

Agricultural Productivity Growth, Resilience, and Economic Transformation in Sub-Saharan Africa

IMPLICATIONS FOR USAID



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LIST OF ACRONYMS

ACET	African Center for Economic Transformation
ACLED	Armed Conflict Location & Event Data Project
AEN	Agronomic Efficiency of Nitrogen
AERC	African Economic Research Consortium
AfCFTA	African Continental Free Trade Area
AfDB	African Development Bank
AFS	Agri-Food System
AGRA	Alliance for a Green Revolution in Africa
APLU	Association of Public and Land-grant Universities
ASTI	Agricultural Science and Technology Indicators Database
BIFAD	Board for International Food and Agricultural Development
CGIAR	Consultative Group for International Agricultural Research
COVID-19	Coronavirus Disease 2019
DRC	Democratic Republic of the Congo
ECOWAS	Economic Community of West African States
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization of the United Nations Corporate Statistical Database
FDI	Foreign Direct Investment
FSI	Fragile States Index
GDP	Gross Domestic Product
GFSS	Global Food Security Strategy
ICT	Information and Communications Technology
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
LIC	Low-income Country
LMIC	Lower-middle-income Country
NGO	Nongovernmental Organization

PPP	Purchasing Power Parity
R&D	Research and Development
R&D&E	Research, Development, and Extension
RFS	Bureau for Resilience and Food Security
RORI	Rates of Return on Investment
SOE	State-owned Enterprise
SSA	Sub-Saharan Africa
T/ha	Ton per Hectare
TFP	Total Factor Productivity
UN	United Nations
UNICEF	United Nations International Children’s Emergency Fund
US	United States
USAID	United States Agency for International Development
US\$	United States Dollar
USDA	United States Department of Agriculture
USDA-ERS	United States Department of Agriculture Economic Research Service
USG	United States Government
WIDER	World Institute for Development Economics Research

ABSTRACT

Economic transformation refers to two linked development processes. One is structural change: the shift of workers and other resources from low-productivity sectors, such as subsistence agriculture, to high-productivity sectors, such as industry and modern services. The other is faster productivity growth within various sectors. Economic transformation is a fundamental driver of improved living standards, resilience, and self-reliance. The process of economic transformation is both initiated and accelerated when the main sector of the economy starts to experience productivity growth. In most sub-Saharan African countries, agriculture and the broader agri-food system remain the primary source of employment and incomes for most of the population. Hence, agricultural productivity growth (*i.e.*, increases over time in the ratio of agricultural output to inputs) remains one of the key challenges to be addressed by African governments, but it is by no means the only challenge, especially for fragile and resource-rich countries. A balanced approach that considers the full range of actions necessary to achieve economic transformation is required, acknowledging the synergies between growth in agriculture, downstream value chains, and non-farm sectors, as well as education, governance, water, sanitation and health, and hard and soft infrastructure.



Photo by Julius Mtemahangi

EXECUTIVE SUMMARY

The Board for International Food and Agricultural Development (BIFAD) is a presidentially appointed federal advisory committee established in 1975 under Title XII of the Foreign Assistance Act. In the course of developing the BIFAD work plan for FY2020 and, in light of the Coronavirus Disease 2019 (COVID-19) pandemic, BIFAD commissioned this analysis of the relationship between agricultural growth and economic transformation, including its impact on a country's resilience to shocks. This report provides an analysis of the relationships among agricultural productivity-led growth, resilience, economic transformation, and the journey to self-reliance.

Objectives and Methodology

The report is a synthesis of existing evidence to accomplish three main objectives: (1) to provide an evidence-based review of the relationships between agricultural productivity growth, resilience, and economic transformation within a unified framework, demonstrated with examples from South and Southeast Asia; (2) to review the evidence on sub-Saharan Africa's (SSA's) recent economic transformation and progress toward resiliency and self-reliance; and (3) to identify policy and programmatic options for effectively addressing the similar and unique challenges that these different types of countries face, with particular focus on the activities of the United States Agency for International Development's (USAID's) Bureau for Resilience and Food Security (RFS).

What Does Economic Transformation and Resilience Mean?

Economic transformation refers to two linked development processes. One is *structural change*: the shift of workers and other resources from low-productivity sectors, such as subsistence agriculture, to high-productivity sectors, such as industry and modern services. The other is *sectoral change*: faster productivity growth within various sectors. Economic transformation is a fundamental driver of improved living standards, resilience, and self-reliance.

Risk and shocks are unavoidable during economic transformation and development; the antidote is resilience. Resilience refers to the ability to dampen the impact of, and quickly recover from, shocks. Resilient households weather shocks; resilient countries can grow and transform more rapidly. Resilience is enhanced by the factors that drive transformation such as human capital development, improved governance, and political and economic inclusion. The importance of promoting resilience has become increasingly recognized, especially in light of recent shocks from conflict, climate change, and now COVID-19. Resilience promotes, and is promoted by, agricultural productivity growth and economic transformation.

Main Findings

Despite the continued deep challenges that the region is facing, **mounting evidence points to profound economic transformation in SSA since the early 2000s**. There are three notable aspects of Africa's unfolding economic transformation since 2000: (1) substantial progress for the region as a whole, (2) highly uneven progress across countries, with the greatest progress being made by lower-middle-income countries (LMICs) across a wide range of indicators, and the least progress being made by resource-rich and fragile countries; and (3) the varying challenges facing low-income, lower-middle-income, resource-rich, and fragile countries.

By pursuing policies correlated with successful transformation, **most African countries have realized strong economic growth, major improvements in the welfare of their population, and increases in resilience**. Key drivers of transformation included rapid growth of agricultural production and agri-food systems (AFSs), successful macroeconomic stabilization and better management of macroeconomic shocks, increased integration with the global economy, improved skills and knowledge in the workforce owing to rapid expansion of education, better health and nutrition, and financial deepening and inclusion.

SSA has achieved the highest rate of agricultural growth of any region of the world since 2000, at roughly 4.3 percent per year, which has undoubtedly contributed to the region's relatively strong economic transformation process, which started around 2000. The factors that enabled this growth include the sustained period of relatively high global food prices beginning in 2006, a harbinger of the increased global demand for food, especially higher prices for livestock products that require food grains for animal feed, rapidly developing land markets in the region, and macroeconomic and sectoral policy reforms, which provided greater scope for private investment in trading, processing, and retailing agricultural inputs and commodities, and which subsequently contributed to increased employment and incomes in the upstream and downstream stages of African AFSs.

Despite SSA's high rate of agricultural production growth, **this growth has mostly depended on the expansion of cropped area rather than productivity growth**. An important reason has been the low public spending on agricultural research and development (R&D). Asian and African countries that achieved high rates of agricultural productivity growth (e.g., Ghana, Ethiopia, Bangladesh, and Thailand) all show the importance of effective local agricultural research, development, and extension (R&D&E).

However, this progress has been uneven.

- **The LMICs have achieved much greater progress in expanding the delivery of public services, education, and health benefits to their populations than in the other country categories and have the lowest poverty rates.** Today, a much greater proportion of the population in lower-middle-income African countries has access to paved roads, electricity, the internet, and mobile cell subscriptions. Residents of LMICs have higher levels of education and better health. LMICs spend

far greater amounts on agricultural R&D per agricultural worker and per hectare cultivated than low-income countries (LICs), mobilize greater domestic credit to private sector firms as a percentage of their gross domestic products (GDPs), and have higher scores for business enabling environment, government effectiveness, voice and accountability, and financial inclusion. The LMICs also show improvements in governance and the enabling environment for business compared to other country categories. Their prospects for future productivity-led economic growth and resilience are bright, despite continued challenges.

- **Although the LIC group experienced positive per capita income growth and substantial poverty reduction, their economies are still in early stages of transformation.** The non-farm private enterprise sector still accounts for a small share of output, and 80 percent of employment remains in household farms and informal businesses. Employment in farming remains high, reflecting lower economic diversification. Government effectiveness remains low and access to infrastructure services is limited. Access to education and health services has improved substantially, but the quality of publicly provided health and education services is poor, so education and health outcomes are lower.
- **Resource-rich countries enjoy higher levels of GDP per capita and mean labor productivity than all other country categories, but they have struggled to translate their mineral wealth into improved development outcomes.** The public sector is a large employer and spender, yet these countries have some of the lowest social indicators and have higher poverty rates than the non-resource-rich LMICs. Key indicators of health and access to services in the resource-rich countries are generally no better than for the other country categories—they are often worse; life expectancy for both men and women is lower than in the other country categories, while child mortality rates are much higher. Public expenditures are urban-biased, and as a result, there is a large rural-urban gap in access to public goods and services. The domestic private enterprise sector is relatively small and concentrated in non-tradable sectors owing to the Dutch disease;¹ sustainable transformation has not really progressed. Government effectiveness is rated below the average of LICs despite higher incomes. However, these countries have a high average information and communications technology (ICT) use, an educated population, and in some countries, significant infrastructure (but associated high debt levels, making them vulnerable in the future).
- **Fragile states, which are mostly LICs and often resource rich as well, show poor performance on virtually all indicators of development.** The history of violence is easily visible in the indicators of economic growth, transformation, poverty and human development, infrastructure, and governance. Growth rates in GDP per capita and in agriculture have been lower in fragile states than all other country categories. The dominant challenge at this point in their development is to

¹ The Dutch disease occurs when large resource discoveries in oil or minerals harms a country's broader economy by increasing the currency value leading to a drop in competitiveness and loss of jobs in other tradeable sectors. Resource discoveries can also lead to increased rent-seeking behavior and a decline in governance and public sector management effectiveness.

reach a political settlement that will allow violence to be reduced and physical safety to increase, permitting the rule of law and reducing commerce transaction costs. A political settlement would also allow the government to concentrate on rehabilitating infrastructure and focusing on economic development. Even when a political settlement is reached, however, fragile states have low tax revenues so are likely to need significant outside assistance, as governments may be unable to invest sufficiently in either economic growth or public service delivery.

The Way Forward

The most urgent need for all African countries is to recover from the economic and social setbacks of the recent COVID-19 pandemic. Stabilization and recovery are current priorities in most African countries. Recovery will be easier in the LMICs, where development has built supportive political and economic institutions. Meanwhile, countries already in default on their debts and countries at high risk of debt default will require support to get needed fiscal space for recovery-inducing public spending.

In the medium run, the overarching goal remains accelerated economic transformation and resilience through agricultural productivity growth, AFS transformation, non-agricultural sector growth, and improvements in governance, public service delivery, and education. Although agricultural productivity growth remains one of the key challenges to be addressed by African governments, it is by no means the only challenge, especially for fragile and resource-rich countries. A balanced approach that considers the full range of actions necessary to achieve economic transformation is required, acknowledging the synergies between growth in agriculture, downstream value chains, and non-farm sectors, as well as education, governance, water, sanitation and health, and hard and soft infrastructure. Macroeconomic stability, inclusionary economic policies, continued improvements in the enabling environment for private business, and increased openness to trade and investment to bring in new technologies and capital flows will be fundamental priorities for all countries. By raising economic growth, these activities will provide a growing surplus for governments to reinvest into public services and infrastructure that can also contribute to resilience and self-reliance.

Key development priorities for all countries to support agricultural productivity-led transformation and resilience include:

- **Supporting African-led adaptive agricultural R&D and improve the policy environment to support agricultural productivity growth.** The twin goals of feeding Africa's growing population and conserving the planet's natural resources, diverse ecosystems, and the services they provide need sustainable forms of agricultural growth driven by productivity improvements on existing farmland.
- **Expanding employment opportunities:** Although sometimes framed as a youth employment challenge, the challenge is fundamentally a broader "missing jobs" crisis that reflects structural constraints within African economies. Addressing this



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challenge entails (1) policies that support economic growth and better jobs throughout the economy; (2) public investments that support private investment, competitiveness, and new job opportunities; and (3) investing in human and organizational capacities in Africa.

- **Increasing economic empowerment for women:** Although gender equality does not automatically improve with economic development, improvements in gender equity support economic transformation and resilience by building and using human capital more efficiently in the household, the community, the market, and society. Key actions for African governments include (1) improving reproductive health services to give women control over their bodies; (2) eliminating the remaining gender education gap; (3) reforming legal systems that deny women control of income, assets, and inheritance; (4) investing to decrease “women’s time poverty”; and (5) fostering agency to reduce the negative impact of gender norms on women’s lives.
- **Capture the opportunities for intra-African agricultural trade:** Opportunities include (1) supporting the African Continental Free Trade Area (AfCFTA) agreement and reducing non-tariff barriers on agricultural trade between countries; (2) developing transport and communications infrastructure between countries to reduce costs and risks of trade; and (3) promoting competitiveness by reducing costs of production through investing in agricultural R&D&E.
- **Reduce the infrastructural deficit:** Africa has a large infrastructure deficit compared to other regions. This makes production in Africa less competitive, impedes adoption of new technology to raise productivity, raises prices for consumers, and impedes poverty reduction. Developing SSA’s energy, transport, water and sanitation, and communications infrastructure will be important for overcoming almost all SSA’s other major challenges. Key responses would be (1)

improving management to get more quantity and quality out of existing infrastructure; (2) improving planning and project selection to get higher rates of return on investment; and (3) creating an enabling environment for private financing.

Each of the four country groups will face unique major challenges and priorities, too.

Low-Income Countries: Accelerate Productivity-Led Growth in Rural Areas

LICs' medium-term priorities will involve a mix of public investment to expand access to key public goods and continued development of government capacity to collect taxes, manage expenditures, transparently and efficiently regulate markets, and provide budget transparency. Expansion of rural health, education, and water and sanitation services is also critical to raising incomes in both rural and urban areas. Public services need to be financed, so taxes must be collected and allocated through budgets. Building the capacity to collect taxes and design and implement budgets transparently is important for both transformation and resilience because African LICs' low capacity and uneven commitment to political inclusion raises fragility and the ensuing risk of destructive civil conflict. Reducing trade barriers (tariff and non-tariff) and starting the development of a modern trade logistics system are needed to support the development of both the AFS and non-farm enterprise sectors. Nevertheless, it must be recognized that in these countries for the foreseeable future, most employment activities in rural and urban areas will be found in household farms and businesses. Developing the rural economy through (1) measures to increase income and productivity gains on the farm and (2) encouraging households to start and grow non-farm household businesses will increase resilience through expanded employment, increased household incomes, better food security, and more diversified income sources.

Fragile States: Focus on Security, Humanitarian Relief, and Rebuilding

Fragile states not only have poor social and economic infrastructure and human development indicators, but they have low ratings on government effectiveness, voice and accountability, and political rights. So, **while their transformation and resilience agenda is similar to the LICs, their capacity to develop and implement policies and programs is generally worse.** In fragile states, restoring security and stability takes precedence over all other objectives. Afterward, a more ambitious rehabilitation and transformation agenda can take shape. However, resilience requires that the underlying causes of the fragility be addressed; if not, conflict in one area will spill over to other areas. Fragile states have high levels of poverty and malnutrition and rely on humanitarian assistance. Over time, they can begin to assume some responsibility for safety net functions as needs diminish and public-sector resources improve.

Lower-Middle-Income Countries: Focus on Government Effectiveness, Infrastructure, Trade Logistics, and Urban Governance

After post-COVID-19 stabilization, LMICs need to continue to transform their economies while recognizing that for at least the next decade, most of the employment (60 percent or more) will remain in the informal sector—household farms and businesses. As opportunities for non-farm employment rise along with continued economic transformation, the size of the agricultural labor force and the share of farm output in GDP will decline, but this does not mean that agricultural productivity-led growth will become less important. Without a continuous and increasing flow of farm products and continually increasing farm incomes, the off-farm and non-farm sectors will stagnate in rural and peri-urban areas. New firm entry, and productivity growth and capacity expansion in existing firms, is critical at this stage of development in order to grow competitiveness and provide better jobs for a growing, and more educated, labor force. The business enabling environment and improved trade logistics, an increasingly important part of competitiveness, will be crucial both for exporters and domestic producers who rely on key imported inputs and just-in-time operations. Addressing these issues implies constant quality upgrading in the public sector, which in turn requires quality upgrading of education systems, because competitiveness will increasingly require a labor force with not just basic cognitive skills to read and follow directions, but higher-level skills such as reasoning and problem solving, as well as socio-emotional skills such as communication and teamwork. Last, rapidly urbanizing countries grow faster due to economies of agglomeration, but this requires addressing the challenges of urban governance.

Resource-Rich Countries: Fight Dutch Disease, Government Ineffectiveness, and Corruption

All non-fragile, resource-rich countries have reached LMIC status based primarily on their mineral rents—not because of economic diversification, government effectiveness, or resiliency. Indeed, these economies historically have shown more economic volatility than the African non-resource rich LMICs. Africa's resource-rich countries have not made the progress that LMICs have in building social and economic infrastructure. As a result, their infrastructure challenges are closer to those of the LIC countries than those of the LMIC countries. The same is true for the business enabling environment. Resource-rich countries must find ways to reduce the influence of the commodity cycles and the Dutch disease if they are to advance economic transformation. Some countries outside of Africa, such as Indonesia, have found some success in part by supporting smallholder farmers with infrastructure and technology so that they can supply urban areas (especially the interior, where transport costs provide some natural protection). Countries can use mineral rents to develop sites and services for industries serving a domestic or regional market, such as building materials and food processing. Service sectors, including those based on ICT, could offer some opportunities for economic diversification. Progress in reforming the business enabling environment—especially reducing corruption and red tape by creating more impersonal institutions—will be vital to the success of these efforts. To

avoid fragility, resource-rich countries need to find ways to increase inclusion within their political systems.

The number of African countries able to export minerals is growing. The experience of Africa's long-time resource-rich countries should be sobering for diversified LMIC countries such as Ghana, which are or are becoming major mineral exporters.

Implications for USAID

An agricultural productivity-led growth and transformation strategy is essential to achieving USAID and United States government (USG) foreign assistance objectives. Inclusive economic transformation and resilience depend on agricultural growth, especially for countries in early stages of transformation. This was true in the past and remains true in SSA today. Income and employment growth in African economies, including AFSs, depend greatly on increasing productivity and reducing costs of products grown on African farms, which supply raw materials for commodity value chains and provide jobs and markets for millions of Africans in agribusiness firms.

The synthesis of evidence in this report indicates that supporting agricultural productivity-led growth would accelerate progress in achieving several USAID and USG objectives. USAID and RFS should not divert their attention away from the objective of supporting farm-level productivity growth and resilience. By implementing projects to support agricultural productivity-led growth in Feed the Future countries, USAID/RFS can sustain progress on the following USAID and USG-wide objectives for foreign assistance: (1) increasing country self-reliance; (2) supporting implementation of the Global Fragility Act; (3) increasing private-sector engagement by working with the private sector to modernize and transform food systems; and (4) supporting increased trade along agricultural value chains and U.S. foreign direct investment—two objectives of the Prosper Africa program.

USG Has Deep Experience in Building Institutions That Support Agricultural Productivity

Not only is supporting agricultural productivity-led development important for USAID and USG foreign assistance objectives, but it is one of USAID's comparative advantages in the development partner space. Few donors have the depth of expertise and experience as USAID in this area. Most other bilateral donors are either not at all engaged in the agricultural sector or not focused on boosting productivity and encouraging private investment to develop agricultural value chains. Moreover, USAID can leverage the capacity of U.S. global leadership in agricultural sciences and technology transfer through the Land-grant University System and the United States Department of Agriculture, as well as engage its robust agri-food business sector for trade and development. These actors can be enlisted to promote the development of agricultural institutions in Africa that provide important public goods, including tertiary education institutions with a land-grant mission.

We have argued for greater focus and spending on agricultural research by African governments and their development partners, especially USAID,

recognizing that money alone will not be enough. The record of past failures and institutional rivalries shows that additional investments in agricultural research without digesting lessons would be a mistake. We therefore recommend a specially commissioned report to identify strategies for African R&D&E systems to improve the efficiency and sustainability of their operations.

Diversity of Circumstances Requires Diverse Strategies within the Global Food Security Strategy

Diverse circumstances within SSA mean that USAID cannot apply a one-size-fits-all approach. Building public R&D&E in countries with only weak levels of political stability and low government capacity will pay low dividends if other issues such as property rights and public safety are not yet addressed. In fragile states, restoring infrastructure and reducing extreme deprivation in rural areas may be the most effective strategy. Addressing nutritional deficits through post-natal healthcare and food supplements will be more effective than relying on increased agricultural incomes in this situation and in many other LIC settings. Meanwhile, the governance and economic policy challenges in resource-rich countries motivate for a nuanced approach, perhaps more focused on governance and accountability and provision of public services to raise earnings in both the farm and non-farm sectors in rural areas. Improving the efficiency of social spending in rural areas through decentralized incentives and outcome monitoring will most likely be a high-value investment as well, with positive effects on productivity in both sectors.

In the spirit of self-reliance, USAID might explore supporting African continental and regional initiatives (e.g., by the African Union, Economic Community of West African States [ECOWAS], African Development Bank [AfDB]) aimed at agricultural productivity growth and policy efforts to encourage inclusive private investment in agriculture. To improve governments' capacity to plan and implement development policies and programs, it may be increasingly effective for U.S. technical assistance to work in support of African-led policy analysis units, thereby promoting local self-reliance in policy engagement processes. USAID can support African universities' efforts to perform land-grant university activities that have been, and in some cases continue to be, very effective for rural communities in the U.S. In the areas of agricultural R&D and policy assistance, USAID could support long-term partnerships between African and international universities and research institutes to simultaneously build capacity and contribute to agricultural productivity growth in Africa.

Investments in Growth and Transformation Require Complementary Policies, Programs, and Investments to Realize Their Potential

Unless proactively addressed, challenges in the education system, the financial system, the regulatory environment, infrastructural development, and the public sector's capacity for economic policy formulation and implementation will impede economic transformation and progress in resiliency. USAID is not investing in all these areas in Africa; however, it can support the activities of other development partners who are

coordinating their programs more closely with those of pan-African organizations and committed African governments. Remaining relevant will depend on such an approach.



Photo by Theodora Kachingwe

1.0 INTRODUCTION

Despite the continued deep challenges that the region is facing, mounting evidence points to profound economic transformation in sub-Saharan Africa (SSA) since the early 2000s. Three notable aspects of Africa's unfolding economic transformation are (1) substantial progress in the region as a whole, (2) highly uneven progress across countries, and (3) varying future challenges ahead. The diversity in country circumstances and pace of economic transformation in SSA warrants caution against over-generalizing regional development priorities.

Because SSA today is very different than in 1980 or even 2000, many are questioning whether the fundamental challenges facing the region remain the same and how the modalities of effectively supporting African-led development may be evolving, especially after taking account of the widely differing conditions across the continent. Moreover, and especially in light of recent shocks from conflict, climate change, and now Coronavirus Disease 2019 (COVID-19), the concept of resilience has become increasingly recognized as an important development objective. The role of governments and development partners in improving living standards in SSA can be enhanced by a deeper understanding of the relationships between resilience and economic transformation.

1.1 Motivation

The Board for International Food and Agricultural Development (BIFAD) is a presidentially appointed federal advisory committee established in 1975 under Title XII of the Foreign Assistance Act, as amended. BIFAD's leadership as an advisory board to the United States Agency for International Development (USAID) on agriculture and food security in developing countries recognizes the critical role of U.S. universities in agricultural development, domestically and abroad, and the importance of their engagement in USAID development programs. BIFAD is supported by a USAID-based secretariat and a USAID-funded support mechanism.

