to purchase fertilizer. By the end of 2014, Cellulant had registered approximately 15 million farmers on the platform and was helping the Nigeria government successfully disburse $200 to $300 million in fertilizer subsidies every year to smallholder farmers. Cellulant's digital platform has been instrumental in raising yields and increasing food production across Nigeria. It is estimated to have more than doubled smallholder household income from $700 to $1,800 per year. The Liberia government has also implemented Cellulant's digital platform, which is powering the disbursal of $9 million in subsidies to Liberian farmers.

Agrikore is a powerful digital platform for organizing players across the agricultural value chain—including farmers, aggregators, off-takers, agrodealers, governments, and commodity buyers—and digitizing their payments and exchanges, thus providing value to all participants and de-risking the market. Cellulant's platform also accommodates the distribution of other important services (e.g., microloans, banking services, and insurance as well as farmer advice and training) to farmers and bottom-of-the-pyramid consumers in rural areas. Consumer goods manufacturers looking to extend and digitize their supply chains can also utilize this platform to purchase produce from smallholder farmers. A major milling company in Nigeria recently partnered with Cellulant in this regard to purchase more than 40,000 tons of rice directly from smallholder farmers.

Source: Cellulant, "What We Do"; AGRA 2017

the development of physical infrastructure, strengthen overall policy development and implementation, and support access to finance. However, there are additional areas of investment that may be critical to support the progress and success of rural youth populations and their contributions to agricultural development and economic development more broadly.

Action 4A: In partnership with priority countries, the private sector and multilateral partners should commit to prioritizing investment and innovation in digital infrastructure for rural areas alongside other investments like rural roads and power.

As populations grow around the world, secondary and tertiary cities will become critical engines of economic progress and commerce. With increasing agricultural productivity, these cities will become the centers of agricultural trading activity, processing, food retail, and many other critical services. Without strong rural-urban infrastructure like roads and power, the growth of the rural economy—and the urban economy—will suffer. The United States has already led infrastructure efforts through Feed the Future and electrification through Power Africa, which together can create an ecosystem for growth in priority countries. However, rural access to digital information in the form of mobile phone and internet connectivity will be critical for prosperity in rural areas. Without concerted efforts, rural areas will be among the last to come online. The MCC should consider assessing whether the lack of internet access in tertiary and rural areas is a binding economic constraint to local and regional economic growth. Digital technology can drive commercial activity, smart monitoring and use of scarce natural resources, and finance, but only with connectivity. Solving this challenge will require increased private-sector participation. Enabling access to the internet will ensure that youth, as "digital natives," can fully engage with existing opportunities and create opportunities yet unforeseen. Without it, digital disconnection could provide a rationale for youth to leave rural areas, leading to further depletion of human capital and dislocation from the new economy.

Enabling access to the internet will ensure that youth, as "digital natives," can fully engage with existing opportunities and create opportunities yet unforeseen.

Action 4B: An interagency policy working group should be established and formalized to coordinate a holistic approach to development finance tools available to private-sector investors, from small businesses to multinational corporations.

Private investment is key to achieving development goals and agricultural transformation in particular. American companies and investors must have the opportunity to develop new market demand and deploy their expertise to remain competitive with rising powers like China. Mechanisms exist to assist companies, but it is often unclear what is available. The administration should review programs supporting private investment and financing, examining agencies that play a key role in agricultural development and financing—includ-

Box 24 – Project design guide for youth-inclusive agrifood systems

The YouthPower project by the United States Agency for International Development (USAID) strengthens local, national, and global systems to achieve sustainable, positive youth outcomes in health, education, and political and economic empowerment.* The project consists of two complementary, agencywide global contracts: 1) YouthPower: Implementation and 2) YouthPower: Evidence and Evaluation. As a whole, YouthPower supports cross-sectoral, positive youth development investments, which empower youth to reach their full potential.

YouthPower Learning responds to USAID's renewed call for unbiased impact and performance evaluations of the agency's programs as well as for increased use of research to improve program planning and results. YouthPower Learning is supporting USAID to integrate youth into the US Feed the Future initiative and the US Global Food Security Strategy. In collaboration with **Making Cents International**, YouthPower Learning recently launched the *Feed the Future Project Design Guide for Youth-Inclusive Agriculture and Food Systems Volume I and II*, which present approaches, frameworks, and tools that can be applied by USAID Missions and others to design agriculture programs that promote successful and meaningful youth engagement. The guide is divided into two volumes, focusing on program design and implementation, respectively.

- **Volume I** is intended to support Feed the Future staff (USAID Missions and others) to design youth-inclusive programs based on the USAID project design cycle.
- **Volume II** offers implementation guidance for activity-level interventions and is intended for USAID staff and those who may be managing activities and/or who wish to know more about youth-inclusive approaches to implementing Feed the Future initiatives.

*At the time of publication this program was still forthcoming.
Source: YouthPower; Making Cents International

ing the Commerce Department, USAID, USDA, OPIC—and the way they interface with the private sector. Upon review, opportunities to invest in youth-inclusive agricultural transformation should be prioritized and expanded. The State Department, the Treasury Department's Office of Technical Assistance, and the Department of Defense also have important programs that should be reviewed to determine their strengths and barriers to scaling up effective models.

An interagency program could then draw these tools into a single entity, allowing companies interested in investing in LMICs to easily draw from available US government resources. Congress should encourage the administration to create an organization that provides a "single window" in the US government to assist small, medium, and large US agribusinesses in finding investment opportunities in global agricultural development. The organization would be similar to efforts under the National Export Initiative of the last administration and would eliminate redundancy and cut red tape. The organization should have the ability to work with US trade, development, foreign policy, and export promotion organizations to seize the opportunity and find shared interest.

Action 4C: With voice and vote, Congress should support the building of rural youth capacity through multinational development banks like the World Bank, African Development Bank, and Asian Development Bank. This would complement critical priorities such as small and medium enterprise (SME) development, regional policy reform and harmonization, and infrastructure to build a positive climate for investment and employment in the agrifood system.

In recent years, the African Development Bank has emphasized the importance of supporting youth entrepreneurs and agricultural development in recognition of these important priorities. The World Bank produced the report *Shaping the Food System to Deliver Jobs* in 2017 and is beginning to expand strategies to include youth in agricultural transformation. These are important steps to support national governments that are also prioritizing rural youth livelihoods and youth in agriculture. Multilateral institutions have the scale and resources to work with national governments to support systemic changes that can unlock opportunities for SME development. Their efforts to catalyze entrepreneurial activity span regions experiencing dramatic shifts in youth populations. These efforts should be an increasing priority, with particular emphasis on rural areas. The US government should use its influence as a large-scale donor to support these youth-inclusive rural and agricultural development efforts.

In addition to the multilateral development banks, Congress and responsible agencies can provide support for cross-border trade through the World Trade Organization. Critical trade infrastructure is needed at ports and internal borders in many developing countries to enhance regional trade. USDA should coordinate with USAID to develop pilot projects and training aimed at building capacity as part of the World Trade Organization's

People wait in line at a local store in Mwanza, Tanzania, with bags of maize piled outside. Credit: MattiaATH

Trade Facilitation Agreement's (TFA) measures for food trade. In some cases, international donors have "specialized" in providing technical assistance to implement parts of the TFA. For example, USAID commissioned a set of training modules on penalties, appeals, and internet publications to expand understanding about these important procedures. Similarly, the United States could develop modules and pilot programs to help countries diagnose and improve sanitary and phytosanitary border procedures in alignment with work by the World Bank and OECD. Efforts can leverage private-sector expertise to pioneer the programs, including local programs and initiatives that connect farmers to larger markets. This would not only help harmonize and expedite trade but would also help prevent pests and diseases from traveling through the US food supply chain.

Conclusion

The rise in youth populations in LMICs in the next 30 years and beyond will have a fundamental impact on the economic, political, and social stability of those regions. The degree to which young people are equipped for participation in the workforce in their home countries will also have profound impacts on every region of the world. A prosperous, employed workforce will generate economic growth and will continue to build a growing middle class, which creates demand for more and higher-quality food and other consumer goods. Youth are also poised to generate innovations for the benefit of an increasingly

Through sound policymaking and dedicated leadership, the largest generation of young people in history can become the problem-solving producers, creators, entrepreneurs, change agents, and leaders of the coming decades.

connected world. If young people can be integrated into the fast-growing agrifood system, they will also play a vital role in helping to end poverty and hunger that has plagued underdeveloped regions for too long. For this to happen, policymakers must adopt a youth-inclusive agricultural development agenda aimed at transforming the agrifood system. This includes investments in the fundamentals of such a food system, from R&D to rural infrastructure to agricultural education and extension. If agricultural transformation is blind to the unique features of a young workforce, it will be challenged to reach its full potential. This failure may mean a lack of opportunity for the hundreds of millions of young people who are entering the workforce in rural areas and beyond. Progress cannot be achieved by governments alone, but their focus on a youth-inclusive agenda and leadership is urgent. Governments will need robust partnerships with the private sector and civil society to achieve the twin goals of securing rural youth livelihoods and achieving global food security through agricultural transformation.