In the course of developing the BIFAD work plan for FY2020, and in light of the COVID-19 pandemic, BIFAD commissioned this analysis of the relationship between agricultural growth and economic transformation, including its impact on a country's resilience to shocks such as COVID-19. This BIFAD-commissioned report responds to this request by providing a framework for examining the relationships among agricultural productivity-led growth, resilience, economic transformation, and the journey to self-reliance. The report focuses on SSA but draws upon examples from East and Southeast Asia.

1.2 Objectives

This BIFAD report has three main aims. First, to provide an evidence-based review of the relationships between agricultural productivity growth, resilience, and economic transformation. The importance of promoting resilience has become increasingly

recognized, especially in light of recent shocks from conflict, climate change, and disease. Second, because SSA countries are at differing stages of economic transformation, dependency on natural resource extraction, and degree of fragility, we explore the differing nature of the key challenges for four categories of countries: low-income, lower-middle-income, resource-rich, and fragile. Third, the report outlines in broad strokes the policy and programmatic options for effectively addressing the similar and unique challenges that these different types of countries face, with particular focus on the issues addressed within USAID's Bureau for Resilience and Food Security (RFS).

The report synthesizes existing evidence using the conceptual frameworks of economic and agricultural transformation and resilience, with country examples to provide context on success in the roles of agricultural productivity growth, resilience, and other diverse drivers of economic transformation for SSA countries' economic development.²

1.3 Report Outline

The remainder of this report is organized as follows. Section 2.0 presents the conceptual framework for the paper, relating economic transformation, agricultural productivity growth, and macro- and microeconomic resilience. Section 3.0 documents the role of agricultural productivity in driving economic transformation, resilience, and improved living standards in countries that have successfully transformed, drawing upon two Asian and two African case studies. Section 4.0 examines the patterns of growth and economic transformation in SSA countries since 2000, and how countries' past investments in economic and social infrastructure as well agricultural research and development (R&D) open future opportunities for inclusive economic transformation and position them to face future shocks. Our analysis uses a country typology framework that recognizes salient differences among SSA countries and the unique challenges and development priorities that this implies. Using this country typology, we then present fresh evidence on African countries' varying degrees of progress in transforming their economies and becoming more resilient. Section 4.0 ends by identifying the major challenges ahead to achieve sustainable and inclusive development and resilience, noting how these challenges are in some cases similar and in other cases quite different for low-income, lower-middle-income, resource-rich, and fragile countries. Section 5.0 highlights in broad strokes the way forward for African governments that international development partners could support. Section 6.0 considers specific priority options for USAID, given its historical and evolving comparative advantages in certain aspects of international agricultural development.

² Throughout this report, Africa's upper-middle income and rich countries (e.g., South Africa, Gabon, Mauritius) are excluded because these countries are very different from most sub-Saharan African countries and are mostly not USAID grant recipients.

2.0 ECONOMIC TRANSFORMATION, RESILIENCE, AND AGRICULTURAL PRODUCTIVITY GROWTH

Economic development as a field of study is less than 100 years old. It emerged from attempts to understand how today's relatively developed countries achieved their progress. As the field matured, it considered an ever-expanding range of influences on a country's economic fortunes and future options. In part, this reflects growing recognition of the role that different initial conditions and external forces played in shaping countries' options today—colonial history and the institutional structures left behind, geography and trade patterns, natural resource endowment, war and conflict, etc. Consensus is emerging on the role of two important dynamics that shape country outcomes: (1) the nature and pace of economic transformation, and (2) the development of resilience—at the household, community, and national levels. In virtually all countries in their early stages of development, economic transformation and resilience have been fundamentally powered by growth in agricultural productivity, which is why these three concepts—economic transformation, agricultural productivity, and resilience—form the conceptual framework of this report.

2.1 Economic Transformation

Economic transformation refers to two linked development processes: (1) *sectoral change*, through increases in labor productivity, especially in the sectors containing the majority of the labor force; and (2) *structural change*, the shift of workers and other resources from low-productivity sectors, such as subsistence agriculture, to high-productivity sectors, such as industry and modern services (De Vries *et al.*, 2015; Lewis, 1954; Timmer & Akkus, 2008). Economic transformation raises the general level of output per worker and hence is a fundamental driver of rising wages and incomes, improved living standards, and economic opportunities (Herrendorf *et al.*, 2013).

The process of economic transformation is both initiated and accelerated when the sector(s) of the economy where most people work experience productivity growth. In low-income countries (LICs), the largest sector by employment is usually agriculture. Sustained economic growth per capita—where the capacity to produce goods and services grows faster than population—is required to achieve transformation and development, in part because transformation requires continual investment and innovation, which requires increased resources per capita. Economic transformation creates sustained growth and is necessary to improve the material welfare of the population and increase resilience to shocks.

Both within-sector productivity growth and structural transformation involve the investment of more capital per unit of labor, the adoption of better technology, and a more efficient allocation of resources (often through better management). Case studies of Organisation for Economic Co-operation and Development countries

suggest that economic transformation is accelerated by the adoption of policies that raise savings, reduce investor costs and risks, and encourage continuous new investment and innovation. Policies that have been identified as important for economic transformation include:

- *Macroeconomic and political stability* (to reduce investor risk);
- *Increased integration into the global economy* in order to bring in technology and create a larger market for production (needed because manufacturing plants are often subject to economies of scale);
- *An adequate business environment*, including the legal institutions needed to reduce risks and transaction costs and increase the return on private investment (e.g., contract enforcement, protection of private property, rule of law, policy stability and predictability);³
- *Financial deepening and inclusion* to facilitate savings and reduce the cost of capital for new investment;
- *Adequate supply of entrepreneurial aspirations and skills*;
- *Public investment in complementary social and infrastructure services* with important externalities such as human capital, transport, communications, water and sanitation, energy, and public safety; and
- *A rapid demographic transition*, which creates a “demographic dividend” through a declining dependency ratio, which tends to increase public and private savings and investment.

The process of structural transformation increases labor productivity, incomes, and resilience in complex ways. Structural transformation entails more production in firms, and less production by households. As these higher-productivity sectors expand, they employ a greater fraction of the labor force. This labor will be supplied by (1) those about to leave school and enter the labor force; (2) those already in the labor force and engaged in home production (e.g., farmers or petty traders who leave their land or cease other forms of self-employment); (3) those in the labor force who are underemployed or unemployed; and (4) those not in the labor force who might be induced to enter it because of new earning opportunities. Movement of labor into firms where they earn a wage is known as the *employment transformation*. Increases in the share of employment in medium and large enterprises bring about higher and more stable earnings than employment on the farm or in household microenterprises because (1) it allows workers to specialize in discrete tasks that use their skills more effectively; (2) employees usually work with more capital or technology, raising their productivity, and (3) their incomes are less vulnerable to business risks. Because medium and large enterprises are more likely to be registered in the formal economy, rising employment in such enterprises mobilizes increased tax revenue for governments, which in turn allows them to invest more in ways that encourage future

³ The business environment need not be great at the start, but improvements support the transformation and enable it to continue.

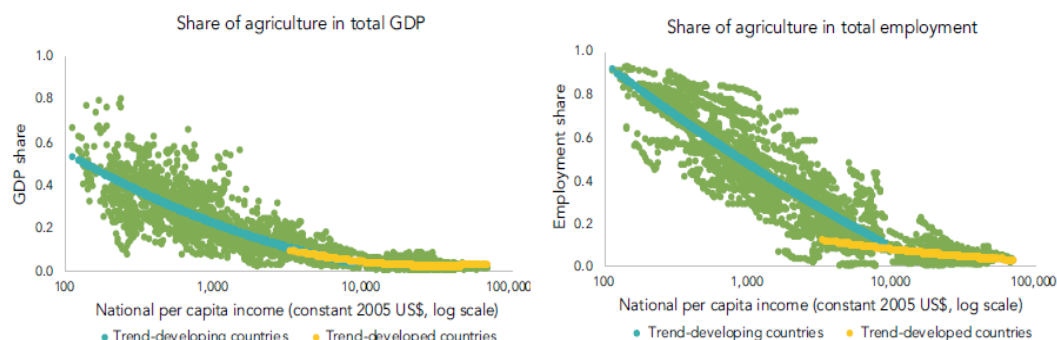
economic transformation and resilience. Employment transformation is a critical link between economic growth, development, and poverty reduction.

2.2 The Agricultural Growth Pathway to Inclusive Economic Transformation

Productivity improvements in the agricultural sector are critical for economic and employment transformation, although the thinking on how they interact continues to evolve. Early scholars of economic development ignored the prospect of within-sector productivity gains, focusing only on employment transformation, and saw agriculture as providing a deep pool of cheap labor that would need to flow into more productive manufacturing and service sectors as soon as they could start developing (see, for example, Lewis, 1954; Chenery & Syrquin, 1975). Since then, however, agricultural growth has come to be understood as a powerful catalyst of growth for the other non-farm sectors, especially in LICs, which can initiate and support inclusive transformation processes.

In countries still in their early stages of transformation, getting agriculture moving gets the whole economy moving. More than four decades ago, Johnston and Mellor (1961) described how this comes about: improvement to agricultural productivity releases resources to other sectors, raises the nutritional status of workers, lowers the costs of raw materials for industry, earns foreign exchange, and increases the demand for other sectors' outputs. The paradox of agricultural growth is that it leads to a relative decline of agriculture in the overall economy (Figure 1). This is because robust agricultural growth stimulates even faster output and employment growth in other sectors. However, although agriculture's share of employment, output, and productivity growth declined as countries started to transform, it was nonetheless significant until they reached at least upper-middle-income status. Agricultural output typically increased faster than population growth, allowing the agricultural sector to fuel transformation (Gollin, Parente and Rogerson, 2002; Gollin, 2010; Timmer 1988).

Figure 1: Agriculture's Share of Gross Domestic Product (GDP) and Labor Force Declines as Countries Get Richer



Note: The graphs show the relation between shares of agriculture in GDP and employment in the total economy of 139 countries (101 developing countries and 38 developed) during 1991–2014. Source: Lele et al. (2018).

As the agricultural sector develops, the rest of the rural economy does also, creating new sources of income for members of farm households. Increased farm production and productivity requires inputs and services to grow crops and subsequently to process, store, and transport produce, which creates new jobs and growth in the off-farm stages of the agri-food system (AFS). Moreover, raising farm incomes through increased agricultural productivity creates purchasing power that stimulates employment and output growth in non-farm sectors, especially in value-added food chains and non-tradable goods and services (Christiaensen *et al.*, 2011; Delgado *et al.*, 1998).⁴

Empirical estimates of the multiplier effects of agricultural growth on non-agricultural growth in developing countries range from 1.3 to 4.3—that is, a US\$1 increase in agricultural income generates an additional US\$0.30 to US\$3.30 of output in other sectors of the economy (Haggblade *et al.*, 1991). For countries in SSA, Delgado, Hopkins, and Kelly (1998) estimated agricultural growth multipliers between 1.9 and 2.9. A recent study by Gollin, Hansen, and Wingender (2019) found that between 1960 and 2010, each 1 percent increase in agricultural productivity in developing countries generated, on average, an increase of 1 percent in GDP per capita. This would suggest a multiplier as high as 5.

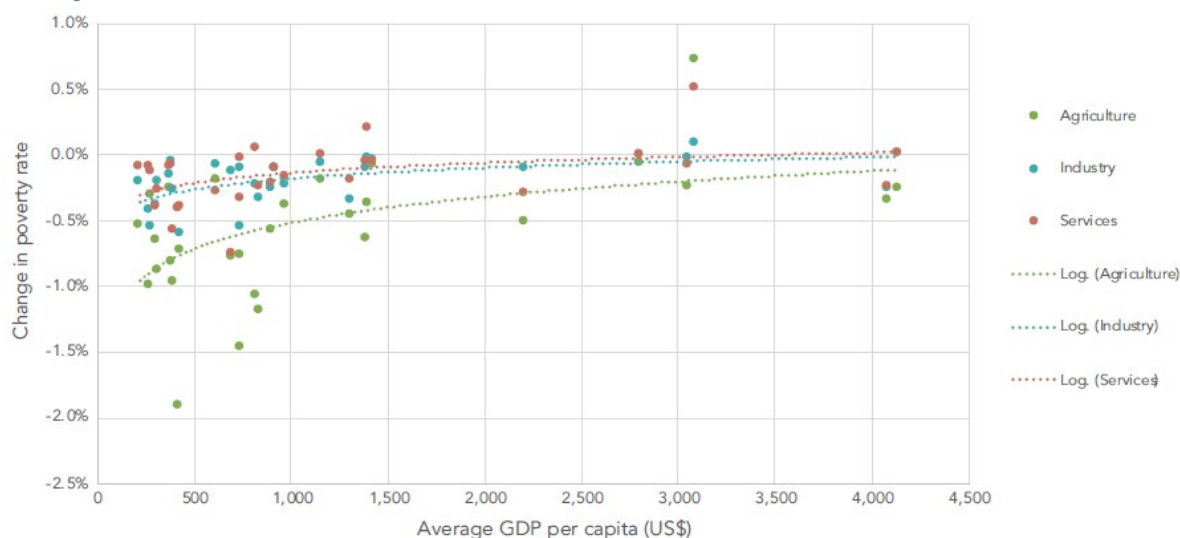
Because of these widely shared income and employment effects, output and productivity growth in agriculture has reduced poverty more so than growth in other economic sectors in the earlier stages of economic transformation (Ivanic & Martin, 2018; Ligon & Sadoulet, 2018). Ivanic and Martin (2018) found that in LICs, a 1 percent increase in agricultural total factor productivity (TFP) results, on average, in a 1 percent decline in the share of the population living in extreme poverty—roughly double the impact of a comparable increase in productivity in industry or services (Figure 2). Agriculture’s poverty-reducing advantage shrinks as countries (and people) grow richer, but the evidence affirms that improvements in agricultural productivity are vital for structural transformation and a smooth transition toward more urbanized economies. In countries where rural populations are still rising, technical change in agriculture can also help absorb the rapidly growing youth labor force while simultaneously raising farm earnings (Filmer & Fox, 2014).

In sum, agricultural productivity growth is essential for economic transformation in SSA. Because of agriculture’s extensive linkages throughout the economy, agricultural productivity growth supports growth in non-agricultural sectors, raising overall economic growth and the incomes of the poorest people in the country. By fueling national economic growth, agricultural productivity growth permits an increasing range of public services to be supplied in rural areas—education, health, water and power supplies, transportation services, police, *etc.*—which in turn support further increases in rural household incomes and welfare. Improvements in rural incomes and welfare help make the transformation more inclusive, increasing the resilience of the

⁴ Survey articles with empirical macroeconomic analysis of how agricultural growth accelerates growth in the rest of the economy include Timmer (1998) and Gollin (2010).

national economy. For these reasons, agricultural productivity growth continues to play a catalytic role in the economic transformation process in most low- and lower-middle-income African countries, even for those that have already succeeded in diversifying their economies.

Figure 2: Productivity Growth in Agriculture Is Especially Effective in Reducing Poverty in LICs



Note: The scatter plot shows the percent reduction in poverty (Y-axis) for a 1 percent increase in TFP of a sector, for countries with different levels of GDP/capita (X-axis). The dots and dashed trend lines show the effect on poverty reduction from TFP growth by sector for different countries. At low levels of national income, agricultural TFP growth (red dots and dashed line) has a significantly stronger effect on poverty reduction than TFP growth in industry and services (blue and yellow dashed lines, respectively). Figure 2 indicates that agricultural growth will be more poverty reducing for countries with average per capita income below US\$3,000 (in 2005 purchasing power parity [PPP] dollars). For perspective, all Africa's low-income countries had average per capita income of less than US\$2,000 in 2019. Most lower-middle-income countries had per capita income of less than US\$3,000 in 2019, with the exceptions of Angola, Côte D'Ivoire, Eswatini, Ghana, and Nigeria. Source: Ivanic & Martin (2018).

2.3 Resilience

Risk—the chance of loss or peril—is a feature of life. Negative shocks brought on by a risk materializing, whether arising from sources within a household, country or community, or outside, have a negative effect on economic and social welfare. There are three fundamental ways of addressing risk and the onset of shocks:

1. **Prevention:** *Ex ante* measures to reduce or eliminate the *possibility* that a negative shock will occur. Examples would be a vaccination, which prevents the risk of ill health from measles, a sea wall, which drastically reduces the probability that high tides would destroy property, or a farmer's purchase of fungicide to reduce the potential for crop loss due to disease.
2. **Mitigation:** *Ex ante* measures to reduce *the impact* of a shock that may occur in the future. Many important risks cannot be prevented from happening, but actions can be taken to dampen their effects if they do. Mitigation actions include developing drought-tolerant seed varieties; farmers adopting conservation farming practices that stabilize downside loss in crop yields from a drought or

flood; adopting standards or building infrastructure to reduce damage to real estate assets from earthquake, fire, flooding, or other natural disaster; or bankruptcy processes to minimize asset losses in the case of business failure. Insurance is an important form of mitigation, as it spreads any potential loss among many, reducing the severity of the impact on any one person at a point in time.

3. **Coping:** Recovering from a shock after it has occurred (*ex post* response). Coping actions include programs to provide cash or in-kind transfers to those affected by the shock; a household borrowing or drawing on unemployment benefits after the loss of a job, or a region developing an early warning system for potential flooding so that those living in a flood or tsunami zone can escape in time.

Table 1: Typology of Risk Management Strategies

	Effect on prior shock?	Effect on future shocks?
Prevention: reduce the probability that a shock will occur	No	Yes
Mitigation: reduce the impact that a future shock might have	No	Yes
Coping: reduce the adverse effects of shock that already occurred	Yes	Possibly

Risks are often classified by the number of people affected at once. An *idiosyncratic* risk affects households or individuals randomly and does not spillover to others. An example would be a car accident, or a chronic disease—if your neighbor experiences it, the chance of it happening to you are unchanged. A *covariate* risk affects a group of people (community, region, or nation) at once. This could be a weather shock (drought, food, extreme cold or heat), a contagious disease such as COVID-19, or an economic shock such as rapid change in prices or terms of trade, or in availability of supply. In many African countries, relatively high-probability covariate risks include drought, floods, and transmittable human disease.

Failure to manage shocks results in income losses and asset declines or destruction, meaning that people and countries have to save and reinvest just to get back to the capacity to produce goods and services and consumption levels that they had before the shock. Idiosyncratic risks are easiest to mitigate through insurance, as everyone would pay a premium at the same time but not need an insurance pay-out at the same time. Covariate risks can have a sustained impact on the growth trajectory of entire countries and hence may pose the greatest threats to economic transformation, but transformation can help countries manage risks. How well households, communities, and countries manage shocks—either through prevention, mitigation, or coping—reflects their resilience.



USAID defines *resilience* as:

the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth (USAID, 2012, p.1).

Resilience has three fundamental dimensions: the ability to (1) *ex ante* dampen the impact of shocks (mitigation); (2) quickly recover from shocks and difficulties (coping); and (3) adapt to “new normal” conditions, given that some shocks may permanently alter the conditions facing a given household, community, or nation (plan for future prevention and mitigation).

A distinguishing feature of poor people and countries is their high vulnerability to risk and their limited resilience. Livelihoods in poor countries are inherently risky, as most people live off of what they can sell (either what they produced on their farm or at home, or what they bought and are reselling to others), resulting in a risky and uncertain income stream compared to a wage earner. Production is not very diversified, so a major weather shock (reducing agricultural output and earnings) or an export price shock (reducing exporter earnings) affects national income—reducing consumption and investment in both the public and private sectors. Income risk is often covariate (e.g., bad weather affecting all incomes in a farming community), reducing possibilities for informal risk sharing or pooling. Investments in prevention, mitigation, or coping are difficult for people without savings or countries without access to capital to finance the investments. Recent research suggests that people with inadequate food, or even at the risk of inadequate food, suffer cognitive declines, making the type of planning needed to manage risks much harder (Mani *et al.*, 2013). Owing to economies of scale and difficulties in risk pooling, insurance markets are often ineffective in poor countries and poor areas. Finally, poorer countries are somewhat more likely to experience civil conflict, and conflict impoverishes countries, communities, and people (Hegre *et al.*, 2011).

Strategies to promote resilience must consider the alternative ways of supporting country preparedness for relatively high-probability covariate risks that cannot be

prevented. Economic growth widens country options. The development of an effective tax collection and expenditure management system means countries can invest in infrastructure to reduce the impact of shocks (prevention and mitigation). These are often, but not always, high-return investments, as expenditures on coping can be suboptimal. However, some risks (e.g., extreme weather events) cannot be prevented, and mitigation strategies are limited. In these cases, economic growth allows countries to become rich enough to self-insure, funding coping mechanisms such as providing emergency assistance to the affected population in the case of shocks that tend to affect one region of the country but not others (e.g., a hurricane that affects coastal areas but not inland areas versus a severe freeze that affects colder regions but not warmer ones). Richer countries also have access to capital markets, allowing borrowing to financing coping expenditures.

Weak government effectiveness hinders poor countries' capacity to manage risks, as often a resilience strategy (risk prevention or mitigation) requires an effective public sector response to ensure collective action and/or participation in risk pooling. For example, in the case of many animal or crop diseases, all farmers in an area must vaccinate their animals or spray their fields to prevent transmission to other farmers' fields or animals.

Even mitigation may require collective action (e.g., an irrigation system or management of a flood plain). Mitigation investments may be costly, especially for poorer countries that face many competing expenditure priorities such as education, health, and water and sanitation. Sometimes coping is the cheapest strategy. If an area or region is constantly subject to shocks—such as a highly drought- or flood-prone region—the best solution could be to increase transportation networks and build human capital in the next generation so that they can migrate to towns and cities and take advantage of better income earning opportunities there. This is a lesson that many countries have learned the hard way, when large engineering projects failed to deliver promised benefits.⁵

The role of resilience and adaptability in supporting economic transformation and development has been underappreciated until very recently. Today's rich countries got there not through economic growth rates higher than today's developing countries, but by avoiding periods of decline (Broadberry & Wallis, 2017). This increased resilience—lack of economic decline in response to shocks—is what brought increased income and self-reliance to today's rich countries. Countries that are not resilient suffer extended periods of decline in per capita production and income following the onset of a shock. They struggle to get back on a growth path, and their net growth over an extended period is therefore lower, even if they do experience some years of rapid growth.

Countries gain resiliency through four main pathways (Broadberry & Wallis, 2017):

⁵ For an early, but still highly relevant discussion of this problem, see A. O. Hirschman's classic book *Development Projects Observed* (1967).

1. More political inclusion and stability, with less civil conflict;
2. Economic diversification, in production and exports, so that commodity cycles do not have an outsized impact on growth;
3. Economic transformation, which raises growth sustainably and fuels employment transformation, which raises the share of workers earning a more secure income; and
4. Human capital accumulation, which allows productivity increases through acquisition and adaptation of technology, and ultimately more innovation as well as adaptability to new circumstances or conditions.

All these factors are enabled by impersonal institutions, which are the laws, regulations, and customs that facilitate exchange, reduce transaction costs, coordinate markets, and provide order, reducing transaction risk. As noted above, stronger institutions facilitate increased investment and economic transformation. Combined with political inclusion, they facilitate cooperation when a shock arrives and reduce conflicts over resources in the economy, helping ensure that growth is shared (Broadberry & Wallis, 2017). As many have noted, institutions take time to develop, but institutions do not have to be perfect at the outset for growth to be sustained (Rodrik, 2015). Steady improvements are enough.