Through sound policymaking and dedicated leadership, along with the engagement of young people in nurturing their own potential, threats can be transformed into opportunities, allowing the largest generation of young people in history to become the problem-solving producers, creators, entrepreneurs, change agents, and leaders of the coming decades.

Appendix

Key areas for investment to stimulate agricultural productivity growth

Expanding youth employment opportunities in the agrifood system will require systematic investment in strategic areas to address constraints to agricultural productivity growth. Public investments providing the highest impacts on agricultural productivity growth and poverty reduction are well known and are backed by strong evidence. They include investing in agricultural research systems, extension services, and physical infrastructure (rural electrification and road, rail, and port infrastructure) as well as facilitating access to productive services such as finance, insurance, and markets.

Agricultural research systems and institutional capacity building

Developing strong agricultural institutions has always been a key feature of countries experiencing rapid agricultural productivity growth. In the United States, for example, rural communities benefited immensely from more than a century of sustained publicly funded agricultural R&D, extension programs, and land-grant university programs that brought research into rural communities. Land-grant universities also solicited feedback from farmers about what aspects of new innovations were problematic, developing bidirectional learning between researchers and farmers and allowing technologies to be adapted to farmers' needs. James Bonnen, former member of the Presidential Council of Economic Advisors under Lyndon B. Johnson, articulates this well in his reflection on the development of American agriculture:

> "One of the clear lessons for successful agricultural development the world over is necessity of a centralized national investment in agricultural research complemented by and coordinated with a decentralized capacity in adapting agricultural research to the highly varied local ecospheres within which agriculture is practiced. Together, this is what the land-grant colleges and the USDA originally accomplished."[182]

Similarly, a fundamental driver of the Asian Green Revolution, which catalyzed economic transformation in that region, was investments in agricultural research that translated into the development of yield-enhancing seed varieties.

Despite its crucial role in promoting agricultural growth and employment, agricultural research systems in most LMICs are either nonexistent or woefully underfunded. SSA, for instance, contributes only 5 percent of global public spending to agricultural R&D, and the average annual expenditure on agricultural research among African countries is eight times lower than in Asia.[183] Therefore, Asian farmers are provided with new practices and technologies to respond more quickly to climate change, plant diseases, and other environmental stresses than most African farmers. Thus, it is not surprising that agricultural productivity levels in Asia are far higher than those in SSA.[184]

In the face of climate change and a rising global competitive market, low-income economies will increasingly need new knowledge and innovative techniques that promote resilient and sustainable forms of agricultural productivity growth. Drought-resistant seed varieties and soil amendments that hold moisture for longer periods and provide greater

crop response to synthetic fertilizer will be essential for climate-smart agriculture. Such technologies, however, cannot always be developed in foreign research institutions, as they need to be adapted to the highly varied local agroecological conditions. Realistically, this local adaptation can be done only by committed and well-resourced national agricultural research systems through close coordination with international research institutions and strong public-private sector partnerships. Building such capacities in LMICs requires sustained investments at much higher levels in people, facilities, lab equipment, budgets for field trials, and other recurrent costs. Since the benefits of most agricultural R&D investments accrue broadly and cannot be captured by firms investing in them, there is a strong role for sustained support for public R&D. Supporting the development of strong local agricultural R&D and extension systems should be a priority for international development assistance.[185] By strengthening the capacity of their agricultural research systems to effectively borrow, screen, and adapt technologies from neighboring countries, LMIC governments could promote agricultural productivity growth and thereby enable millions of young people to find profitable and attractive futures in agriculture.

Agricultural extension systems

The success of research and technology development in influencing agricultural productivity depends on the extent to which the technologies are known to farmers and are appropriately applied. Therefore, investments in R&D need to be complemented with effective and robust extension systems to facilitate technology transfer and uptake.

Agricultural research and extension systems in LMICs are often disconnected from the people they aim to serve and the practical realities of poor rural communities. Due to inefficiencies in the chronically underfunded and understaffed public agricultural extension services, information on new technologies and best practices is not readily available to farmers.[186] Unlike the United States, public extension services in many developing countries are under the ministries of agriculture without direct relationships with universities and research centers. Thus, extension officers are not privy to the latest technology being developed. Many extension systems still promote blanket recommendations for fertilizer application that take little account of the local context[187]—a clear demonstration of inadequate effort to help farmers use fertilizer efficiently. A focus on "best practices" also overlooks the key role of farmers and local advisors in the adaptation of technologies, which is key to successful adoption. Only recently has bidirectional learning between farmers, scientists, and extension workers gained favor, and it has produced notable achievements in some cases.[188] An integrated R&D and extension approach built on cocreating best practices with farmers will increase the odds of experimentation that leads to the discovery of practices that actually fit with farmers' varied resource constraints.[189]

Hyper-local recommendations are also the goal of information and communication technologies (ICT) such as mobile apps.[190] Continued growth in Africans' use of mobile banking and software-based provision of information and services is anticipated. Such technologies hold great potential to remove the historical barriers between remoteness and access to services. For example, through the setup of agricultural hotlines and extension videos, farmers can get up-to-date agronomic information while receiving real-time feedback on challenges they face on their farms. The work of Digital Green demonstrates how extension information can be delivered via digital video.[191]

Such programs have great potential to create jobs in agricultural services that are attractive to young people. However, the emerging constraint is now becoming the message, not the medium. Digital extension services cannot be very useful to farmers if the advice itself is not appropriate. Greater support for bidirectional farm extension programs will not automatically ensure that young people apply the most productive and profitable technologies available, but it is highly unlikely that they will without much more effective farm extension systems.

Physical infrastructure

A major constraint to agriculture productivity growth and enterprise development in LMICs is the lack of quality and reliable physical infrastructure. Improvements in complementary infrastructure—such as roads, organized formal markets, rural electrification, and access to ICT—are needed to open up new markets, lower the costs of conducting business, increase competitiveness of businesses, and generate off-farm employment opportunities. In Tanzania, for instance, improved access to electricity in peri-urban areas stimulated growth in nonfarm wage employment and earnings.[192] Similarly, the rehabilitation of roads in Vietnam was associated with greater participation in trade and services and increases in the variety of sold goods and services.[193]

The scope of infrastructure need—and the financial requirement to meet this need—remains quite large. In Africa alone, infrastructure need is estimated at US$93 billion per year over a 10-year period.[194] Meeting these needs in the short term will overwhelm developing economies. Governments must therefore find creative ways to attract donor and private investment to support infrastructure improvement. For example, in the area of road construction, external private investment could be encouraged using a toll system, which would allow investors to extract rent for a specified period of time after its construction.

Combining infrastructure development with other initiatives could simultaneously achieve employment and social protection objectives. An example is the Community-based Poverty Reduction Project in Sierra Leone, a public works program that provides temporary employment for young people to rehabilitate rural infrastructure and acquire relevant skills and work experience. To the extent that infrastructure upgrades and maintenance are labor intensive, they could create employment for young people.[195] Similarly, prioritizing investments in agriculture-specific infrastructure, such as irrigation systems to reduce seasonality in agriculture, offers avenues to boost agricultural productivity and incomes and provide yearlong employment opportunities for young people in agriculture.

Digital technology

Modern ICT is expanding rapidly across the developing world. Today, there are about 650 million mobile phone owners in Africa alone, with smartphone adoption projected to reach 55 percent of mobile subscriptions by 2020. The development of ICT offers the potential to address some of the key constraints to productivity in the agricultural sector and the broad economy (e.g., inadequate access to information, financial services, and markets). Information technology platforms could be leveraged to revamp defunct extension services in LMICs to improve information delivery to farmers and promote greater financial inclusion for the poor.

Some of these digital technologies are already in use and are transforming the agrifood sector in LMICs in diverse ways. In Nigeria farmers receive fertilizer vouchers via their

mobile phones in the e-wallet program, cutting out the middlemen and reducing leakages associated with fertilizer subsidies through real-time tracking of inventory. Across the developing world, farmers use mobile phones to check prices of agricultural products, receive weather information, and pay and/or receive payments via mobile money services. Kenya's M-Pesa, a cell phone-based financial service, is increasing banking access to large segments of populations unserved by traditional banks.[196]

Nonetheless, the promise of digital technologies can only be realized if systems are put in place to make them accessible to those who need them. Despite widespread diffusion of mobile technologies, they are not accessible to many rural residents. A lack of access to the internet is even more acute, particularly in SSA and South Asia. Estimates from the International Telecommunication Union suggest that three in four Africans are without internet access. Poverty, limited access to electricity, high operational cost of phone masts, and sometimes high taxes on mobile companies are limiting mobile and internet access in rural areas.[197] Ensuring internet access for all and bridging the rural-urban digital divide—goals in line with the Sustainable Development Goals—will be critical to improve productivity.