Economic cooperation leading to resilience and increased self-reliance is also enabled by lower economic inequality and by political and economic policy that strives for inclusion. Civil conflict and violence retard, if not eliminate, economic growth and transformation, and one of the important drivers of political instability, conflict, and state fragility is economic and social exclusion (World Bank, 2020c). Inclusion supports and complements economic development through increased political stability and investments in human capital throughout the population, which fuel future increases in economic capabilities and the demand for the impersonal economic institutions that enable both investment and resilience (Acemoglu & Robinson, 2012). Few countries have succeeded in transforming their economies without improving the welfare of broad segments of the population, including in rural areas (International Fund for Agricultural Development [IFAD], 2016).

Microeconomic resilience—reduction in income volatility at the household and community level—is also necessary for economic growth and inclusive development. Sustained improvements in household incomes require a reduction in income volatility (Banerjee & Duflo, 2011; Lybbert & Wydick, 2017) because volatility and risk reduce household incentives to invest, especially for poor households. Households without assets have trouble growing their incomes, and in this way, the risk of income volatility creates a poverty trap through encouraging costly risk-avoidance behavior. Households need to reduce their exposure to idiosyncratic risk through savings and access to prevention, mitigation, and coping mechanisms (such as affordable healthcare). Communities often join together to mitigate or cope with covariate risks or engage in collective action to get help from their fellow citizens (the national

government). Through the channel of reduced chronic poverty and increased inclusion, improved microeconomic resilience supports macroeconomic resilience.

Although resilience supports economic growth and transformation, inclusive economic growth supports resilience as well. Households further away from the poverty line, where food expenditures account for 20 percent of consumption or less, find it much easier to cope with an increase in food prices than households where food accounts for 70 percent or more of total consumption. Economic growth helps finance the investments needed to increase resilience.

In sum, gains in economic transformation, inclusive economic development, and resilience are self-reinforcing and mutually support each other. Economic transformation enables economic diversification, which reduces countries' vulnerability to shocks affecting a particular sector, promoting resilience. Economic transformation also generates resources for both the public and private sectors to save and invest, building human capital and infrastructure services that enable household and community resilience.

Policies supporting inclusion and poverty reduction support economic transformation by encouraging political stability, voice, and accountability, and helping households invest in physical, financial, and human capital, including the health and education of their children. Reducing microeconomic risk is critical for avoiding poverty traps. Underlying and supporting all these changes is the continued development of impersonal institutions, which also helps economies adapt when a shock arrives.



Box 1: COUNTRY SELF-RELIANCE: What Do Transformation and Resilience Have to Do with It?

In 2017, USAID proclaimed ending the need for foreign assistance as its mission, and the Journey to Self-Reliance as its vision of how USAID supports partner countries to reach this goal. USAID defines country self-reliance as:

the capacity to plan, finance, and implement solutions to local development challenges, and a commitment to see these through effectively, inclusively, and with accountability.⁶

USAID uses 17 primary metrics to measure a country's progress toward (1) making the necessary commitments to the Journey and (2) translating those commitments into capacity.⁷ Several of the metrics are measures of progress toward economic transformation and resilience, an indication of how important these processes are for improving self-reliance. For example, the metrics on country commitment cover key enabling policies for transformation and resilience: business and investment climate, trade freedom, open government, and inclusive development; while the metrics on capacity chart progress toward transformation and resilience: safety and security, government effectiveness, GDP per capita, export sophistication, poverty rate, child educational and health outcomes, and civil society capacity. This shows the tight link between advancing economic transformation, building resilience, and progressing toward self-reliance.

⁶ USAID (2018)

⁷ USAID's Country Roadmaps: Assessing a Country's Progress toward Self-Reliance, https://www.usaid.gov/sites/default/files/documents/1870/Revised_Updated_Roadmap_Factsheet.pdf.

3.0 THE TRANSITION FROM RESOURCE-DEPENDENT TO PRODUCTIVITY-LED AGRICULTURAL GROWTH: LESSONS FROM SUCCESSFUL ASIAN AND AFRICAN CASES

USAID has been committed to agricultural development for decades and has achieved significant successes. Many countries in Asia and Latin America used strategic investments in agriculture as a means to stimulate economic and structural transformation in their economies in a way that has reduced poverty and improved food security.

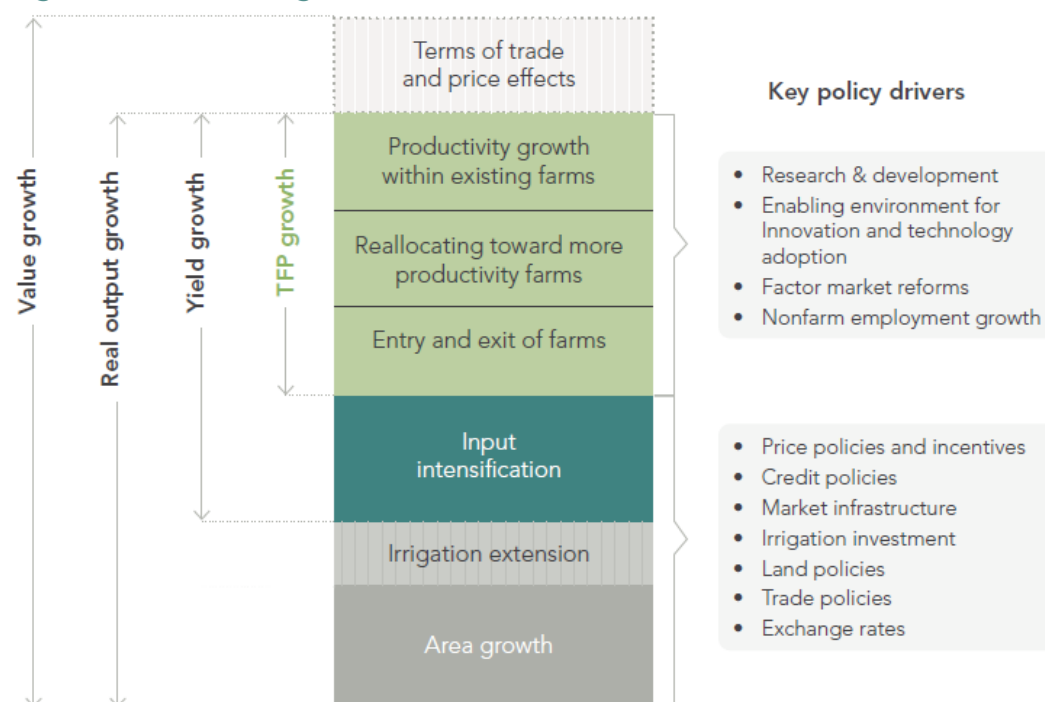
This section provides a conceptual understanding of agricultural productivity and the factors that influence it. We then briefly review the experiences of two Asian countries—Thailand and Bangladesh—that have successfully emphasized agriculture in their national development strategies. We also review the role of agricultural growth in two African countries—Ethiopia and Ghana—that have made great strides in reducing poverty and improving health outcomes in recent years.

3.1 Assessing Progress toward Productivity-Led Agriculture Growth

Given the importance of productivity growth to agricultural and economic development, it is important to have a clear (and measurable) conception of what productivity is and what policies can best influence it. Measures of productivity include value-added per worker, crop yield per acre, and total output per total input. At its core, productivity is a ratio between economic output (or set of outputs) and economic input (or set of inputs). Increases in productivity imply that more output is obtained from the same or fewer amount of inputs. From that standpoint of agricultural growth, it is common to distinguish between growth due to land expansion as “extensive” or resource-dependent growth, and growth due to increases in yield as “intensive” growth. In industry, economic growth is often decomposed into two parts: one resulting from increases in the size of the labor force and another resulting from changes in value-addition per worker. Increases in the productivity component of growth (crop yield per acre or value-added per worker) can come about through increased use of other inputs (e.g., more fertilizer per acre or capital per worker) or by adopting new technologies or practices that improve the efficiency with which inputs are used. Productivity measures that compare output to total inputs (land, labor, and capital inputs combined) are known as total factor productivity (TFP).

Figure 3 provides a conceptual depiction of sources of agricultural (or economic) growth. The size of the stacked bars indicates the contribution of various factors to the growth in value of output. Note that changes in the real *value* of agricultural output is due to changes in the *volume* of supply (labeled “real output growth” in Figure 3) and changes in the agricultural terms of trade (or the price of agricultural commodities relative to the overall GDP price level). During periods of commodity price booms, agricultural GDP may rise due to terms of trade effects even if the volume of production remains unchanged. Conversely, it may decline during periods of price busts. The top box in Figure 3 depicts the terms-of-trade effects. Because these effects tend to be transitory, our analysis focuses on the components that contribute to real output growth—increases in the total volume of commodities produced.

Figure 3: Sources of Agricultural Growth



Note: Sources of growth in agricultural output can be decomposed into a part due to an increase in effective land area cropland and pasture (include the impact of irrigation to expand effective agricultural area) and a part due to the increased yield of that area. Yield growth in turn can be due to (1) more intensive use of labor and capital per acre, and (2) to an improvement in TFP of all the inputs used in production. TFP improvement can come about through adoption of new technology by existing farms and more efficient resource use by farms (including expansion of the most productive farms). The contribution of total inputs to output growth is the sum of area growth (in dark gray) and input intensification (in teal). Changes in the terms of trade reflect the relative price of farm commodities for non-farm goods. Source: Fuglie et al. (2020).

The bottom component of the stacked bar (dark gray box in Figure 3) shows the contributions to real output growth from land expansion, including the augmentation of land quality by extending irrigation. The middle component (teal box) captures growth due to intensification of input use on existing land (more labor, fertilizer, or capital per acre, for example). The TFP growth component (light green box) reflects the overall efficiency with which all inputs are transformed into outputs.



Photo by Tony marcel II/AYANSE

TFP growth itself can be decomposed in a standard fashion into three sources of efficiency gains: (1) increases in the productivity of existing farms due to technical and managerial improvements; (2) gains from reallocation of factors of production from lower to higher productivity farms (*i.e.*, more productive farms acquire land, *etc.*, from less productive farms); and (3) entry of higher productivity farms and exit of less productive farms.

The growth decomposition depicted in Figure 3 conveys an important message: without land expansion, any increase in agricultural output will require either more intensive use of inputs or improvement in TFP. In the short term, yields may be raised by intensifying the use of other inputs (*e.g.*, induced by higher crop prices or input subsidies), but by using only existing technologies, this growth path will be subject to diminishing returns. Changes in TFP, conversely, are driven by innovations and changes in technology. Through investment in R&D, incremental improvements to productivity can be sustained over the long term. Policies that provide a constructive “enabling environment” can stimulate investment by private agribusiness and farms in innovation and technology adoption. Improved market integration and trade liberalization can raise TFP by enabling farmers to specialize in commodities in which they have a comparative advantage and thereby improve efficiency.

Thailand: Competitive Agriculture Moving Up the Agri-Food Export Value Chain

Through strategic government investments and a favorable business environment, Thailand has strengthened its comparative advantage in agriculture to diversify its exports beyond a few raw agricultural commodities into a more diverse set of value-added food and agricultural products. Up until the 1980s, Thailand’s agricultural exports (and total exports for that matter) were dominated by rice and rubber, but in the decades since then, Thailand’s exports have grown to include sugar cane, cassava, maize, farm-raised seafood, and processed food products such as poultry and canned

tropical fruits. This economic diversification has kept agriculture's share of total GDP relatively high—between 1970 and 1990, agriculture's share of GDP declined from 25 percent to 10 percent, but since 1990, the growth in agricultural GDP has been comparable to the economy as a whole to keep this share roughly constant. Meanwhile, value-added food processing accounts for about one-fifth of Thailand's total manufacturing (World Development Indicators, 2020).

Of particular relevance for Africa is Thailand's successful agricultural development of its Northeast Region. Northeast Thailand makes up about one-third of the country's land area and population. In 1970, most of this region's population depended on subsistence agriculture, growing rice under rainfed condition on weathered, tropical soils similar to those found in Africa's Guinea Savanna (World Bank, 2009). Agricultural productivity was low and unstable, and much of the region's population lived in poverty, with a high prevalence of child malnutrition.

In the 1970s, government (and USAID) investments in farm-to-market roads, plus strong domestic and foreign demand for animal feed, helped stimulate growth in cassava and maize production in the Northeast. This was primarily extensive growth—farmers increased crop production by expanding into upland and forest areas. By the 1980s, the land frontier had largely been reached, but agricultural growth was sustained by transitioning to productivity-led growth. Government and private investments in agricultural research and extension contributed high yielding and drought-resistant varieties of rice, cassava, sugar cane, and maize (Ekasingh *et al.*, 2008). Since 2003, rubber (which was up to that time grown mainly in Thailand's south) has become a major export commodity of the Northeast Region. By 2013, more than four million hectares had been planted to new high-yielding rubber tree clones. Intermediate processing of fresh cassava roots into dried chips and pellets, cane into raw sugar, and rubber sap into latex has generated further employment in the region. Even rice, which was traditionally grown for local consumption, has emerged as a major export commodity for the Northeast, with farmers switching from glutinous rice varieties (the local staple) to non-glutinous varieties for export. Between 1980 and 2005, average yields of rice, cassava, and maize in the Northeast improved by 30–50 percent, with rice yields, for example, increasing from about 1.5 tons per hectare (t/ha) to 2.0 t/ha (Grandstaff *et al.*, 2008).

Rambo (2017) summarizes findings from research on the social impacts of the agricultural transformation in Northeast Thailand. More productive farms and higher incomes contributed to significant reductions in poverty. Malnutrition (in the form of energy-protein deficiency), which affected close to half of school-age children in the 1980s, declined sharply. However, specific micronutrient deficiencies (in iron, zinc, and Vitamin A especially) remain common, and childhood obesity has been rising. Accompanying the changes in income levels and commercial orientation of farm households were rapid gains in education. Parents increasingly see investing in their children's education as a preferred pathway for upward mobility over expanding their land holdings to pass on to their children.

An important lesson from the commercialization of agriculture in Thailand's Northeast Region is that this did not come at the expense of the subsistence crop of glutinous rice. Productivity improvements in glutinous rice production released resources for commercial crops while meeting local demand for this food staple.

Bangladesh: Agriculture Supports Poverty Reduction and Economic Transformation

At its independence in 1971, Bangladesh was one of the poorest countries in the world. Its economy and labor force were mostly agricultural, and most of the population lived in poverty and suffered from chronic food insecurity. Bangladesh was a major destination for emergency food aid.

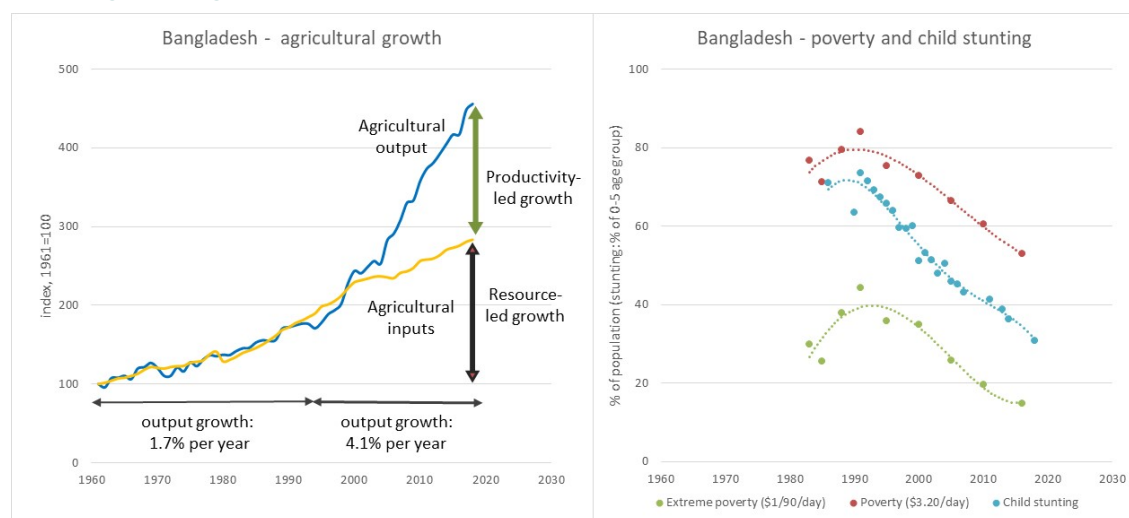
Agricultural growth in Bangladesh was sluggish until the mid-1990s, but a combination of factors, including macroeconomic reforms, market liberalization, and adoption of new agricultural technologies, led to a more than doubling of the agricultural growth rate after 1996 (Figure 4). Important innovations included improved crop varieties, techniques for aquaculture production and marketing, availability of low-cost equipment for groundwater irrigation, and an emphasis on inclusive adult education and training. Nongovernmental organizations (NGOs) like the Bangladesh Rural Advancement Committee and Grameen Bank led the development of an effective adult education system for farm and rural households, which included microfinancing schemes and an emphasis on gender inclusiveness (Gautam & Faruquee 2016). The government and NGO sectors also played a leading role in improving access to family health and family planning services to increase birth spacing and reduce fertility rates.

Rapid agricultural growth was sustained by a successful transition from resource-dependent growth to productivity-led growth (Figure 4). Since around 2000, improvement in agricultural TFP has been the dominant source of agricultural growth. The agricultural economy has also diversified, with the share of rice in gross value of agricultural output falling from around two-thirds in 2000 to about one-half by 2016. Aquaculture has been the most rapidly growing component of Bangladeshi agriculture, with annual production increasing from about 200,000 metric tons in the early 1990s to 2.4 million tons in 2018.

Studies by the World Bank and others have found that the rapid improvements in productivity of smallholder agriculture in Bangladesh were a major driver of the sharp reduction in poverty rates and malnutrition in the country (Gautam & Faruquee, 2016; Headey *et al.*, 2015). Between 1991 and 2016, the share of the population living on less than US\$3.20/day/capita fell from 84 percent to 53 percent, and between 1991 and 2018, the share of children under five years old suffering from stunting declined from 74 percent to 31 percent. Productivity-led growth in agriculture not only raised farm household incomes, but it reduced the real cost of food and stimulated demand for non-farm goods and services. Non-farm employment grew more rapidly than farm employment nationally and in rural areas. Farm families began to devote more of their labor to non-farm activities and diversify their sources of income. From an analysis of

five rounds of household surveys between 1997 and 2011, Headey *et al.* (2015) found that increased household income and parental education were the dominant explanatory factors behind the decline in child undernutrition. According to the detailed assessment by Gautam and Faruquee (2016, p. 175), “Agriculture has played a key role in the development of Bangladesh’s economy— improving food security, reducing poverty, and bringing prosperity to areas that have been depressed for a long time.” Their analysis found strong linkages between agricultural growth and diversification on child nutritional outcomes, which also benefited from complementary improvements in household sanitation and women’s education.

Figure 4: Accelerating Agricultural Growth Helped Reduce Poverty and Child Stunting in Bangladesh



Note: In the mid-1990s, the average rate of growth in agricultural production in Bangladesh increased from around 1.7 percent per year to more than 4 percent per year. As agricultural growth accelerated, poverty and child stunting began to decline. The prevalence of child stunting in the 0–5 age group fell from 74 percent in 1991 to 31 percent by 2018. Agricultural TFP became the dominant source of agricultural growth in the 2000s, achieved through smallholder adoption of innovations in rice, aquaculture, and vegetable production systems. Sources: Agricultural output and input indexes are from the United States Department of Agriculture (USDA)-Economic Research Service (2020); prevalence of poverty and child stunting are from the World Development Indicators (2020).

Another outcome of agricultural growth in Bangladesh is that the country is rapidly graduating from the need for emergency food assistance. According to the Food and Agriculture Organization of the United Nations (FAO), during the 1990s, Bangladesh received on average about 900,000 tons of emergency food assistance annually, but during 2008–2016, emergency food shipments had fallen to about 90,000 tons per year. Currently, U.S. food assistance to Bangladesh is almost entirely targeted to special groups, such as Rohingya refugee assistance or for mothers and children from poor families and includes both in-kind food deliveries and income support (USAID, 2020a).

3.2 Ethiopia: An Emerging African Agricultural Success Story

In the latter part of the 20th century, Ethiopia was afflicted by political upheaval, civil conflict, and severe drought, cumulating in a devastating famine that claimed at least



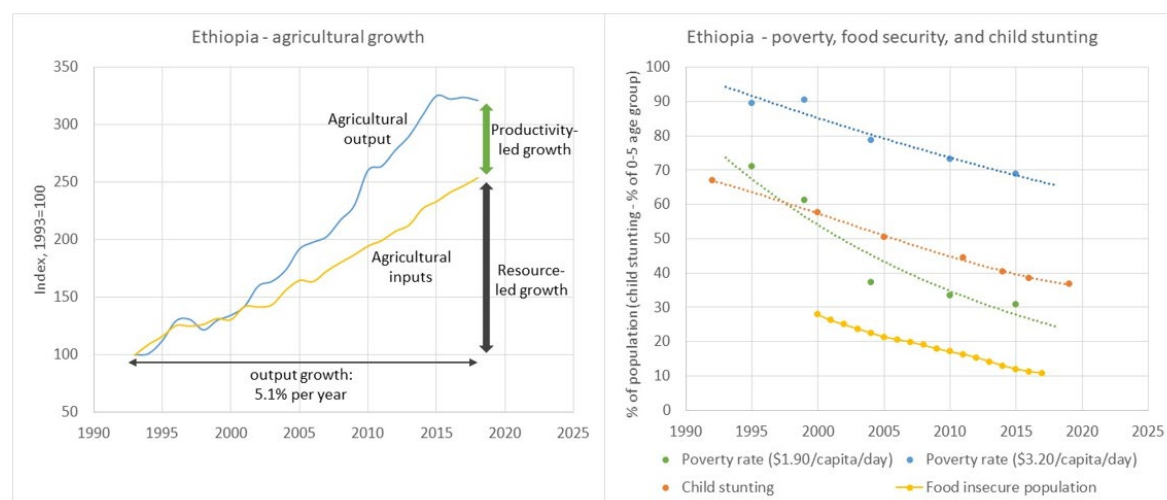
400,000 lives in 1984–1985 (de Waal, 1997), but since the mid-1990s, Ethiopia has achieved one of the fastest economic growth rates in the world. Ethiopia has characterized its new economic policy as “agricultural development-led industrialization,” which puts an emphasis on raising productivity of smallholder farmers in order to improve food security and generate broadly shared income gains. The result: between 1993 and 2018, agricultural output more than tripled, with growth averaging more than 5 percent per year over these 25 years (Figure 5). About two-thirds of this growth came from expanding land in farms and use of other inputs and about one-third from productivity gains: agricultural TFP grew at an annual rate of 1.6 percent over these years, according to United States Department of Agriculture Economic Research Service (USDA-ERS) estimates. This acceleration in agricultural and economic growth greatly improved the livelihoods of millions. By 2015, the share of the Ethiopian population subsisting on less than US\$1.90/day had been cut in half, falling to 31 percent from 71 percent in 1995; the fraction of children under age five suffering from stunting fell from 67 percent in 1992 in to 37 percent in 2019 (Figure 5).

Ethiopia’s “agricultural development-led industrialization” involved a strong role for the state in guiding agricultural and rural investment together with gradual liberalization of the market economy. Dorosh & Rashid (2012) identified several policies that have been especially important to Ethiopia’s success in agriculture: (1) liberalizing agricultural markets; (2) investing in agricultural research and extension; (3) building rural transportation infrastructure; (4) establishing an effective social safety net; and (5) providing macroeconomic stability. These policies encouraged farmers to adopt new crops and improved crop varieties, increase use of fertilizers and other modern inputs, invest in land improvement, and access markets with emerging farm surpluses.