Mechanization and labor-saving technology

In recent decades, the demand for mechanization and labor-saving technologies has risen in many LMICs. This is partly in response to rising rural wages and seasonal labor shortages as opportunities for off-farm employment expand and farmland consolidation continues, as evidenced by increasing numbers of medium-scale farms.[198] However, the supply response has been uneven across regions. For instance, in some Asian countries (e.g., Bangladesh), the removal of import restrictions on small and cheap diesel engines from China has lowered the cost of imported agricultural machinery, stimulated private-sector investments, and significantly increased machinery use on the farm.[199] In SSA, however, supply-side challenges (e.g., import restrictions and currency volatility that increase the price of machinery, lack of access to credit for machinery investment, and lack of knowledge and availability of appropriate agricultural machinery) have stymied the growth of mechanization. Despite recent increases, only about 10 percent of farms are powered by machinery and the demand for mechanization is growing.[200] Addressing these supply challenges will be central to reaping the productivity gains from mechanization and engendering positive perceptions and young people's engagement in agriculture.

Youth Livelihoods Task Force Biographies

Cochairs

Reuben E. Brigety II

Dean, Elliott School of International Affairs, George Washington University

Ambassador Reuben E. Brigety II has served as dean of the Elliott School of International Affairs at George Washington University (GW) since October 2015. Prior to joining GW, he served as representative of the United States to the African Union and permanent representative of the United States to the UN Economic Commission of Africa. From December 2009 to November 2011, Brigety served as deputy assistant secretary of state in the Bureau of African Affairs and as deputy assistant secretary of state in the Bureau of Population, Refugees, and Migration. Prior to that, he served as a senior advisor for development and security to the US Central Command Assessment Team in Washington, DC, and in Doha, Qatar. A 1995 distinguished midshipman graduate of the US Naval Academy, Brigety earned his master's of philosophy and doctorate in international relations from the University of Cambridge.

Bobby J. Pittman

Managing Partner, Kupanda Capital

Bobby J. Pittman is the managing partner at Kupanda Capital, an investment platform established to create, capitalize, and scale pan-African companies. He has helped found numerous companies, including Fraym.io, where he currently serves as chairman. He is a senior advisor to TPG Growth and The Rise Fund. Prior to his role at Kupanda Capital, Pittman served as vice president of infrastructure, private sector, and regional integration at the African Development Bank (AfDB). There, he managed one of the largest portfolios in Africa, including more than $25 billion in active projects across 52 African countries. Pittman previously held senior positions at several US government agencies, including the Central Intelligence Agency, National Security Council, Treasury Department, State Department, and the White House. From 2006 to 2009, he served as the special assistant to the president and senior director for African affairs in the White House.

Africa Fund Manager magazine named Pittman to its inaugural "Power 50" list of industry leaders who are shaping investment trends in Africa. He also serves on the boards of Africare and the Center for Global Development. Pittman studied economics at Florida State University and the University of Chicago.

Members

Joy Basu

Food and Agriculture Lead, The Rise Fund (TPG)

Joy Basu is the Rise Fund's impact sector lead for food and agriculture. Prior to joining TPG, Basu was a consultant at McKinsey & Company. She focused on agricultural development, working with businesses, development banks, and foundations to improve agricultural productivity in emerging markets. Basu served as project manager to the World Economic Forum's New Vision for Agriculture, a collaboration among multinational companies

to improve the social, environmental, and economic impact delivered by the private sector. Basu has also worked for the Ethiopian Agricultural Transformation Agency and Starbucks Coffee Company. Basu earned a law degree and a master's of business administration from Stanford University with a certificate in public management and social innovation. While at Stanford, she served as an Arbuckle Leadership Fellow and the president of the Women of Stanford Law. Basu has a bachelor's in public policy and economics from Duke University. She serves as a term member of the Council on Foreign Relations and a security fellow with the Truman National Security Project.

Ertharin Cousin

Distinguished Fellow, Global Food and Agriculture Program, Chicago Council on Global Affairs; Frank E. and Arthur W. Payne Distinguished Lecturer and Visiting Fellow at the Center on Food Security and the Environment, Freeman Spogli Institute for International Studies, Stanford University

Ertharin Cousin is a distinguished fellow of global food and agriculture at the Chicago Council on Global Affairs. She previously served as executive director of the World Food Programme from 2012 to 2017. In 2009 Cousin was nominated by the president and confirmed by the Senate as the US ambassador to the UN Agencies for Food and Agriculture in Rome. In this role she served as the US representative for all food, agriculture, and nutrition-related issues. Cousin helped identify and catalyze US government investment in food security and nutrition activities supported by the USAID Feed the Future program. A Chicago native, Cousin is a graduate of the University of Illinois at Chicago, the University of Georgia Law School, and the University of Chicago Executive Management Finance for Non-Financial Executives program.

Willy Foote

CEO and Founder, Root Capital

Willy Foote is founder and CEO of Root Capital, a nonprofit impact investor that offers farmers around the world a path to prosperity by investing in the agricultural businesses that serve as engines of impact in their communities. Root Capital provides these businesses with the capital, training, and access to markets they need to grow, thrive, and create opportunities for thousands of farmers at a time. Since its founding in 1999, Root Capital has provided more than $1 billion in loans to 630 agricultural businesses in Africa, Asia, and Latin America. Together, these businesses have generated more than $6 billion in revenue, 80 percent of which has been paid directly to the 1.2 million smallholder farmers whose crops they collect and market.

Foote is a Skoll Foundation entrepreneur and an Ashoka global fellow. He was named a Young Global Leader by the World Economic Forum in 2008, one of Forbes' "Impact 30" in 2011, and was a 2012 Henry Crown Fellow of the Aspen Institute. He served for nearly a decade on the executive committee of the Aspen Network for Development Entrepreneurs (ANDE). He is a member of the Council on Foreign Relations and Young Presidents' Organization (YPO). Foote holds a master's in development economics from the London School of Economics and a bachelor's from Yale University.

Miguel Garcia-Winder

Head of IICA's Center for Strategic Analysis for Agriculture

Miguel Garcia-Winder holds a bachelor's in agronomy with a major in animal production from the National School of Agriculture in Mexico, a master's in animal science from the University of Nebraska, and a doctorate in reproductive physiology from West Virginia University. During his professional career, Garcia-Winder has occupied diverse positions with government, education, private industry and international organizations. Since joining IICA in 2002, he has served as director for agribusiness and trade as well as director for agribusiness and commercialization. Currently, he serves as the institute representative in the United States and as the head of the Center for Strategic Analysis for Agriculture. He has published more than 40 papers in referenced journals, served in several national and international organization, and has represented IICA in diverse international fora. His current professional interests center in the area of food and nutrition security, animal production and its contribution to sustainability and poverty reduction, youth in agriculture, and the development of a competitive agricultural sector capable of improving living conditions and reducing social inequalities. During his career, Garcia-Winder has received several recognitions for his work in agriculture and animal production.

Thomas Jayne

University Foundation Professor of Agricultural, Food, and Resource Economics; Codirector of the Alliance for African Partnership, Michigan State University

Thomas Jayne's career has been devoted to working with African colleagues to respond to the region's major agricultural policy challenges. Jayne is university foundation professor of agricultural, food, and resource economics at Michigan State University (MSU) and codirector of the Alliance for African Partnership, a university-wide initiative to promote long-term partnerships between African research organizations, MSU, and other international organizations. Jayne is a fellow of both the Agricultural and Applied Economics Association and the African Association of Agricultural Economists. He has mentored dozens of young African professionals and played a major role in building MSU's partnerships with African agricultural policy research institutes, serving as codirector of several grants from USAID, DFID, and the Gates Foundation that focus on building sustainable research capacity in Africa. Over the past decade, he has received six distinguished research excellence awards from various professional and academic organizations, including the 2009 Outstanding Article Award in Agricultural Economics.