The costs of Ethiopia’s agriculture-led development strategy have not been insubstantial. Total spending on agriculture by the Ethiopian government between 2001 and 2017 was US\$7.19 billion, or 9.4 percent of total government expenditures (FAO, 2020). Ethiopia is one of the few African countries to substantially increase its

spending on public agricultural research, which has more than tripled in real terms, from less than US\$50 million per year in the 1990s to US\$162 million in 2016 (constant 2011 prices; Agricultural Science and Technology Indicators Database [ASTI], 2020). During 2001–2017, foreign donors also committed US\$5.63 billion to Ethiopia in development flows for agriculture, agro-industry, and rural development, and another US\$9.78 billion in food and nutrition assistance (FAO, 2020), but these commitments paid off. Between 2001–2019, annual agricultural value-added increased from US\$7.76 billion to US\$21.7 billion. The cumulative value of the *growth* over 2001 levels in agricultural value-added over these years was US\$113 billion. The increase in agricultural value-added, which raised farm incomes, in turn generated demand for non-farm goods and services. Diao *et al.* (2007) estimated that each US\$1 of agricultural value-added in the Ethiopian economy generates an additional US\$0.29 in non-farm GDP.

Figure 5: Agricultural Growth and Falling Rates of Poverty, Food Insecurity, and Child Stunting in Ethiopia



Sources: Agricultural output and input indexes are from USDA-ERS international agricultural productivity database; poverty and child stunting are from World Development Indicators; the food insecure population is three-year moving average from FAO *et al.*, 2017.

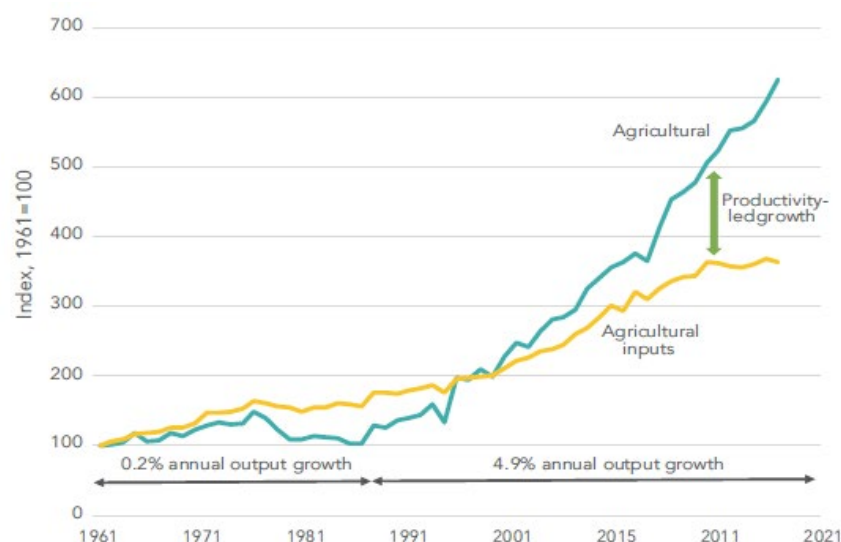
Since 2015, however, agricultural output in Ethiopia appears to have stagnated (Figure 5). This was partly due to severe droughts in 2016 and 2017, highlighting the country's continued dependence on rainfed agriculture. Reinvigorating growth in Ethiopia's agriculture will likely require expanding the area under irrigation, improving market access for remote villages, and continuing to strengthen the public research and extension system. Although spending on agricultural research has increased, it is still small relative to the size of Ethiopia's agriculture sector (R&D spending is less than 0.3 percent of agricultural value-added), and scientific capacity is underdeveloped, with fewer than 8 percent of research staff having PhD degrees, compared with about 30 percent on average for agricultural research systems in SSA countries (ASTI, 2020). Importantly, productivity improvement will need to move beyond crops and include Ethiopia's large livestock sector.

3.3 Ghana: Turning the Corner from Stagnation to Growth in Agriculture

At independence in 1957, Ghana's future looked bright. It had a relatively strong economy, abundant land and forests, and was the world's leading supplier of cocoa. It initially followed a state-led development strategy that taxed agriculture to subsidize industrial development, but this strategy failed to produce sustainable growth, and serious macroeconomic imbalances emerged. By the mid-1980s, Ghana was obliged to adopt significant economic reforms. These reforms liberalized markets, improved the agricultural terms of trade, and helped reinvigorate the economy. Since 1984, economic growth in Ghana has averaged more than 5 percent per year, and this growth was widely shared: the US\$1.90/capita/day poverty rate fell from 43 percent of the national population in 1987 to 13 percent by 2016; meanwhile, rates of child stunting were more than halved (World Development Indicators, 2020).

A key reason why Ghana has been able to achieve inclusive economic growth is that agriculture has been a strong participant in the country's economic success story. Since economic reforms began in 1983, gross agricultural output (in constant dollars) has grown at nearly the same rate as the rest of the economy, at 4.9 percent per year (Figure 6). Ghana is a net exporter of agricultural products and has diversified its agricultural exports beyond cocoa to include pineapples, tropical fruits, cashews, and vegetables, while remaining largely self-sufficient in food crops (Wiggins & Leturque, 2011). Cropland expansion by small- and medium-sized farms has been a major driver of the growth in agriculture output. Productivity has also improved. In fact, increases in TFP accounted for nearly all the growth in Ghana's agricultural output since 2012 (Figure 6).

Figure 6: Agricultural Growth Trends for Ghana, 1961-2018



Source: USDA-Economic Research Service (2020) international agricultural productivity database.

In an extensive review of factors driving the resurgence of agricultural growth in Ghana, Wiggins and Leturque (2011) concluded that the key role of government was

to “ensure a favourable climate for investment and supplying public goods, especially roads and research.” In the 1980s, allowing an overvalued exchange rate to depreciate helped make Ghana’s exports more competitive. Reform of the monopolistic Cocoa Marketing Board increased prices received by producers and encouraged private investment in agri-food value chains. Trade and banking liberalization made commercial credit and export licenses easier to obtain. Public investments in rural roads improved farmers’ market access conditions. Support for public agricultural research and extension provided innovations such as improved crop varieties that raised crop yields. Benin (2019) found that government spending on agriculture and rural roads has, on average, generated high returns. However, this spending has heavily favored the cocoa sector, and non-cocoa commodities continue to face significant underinvestment in public goods (Benin, 2019).

As with Ethiopia, Ghana is one of the few countries in SSA that has significantly increased its spending on agricultural research. Between 1981–2013, Ghana’s spending on public agricultural research increased almost 10-fold in real terms, from US\$23 million to US\$207 million (at constant 2011 prices), reaching about 1 percent of total agricultural value-added in recent years (ASTI, 2020). Research on food crops has also benefitted from collaboration with the Consultative Group for International Agricultural Research (CGIAR) international agricultural research centers and other foreign research institutions. For many important food crops, new varieties have been developed and average crop yields increased over the last couple of decades (Table 2).

Table 2: Primary Crop Production and Productivity in Ghana

Crop	Value of Production	Production	Area Harvested	Yield (1989–1991 average)	Yield (2016–2018 average)	Area Under Improved Varieties
	(million Cedi, 2017 prices)	(1,000 tons)	(1,000 hectares)	(ton/ha)	(ton/ha)	% of area harvested
Cassava	19,541	19,218	987	8.8	19.4	36
Yam	15,913	7,718	448	8.2	17.2	10
Plantain	6,644	4,056	367	6.2	11.0	--
Cocoyam	3,108	1,383	212	6.0	6.5	--
Maize	3,057	2,013	1,022	1.3	2.0	53
Groundnut	2,155	460	356	0.9	1.3	--
Rice	1,783	726	258	1.4	2.8	58
Soybean	727	155	93	--	1.7	--
Cowpea	721	211	153	--	1.4	81
Sorghum	502	259	243	0.8	1.1	--
Millet	394	168	168	0.6	1.0	--

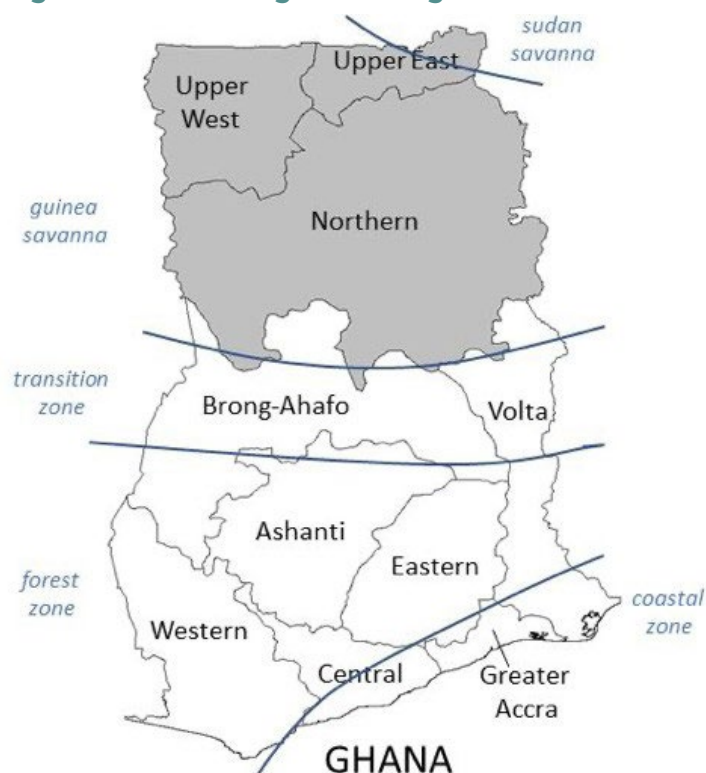
Notes: -- data not available. Tons = metric tons. Official exchange rate in 2017: US\$1 = 4.4 Cedi.

Sources: Production, area, value of production and yield are from the Food and Agriculture Organization of the United Nations Corporate Statistical Database (FAOSTAT; 2020) and are an annual average over 2016–2018 except where noted. Adoption rates for improved varieties are from Walker & Alwang (2015) and refer

to the 2009–2010 crop year, except for maize, which is from Abate *et al.* (2017) and refers to the 2016 crop season.

The northern regions of Ghana have historically had higher poverty rates and greater reliance on food crops than the more developed southern “cocoa belt.” In the Guinea and Sudan Savanna zones especially (see Figure 7), most households depend on agriculture for their livelihood, rainfall is sufficient for just one crop per year, and primary food crops (root crops, cereals, and grain legumes), dominate production and livelihood. Northern Ghana has also been a “zone of influence” focal area for the U.S. Government’s Feed the Future initiative. Although data on agriculture trends in Ghana’s northern regions are less up-to-date, Figure 8 indicates that agricultural output and productivity gains in the savanna zones have been substantial, and that indices of poverty and child stunting have significantly declined in this region as well. Moreover, most poverty reduction appears to be due to economic growth within the savanna zone itself rather than outmigration—between 2000 and 2013, population growth in the north was only slightly lower than the national rate (2.4 percent versus 2.6 percent). Up to 2007, growth in food crop production in the savanna zone closely followed cropland expansion, but during 2007–2011, improvement in crop yields appears to have strongly contributed to growth (data on regional crop yield are not available after 2011). There is also evidence that crop composition in this region is diversifying, with rapid growth in crop area devoted to grain legumes (groundnuts, cowpea, soybean, and beans).

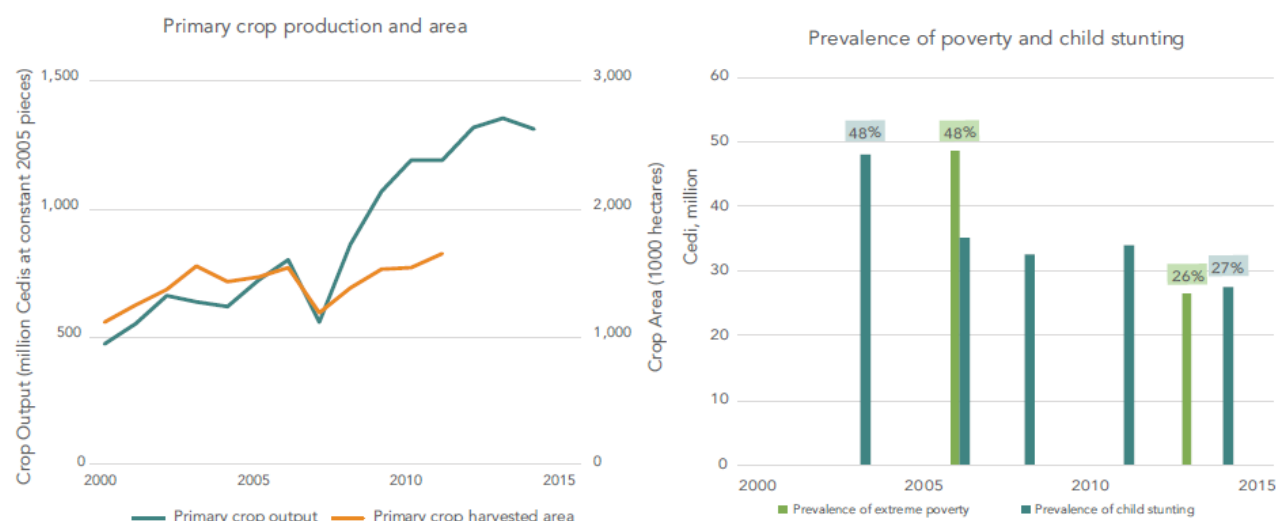
Figure 7: Ghana’s Regions and Agricultural Zones



Note: The boundaries for Ghana’s 10 regions are shown as they existed between 1987–2018 (in 2019, six new regions were created). Farming systems vary considerably across the agro-ecological zones. Agriculture in the savanna zones is dominated by smallholder farmers producing mainly food crops—roots and tubers, cereals, and grain legumes. Agriculture in more commercially oriented coastal, forest, and transition zones

produce significant amounts of cash crops for export (cacao, pineapples, oil palm, rubber, cashews) in addition to food crops. The savanna zones predominate in the Northern, Upper West, and Upper East Regions. These regions contain about 17 percent of the national population and more than half of those living in extreme poverty.

Figure 8: Agricultural Productivity and Poverty Reduction in Northern Ghana's Savanna Zones



Note: Primary crops consist of cereal grains (rice, maize, sorghum, millet), roots and tubers (yam, cassava, cocoyam, and sweet potato), grain legumes (groundnuts, cowpea, soybean) and plantains. The value of crop output is calculated using constant 2005 producer prices (Cedi/metric ton). The rate of growth in crop production accelerated after 2008. The incidence of extreme poverty fell nearly by half (from 48 percent to 26 percent of the area's population) between the 2005 and 2013 national household surveys.

Sources: Regional crop production statistics from FAO CountryStat (2020); Population and poverty statistics are from the Ghana Statistical Yearbook. Extreme poverty is defined as persons not able to afford sufficient calories for their diet even if they spend all of their income on food.

The prospects for sustaining growth in Ghana's agriculture will depend increasingly on being able to continue to raise productivity and diversify commodity production. There is considerable scope for continuing to raise crop yields and develop agri-food value chains beyond cocoa (Diao *et al.*, 2019). Importantly, growth in Ghana's animal sector has been sluggish despite growing urban demand for meat and other animal products. The high cost of feed concentrates—which largely reflects low farm productivity of feed grains and oilseeds—has been a key factor holding back growth in domestic poultry and farm-raised fish, for example. Ghana's private sector has been the main source of investment in agri-food value chains in Ghana's economy; the principal role of the public sector has been to establish a favorable enabling environment for private investment and provide public goods, especially R&D, to raise farm productivity and rural roads to reduce marketing costs of farm products.

In the 1980s, Ghana's leaders were able to sustain policy reforms by building a coalition with a strong support from cocoa farmers and other rural constituents (Wiggins & Leturque, 2011). Recent political directions in Ghana have emphasized devolution of many government services (including agricultural extension) to under-resourced local governments (Resnick, 2019). However, key policy elements important for agricultural development will continue to be the responsibility of the national government, such as macroeconomic stability, exchange rate management, and



Photo by Alanuzzaman Kurishi

investment in national agricultural research. Ghana is now facing the challenge of becoming a “resource-rich” nation.

Since 2012, just under 50 percent of its exports have been from the mining and petroleum sectors (Harvard University Growth Lab, 2020). To maintain agricultural growth, Ghana will need to contain the risk of Dutch disease, especially by avoiding currency appreciation that would reduce competitiveness of other sectors of the economy like agriculture (see Box 2: Resource Riches and Agricultural Development on pages 81 and 82). At the same time, these mineral resources could provide the government with new sources of revenue with which to finance public goods for agricultural and rural development. In this way, it could continue to create inclusive economic growth.

4.0 AFRICA'S ECONOMIC TRANSFORMATION: SIGNIFICANT ACHIEVEMENTS, PERSISTENT CHALLENGES

Despite the continued deep challenges that the region is facing, mounting evidence points to profound economic transformation in SSA since the early 2000s. This section highlights three features of Africa's unfolding economic transformation since 2000: (1) substantial progress for the region as a whole; (2) strong agricultural growth but continued difficulty in transitioning from reliance on area expansion to productivity-led growth; and (3) the similar and distinct challenges facing low-income, lower-middle-income, resource-rich, and fragile countries.

4.1 Unmistakable but Uneven Economic Transformation Underway

Evidence of remarkable progress for the region is unmistakable. After a long period of decline, economic growth started accelerating around 2000. Real GDP per capita rose every year from 2000–2016.⁸ SSA has been the world's second-fastest growing regional economy from 2000–2018, exceeded only by Asia (World Development Indicators, 2020). Per capita income increased by 35 percent in real terms, doubling in some countries (Barrett *et al.*, 2017). SSA achieved the highest rate of farm production growth of any region of the world from 2000–2018, at 4.3 percent per year, roughly double that of the prior three decades (World Development Indicators, 2020).⁹ Africa's rural labor force is diversifying away from subsistence farming (Yeboah & Jayne, 2018). The share of the labor force in non-farm employment has risen dramatically since 2000, contributing to the region's rising labor productivity (Filmer & Fox, 2014; McMillan *et al.*, 2014). Poverty rates have declined significantly for the region as a whole; the proportion of the region's population with incomes below the US\$1.90 per day poverty rate fell from 54 percent in 1990 to 41 percent in 2015 (Beegle & Christiaensen, 2019). Governance has improved, albeit unevenly across countries (World Bank, 2020a). Women have become considerably more active in labor markets (Diao *et al.*, 2017), are rapidly improving in measures of financial inclusion (World Development Indicators, 2020), and are gaining greater influence over household resources (Oduro & Doss, 2018). Nutritional indicators also show gradual but clear improvement (Masters *et al.*, 2018). Average education levels have increased; while

⁸ In 2016, declines in the prices of oil and other minerals caused declines in per capita incomes in three of SSA's largest economies—Angola, Nigeria, and South Africa, reducing economic growth substantially for the region as a whole. However, gains in per capita income continued in non-mineral exporting countries until the COVID-19 shock hit in 2020.

⁹ Other datasets indicate that real agricultural output in SSA grew by 3.7 percent per year (USDA-ERS, 2020), which still represents the highest of any region of the world between 2000–2018, and significantly higher than the world average of 2.75 percent per year.

quality of education is a growing concern, a greater proportion of young Africans are acquiring secondary and university educations (Darvas *et al.*, 2017).

Africa's economic growth has contributed to substantial structural transformation, economic diversification, and resilience, yet different initial conditions either helped or hindered the pace of growth and transformation. Countries such as Côte d'Ivoire, Ethiopia, Ghana, Kenya, Rwanda, and Senegal have achieved substantial progress by pursuing policies correlated with successful transformation such as macroeconomic stability, improvements in the business environment, increasing globalization, financial deepening, and public investment in social and economic infrastructure. These countries have experienced productivity growth in traditional sectors (especially agriculture), expanded output and employment in industry and service sectors, created a new middle class, and increased the internal market for domestically produced goods and services, including food. Economic infrastructure access also expanded, as more energy was generated, vast kilometers of roads were built, and access to information and communications technology (ICT) services swelled. The percentage of Africans using the internet increased from 1 percent in the early 2000s to 17.0 percent in 2018 in LICs and to 30.7 percent in lower-middle-income countries (LMICs) of SSA. Almost 80 percent of sub-Saharan Africans have mobile cell subscriptions. Governments have made tangible progress in delivering basic public services to rural areas. The percentage of rural people in SSA with access to electricity rose from 9 percent to 31 percent between 2000–2017. Rural people with access to safe drinking water rose from 28 percent to 46 percent over the same period (World Development Indicators, 2020). Similar improvements across a wide range of other economic, social, and health indicators, as will be shown below, attest to the fundamental transformation underway in the region.

4.2 Drivers of Economic Transformation Since 2000

- **Macroeconomic stability:** Most SSA countries have greatly improved macroeconomic policy management compared to 2000; this has contributed to the region's economic stability and promoted both economic transformation and resilience. The days of hyperinflation, black market exchange rates, and macroeconomic turmoil are largely over, and the region has benefited from massive new local and foreign investment in many economic sectors (African Center for Economic Transformation [ACET], 2017). Although these gains have been more difficult to achieve in fragile states and countries that are major oil, gas, or mineral exporters, even these countries have experienced more macroeconomic stability in the last 20 years than previously.
- **Diversification and management of shocks:** Better macroeconomic stability combined with balanced and inclusive growth¹⁰ allowed African countries to become more resilient to shocks as their economies have grown and diversified.

¹⁰ See Table 4 for details. Also, see Ethiopia and Ghana case studies; these are country examples where strong agricultural growth enabled growth in other sectors, resulting in a balanced and inclusive growth path.

The data in Figure 9 show much greater stability in both agricultural and overall economic growth since 2000. In the 2000–2018 period, annual growth rates of agriculture and GDP each fell below 2 percent only once (in 2000 for agriculture and in 2016 for GDP). In the 1982–1999 period, annual growth rates fell below 2 percent five times for agriculture and seven times for GDP.

- **Two decades of strong agricultural growth:** Real agricultural growth rates in SSA rose to 4.3 percent per year between 2000–2018, roughly double that of the 1980–1999 period. The region’s annual GDP growth remains highly correlated with annual changes in agricultural growth (Figure 9). These correlations are even more apparent for individual countries.¹¹ Higher rates of farm output growth since 2000 have contributed to rapid employment growth in SSA’s AFSs (Yeboah & Jayne, 2018). Major drivers of agricultural growth in SSA since 2000 have included:
 - **Sectoral policy reforms starting in the 1990s,** which provided greater scope for private investment in trading, processing, and retailing agricultural inputs and commodities, and which subsequently contributed to increased employment and incomes in the upstream and downstream stages of African AFSs (Alliance for a Green Revolution in Africa [AGRA], 2016; Anderson & Masters 2009; Badiane & Makombe, 2015; Fuglie & Rada 2013). The effects of the reforms were not clearly discernible until the mid-2000s when world food prices skyrocketed, enabling thousands of agri-entrepreneurs to respond to profitable incentives in agricultural trade and processing, synergistically driving employment growth in micro-, small-, and medium-scale agribusiness firms and raising farm output growth (AGRA, 2016; Beegle & Christiaensen, 2019).
 - **Sustained period of relatively high global food prices** between 2006–2013. Even in the 2014–2020 period, inflation-adjusted international food prices remained roughly 35 percent higher than during the 1980–2005 period. Improved terms of trade for agriculture has fueled new investment and area expansion in agriculture (Ivanic & Martin, 2018), including by a new class of relatively capitalized and entrepreneurial African investor farmers (Jayne *et al.*, 2019a).
 - **Rapidly growing domestic demand for food, driven both by population and income growth:** Prior to 2000, food prices in much of Africa switched back and forth from export parity to import parity depending on weather, which exacerbated price instability in African food economies and depressed investment. As demand for basic foods has outstripped supply in most of the region, most of the region is now consistently at import parity prices, which has created a more stable environment for private investment in farming and agricultural value chains (AGRA, 2016). Rising per capita incomes in Africa also

¹¹ Even though the correlations for the region as a whole are somewhat dampened by inter-country differences in weather and agricultural performance and individual country-level shocks, the correlation coefficient between annual rates of agricultural and GDP growth for the region as a whole is 0.48.

provides major opportunities for value addition and employment growth in AFSs (Tschirley *et al.*, 2015).

Figure 9: Annual Growth Rates in Agricultural, Forestry, and Fishing Value-Added and GDP in SSA



Source: World Bank World Development Indicators (2020).

- **Increased integration with global economy:** Although Africa's share of world trade remains below 3 percent, trade as a share of GDP has grown from 40 percent in 2000 to 53 percent in 2018. Africa's exports are increasingly diversified; in 2015, for the first time, manufactures as a share of exports reached 50 percent.¹² Foreign direct investment (FDI) has been growing steadily since 2000 (World Development Indicators, 2020). Indicators of trade openness and ease of doing business are improving across the region, albeit gradually in some countries (World Development Indicators, 2020).
- **Improved capacity of the workforce:** Africa's workforce is healthier and better educated than it was even two decades ago. African countries and firms are better able to acquire and adapt new technology in agriculture and in non-agricultural sectors (African Development Bank [AfDB], 2020; Darvas *et al.*, 2017).
- **Financial deepening and inclusion:** The expansion of microfinance and insurance, and increased openness to foreign and intra-African banks, has increased the availability of credit to the private sector. With the development and expansion of mobile money, financial inclusion is improving rapidly—for men especially, but also for women. The percentage of African women (men) with individual or shared accounts at a financial institution or mobile bank has swelled from 17.5 (22.8) percent to 34.1 (47.0) percent in the six-year period between 2011–2017 (World Development Indicators, 2020).

However, the systemic COVID-19 shock will present new challenges in maintaining progress on many of these fronts.

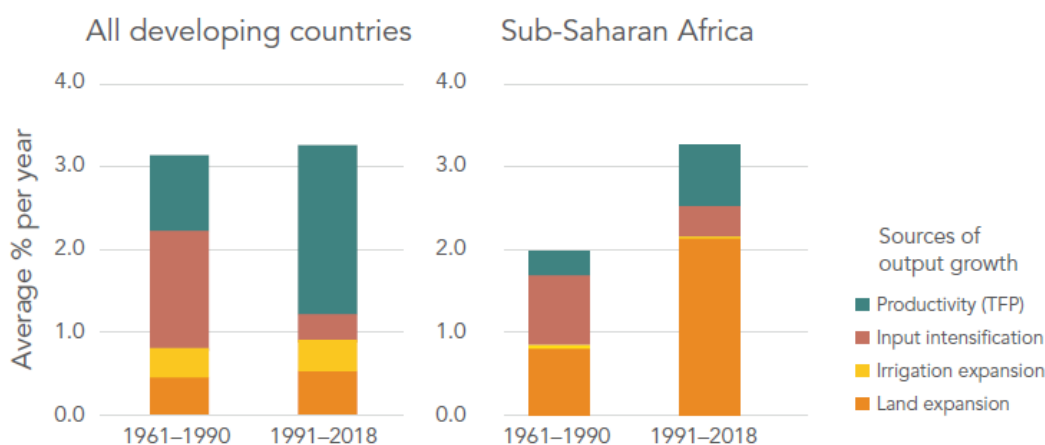
¹² See: <https://iap.unido.org/articles/african-manufacturing-firms-and-their-participation-global-trade>. Note that this figure includes South Africa, which accounts for a large share of Africa's manufactured exports.

Sub-Saharan Africa Still Lags in the Transition to Productivity-Led Agricultural Growth

Although SSA has achieved the highest rates of agricultural growth in the world since 2000, this growth has mostly depended on expansion of cropped area rather than productivity growth. Figure 10 applies the growth decomposition framework described in Section 3.1, above, to the historical experiences of developing countries as a whole and to SSA over six decades since 1961.¹³

During the first three decades (1961–1990), agricultural output in developing country agriculture grew by an average of just over 3 percent per year, and in SSA by about 2 percent per year. Over the next three decades (1991–2018), developing countries were able to maintain annual growth of 3 percent, but the primary source of growth became TFP rather than through expanding land area or by intensifying the use of inputs per hectare. SSA was also able to accelerate agricultural growth to roughly 4 percent per year during the 1991–2018 period, but this was mostly due to expanding the area under cultivation. Policy reforms and an improved enabling environment for agriculture improved the incentives for farmers to expand land and production (Anderson & Masters 2009; Fuglie & Rada 2013; Ndulu *et al.*, 2007), but without strong R&D systems to provide a steady stream of improved technologies, Africa has lagged in the transition to productivity-led growth.

Figure 10: SSA Lags in Moving from Resource-Dependent to Productivity-Led Agricultural Growth



Note: The onset of the Green Revolution in the 1960s–1970s enabled many developing countries to achieve agricultural growth rates of more than 3 percent per year (output growth is given the height of the stacked bars). This was achieved by expanding the area in crops, extending irrigation to more cropland, intensifying the use of fertilizer and other inputs per hectare, and adopting new technologies to raise TFP. In SSA, meanwhile, agricultural growth lagged. Since the 1990s, agricultural growth in Africa has caught up, but it remains heavily dependent on expanding land area rather than raising productivity, whereas developing countries as a whole rely increasingly on improving productivity to maintain growth in agriculture. Source: USDA-Economic Research Service (2020).

Agricultural land expansion in Africa was also accompanied by a similar rate of growth in farm labor. African agriculture continues (and will continue for some time) to absorb

¹³ Empirical decomposition of sources of agricultural growth is based on “growth accounting” methodology (see Fuglie (2015) for a complete description).

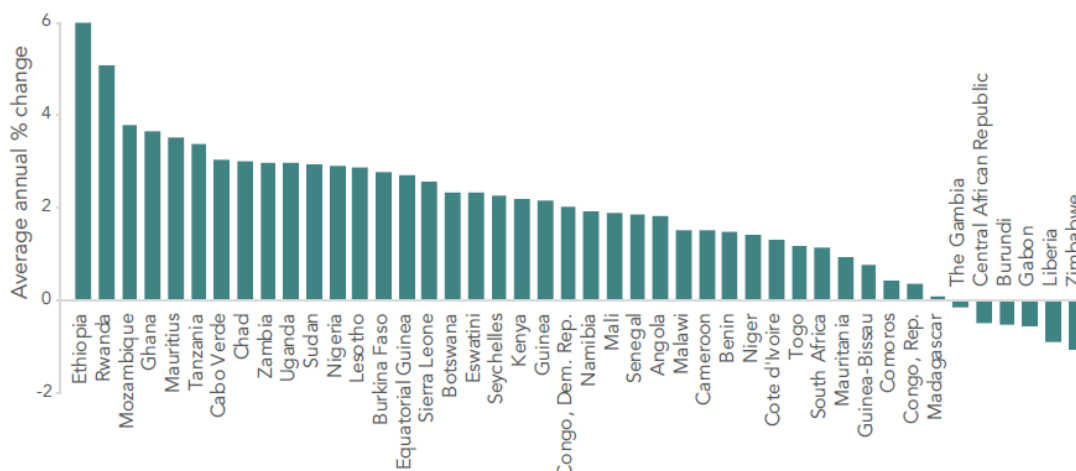
a significant part of the region's growing labor force. Total employment in agriculture continues to rise even as its share of the labor force slowly declines (Yeboah & Jayne, 2018).

Most smallholder households' farms have been gradually shrinking in size for decades due to rural population growth and limited potential for continued area expansion in relatively densely populated areas where most rural Africans live. Seventy-three percent of SSA's rural population is concentrated in 10 percent of its rural land area (Jayne *et al.*, 2014). Many young Africans growing up in rural areas are unable to obtain additional land through customary land institutions or through inheritance. Hence, even though most of SSA might be considered "land abundant" and sparsely populated, a relatively large proportion of rural Africans face land scarcity. For most African farmers, income growth from farming increasingly depends on raising productivity of existing farmland. By accelerating growth in agricultural output faster than the growth rate in agricultural labor, output per worker and thus farm incomes will rise. Increasing agricultural productivity growth will improve African countries' objectives of increasing employment as well as labor productivity in agriculture. Moreover, the goals of feeding Africa's growing population, becoming more internationally competitive, and conserving the planet's natural resources, diverse ecosystems, and the services they provide can be more effectively achieved through sustainable forms of agricultural growth driven by productivity improvements on existing farmland instead of area expansion (Fuglie *et al.*, 2020; van Ittersum *et al.*, 2016).

4.3 Highly Diverse Economic Conditions and Priorities

The diversity in the circumstances and pace of economic transformation in Africa requires caution against over-generalizing Africa's achievements and development opportunities. Although there have been many successes, the pace of economic growth and transformation has been highly uneven across the region (Figure 11). Some countries such as Burundi and Zimbabwe have been bogged down by civil conflict and unrest during much of the last 20 years, leaving most of the population poor, hungry, sick, and ill educated, with limited future prospects.

Figure 11: Average Annual Per Capita GDP Growth Rates, 2000-2019



Source: World Development Indicators (2020).

Diversity of countries' economic-transformation trajectory is largely due to the following:

- **Initial levels of income per capita:** Most countries started the century very poor, with limited infrastructure, human capital, and savings. Government capacity was also weaker, as was resilience because economic institutions were underdeveloped. Some countries were able to climb out of LIC status into LMIC status by 2018 (e.g., Ghana and Kenya), but most others remained below the LMIC threshold of US\$1,035 income per capita, including three of the fastest growing economies in Africa—Ethiopia, Mozambique, and Rwanda. However, most LICs were able to achieve some poverty reduction.
- **Conflict and insecurity:** The total number of armed conflict incidents in SSA countries rose from 3,209 in 1997 to 25,166 in 2018 (Armed Conflict Location & Event Data Project [ACLED], 2019), owing in part to greater presence of insurgent groups such as the Islamic State of West Africa, Boko Haram, Al Shabaab, and Al-Qaeda in the Islamic Maghreb. Africans are nine times more likely to live in conflict-affected countries than people living anywhere else in the world (Beegle & Christiaensen, 2019). These conflicts not only adversely affected agriculture and food security, disrupted livelihoods, reduced incomes, and limited access to social services such as health and education for a large share of the affected population, but also had significant implications for human displacement. Although most countries have made tangible progress toward achieving developmental targets, progress in conflict-affected countries has stagnated or deteriorated (FAO *et al.*, 2017).
- **Resource dependent/resource-rich:** Countries heavily dependent on revenues from exporting minerals often suffer from what is called the “resource curse.” In developing countries, mineral wealth (e.g., minerals account for a large share of commodity exports or government revenues) is associated with a larger state, a less developed and less diversified domestic private sector, and overall worse

development outcomes compared with countries at a similar level of income (Frankel, 2012). In Africa, these countries experienced strong but volatile economic growth over the last 20 years as commodity prices shot up, and then fell back. By 2016, several of these countries experienced negative per capita growth rates, indicating a serious recession (e.g., Angola and Nigeria). Countries such as Angola and Zambia have responded to declining resource income with increased international borrowing in private capital markets at increasingly unfavorable rates. This debt burden will complicate economic policy in the future. As will be shown below, resource-rich countries have also realized lower human development outcomes, despite having higher incomes, leading to greater inequality and worse governance. Nigeria, for example, is one of the most unequal countries in the world, and other resource-rich SSA countries are not far behind. Inequality tends to be self-perpetuating because it reduces the supply of public infrastructure needed to reduce poverty and build human capital, as elites find it cheaper to buy it themselves (e.g., private schools and healthcare) than to tax themselves to provide opportunities for everyone (Lopez, 2003). The prospects for resiliency are lower in these countries, as each economic shock requires a renegotiation over the division of economic rents and opportunities, delaying the enactment of the structural policy reforms needed to get the economy back on the growth path. Indeed, there is a high degree of overlap between resource wealth and fragility.

Based on the heterogeneity of African countries' historical circumstances and current economic prospects, we track key indicators of economic capacity, health and public service delivery, resilience, and potential for future economic transformation for four categories of countries: low-income, lower-middle-income, resource-rich, and fragile. Table 3 presents the countries in each category. Major differences across these four country groups in achievements and prospects become apparent. Details as to the definitions and data used to develop the four country groups are provided in Appendix 1.

Table 3: Classification of Sub-Saharan African Countries, 2000–2018

Fragile States Resource-Rich Countries		Fragile States Resource-Rich Countries	
Central African Republic*‡ Angola		Central African Republic*‡ Angola	
Chad* Congo Republic		Chad* Congo Republic	
Congo, Democratic Republic*‡ Mauritania		Congo, Democratic Republic*‡ Mauritania	
Guinea* Nigeria		Guinea* Nigeria	
Somalia Zambia		Somalia Zambia	
Sudan and South Sudan (separated 2011)*		Sudan and South Sudan (separated 2011)*	
Zimbabwe			
Low-income Countries		Lower Middle-Income Countries	
Benin‡	Malawi	Cape Verde	Sao Tome & Principe
Burkina Faso††	Mali†	Cameroon	Senegal
Burundi	Mozambique‡	Comoros	Sao Tome & Principe
Eritrea†	Niger	Cote d'Ivoire	Senegal
Ethiopia	Rwanda	Djibouti	
Gambia	Sierra Leone†	Eswatini (formerly Swaziland)	
Guinea-Bissau	Tanzania	Ghana†	
Liberia†	Togo	Kenya	
Madagascar	Uganda	Lesotho	

Note: Upper-middle-income and high-income countries are excluded. This group consists of Botswana, Equatorial Guinea, Gabon, Mauritius, Namibia, South Africa, and Seychelles.

* These fragile states also fit the definition of “resource-rich” with at least 50 percent of export revenues from petroleum, minerals, and precious metals. For the purpose of this study they are classified as “fragile.”

† By 2018, these countries had emerged as “resource-rich,” with at least 50 percent of their exports from petroleum, minerals and/or precious metals.

‡ In 2019, Benin was reclassified by the World Bank as a LMIC.

Economic Capacity

- The highest rates of agricultural and GDP growth between 2000 and 2018 were registered by the low-income and resource-rich countries. Growth rates in GDP per capita and in agriculture have been lower in fragile states than all other country categories (Table 4).
- The share of the labor force in farming remains much higher in the low-income and fragile countries than it does for the lower-middle-income and resource-rich countries, where significant economic diversification and transformation has already begun (Table 4). Note that all resource-rich countries are LMICs as well.

Investments in Public and Private Service Delivery

- Comparisons between the LICs and LMICs are particularly striking. Lower-middle-income African countries have achieved much greater progress in expanding the delivery of public services, education, and health benefits to their populations than in the other country categories (Table 5). Indeed, LMICs recorded impressive increases in educational attainment, financial inclusion of both women and men,

the proportion of rural people with access to electricity and safe water, and the proportion of the people using the internet.

- LICs have still realized some success in expanding basic social services. Child mortality and stunting rates have declined, and school enrollment rates have risen. However, 80 percent of employment remains in the informal sector—household farms and microbusinesses. Government effectiveness and access to infrastructure remain very low (Tables 4 and 6).
- Resource-rich countries enjoy higher levels of GDP per capita and mean labor productivity in farming, industry, and services than all other categories (Table 4), but they have struggled to translate their mineral wealth into development outcomes owing to generally inefficient and ineffective public sectors. The public sector is a large employer and spender, yet these countries have some of the lowest social indicators and higher poverty rates than the non-resource-rich LMICs. Key indicators of health and access to services in the resource-rich countries are generally no better than for the other country categories—they are often worse (Table 6). For example, life expectancy in resource-rich countries for both men and women is lower than in the other country categories, and child mortality rates are much higher. Public expenditures are urban-biased, and as a result, there is a large rural-urban gap in access to public goods and services. The domestic private enterprise sector is relatively small and concentrated in non-tradable sectors owing to the Dutch disease;¹⁴ sustainable transformation has not really progressed. Their banking sectors are underdeveloped, as shown by low net credit to the private sector (Table 7). Government effectiveness is rated below the average of LICs despite higher incomes. However, these countries have the highest average ICT use, an educated population, and in some countries, significant infrastructure (but associated high debt levels, making them potentially quite vulnerable in the future).

Improvement in Poverty and Health Indicators

- The LICs experienced substantial poverty reduction, driven by relatively high levels of agricultural and economic growth (Tables 4 and 6). LMICs had the lowest poverty rate in 2000 and still made significant progress in poverty reduction, as well as in indicators of health and nutritional status (Table 6). Although resource-rich and fragile countries have also achieved some improvements, they still rank far behind the LMICs and even the LICs in most indicators of nutrition and child and maternal health.

¹⁴ The Dutch disease refers to an economic paradox that occurs when large resource discoveries in oil or minerals harms a country's broader economy. Symptoms include a rising currency value leading to a drop in competitiveness and loss of jobs in other tradeable sectors. Resource discoveries can also lead to increased rent-seeking behavior and a decline in governance and public sector management effectiveness.

Potential for Future Economic Transformation and Resilience

- Lower-middle-income African countries also appear poised for faster economic transformation in the future (Table 7). Today, a much greater proportion of the population in lower-middle-income African countries have access to electricity, the internet, mobile cell subscriptions, and have higher levels of education than in low-income African countries. LMICs spend far greater amounts on agricultural R&D per agricultural worker and per hectare cultivated than LICs, mobilize greater domestic credit to private sector firms as a percentage of their GDPs, have higher scores for government effectiveness, voice and accountability, and financial inclusion (Table 7). Because they started to achieve higher levels of economic growth earlier than countries in the low-income category, they have made greater gains in health, infrastructure, education, governance, and agricultural growth indicators, thereby raising their prospects for future productivity growth. Without economic growth, countries are generally unable to mobilize sufficient revenue to invest in the delivery of public services and infrastructure to support future economic growth. In fragile states, governments may be unable to significantly invest in either economic growth or public service delivery.
- Much has been made of SSA's spiraling food import bill, which stood at US\$43 billion in 2019. However, the resource-rich and fragile countries are almost fully responsible for the region's net agricultural trade deficit, led in particular by Nigeria (being a net importer of more than US\$5 billion per year) and to a lesser extent by Angola, the Democratic Republic of the Congo (DRC), Senegal, and Somalia. Most SSA countries that are low income import significant amounts of food but also export comparable values of agricultural commodities (Figure 12). LMICs as a group have become net agricultural commodity exporters with a trade surplus of more than US\$5 billion per year, led by Côte d'Ivoire, Ghana, Kenya, and Uganda. SSA's top exports are mainly tropical commodities such as cocoa, coffee, tea, and also include cotton, while its main food imports are wheat, rice, soybeans, other oilseeds, and frozen meat products.
- Fragile states perform poorly on virtually all indicators of development. The history of violence is easily discernible in the indicators of economic growth, transformation, poverty and human development, infrastructure, and governance. Their banking system is barely functioning, and public investment and agricultural R&D expenditures are low. Not surprisingly, most of these countries would otherwise be classified as LICs, and many are also resource rich. However, the dominant challenge at this point in their history is to reach political settlement that will allow violence to be reduced and physical safety to increase, thereby permitting the rule of law and reducing the transaction costs of commerce, such as efficient and safe transport of goods around the country. A political settlement would also allow the government to concentrate on rehabilitating infrastructure and focusing on economic development.

Table 4: Economic Performance Indicators, 2000–2018

Indicator	Unit of Measure	Low Income	Lower Middle Income	Resource-Rich	Fragile
Agriculture, Forestry, and Fishing, Value-added	annual % growth (2000–2018)	4.18	3.07	3.68	1.65
GDP Per Capita	annual % growth (2000–2018)	3.21	2.14	2.85	1.63
Labor Force Share in Agriculture	% (from 2019)	62.8	41.6	38.2	62.0
Industry	% (from 2019)	10.1	13.7	11.8	9.7
Services	% (from 2019)	27.1	44.7	50.0	28.3

Note: Country averages weighted by population. Share of labor force data from International Labour Organization (ILO) modeled estimates: Employment by sex and economic activity, Nov. 2019 (percent) for 2019. Source for all other indicators: World Development Indicators.

Table 5: Trends in Public and Private Sector Service Delivery

	Low-income		Lower-Middle-Income		Resource-Rich		Fragile	
	2000	2018	2000	2018	2000	2018	2000	2018
% of Rural Population with Access to Electrification	5.5	19.9	15.1	50.1	18.8	27.0	8.6	24.1
% of Rural Population with Access to Safe Water	22.6	42.2	45.2	55.3	32.7	51.0	28.7	34.7
% Adults Using Internet (end year 2017)	0.1	17.0	0.3	30.7	0.1	36.6	0.0	14.4
% Women with Financial Account, (initial year 2011, end year 2017)	11.6	32.5	25.8	53.2	26.7	27.9	6.7	23.6
% Men with Financial Account (initial year 2011, end year 2017)	16.5	44.6	31.4	61.9	32.6	50.5	9.8	29.4
Gross Enrollment Ratio (% in lower secondary school)	18.5	46.3	49.0	79.2	26.1	50.9	43.2	51.9

Note: Countries weighted by population. Financial inclusion: Percentage of adult population who report holding an account, by themselves or together with someone else, at a bank or another type of financial institution or report personally using mobile money services in the past 12 months. Source: World Development Indicators (2020).

Table 6: Trends in Poverty, Nutrition, and Health Indicators, 2000–2018

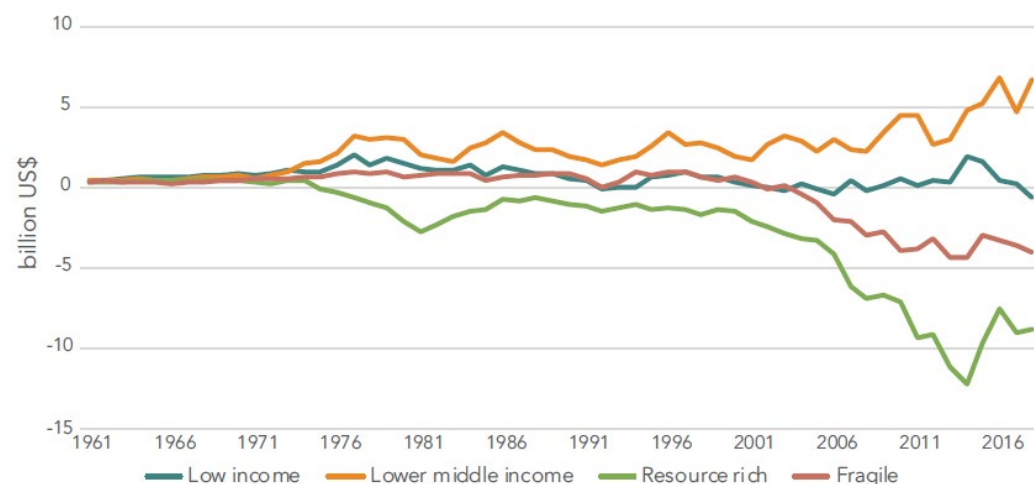
	Low-income		Lower Middle Income		Resource-Rich		Fragile	
	2000	2018	2000	2018	2000	2018	2000	2018
Poverty								
US\$1.90/Day Poverty Rate (% below, 1999 vs. 2019)	70.4	43.2	34.3	24.1	59.5	49.8	63.6	49.4
Nutrition								
Prevalence of Stunting, Height for Age (% of Children under 5)	51.0	35.4	38.1	23.6	41.5	36.2	40.7	38.8
Health								
Mortality Rate, under 5 (per 1,000 live births)	153	61.7	120.7	55.8	182.9	108.3	147.0	86.2

Note: Countries weighted by population. Source: World Development Indicators (2020).