Neha Kumar

Senior Research Fellow, Poverty Health and Nutrition Division, International Food Policy Research Institute

Neha Kumar is a senior research fellow in the poverty, health, and nutrition division of the International Food Policy Research Institute (IFPRI). Kumar is an economist by training and has accumulated expertise that spans the diverse sectors of agriculture, social protection, gender, and nutrition-focused programs. She currently leads a portfolio of projects in India and Bangladesh that examine the links between agriculture, nutrition, and gender. Since joining IFPRI in 2008, she has been involved in several complex and multidimensional impact evaluations, including of social protection programs such as the Productive

Safety Nets Program in Ethiopia, agriculture-nutrition interventions such as the Harvest Plus-funded biofortified Orange Sweet Potato program in Uganda and Mozambique, and the Improved Vegetables and Fish Technology Intervention in Bangladesh. She has expertise and substantial experience using state-of-the-art econometric techniques for impact evaluation. She has several years of survey design and fieldwork management experience in different countries and contexts. She has developed complex questionnaires on topics as diverse as agriculture, gender, nutrition, and social protection. Her gender research has focused on topics such as the role of gender in adoption of new agricultural technologies to improve nutritional status among children as well as women's bargaining power and its long-term implications for children's schooling, shocks, and resilience. Kumar holds a doctorate in economics from Boston University.

Linda Kwamboka

Cofounder and Director, M-Farm

Linda Kwamboka is making agribusiness supply chains more efficient by helping smallholder farmers move into commercial farming through the use of mobile technology that provides needed real-time information and incentivizes collective action. Through M-Farm's technology platform, farmers are linked to markets and access an ecosystem of knowledge exchange, aggregation, and opportunity spotting that shifts them into productive commercial farming. This creates a path out of poverty for these farmers and enables them to meet the growing demands for produce across the region, particularly in urban areas. Pioneered in Kenya, M-Farm is an award-winning platform.

As an entrepreneur, Kwamboka has great interest in research and product development through human-centered design, as evident in her work with the Strathmore iLabAfrica research lab, where she is involved in nurturing and mentoring ideas into commercialization. This lab works on concepts such as the Internet of Things in support of agriculture, de-risking, and feeding urban populations. Kwamboka holds a bachelor's in business information technology from Strathmore University.

Meredith Lee

Deputy Director, Youth Livelihoods, MasterCard Foundation

Meredith Lee is the deputy director of youth livelihoods at the Mastercard Foundation. She is responsible for the management and oversight of a portfolio of youth programming in a variety of sectors, including technology, tourism and hospitality, and agrifood systems, across Africa. She focuses on the pressing issues of young people as they transition into work opportunities in formal and informal sectors. Lee has almost 20 years of experience working with youth in Canada and internationally in experiential education, program design, and implementation. Prior to joining the Foundation, Lee was the director of programs for Street Kids International. Lee has worked in various capacities in youth development and program management in more than 15 countries in the Global South. She holds an honors bachelor's in international development studies from the University of Toronto, Canada, and a master's in public administration from Queen's University, Canada.

Trent McKnight

Founder and President, AgriCorps

Trent McKnight is a lifelong rancher and businessman in Throckmorton, Texas, with bachelor's and master's degrees in agricultural economics and comparative politics from Oklahoma State University and The London School of Economics, respectively. He is a past national president of the Future Farmers of America. In 2012 he was narrowly defeated in a runoff election for the Texas legislature.

McKnight has served as an agriculture advisor to the US military in Iraq, agricultural economist to the United Nations in West Africa, and chairman of the USDA Beginning Farmers and Ranchers Committee. His passions are agriculture, rural Texas, and international development. In 2013 he founded AgriCorps, a nonprofit organization that connects young American agriculture professionals to capacity-building efforts for school-based agricultural education in developing countries.

Nachilala Nkombo

Country Director, World Wide Fund for Nature-Zambia

Nachilala Nkombo is the country director for the World Wide Fund for Nature in Zambia, where she is spearheading conservation programs that seek to impact agriculture, natural resources, and energy policies as well as the governance and use of Zambia's vast natural resources. Nkombo will lead the WWF Zambia team in implementing the new country conservation strategy that focuses on helping the Zambian government deliver its 2030 growth and development goals as articulated in the 7th National Development Plan. Prior to joining WWF Zambia, Nkombo served as deputy director for Africa at the ONE Campaign in Johannesburg, South Africa, where she led the organization's objective, strategy, policy, government relations, and partnership building with a focus on transparency and accountability commitments by African states.

Nkombo has over 10 years of management experience across various organizations, successfully leading a number of national and international policy reform initiatives. Her leadership expertise covers a range of sustainable development policy areas. She has successfully led partnerships with the Africa Union, the African Development Bank, civil society, and the governments of Benin, Mali, Niger, Nigeria, Senegal, South Africa, and Zambia focused on agriculture, nutrition health, and land reform and investments. Nkombo is a member of the Malabo–Montpellier Panel. She holds a master's of public management from the University of Potsdam, Germany, and a bachelor's of arts in economics from the University of Zambia.