Table 7: Indicators of Future Economic Transformation Potential and Resilience

		Countries Weighted by Population			
		Low Income	Lower Middle Income	Resource-Rich	Fragile
Indicator	Unit of Measure				
Financial Inclusion					
Domestic Credit to Private Sector	% of GDP (see notes), 2018	15.8	21.3	11.5	8.6
Technology					
Individuals Using the Internet	% of population, mean 2010–2017	8.60	16.99	20.71	8.55
Mobile Cell Subscriptions	per 100 people, mean 2010–2017	48.99	84.32	69.72	48.17
Physical Infrastructure					
Infrastructure Development Index (World Economic Forum)	Index (see notes)	41.7	48.5	39.9	31.8
Policy and Governance					
Trade Openness (World Economic Forum)	Index (see notes)	51.2	52.5	51.7	49.4
Enabling the Business of Agriculture Score	2019 country score	43.8	49.1	47.4	31.7
Government Effectiveness	2019 index (see notes)	23.5	36.1	14.6	5.8
Voice and Accountability	2019 index (see notes)	29.3	40.9	33.4	10.8
Agricultural R&D					
Agricultural R&D/Laborer	PPP\$ per worker (2016)	5.6	23.5	17.5	3.1
Agricultural R&D/Hectare	PPP\$ per cultivated hectare (2016)	5.8	16.3	7.8	2.4
Land Degradation					
% of Rural Population Living on Degrading Land		27.3	32.4	17.4	13.4

Figure 12: Total Annual Agricultural Product Net Exports (Millions of US\$)



Source: FAO (2020). Net Exports equals exports minus imports.

Overall, Africa's economic progress in the last 20 years has been remarkable, especially in the countries that have managed to reach LMIC income levels. Many LIC countries have also realized major gains, especially in poverty reduction and expansion of social services. Countries currently classified as fragile have a more mixed record. Some, such as Chad, Guinea, and Sudan, have realized economic growth despite conflict within their borders, whereas others such as the Central African Republic and Zimbabwe have slipped backward. At the same time, countries such as Côte d'Ivoire have emerged from their conflict, restored stability and economic growth, and are once again at LMIC income levels, with very good future prospects. Resource-rich countries have sustained economic growth as well, but the inclusivity of their development has been poor, which does not bode well for future resilience.

Remaining Challenges and Opportunities

SSA faces both challenges and opportunities in the next decade; a few of the major ones are highlighted below.

Growing External Shocks

SSA must also brace for growing exposure to climate, conflict, and health shocks, which threaten achievements to date. For example, drought and desertification have plagued Nigeria's northern region, leading to increased southward herding seasonal migration and increased farmer-herder conflicts and associated fatalities (George *et al.*, 2020). Climate change increasingly threatens the payoff from past economic development investments (Hendrix & Salehyan, 2012), especially in rural areas (George, Adelaja & Awokuse, 2020; IFAD, 2019). Countries in West Africa were affected by the 2016 Ebola outbreak, whereas the current COVID-19 pandemic adds a new dimension to shocks facing African countries. COVID-19 has resulted in massive economic slowdowns, exposing the vulnerabilities of African farmers and other poor people working in the informal sector who have little job or food security (Fox & Signe, 2020; ILO, 2020). COVID-19 highlights the importance of resilience and self-reliance to

future growth strategies. Building resilience to shocks and stresses can reduce the high human and economic costs of repeated humanitarian efforts (Barrett & Conostas, 2014).

Looming Debt Crisis

African countries need much more social and economic infrastructure but have limited tax revenue and face stagnant or declining foreign grants and concessional long-term loans. To continue financing their expenditures, many African governments started tapping international sovereign bond markets in a major way in the last decade. As a result, stocks of external debt tripled between 2006–2018. By 2018, 25 countries had a debt to GDP ratio greater than 55 percent, and the median debt to GDP ratio was 53 percent, compared with a median ratio of only 31 percent in 2012. The terms of this debt are often not widely reported, especially when other sovereigns such as China or Saudi Arabia are involved. Based solely on publicly reported and traded bonds, it is clear that Africa has paid a large risk premium on these bonds—payable in foreign currency.

Before the COVID-19 crisis, observers believed that most countries could avoid a debt crisis and default by increasing tax collections, which remain a low share of GDP compared to other developing countries. At the onset of the COVID-19 crisis in March 2020, the Group of Twenty (G20) countries (including China and Saudi Arabia) agreed to voluntarily suspend debt service due for countries under the ID ceiling (most African LIC as LMICs) until the end of 2020. China, estimated to hold about 30 percent of Africa’s sovereign debt, has started quietly offering more extended debt service terms and, in a few cases, debt forgiveness (Paduano, 2020).

High levels of debt will restrict state investment in infrastructure and other public goods needed to support economic transformation and resilience. It is not clear that African countries can service their external debt and effectively spend remaining public resources to achieve growth in key sectors that will expand governments’ future revenue streams so that they can eventually draw down their debt.

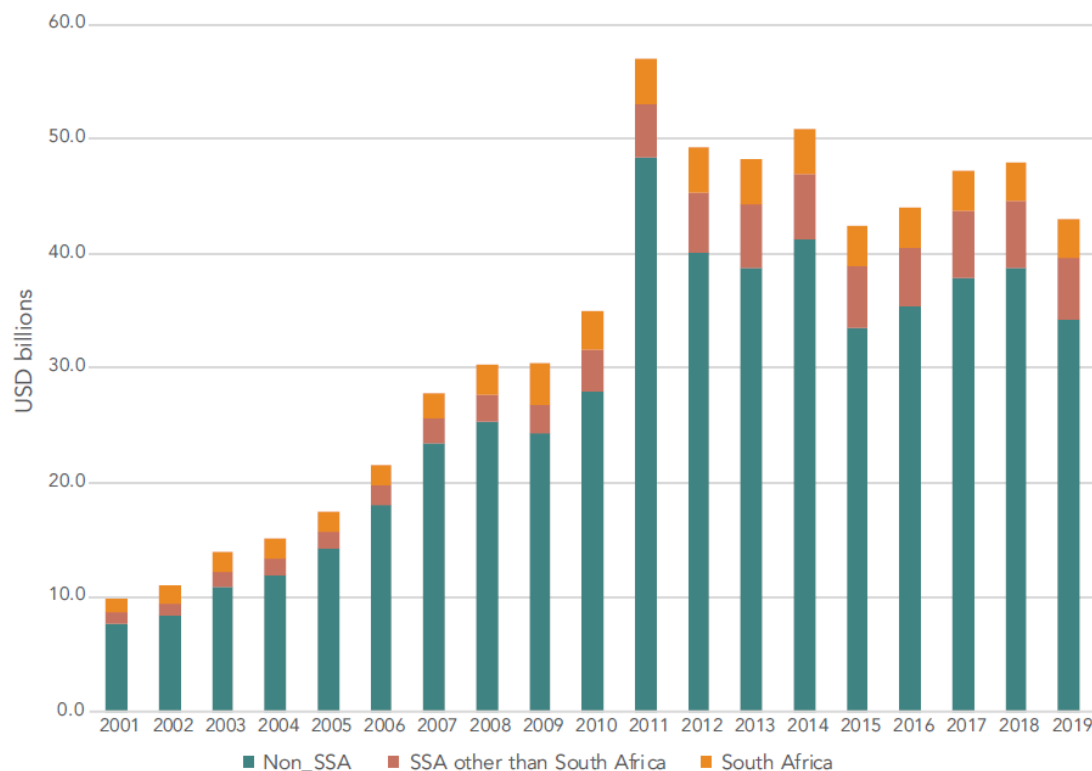
Rapidly Increasing Demand for Food

As the world’s population grows and gets richer, demand for food—especially high-value crops and livestock products—grows. Africa’s population is projected to double by 2050 and will account for more than 80 percent of the world’s population growth over this period. Rapid population growth, rising per capita incomes, and urbanization are all fueling a rapid rise in demand for food in SSA (Tschirley *et al.*, 2015). The region’s food import bill rose from US\$7 billion in 2000 to US\$45 billion in 2018 and is projected to rise to US\$80 billion by 2030 under current trends (Traub, forthcoming). Based on current projections, the main growth in demand will be for staple grains such as wheat and rice, soybeans, and oilseeds; and animal proteins such as frozen poultry.

Rapidly rising demand for food within Africa provides considerable untapped potential for intra-African trade. The proportion of African countries’ food imports originating from other African countries remains very low, consistently averaging about 20 percent over the past several decades, with South Africa accounting for more than one-third of

this intra-African food trade (Figure 13). The African Continental Free Trade Area (AfCFTA) agreement has great potential to enable African farmers and AFS firms to capitalize on the opportunities presented from Africa’s rapidly rising demand for food (see Section 5.0). Achieving this goal will require African food value chains to become more internationally competitive by raising on-farm productivity, lowering the costs of production and distribution to cities and small towns, facilitating private investments in value addition such as food processing, and most importantly, by reducing trade barriers between their own countries.

Figure 13: SSA Imports of Food Commodities and Products by Source



Notes: The values reflect total food imported by SSA countries, disaggregated by exporting regions. The product group includes agricultural commodities and products fit for human consumption (e.g., wool, cotton, and tobacco are excluded). Source: Traub (forthcoming), based on the International Trade Center (2020) Trade Map database.

Raising Productivity on Existing Farmland to Sustainably Drive Agricultural Transformation

Rising population densities in many parts of Africa are making continued reliance on area expansion untenable for millions of African farmers. The land frontier already has been reached in many smallholder areas, causing farms to become subdivided, fragmented, and increasingly small. Smallholders have responded to shrinking farm sizes by more continuously cropping their fields every year, mainly to their priority staple foods. Fallows have largely disappeared in densely populated areas, and for the overall SSA region, fallowed land as a proportion of total farmland has declined steadily from 40 percent in 1960 to 15 percent in 2011 (Fuglie & Rada, 2013). It will be harder to sustain production growth on existing smallholder farms through area



expansion, putting more pressure on African farming systems to raise yields and the value of farm output per hectare and per labor unit.

Greater and more efficient use of improved seed, inorganic fertilizers, and organic inputs are widely recognized as preconditions for achieving productivity growth on African farms (Lal, 2004; Sanchez, 2019). In 2018, farmers in SSA used 17.9 kilograms per hectare of plant nutrients (nitrogen, phosphorus, and potassium fertilizer), far short of what is needed to compensate for the harvested nutrients (FAO CountryStat, 2020), while in Asia and Latin America, farmers use seven times that amount. Moreover, it is increasingly recognized that African farmers obtain widely varying and generally low crop response to the fertilizers that are applied (Laajaj *et al.*, 2020; Roobroek *et al.*, 2020). The agronomic efficiency of nitrogen (AEN) in Africa averages 14.2. With appropriate fertilizers, organic inputs, high yielding seeds, and improved soil management, crop response to fertilizers can be doubled or tripled, reaching the global average AEN of 37 (Sanchez, 2019).

An important related challenge is the need to reduce the high costs of farm inputs. African farmers pay the highest prices in the world for fertilizers and improved seeds; reducing these costs will encourage greater input use and hence contribute to farm productivity. Reducing costs is both a technical and a policy challenge, because in

many respects, the increased use of productivity-enhancing technologies remains constrained by policy and governance challenges.

Very few organic inputs such as animal manure, crop residues, and cover crops are used by smallholder farmers in SSA, partly because such inputs are difficult to grow in fertility-depleted soils. Although at present crop residues such as cereal straw is mainly fed to cattle, when crop yields double, crop residues also usually double. This provides an opportunity to satisfy feeding cattle while returning large quantities of crop residues containing 45 percent carbon to the soil. Because mineral fertilizers contain no carbon, organic fertilizers must be part of the equation (Lal, 2004; Roobroeck *et al.*, 2020; Sanchez, 2019).

More than 100 African-owned seed companies exist, selling improved seeds needed to attain high yields when fertilized. Improving soil health without improved seeds is a nonstarter (Sanchez, 2019). Although lower-middle-income African countries' expenditures on R&D per agricultural worker and per cultivated hectare are roughly similar to those of Southeast Asia and South Asia, they are substantially lower in low-income and fragile African countries, harming their farmers' ability to improve their livelihoods and depressing the pace of economic transformation in their countries (Fuglie *et al.*, 2020).

Land Degradation

The challenge of achieving sustainable yield growth in SSA in the context of rising land scarcity is further complicated by mounting evidence of yield-depressing soil degradation arising from unsustainable intensification in SSA's densely populated areas (Barbier & Hochard, 2016b; Drechsel *et al.*, 2001; Montpellier Panel, 2014; Stoorvogel & Smaling, 1990; Tittonell & Giller, 2013). Continuous cultivation of existing plots would not pose problems for sustainable intensification if farmers were able to maintain or improve soil quality over time through sufficient use of fertilizers, soil amendment practices, and other land-augmenting investments. However, there is growing evidence of a significant relationship between population pressure, reduced fallow periods, and land degradation, pointing to an unsustainable dynamic between population, agriculture, and the natural resource base (Drechsel *et al.*, 2001; Lal, 2011). Losses of soil organic matter and acidification pose special problems because they cannot be ameliorated by the application of conventional fertilizers and because they tend to depress the efficiency of inorganic fertilizer in contributing to crop output. Smallholder farmers are often unable to benefit from the current yield gains offered by plant genetic improvement due to their farming on depleted soils that do not respond well to fertilizer application (Tittonell & Giller, 2013). Given United Nations (UN) projections that rural SSA will contain 52 percent more people in 2050 than it does in 2017, the challenge of helping millions of African smallholders to raise the productivity of their existing farmland in sustainable ways is a major priority.

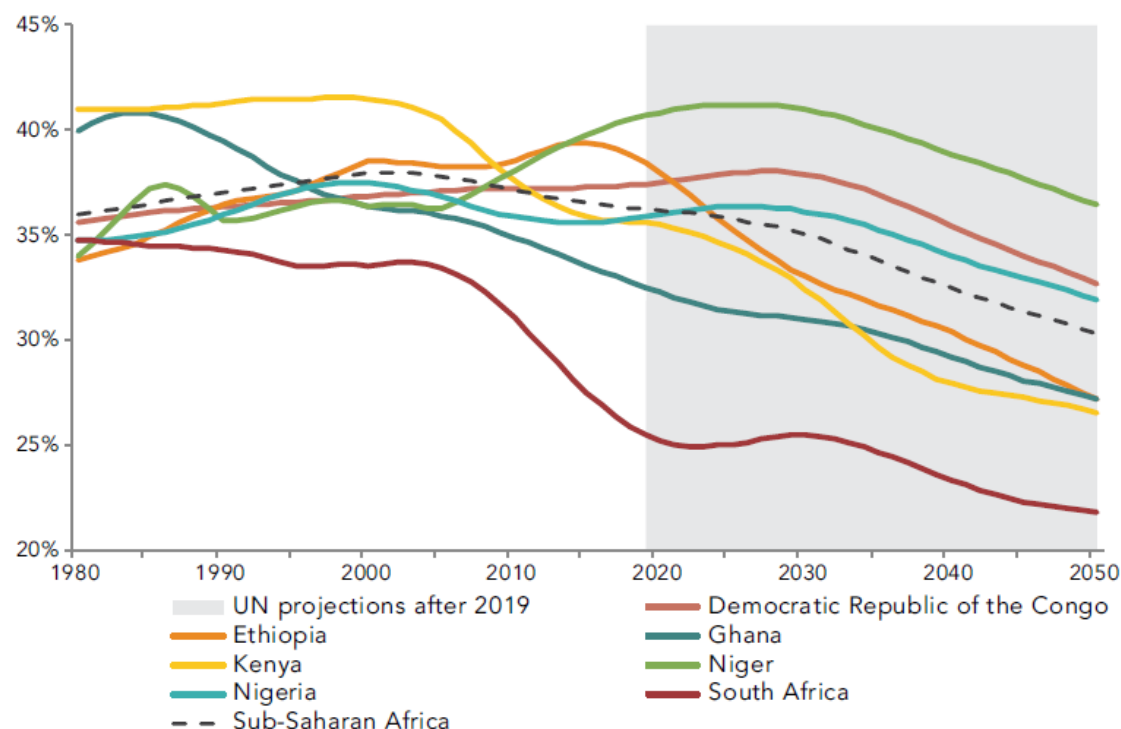
Young Population

Africa's low income, combined with high fertility, has resulted in a young and rapidly growing population. This has led to substantial concerns around youth employment. In most countries, fertility and the share of youth in the labor force have reached their peak and are beginning to fall. For SSA, youth share of the labor force reached its peak in 2001 and has been declining since then (Figure 14), but in several countries, the peak will not occur until later this decade. Fertility rates are expected to decline very slowly except in upper-middle-income countries (such as South Africa). Therefore, the growth of the labor force and the youth share within the labor force is declining slowly.

These demographic trends will have four important consequences. First, high population growth requires even faster income growth to raise per capita income. High population growth is one reason why the number of poor people in Africa has not fallen even as the poverty rate has declined (Beegle & Christiaensen, 2019). Second, a young population requires continued public investment in social services just to maintain current levels of human capital. Third, a rapidly growing labor force exerts downward pressure on earnings, especially for younger cohorts. This makes it more difficult for young families to adequately provide for their children and invest in their development during the very critical first five years of life (Lee & Mason, 2011). Fourth, structural transformation may be delayed, because increasing the share of labor in high-productivity activities requires significant capital investments, which implies higher savings rates. Yet, public and private savings rates are inversely related to fertility rates. Lowering fertility can lead to a demographic dividend.

As Figure 14 shows, there is great diversity among countries in the region on this variable as well, with countries such as Ethiopia, Ghana, and Kenya expected to reach a share of youth in the labor force in 2050 equal to or lower than that of South Asia today. For these countries, changing demographics might yield a dividend in the form of higher savings rates to match the young labor force, allowing an increase in productive capital per worker, faster progress on economic transformation, and rising productivity.

Figure 14: Youth Share of the Working Age Population, Selected Countries



Note: Youth is the estimated population ages 15–24. Working age population is estimated population of ages 15–64. Source: United Nations World Population prospects (2019) (Medium Variant).

Gender Inequality and Women's Economic Empowerment

All over the world, gender norms and customs circumscribe economic opportunities for women, and Africa is no exception (Duflo, 2012). Although there are signs of progress, women in Africa still lack opportunities, agency to seize these opportunities, and control over resources. Although higher than in South Asia or the Middle East and North Africa, sub-Saharan African female labor force participation is significantly lower than for men (Filmer & Fox, 2014). Young women tend to marry and have children early in Africa, which interrupts human capital development, reduces income earning prospects later in life, and contributes to Africa's world-high levels of maternal mortality and high fertility. The percentage of young women in Africa aged 15–19 who have already borne a child is the highest in the world. One in 10 young women in SSA have had a child by age 18; in South Asia, the percentage has fallen from 6.5 percent at the beginning of the decade to 2.5 percent today, according to the United Nations International Children's Emergency Fund estimates (UNICEF, 2020).

Once they enter the labor force, African women have less access to wage employment, and women's farms and businesses are on average less productive than men's. This reflects disparities in access to land, capital, and financing, as well as earlier gender gaps in educational attainment (Beegle & Christiaensen, 2019). Women in paid employment face discrimination due social norms on acceptable activities for women. In some countries, women do not have the necessary legal rights to operate an independent business (e.g., the right to own land and assets in their own name or the

right take out a loan independent of their husbands) (Beegle & Christiaensen, 2019; World Bank Group, 2019).

On the World Bank's composite score of women's economic legal rights, SSA scores well above the Middle East and North Africa and South Asia (World Bank Group, 2019). The variance is much higher than other regions, however, showing the wide heterogeneity among African countries. As in other regions, females of all ages spend significant time on (unpaid) household chores; but Beegle and Christiaensen (2019) estimate that adult women spend 2.5 to 7 times as many hours per week on domestic and care work than men. In part, this reflects inadequate infrastructure in rural areas, leaving women to spend long hours fetching water and fuel, for example, and in part, it reflects SSA's high share of the population under the age of 10 and lack of early childhood development programs, obliging women to spend more time caring for young children before they go to school as well as after the school day is over.

Improving women's well-being supports families, communities, and countries. It enhances economic growth and supports better health and education opportunities for their children. In the long run, therefore, improving women's economic status may also be one of the most important contributions to household and community resilience¹⁵ Although these principles often receive broad recognition, effective action is often limited.

Nonetheless, the African sub-continent has made progress, and there are good local models for potential replication more broadly in the region. For example, Ethiopia has substantially reduced child marriage, whereas Ghana has almost closed their secondary school education gap. Rwanda, despite being a poor country, has reformed its legal code and now scores quite high on the World Bank's Women, Business and the Law index (World Bank Group, 2019). Rwanda protects women's reproductive rights and has almost eliminated the unmet demand for contraception. These examples demonstrate that progress is within SSA's grasp.

Conclusion

Africa's economic transformation record of the past 20 years is noteworthy, especially after the disappointments of the 1980s and 1990s. The economic welfare of the population has improved, as shown by lower poverty rates, better child health, improved nutritional status, and much greater opportunities for education. Not all countries have realized the same progress; some have even fallen back, and countries are likely to face significant headwinds in the future. Although threatened in the short term by the COVID-19 health crisis and ensuing global recession, some countries do seem on the cusp of realizing even stronger gains in economic growth and transformation, which will contribute to economic resilience. Others, such as debt-burdened resource-rich countries and fragile states with persistent civil conflicts and

¹⁵ See Beegle and Christiaensen, (2019), chapter 5 for a discussion of how Africa's risks disproportionately affect women, and how women's economic empowerment supports resilience.

divisions, may not have the capabilities yet to develop and implement an inclusive economic growth and transformation agenda.

Higher rates of agricultural growth have been an important part of the improved economic performance and welfare outcomes achieved in Africa during the past 20 years. Macroeconomic and policy reforms that reduced biases against agriculture have stimulated agriculture's recovery in the region. However, in most countries, agricultural growth continues to rely heavily on the unsustainable path of cropland expansion. Underinvestment in essential public goods, especially agricultural R&D, has held back the transitioning to productivity-led agricultural growth in much of the African region. Notably, the two emerging African agricultural success stories discussed in this report—Ethiopia and Ghana—were exceptions to this trend: they both significantly increased public spending on agricultural R&D.

Realizing Africa's potential requires identifying which types of public investments can enable millions of Africans—especially youth, women, and other vulnerable groups—to realize high returns to their labor from these investments.

Economic shocks will be a fact of life. An effective resilience strategy will identify cost-effective actions for reducing the chances that a shock will occur, mitigating the effects of risks that remain inevitable, and responding in cost-effective ways to shocks after they occur. In the next section, we discuss the way forward for each country type in Africa to move beyond the COVID-19 crisis and back into a sustainable and inclusive development path.

5.0 THE WAY FORWARD

The previous section has identified the key challenges that must be addressed to sustain and further accelerate the region's transformation and progress toward becoming resilient. To orient countries and development partners on how to effectively address these challenges, this section outlines five priorities that are common to virtually all African countries regarding the way forward. We then present additional priorities that are somewhat unique to low-income, lower-middle-income, resource-rich, and fragile countries.

The most urgent need for all African countries is to recover from the economic and social setbacks of the COVID-19 pandemic. Without doubt, this recovery will be easier in the LMICs, where development has built up supportive political and economic institutions.

Stabilization is high on the agenda of most African countries, but the path to restoration of economic growth and development will depend on country assets—physical, human, political, and social—that develop resiliency and the capacity to bounce back from these types of external shocks, which include increasingly variable weather events and natural disasters. Fragile states will be particularly hard hit by such shocks and will continue to depend on humanitarian aid to shield households from the worst effects—hunger, malnutrition, and illness. Meanwhile, countries already in default on their debts and countries at high risk of debt default will need resolution of this situation to get needed fiscal space for recovery-inducing public spending.

Beyond the next 12 months or so, in all countries, accelerated economic transformation and resilience through agricultural productivity growth, AFS transformation, non-agricultural sector growth, and governance and educational improvements remain the overarching goals. Macroeconomic stability, inclusionary economic policies, and continued improvements in the enabling environment for private business—including financial sector deepening, expansion of social and economic infrastructure, regulatory reforms to meet 21st century challenges, and increased openness to trade and investment to bring in new technologies and capital flows—will be fundamental priorities for all countries, but the key next steps will be context specific. The remainder of this section briefly describes the common and unique major challenges and priorities for each of the four country groups, which are also summarized in Table 9.

5.1 Common Priorities

Challenge #1: Accelerate Agricultural Productivity-Led Growth

Supporting Agricultural R&D and University Scientific Research

Evidence suggests that agricultural R&D is a powerful tool for economic transformation and resilience. For example, Gollin *et al.* (2019) report that between 1961–2010, the development of improved food crop varieties added US\$14 trillion to world GDP. The

associated gains to employment and rural household incomes over time has certainly reduced millions of households' vulnerability to shocks. Also, Thirtle *et al.* (2003) showed that a 1 percent rise in annual agricultural productivity can result in as much as a 72 percent reduction in the number of poor in Africa.

Response Options

Investment in agricultural R&D has been demonstrated to be one of the most effective ways to promote agricultural productivity growth (Fuglie *et al.*, 2020; Pardey *et al.*, 2014). Public R&D is especially needed in areas where commercial demand is limited and hence where private investments in R&D may not occur spontaneously. Most African governments devote less than 10 percent of their agricultural expenditures to R&D, and African governments spend much less on agricultural R&D than governments in other regions (Table 8). Most Asian governments spend at least four times more per farmer and per hectare cultivated than African governments. It is, therefore, no wonder that cereal yields more than doubled over the past 40 years in South and Southeast Asia but rose by only 38 percent in Africa (FAO, 2020).

Table 8: SSA Has Relatively Low Levels of Investment in Agricultural R&D

Region	Agricultural R&D		Agricultural Research Intensity, 2011 Expenditure			
	1981 (2011 PPP\$, millions)	2011 (2011 PPP\$, millions)	R&D/ Ag GDP (%)	Trend	R&D/ Cropland (\$/hectare)	R&D/ Ag Labor (\$/worker)
Public Agricultural R&D						
Latin America & Caribbean	2,820	4,689	1.06	↑	24.98	106.71
West Asia and North Africa	978	2,253	0.49	↑	26.45	79.55
East Asia and South Asia	2,709	13,572	0.46	↑	27.11	22.28
SSA	1,179	1,893	0.38	↓	9.25	10.11
Developing-Country Total Public Agricultural R&D	7,686	22,406	0.52	↑	22.91	25.79

Note: 2011 PPP\$ = purchasing power parity dollars at 2011 prices. SSA spends less per dollar of agricultural GDP, per hectare of cropland, and per farm worker than other developing-country regions. Moreover, agricultural R&D spending as a percentage of agricultural GDP has been declining (trend in R&D/GDP shown in table is during the 2001–2013 period). Source: Fuglie *et al.* (2020).

International development organizations and foundations have shied away from addressing the issue of adaptive local agricultural R&D, but eventually the constraints posed by the slow pace of technical innovation on African farms will limit the payoffs to most other public and private investments in rural Africa and will need to be addressed if the region is to pivot sustainably to a productivity-led agricultural growth path (Fuglie *et al.*, 2020).

Developing national institutions capable of developing and delivering a steady stream of technological innovations suitable to African farming systems is not just a funding issue; it also involves institutional design and management. National agricultural R&D

is conducted in complex systems composed of national research institutes, agricultural universities, private sector laboratories, and experiment stations, each with unique and essential roles. Universities, for example, underpin scientific capacity development through advanced degree training. However, the quality of graduate training programs at African agricultural universities has been seriously declining for decades, crippling the ability of these institutions to train African scientists and create effective agricultural research capacity in this region (Eicher, 2009; Osuri *et al.*, 2016). This is evident in how governments allocate public funds for agricultural research: countries in SSA route less than 10 percent of public agricultural R&D funding through universities (Pardey & Beintema, 2001). India, on the other hand, allocates more than one-third of its total public agricultural R&D spending through agricultural universities (Lele & Goldsmith, 1989; Pal & Byerlee, 2006).

Public research institutions need to foster a climate of innovation, where creativity and collaboration are encouraged, and performance is recognized and rewarded. International best practice¹⁶ suggests that several factors contribute to high-performing public research institutes:

- **Institutional autonomy:** Many public research institutes are located within ministries of agriculture. They are thus subject to government budgetary and human resource rules that often interfere with the incentives necessary to encourage high performance in research programs. Granting greater autonomy within the context of a clear mission statement and well-designed incentives can encourage high performance in research programs.
- **Performance incentives for scientists:** As in any research institute, the attraction and motivation of staff is perhaps the central challenge for management. Hence, a modern human resource policy with performance rewards is critical. An important source of staff remuneration is to provide opportunities for further education, training, and career advancement for staff who consistently perform at a high level.
- **Stable and diversified financing:** Public agricultural research institutions have historically depended on general government revenues or aid programs for funding. Lack of diverse revenue sources can leave them vulnerable to low and unstable funding. One potential source of supplementary funding for research is through levies on the value of commodity sales or exports. Because they are being taxed, farmer and exporter groups would have incentives to ensure that the research unit benefits their industry. Byerlee (2011) argues that this model is underused in Africa and provides several effective examples including Professional Fund for Agricultural Research and Extension (FIRCA) in Côte d'Ivoire. Other innovative approaches to financing agricultural R&D, including special legislative line items, earmarks, the creation of a special agricultural research foundation or fund, multilevel government funding arrangements (e.g., federal-state-local matching funds), and the creation of special tax districts that include farmers and

¹⁶ For further elaboration of best practices in the institutional design of national agricultural research systems, see Fuglie *et al.* (2020).

food companies. Encouraging FDIs in promising university technologies could also be pivotal.

- **Programs aligned with client needs through public-private partnerships:** One way of improving alignment with local farmer needs and to facilitate dissemination of agricultural innovations to farmers is through partnerships with producer groups and the private sector. Funding of public research through producer associations, as described in the previous bullet, ensures that producers have a direct stake (and voice) in R&D program orientation.
- **International R&D linkages:** Although agricultural technologies need to be tailored to location-specific conditions, much of the pool of scientific knowledge and genetic resources that agricultural scientists draw upon to make these adaptations is supplied by universities and research institutes in developed countries or through the affiliated research centers of the global agricultural innovation network, CGIAR. Establishing close international R&D linkages is especially important for small countries whose own research institutes lack scale. International R&D cannot fully substitute for local R&D because agricultural technologies, especially seed varieties, must be locally adapted, tested, and refined to suit Africa's highly varied agro-ecological conditions.

Improving the Policy Environment to Support Agricultural Productivity Growth

African governments and development partners can also promote agricultural productivity growth in SSA by recognizing and capitalizing on the contribution of institutional and policy innovation to economic transformation. Since 1978–1979, almost all or possibly all cases of successful agricultural transformation have been catalyzed by significant policy change if not comprehensive policy systems change, as have ensuing structural transformations (for an example of China, see Lardy, 1986; Perkins, 1988). As stated by Barrett (forthcoming, p. 18), “we must get the institutions and policies right in order for the science—and associated financing—to follow and enable technology diffusion to achieve real transformations at scale.” Achieving these gains will require greater attention to strengthening the governance and institutions that produce policy decisions, especially as it applies to agriculture.

An important role for policy analysis is to identify how to reduce the high costs of productivity-enhancing farm inputs to African farmers. Available evidence indicates that regulations at the ports, across borders, and in the transport sector can be streamlined or reformed to reduce input costs. Investments in physical and communications infrastructure are also needed, especially to reduce the high “last mile” costs that farmers incur (Minten *et al.*, 2013).

Another example of where policy change is urgently needed to promote inclusive productivity growth in Africa is land tenure policies. Substantial numbers of rural Africans have lost their rights to land, or are currently under threat of losing their land, to both local and external forces (Chimhowu, 2019). Women are particularly vulnerable

to losing rights to land. Promoting land rights for individuals and communities allows people to confidently make productivity-enhancing investments in their land or to sell their land if they so choose, which enables the transfer of land to more productive users (Holden *et al.*, 2013). Innovations in policies, institutions, and technologies can be powerful synergistic contributors to economic transformation and resilience.

Practical options for improved policy making include promoting the development of African-led policy analysis units. International development-oriented institutions will continue to play a critical role, but their effectiveness will depend on understanding and adapting to how Africans view their role in today's world, in which there is considerably greater local expertise, awareness, and insistence that African organizations control their national development agendas, policies, and programs (Jayne *et al.*, 2019b). These African professionals will collectively shape the enabling environment for local and international private investment in African AFSs and hence influence the pace of economic transformation in the region.

Challenge #2: Expand Employment Opportunities for Young Africans

With more than 62 percent of the population in SSA below the age of 25 and a labor force growing at 3 percent per year, about 10 million young Africans will enter into the labor force each year until 2035 (Filmer & Fox, 2014; Fox & Gandhi, 2020). A key challenge for African governments will be how to effectively expand gainful employment opportunities to keep pace with the numbers of people entering the labor force.

Response Options: (1) policies that encourage economic growth and better jobs throughout the economy, particularly in African AFSs; (2) public investments that support private investment, competitiveness, and new job opportunities; and (3) investing in human and organizational capacities in Africa. The following elaborates on each of these response options.

Better Job Opportunities: The dominant narrative around youth employment challenges in Africa focuses on deficiencies of youth and prescribes interventions such as postschool training. To a large extent, however, the youth employment challenge is about expanding the opportunities for economic expansion and job creation (Fox *et al.*, 2020). A strategy to improve opportunities for youth needs to recognize that informal employment is the dominant employment mode in Africa (as shown earlier), and that this will only change slowly. The objectives of employment strategies should be (1) higher and more secure earnings in informal employment through investments to increase productivity in farm and non-farmhouse production, while (2) encouraging private investment in higher productivity sectors to speed up the employment transformation (Filmer & Fox, 2014).

In many cases, the same investments and policies support both informal and formal job creation and earnings growth. Examples include investments in rural-urban transportation infrastructure, trade logistics infrastructure, energy supply, land tenure

regularization, ICT infrastructure, and digital finance services; and policies to reduce the cost of finance, new construction, business start-up, and control petty corruption. Improvements in these areas would provide stronger incentives for small, medium, and large farms and firms to provide employment opportunities commensurate with the rate at which young people are hitting the job market each year (Filmer & Fox, 2014). Given the extensive employment linkages between agriculture and the rest of the economy, efforts to promote agricultural productivity growth will expand job opportunities for youth, both on and especially off the farm (Fuglie *et al.*, 2020). Human capital improvements will also improve the competitiveness of African firms and encourage expansion of jobs in both the informal and formal sectors.

Improving the Productivity of the Workforce through Human Capacity Development

SSA's workforce is the least skilled in the world, which constrains the region's transformational potential. Although progress is being made, too many students in too many countries in SSA are not acquiring the foundational skills they need to thrive and prosper in an increasingly competitive global economy (Arias *et al.*, 2019). Growing evidence shows that it is educational achievement (e.g., secondary-school test scores), not attainment, that are highly correlated with long-term per capita economic growth rates (Angrist *et al.*, 2013). An unskilled labor force, even with low wages, cannot compete anymore in the global marketplace of the future.

Quality improvements must start with teacher qualification and better training in pedagogical methods. Studies show that in Kenya, for example, only one-third of grade four teachers in public schools had the minimum knowledge necessary to teach the grade. Yet, competitiveness will increasingly require a labor force with not just basic cognitive skills to read and follow directions, but higher level skills such as reasoning and problem solving, as well as socio-emotional skills such as communication and teamwork (Arias *et al.*, 2019). Improving teacher quality while expanding access will be difficult, but is needed (Bold *et al.*, 2017). Given continuing high growth in the school-aged population, increases in system efficiency are required.

African universities also need policy attention. They contribute by far the greatest numbers of undergraduate and masters-level workers to the labor forces in SSA, and demand for post-secondary education is growing rapidly. Universities could play a transformational role in upgrading the quality of the entire labor force. African university graduates influence the quality of the rest of their country's workforce through the training that they provide to others. This is carried out in primary and secondary schools, agricultural training colleges, technical and vocational education training schools, on the job in the public and private sectors, and in civil society and at home. Returns on investment from African higher education are estimated at over 20% and among the highest in the world (Psacharopoulos & Patrinos, 2018). A one-year increase in average tertiary education levels is estimated to raise annual GDP growth in Africa by 0.39 percentage points and eventually yield an increase of up to 12 percent in GDP (Darvas *et al.*, 2017). University activities may have important effects on

government policy and the practices of private sector firms, as well as on creating a more-informed citizenry and contributing to the democratic process (Shulock, 1999). Economic development in Africa will co-evolve with the upgrading of African countries' workforces.

Few African universities are playing the transformation role as effectively as they could, and hence efforts to transform the region's human capacities must involve improving the effectiveness of African universities (Arias *et al.*, 2019). With sustained support of development partners, international universities could play a much more engaged role in partnering with African universities to upgrade the capacity of Africa's future labor force.

Challenge #3: Achieve Economic Empowerment for Women

Restrictive gender norms, legal barriers, and discriminatory policies limit African women's opportunity to succeed and advance economically, access and control resources, and make and act on decisions, as noted in *Remaining Challenges and Opportunities* (Section 4.3). Although gender equality does not automatically improve with economic development, improvements in gender equity support economic transformation and resilience by building and using human capital more efficiently in the household, community, market, and society.¹⁷ Good practice examples can be found in Africa on how to address these issues within a country's development strategy.

Response Options: (1) improve reproductive health services to give women control over their bodies; (2) eliminate the gender education gap; (3) reform legal systems that deny women control of income, assets, and inheritance; (4) invest to decrease "women's time poverty"; and (5) foster agency to reduce the negative impact gender norms on women's lives.

Improvements in access to social services are an important first step in closing gender equity gaps. Development of economic empowerment starts early for women, with equal access to education. Most countries have closed their gender gap in primary education and are on track to close the gap in access to secondary education; but there is a large variation across countries, with fragile states showing the widest gaps. Female primary and secondary completion rates remain lower than males, an indication of continued impediments girls face in educational achievement (World Development Indicators, 2020; World Economic Forum, 2018, 2019).¹⁸ Youth literacy rates still show a 5 percentage point gap over all (World Development Indicators, 2020). Countries need to accelerate progress, and in fragile states, donors providing humanitarian support could help countries address this issue more effectively.

Once women reach reproductive age, their access to the world around them narrows substantially, and this impedes economic empowerment. Many countries permit

¹⁷ See Duflo (2012) for an extended review of evidence on this point.

¹⁸ <https://reports.weforum.org/global-gender-gap-report-2018/performance-by-region-and-country/>



marriage before the age of 18, and 10 percent of African women aged 15–19 have already given birth (World Development Indicators, 2020). Young women are less likely to use public transportation for fear of some type of gender-based violence. Only about one-fourth of African women ages 15–49 report using modern contraceptive methods. About half of married women in Africa report an unmet need for contraception—among the highest in the world. Women are more likely to express dissatisfaction with public health clinic services. Governments must prioritize women’s health needs and address them in a gender-sensitive manner.

Although some African countries have improved their legal systems, the average country gives women only about half the legal rights of men in areas of marriage, divorce, land and property rights, and inheritance (World Bank Group, 2019). Reform of these legal codes is essential. Efforts to formalize land tenure, necessary to lower the cost of land transactions and improve productivity, should ensure that women’s rights are formalized along with men’s. Unequal access to land, water, credit, and information through extension services all account for well-known results showing that female farmers are less likely to grow commercial crops and have less overall productivity than male farmers, demonstrating the importance of addressing these issues not only in the law but in program implementation (Beegle & Christiaensen, 2019).

The unpaid household chores and care work burden of women in Africa is high (see Section 4.3's *Gender Inequality and Women's Economic Empowerment*); the effect on women has been labeled "women's time poverty." Public investments can reduce this by expanding access to water, for example, reducing the time women and girls need to fetch water. Programs that expand early childhood development and childcare (provided publicly or communally) have been shown to increase women's participation in the market economy (Beegle & Christiaensen, 2019). Managing public service delivery to save women time by offering evening and Saturday hours also helps reduce time poverty by reducing lines at clinics for mothers to get their children vaccinated or their illnesses tended to. This not only increases access but leaves women with more time for income earning activities.

Informal norms are arguably more binding than formal laws and regulation on the choices women of all ages make with respect to their engagement in markets, in the community, and in society (Fox & Romero, 2017). Programs to develop women's socio-emotional skills have been shown to help women navigate their way through these norms and enhance their agency and options.¹⁹

Gender-based violence is a serious, and often unreported, issue affecting women's health, productivity, and welfare. It appears to worsen in times of crisis, such as the current COVID-19 economic and health crisis, eroding household resilience. This suggests that additional efforts are needed to enforce laws that prohibit it and address norms that encourage or tolerate it (Azcona et al., 2020).

Challenge #4: Capture the Opportunities AfCFTA Agreement

As shown in *Rapidly Increasing Demand for Food* (Section 4.3), the value of food imported by SSA countries exceeds US\$40 billion each year. Of this, only 20 percent is produced by farmers in other SSA countries, so there is great potential to expand employment and household incomes on the farm and in AFSs by promoting intra-regional African food trade. Stronger trade linkages between African countries also contributes to resilience and self-reliance; food production shocks are not highly correlated across most African countries, which enables production shortfalls in one country to be offset by surpluses elsewhere, contributing to food price stability and regional integration. If successful, rapidly rising demand for food in SSA is an opportunity for economic growth and resilience rather than a threat to livelihoods. Development partners can promote these goals by supporting the development and implementation of the African-led AfCFTA agreement.

To exploit opportunities for regional food trade, African states will need to invest in regional transport and communications infrastructure to reduce the costs of trade, remove trade policy barriers, and streamline regulatory procedures for cross-border trade. Investments in agricultural R&D, besides producing the benefits discussed

¹⁹ See Campos et al. (2017) and Fox and Kaul (2018) for examples of programs that build these socio-emotional skills.

earlier, will also contribute to improving countries' competitiveness in regional and international trade.

Challenge #5: Reduce the Infrastructural Deficit

Africa has a large infrastructure deficit compared to LICs and LMICs in other regions. This makes production in Africa less competitive, impedes adoption of new technology to raise productivity, raises prices for consumers, and impedes poverty reduction.

Developing SSA's energy, transport, water and sanitation, and communications infrastructure will be important for overcoming almost all of SSA's other major challenges.

Response Options: (1) improve management to get more quantity and quality out of existing infrastructure; (2) improve planning and project selection to get higher rates of return on investment (RORI); and (3) create an enabling environment for private financing.

Investments in Public and Private Service Delivery (Section 4.3) noted the achievements in expansion of access to infrastructure services African countries have made, but the contribution to transformation and resilience is much less than it could be because of the poor quality of service. In the words of Bond (2016), "performance of infrastructure in Africa is generally poor: costly, erratic and undependable." At the same time, poor project selection, sometimes driven by the availability sovereign financing from China and other sources, has caused RORI to end up well below the cost of debt, resulting in high and even unsustainable debt burdens (Morris *et al.*, 2020).

African countries need system change in how infrastructure is managed and financed. Management needs to focus more on tracking and addressing quality issues through management of operations, and a renewed focus on maintenance to ensure better service quality. Non-technical losses (theft of infrastructure services) need to be reduced and collections improved to generate the funds for required system maintenance. These changes may require new regulatory approaches to state-owned enterprise (SOE) monopolies or moving away from the SOE model to private, competitive ones, similar to recent changes in the telecommunications sector. The energy sector is often cited as the one that would benefit most from this restructuring (Bond, 2016).

In a case of monopoly or near monopoly (oligopoly), regulation is still required to protect consumers from high prices. An outstanding case is the private telecoms sector, where governments have prioritized revenue from sale of licenses over ensuring that lower cost service packages are offered to consumers. As a result, some countries in Africa have the highest mobile phone charges in the world—a practice that has particularly disadvantaged rural areas (Mabiso & Benfica, 2019).

Investment planning and project selection needs to improve as well. Availability of finance should not determine the scale of the project or the choice of technology. Africa is rich in renewable, green resources—solar, wind, hydro, and geothermal—and

these should be exploited over legacy fossil fuel technology offered by some sovereign lenders (Bond, 2016). In the case of transport, regional planning of multi-model transport could identify options for private investment (toll roads, port facilities, airports), reserving scarce public resources for investments with high social returns such as rural roads.

Africa has turned to sovereign lenders for infrastructure financing because of the lack of interest from the private sector. Although not all sectors and projects are suitable for private infrastructure finance, others, such as electricity generation, are, but private financiers will not invest when they must sell to an insolvent, poorly managed, and undependable public sector power distributor. Development partners and development banks can help by providing neutral advice on sector restructuring that would crowd in private finance.

Specific Challenges for Country Groups

Although all African countries will need to address the common challenges identified above, the starting point will differ by country context. Most of these challenges require public-sector action. A crucial difference among countries is public-sector capacity—in policy and program planning and implementation, in resources, as well as commitment to voice, accountability, and inclusion. These differences, and their influence on policy options and priorities, are discussed below.

Issues for Low-income Countries: Expansion of Social and Economic Infrastructure, Encourage Firm Entry while Raising Farm Productivity and Incomes

LICs have suffered substantially from the health and economic shocks of COVID-19. Economies are contracting, and hunger is expanding. Humanitarian aid, including both health supplies and food, will be needed into 2021 (International Monetary Fund, 2020). The outlook for a growth bounce back in 2021—led in many cases by the agricultural sector—is good, except for the few countries currently in debt distress (e.g., Gambia, Mozambique), where their fiscal crises are expected to continue.

In LICs, important medium-term priorities are a mix of public investment to expand access to key public goods and services and crowd in private investment, and continued development of government capacity to collect taxes, manage expenditures, transparently and efficiently regulate markets, and provide budget transparency.

- Countries need policies and programs to attract new investment from domestic and international sources in competitive manufacturing, construction, and services sector activities, to grow productivity and employment in this sector. In some cases, this means measures to increase competition so that large, entrenched firms do not crowd out new entrants; in other cases, it means providing access to land and associated infrastructure to new or expanding businesses; in yet other cases, it means streamlining government procedures so that firms can easily access the necessary operational permits, imported inputs, and markets.

- Reducing trade barriers (tariff and non-tariff) and starting the development of a modern trade logistics system are needed to support the development of both the AFS and non-farm enterprise sectors.
- The expansion of rural health, education, and water and sanitation services is also critical to raising incomes in both rural and urban areas. In LICs, fertility is high (above 4.5 children per woman), so countries will need to continue to invest in system expansion (building schools and clinics and training staff) simply to provide the access a young and growing population requires. System expansion needs to cover both rural and urban areas and all regions to ensure equality of opportunity, which means increases in system efficiency are required.

African LICs' average score on governance is in the bottom 30 percent on voice and accountability, and below 25 percent on government effectiveness (see Table 7). This low capacity in addition to weak commitment to political inclusion raises fragility and the risk of destructive civil conflict.