Jehiel Oliver

CEO, Hello Tractor

Jehiel Oliver is the founder and CEO of Hello Tractor, an agricultural technology company that connects tractor owners with smallholder farmers through the use of innovative software and data analytics. At Hello Tractor, Oliver is responsible for overall management and strategy. He has been honored with numerous awards for his work in social entrepreneurship, including being recognized by *Foreign Policy Magazine* as a Top 100 Global Thinker for 2016. He was appointed under the Obama administration to serve two years as a member of the President's Advisory Council on Doing Business in Africa, where he

currently chairs the technology subcommittee. Prior to Hello Tractor, Oliver worked in consulting and investment banking. He currently lives with his wife and daughter, splitting their time between Abuja, Nigeria, and Washington, DC.

Paul E. Schickler

Retired President, DuPont Pioneer

Paul E. Schickler was president of DuPont Pioneer, the advanced seed genetics business of DuPont, from 2007 to 2017. In this role he continued to expand Pioneer's global business by remaining focused on innovation that improves the local productivity and profitability of farmers in more than 90 countries. Schickler joined Pioneer in 1974 and served in a variety of finance, commercial, and administrative leadership roles, including as the vice president of international operations from 1999 to 2007. Schickler is a graduate of Drake University, where he received both his bachelor's and master's in business administration. He has served on the board of directors of the Cultivation Corridor, the Greater Des Moines Partnership, the Iowa Business Council, and Grand View University. He also served on the Iowa Partnership for Economic Progress committee. He currently serves on the boards of Drake University, the Chicago Council on Global Affairs, and the World Food Prize Foundation. Schickler is the 2018 chair of the United Way of Central Iowa Campaign. Schickler serves on the Chicago Council's Global Agricultural Development Initiative Advisory Group and is an advisor to Longping High Tech (Chengsha, China) and SEED-X (Tel Aviv, Israel).

Author

Dr. Felix Kwame Yeboah

Dr. Felix Kwame Yeboah is an assistant professor of international development at Michigan State University. In this role he conducts agricultural and food policy research and advises various development-related initiatives in Africa. He has expertise in multiple areas of social policy, including agricultural and food system transformation, natural resource management, and youth livelihood issues in Africa.

For the past decade, he has provided critical analysis to inform a range of social policies in the United States and in Africa. Notably, his research informed the MasterCard Foundation's strategies promoting youth employment in Africa's agrifood system; the State of Michigan's effort to reduce nonpoint source pollution in the Great Lakes; and strategic change initiatives advancing solid waste recycling and energy conservation at Michigan State University. More recently, his research was featured in the 2016 *Africa's Agriculture Status Report*, a flagship report of the Alliance for a Green Revolution in Africa. In 2012 he was recognized as a Milton H. Steinmueller scholar of Natural Resources and Environmental Policy and a George and Nancy Axinn Fellow of International Development.

Dr. Yeboah holds a master's and doctorate in environmental policy and international development from Michigan State University and a bachelor's in natural resource management from Kwame Nkrumah University of Science and Technology, Ghana, West Africa. He was also a John M. Gunn Exchange Scholar at Washington and Lee University in Virginia.

Acronyms

AYA — African Youth Agripreneur

CGIAR — Consultative Group on International Agricultural Research

DHS — Demographic and Health Survey

ECA — Education and Cultural Affairs

ENABLE — Empowering Novel Agri-Business-Led Employment

FAO — Food and Agriculture Organization

FFA — Future Farmers of America

FINTRAC — Financial Transactions and Reports Analysis Centre of Canada

GDP — Gross Domestic Product

GFSA — Global Food Security Act

ICT — Information and Communications Technology

ILO — International Labour Organization

JFFLS — Junior Farmer Field and Life Schools

LMICS — Low- and Middle-Income Countries

LSMS — Living Standard Measurement Study

MCC — Millennium Challenge Corporation

NSC — National Security Council

OECD — Organization for Economic Co-operation and Development

OPIC — Overseas Private Investment Corporation

R&D — Research and Development

SDGs — Sustainable Development Goals

SME — Small and Medium Enterprise

SSA — Sub-Saharan Africa

STRYDE — Strengthening Rural Youth Development through Enterprise

TFA — Trade Facilitation Agreement

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