Issues in Fragile States: Security, Humanitarian Relief, Rebuilding, and Governance

Most fragile states are also low income—either because they have always been poor (e.g., Somalia) or their fragility eroded their prior economic and resilience gains (Zimbabwe). Conflict and fragility have deteriorated any existing social and economic infrastructure resulting in high costs of doing business, fragmented markets, and low human development outcomes. They have abysmal ratings on government effectiveness, voice and accountability, and political rights. So, while their transformation and resilience agenda is similar to the LICs, their capacity to develop and implement policies and programs is much worse.

- Restoring security and stability must take precedence over all other objectives. Sometimes security and stability can be restored in some parts of the country first, and the economy can rebound there even as it stagnates in other parts (e.g., Somalia). In this case, a more ambitious rehabilitation and transformation agenda could take shape. However, resilience requires that the underlying causes of the fragility be addressed; if not, conflict in one area will spill over to other areas. This means taking initial steps toward improving government effectiveness by developing or rebuilding government economic planning and management functions.
- Once political stabilization has at least quelled violence, experience in Africa shows that a growth rebound is possible, and it is agriculturally based. All formerly fragile states in SSA without extensive mineral resources relied on the agriculture sector to jump-start the economy following a peace agreement (e.g., Ethiopia, Côte d'Ivoire, Mozambique, Rwanda, Uganda). Even in mineral exporting countries such as Angola and Sierra Leone, a rebounding agriculture sector played an important role in stabilizing household incomes and increasing food security. Initially growth will be based on more extensive use of land and inputs, although some

productivity improvements can be encouraged even at early stages. In Mozambique, for example, a few years after the peace treaty was signed, contract farming companies started to come in with modern inputs for their contractors.

Fragile states have high levels of poverty and malnutrition. They usually are not able to manage their own safety nets but rely on humanitarian assistance. Governments need to work with development partners to ensure an adequate amount of assistance reaches target populations. Over time, these countries can begin to assume some responsibility for safety net functions as needs diminish and public sector resources improve.

Issues in Lower-middle-income Countries: Government Effectiveness, Infrastructure, Trade Logistics, and Urban Governance

Africa's LMICs that are not resource rich have reached this level by mastering the development basics: providing universal access to primary and often lower secondary education; reducing morbidity and mortality from infectious diseases; developing a national water, sanitation, and hygiene network that reaches beyond urban areas, expanding energy, ICT, and transportation logistics, implementing financial sector regulations that encourage financial deepening and household access, and improving the environment for private investment (domestic and foreign). They have achieved political stability through expanding civil society voice and increasing public sector accountability as well as focusing on inclusive economic policies. They have been rewarded with increased FDI and portfolio investment flows that have created a more diversified and productive economy and access to international credit markets. Both household and national resilience have increased, despite growing climate challenges—chronic poverty has declined, and national income has been on a steady growth path. However, they face significant challenges ahead in continuing their trajectory, which require increasing government effectiveness.

In the short term, the LMICs also need to stabilize their economies and restore growth. Many countries already had some form of public safety net in place but have also depended on humanitarian health sector support and food aid in their poorest areas (e.g., rural Kenya, which has also been devastated by flooding and locusts). Tourism-dependent countries are expected to suffer income losses through 2021, but other sectors, including agriculture, manufacturing, construction, and services are expected to recover in 2021. Stabilization in the countries at high risk of debt distress (e.g., Cameroon, Ghana, and Kenya) may take more time, however.

In the medium term, countries need to continue to transform their economies while recognizing that most employment (60 percent or more) will remain in the informal sector—household farms and businesses. As opportunities increase in non-farm employment, seasonal agricultural wage labor supply will diminish, and mechanization and herbicides will be required, increasing farmers' demand for credit; the financial regulatory system should enable expansion and innovation in the sector to meet these needs (e.g., leasing programs). These developments on the farm do not mean that the agricultural productivity-led growth will become less important. Without a continuous

flow of output and continually increasing incomes, the off-farm and non-farm sectors will stagnate in rural and peri-urban areas.

The public sector will need to ensure access to a range of goods and services that support the economic transformation in both farm and non-farm sectors. The challenge is to find ways to be nimble, responding to new issues and problems as they arise in a transparent fashion. One important area is the business enabling environment. New firm entry and productivity growth and capacity expansion in existing firms are critical at this stage of development to grow competitiveness and provide better jobs for a growing, and more educated, labor force. Public action will be needed on a number of potentially binding issues, ranging from streamlining and making more transparent and impersonal business transactions with government to just right levels of financial regulation and supervision so that transaction costs continue to fall and needed new products (e.g., insurance and reinsurance) safely enter the market. Improved trade logistics, an increasingly important part of competitiveness, will be crucial, both for exporters and domestic producers who rely on key imported inputs and need them at precise times. Trade and other regulations must encourage, not inhibit, new agricultural and other sector technologies to enter the market. Addressing these issues implies constant quality upgrading in the public sector, including preventing corruption from emerging and reducing or eliminating existing corruption opportunities within the public system.

Human development will be a big challenge in African LMICs in the future. Improvements have been made, but maintaining (and in some areas, expanding access) will still require expanding infrastructure, training and hiring staff, and providing inputs. Meanwhile, quality upgrading is desperately needed. Health systems also need quality upgrading to respond to the increasing global health challenges as well as more localized emerging noncommunicable diseases. Prevention needs attention along with treatment, but current health systems are not oriented toward providing these services.

Rapidly urbanizing countries grow faster due to economies of agglomeration, but this requires addressing the challenges of urban governance. The objective of rural development should not be to keep the rural population stable; it should be to upgrade rural livelihoods while equipping young people to successfully migrate to nearby urban areas or even capital cities, as the rural economy needs fewer workers. Human development is key, but so is urban planning and governance that encourages productivity-driven economic growth and efficient labor markets and allows for sustainable population growth by providing necessary services (transportation, housing, water, sanitation and solid waste disposal, electricity, security, etc.). A constant process of urban renewal is required. Few African countries today are rising to this challenge. As a result, Africa is home to some of the world's largest and poorest slums.

LMICs score highest on governance indicators of any country group, and this has no doubt contributed to resilience. Countries also must continue to improve their political

systems to provide voice and accountability to an increasingly urban, educated, and aspirational population. Attention to distributional issues as the economy transforms will also be important. This means a focus both on equality of opportunity with respect to public services as well as on human rights such as protecting vulnerable workers from exploitation at work and ensuring that both men and women can move freely without fear of violence and harassment.

Increased household incomes and savings have boosted resilience. Nonetheless, substantial idiosyncratic and covariate risks remain, and as countries and households become richer, the demand for *ex ante* risk reduction through insurance mechanisms grows. Regulations can enable private-sector solutions (insurance, savings, and financial assets) that will meet household needs efficiently and effectively. Publicly financed safety nets have a role to play as well, both in terms of cash transfers to households and taxor privately funded social insurance mechanisms. Many African LMICs are already experimenting with public and private health insurance schemes, for example. Such programs run the risk of resulting in a regressive expenditure pattern (which can reduce resilience), so care is needed in design and monitoring.

Issues in Resource-Rich Countries: Fight Dutch Disease, Government Ineffectiveness, and Corruption

Countries classified as resource-rich countries in this paper are ones with a long history of resource discovery, mining concessions, and wealth (e.g., Angola, Nigeria, Zambia). Several have experienced periods of outright civil war (Angola, Nigeria), and some longtime mineral exporting countries are now in a conflict situation (e.g., DRC). All nonfragile resource-rich countries have reached LMIC status, but based on their mineral rents—not because of economic diversification, government effectiveness, or resiliency. Indeed, these economies historically have shown more economic volatility than the African non-resource-rich LMICs. After a difficult period adjusting to commodity price declines in the 1990s, they have mostly been able to maintain macroeconomic stability, but they have been challenged by the downward trend in commodity prices of the last seven years (which followed a 10+ year upswing).²⁰ Several countries have attempted to borrow their way through the fall in export earnings, and now, with the additional shock of COVID-19, are in debt distress (Congo Republic) or at high risk of debt distress (Angola, Zambia).

Africa's resource-rich countries are widely seen as having succumbed to the "mineral curse," which is both an economic syndrome known as Dutch disease, and a governance syndrome. Dutch disease refers to the natural appreciation of the exchange rate that occurs when mineral prices are high and substantial amounts of foreign exchange flow in. Unless well managed (e.g., the dollars are targeted toward investment and not consumption, and not allowed to affect the exchange rate), domestic competitiveness in sectors producing tradeable goods and services such as agriculture plummets as imports are much cheaper (Frenkel, 2012). The governance

²⁰ The price swings in hydrocarbons have been stronger than those for metals and stones. Copper and gold, for example, have almost recovered from their low in 2016.

syndrome refers to the tendency of a relatively small economic elite to monopolize political power for the purposes of enriching themselves and their families, clan, region, or patronage network. Mineral rents exacerbate authoritarianism and corruption, although if a political settlement is reached among the elite, governments can be quite stable (Pritchett *et al.*, 2017). Both syndromes reduce resilience, as they impede economic diversification, widen inequality, reduce incentives to build impersonal economic institutions, and reduce the flexibility of the public sector in the case of a shock.

Box 2: Resource Riches and Agricultural Development: Nigeria and Indonesia in the 1970s Oil Boom

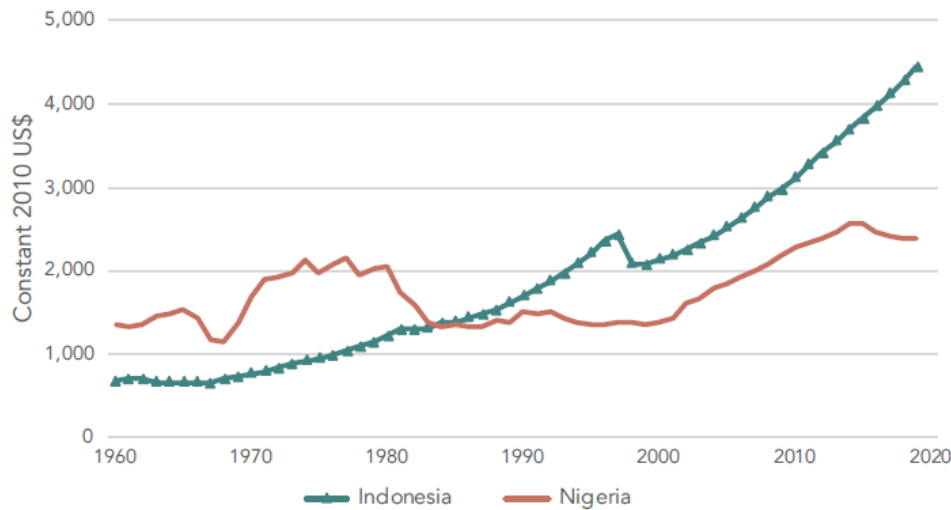
In the early 1970s, Indonesia and Nigeria were LICs with new-found oil wealth. As the world price of petroleum increased 12-fold between 1973–1981, they both experienced large windfall gains in export and government revenues. During such mineral-led export booms, it is common for other trade-sensitive sectors like agriculture to suffer—an economic effect sometimes referred to as Dutch disease. This occurs because the oil, gas, and mineral export booms draw labor and capital away from other tradeable sectors and cause the country's exchange rate to appreciate, making non-oil or non-mineral exports less competitive. These potentially negative consequences also depend on how governments manage their policies during boom (and subsequent bust) periods. In Nigeria's case, the higher government revenues from oil revenues were directed toward subsidies for manufacturing for import-substitution, while agriculture was neglected (Bevan *et al.*, 1999; Pinto, 1987). Previously a net exporter of agricultural products, Nigeria saw its agricultural exports collapse and food imports surge as its agricultural terms of trade deteriorated. Following the decline in world oil prices in the 1980s, Nigeria was not able to sustain economic growth and went into severe recession.

Indonesia, on the other hand, used a substantial part of its oil revenue to invest in its agricultural sector. It expanded irrigation, increased its agricultural research and extension system, and extended fertilizer and credit subsidies to farmers. At its peak in the late 1970s, spending on agriculture accounted for more than 20 percent of the government budget (Scherr, 1989). In addition, when oil prices declined, Indonesia made timely devaluations to its exchange rate to keep its trade balanced and non-oil sectors competitive (Pinto, 1987). Indonesia's agriculture sector exhibited strong growth, and it moved from being a major food deficit country to being largely self-sufficient in its major staple, rice. Moreover, agricultural and rural economic growth helped cut poverty rates in half (Timmer, 2018). Despite this success, Indonesia's support for agriculture was likely not very efficient. Rosegrant *et al.* (1998) found that, although subsidies for fertilizer dominated government spending on agriculture, it was the investment in irrigation, research, and extension that enabled Indonesian farmers to achieve and sustain gains in productivity.

By 1990, Indonesia had emerged as a not only richer but more equitable society than Nigeria (Figure 15). Bevan *et al.* (1999) explore the underlying reasons why each of these countries responded differently to the oil revenue windfall of the 1970s. They argue that the Indonesian elite placed greater priority on agricultural growth and poverty alleviation because they perceived a serious political threat from a food insecure population. Nigerian elites, on the other hand, were more focused on ethnic and regional (especially North-South) interests.

Box 2: Resource Riches and Agricultural Development: Nigeria and Indonesia in the 1970s Oil Boom (continued)

Figure 15: Average GDP Per Capita in Indonesia and Nigeria since 1960



Source: World Development Indicators (2020).

Africa's resource-rich countries have not made the progress that LMICs have in building social and economic infrastructure. Their education and health indicators are worse than LMIC countries, and their public infrastructure performs poorly, both because of inefficient investments and poor management. ICT infrastructure, which is mostly private, is performing better. As a result, their infrastructure challenges are closer to those of the LIC countries than those of the LMIC countries. The same is true for the business enabling environment. Failure to address these issues will hold back economic transformation.

Resource-rich countries must find ways to reduce the influence of the commodity cycles and the Dutch disease if they are to advance economic transformation. Some countries outside of Africa, such as Indonesia, have found some success, in part by supporting farmers with infrastructure and technology so that they could supply urban areas and maintain political stability (see Box 2: Resource Riches and Agricultural Development). Countries can use mineral rents to develop sites and services for industries serving a domestic or regional market, such as building materials and food processing (fresh juices, dairy, smoked fish, etc.). Service sectors, including those based on ICT, could offer some opportunities for economic diversification. At least some progress on reforming the business enabling environment—especially reducing corruption and red tape by creating more impersonal institutions—will be vital to the success of these efforts, however.

Resource-rich countries must find ways to increase inclusion within their political system. High income inequality and inequality of opportunity are breeding grounds for civil discontent, which can spill into violence (as Nigeria’s oil-rich Delta region has demonstrated).

During the last 30 years, the scramble for mineral riches—driven in part by demand for energy, and in part by new technologies requiring a range of rare earth metals such as cobalt and lithium—has resulted in major new mineral discoveries within the continent and off the coast. High resolution satellite technology is making mineral prospecting even cheaper. As a result, the number of African countries able to export minerals and benefit from the income is growing. The experience of Africa’s long-time resource-rich countries should be sobering for diversified LMIC countries such as Ghana, who have become or are now becoming mineral exporters.

Conclusion

Although many African countries have made substantial progress during the last 20 years, the COVID-19 economic and health shock has already rolled back some of their progress in poverty reduction and unearthed remaining weaknesses in resilience and self-reliance. Projections suggest that most African countries can get back on track in 2021 as the world economy recovers. To continue their progress, we have highlighted five key challenges common to all countries in this study—accelerating agricultural productivity growth, expanding employment opportunities, achieving women’s economic empowerment, capturing opportunities for intra-African trade, and remedying Africa’s infrastructure deficit. Addressing all these challenges will test the capacity and commitment of African governments and the public sector. Public policy and donor partnerships need to bear in mind differences in public- and private-sector capacities across Africa, as a one size fits all approach will not be as effective (Table 9). In Section 6.0, we discuss how USAID can support African country priorities, taking into account country capacity and commitment.

Table 9: Priority Challenges and Policy Responses for the Four Country Groups

Country Type	Economic Transformation Challenges	Agricultural Productivity Growth Challenges	Priority Policy Responses for Rural Transformation
Low-Income	• High levels of extreme poverty and hunger • Limited access to basic social services and infrastructure • Low human capital and skills of workforce • Low rural-urban connectivity • Low financial inclusion, low net credit to private sector • Limited private investment in farm and non-farm sectors	• Low productivity of labor and land • Low use of capital inputs • High seasonal underemployment • Food insecurity at household/national level • Policy and market uncertainty • High transaction costs of trade à low farm-gate prices • Weak land tenure	• Strengthen public research, development, and extension (R&D&E) services • Strengthen land rights and registration, especially to support security for women • Promote private investment in AFSs through improved price transparency, investments in market infrastructure and logistics, reducing trade barriers, streamlining regulations • Improved public sector delivery of services • Improve tax policy, collection,

Country Type	Economic Transformation Challenges	Agricultural Productivity Growth Challenges	Priority Policy Responses for Rural Transformation
	• Limited industrialization • Few formal wage jobs in private sector • Narrow tax base, low rate of taxes /GDP • Weak macroeconomic stability • Poor public expenditure transparency	• systems, especially for women • Low livestock productivity • Low investment in Ag R&D • Ineffective extension system	• expenditure management • Build public social safety net • Strengthen voice mechanisms for rural areas
Lower-Middle-Income	• Low efficiency of expenditure on social services and education • Unreliable infrastructure services • Poor urban governance and planning, inconsistent fiscal decentralization • Shallow financial sector, limited products • Low entry of medium and large firms, high informalization of small firms owing to high costs of doing business • Low competitiveness in manufacturing sector • Poor trade logistics, customs inefficient • Fragmented social safety nets • Inconsistent government effectiveness and transparency	• Weak public R&D&E • Limited private extension • Policy and market uncertainty • Limited options for managing risk • Limited exploitation of machinery/irrigation potential • Land degradation/unsustainable land management • Limited private investment in value chains capable of transforming AFSS • Inadequate access to farm credit •	• Use public R&D&E to encourage greater farm productivity and expanded utilization of higher value crops and animal products via public/private partnerships • Strengthen land tenure systems and registration • Improve quality of public sector management across the board to develop nimble public sector • Raise quality of publicly provided social services; develop new funding models to improve access • Deepen financial sector through nimble regulation • Review decentralization, provide a policy framework for better urban governance; increase local voice and accountability mechanisms
Resource-Rich	• Commodity cycles cause volatility in exchange rates, GDP, and public budget • Little transparency or efficiency in public spending, including resource extraction contracts • Poor business enabling environment, low rate of private investment, new firm entry, limited competition • Weak banking sector, limited access to finance • High employment in informal services • High inequality in access to social services, weak public sector delivery of	• Dualistic agricultural sector: high level of subsistence farmers, few large commercial farmers • Non-transparent policy/regulatory environment • Land use and ownership conflicts • Underfunded, underperforming R&D&E. • Ineffective farm credit system	• Manage the Dutch disease • Transparency and efficiency in policy management; improve infrastructure investment project selection • Promote agriculture as a national priority • Invest in rural feeder roads, rural-urban connectivity • Build basic economic and social infrastructure; use community-based management to improve performance • Improve land tenure security and registration • Invest in agricultural R&D&E

Country Type	Economic Transformation Challenges	Agricultural Productivity Growth Challenges	Priority Policy Responses for Rural Transformation
	social and infrastructural services • Limited or no social safety nets		
Fragile	• Political instability, lack of public acceptance of the government and state legitimacy • High levels of extreme poverty and hunger; displacement • Limited state capacity to focus on economic development • Urgent need for foreign aid (humanitarian and rehabilitation) • Deteriorated infrastructure and basic social services • Banking system solvency problems, weak regulatory capacity • Weak macroeconomic stability, poor public expenditure management and transparency	• Mostly subsistence agriculture • Land-related violent conflicts • Conflicts reduce labor and agricultural productivity, marketing channels • Abandoned farmland from conflict • Limited credit and risk mitigation programs • Extension is not functional	• Strengthen conflict prevention and peacebuilding programs • Protect critical agricultural areas and infrastructure • Plan/start rehabilitation, reconstruction, and resettlement • Ensure humanitarian assistance; transition to public safety nets • Rehabilitate infrastructure, resume schools and basic healthcare in conflict-affected areas • Rebuild government economic planning and expenditure management functions

6.0 AN AGRICULTURAL PRODUCTIVITY-LED GROWTH AND TRANSFORMATION STRATEGY IS ESSENTIAL TO ACHIEVING USAID AND UNITED STATES GOVERNMENT (USG) FOREIGN ASSISTANCE OBJECTIVES

Sub-Saharan Africa remains the most aid-dependent region of the world (Beegle & Christiaensen, 2019), reflecting current poverty as well as capital, infrastructure, and institutional deficits that date back to the colonial period. African countries seek to end this dependence. Aid donors have increasingly oriented their programs toward this objective. This includes USAID, where the overarching objective is to build self-reliance in recipient countries, meaning the capacity to plan, finance, and implement their own development strategy (USAID, 2018). Inclusive economic transformation, agricultural productivity growth, and increased resilience at household, community, and national levels synergistically improve a country's self-reliance.

6.1 Agricultural Productivity-Led Growth in USAID Partner Countries Supports USAID and USG Objectives

The synthesis of evidence in this report indicates that supporting agricultural productivity-led growth would accelerate progress in achieving several USAID and USG objectives. By implementing projects to support agricultural productivity-led growth in Feed the Future countries, USAID/RFS can sustain progress on the following USAID and USG-wide objectives for foreign assistance:²¹

- **Increasing self-reliance** by increasing GDP per capita, reducing poverty (by increasing the real incomes of the poor), improving social group equity (by decreasing rural and rural-urban inequality), improving government effectiveness (in agricultural policy and programs), improving the management of natural resources, and improving the business and investment environment.
- **Supporting implementation of the Global Fragility Act** by helping to strengthen

²¹ See The Journey to Self-Reliance Country Roadmaps, <https://selfreliance.usaid.gov/>; Private Sector Engagement, <https://www.usaid.gov/work-usaid/private-sector-engagement>; S. 727 Global Fragility Act of 2019, <https://www.congress.gov/bills/116th-congress/senate-bill/727/text> and Richardson (2019); Trade and Investment, <https://www.usaid.gov/africa/trade-and-investment>.

the economies and livelihoods of poor and excluded people in countries at risk of conflict, thereby providing a foundation for political and economic stabilization and development.

- **Increasing private-sector engagement** by working with the private sector to modernize and transform food systems.
- **Supporting increased trade** along agricultural value chains and U.S. FDI—two objectives of the Prosper Africa program.

The case studies cited in this report, as well as a wealth of other research, have demonstrated the importance of a deliberate policy of agricultural productivity-led growth to the achievement of economic transformation and resilience, especially during the first stages of transformation, when there is a shortage of opportunities in other sectors.

The Global Food Security Strategy (GFSS)²² specifically targets “agricultural-led growth” as one of its objectives. The emphasis should be on activities to promote high-impact, *agricultural productivity-led growth* as opposed to an agricultural growth strategy that continues to rely mainly on expansion of area under crops. The benefits of reducing the pace of land conversion from forest and grasslands to farmland include reducing stress on natural environments, conserving biodiversity and environmental resilience, and reducing the release of greenhouse gas emissions that are associated with the conversion of land to farmland. High impact is achieved by focusing on smallholder farming systems which have significant agricultural size and potential.

A productivity-led approach to agricultural growth is better positioned to achieve all the objectives of the GFSS, either directly or indirectly: (1) inclusive and sustainable agricultural-led growth; (2) strengthened resilience among people and system; and (3) a well-nourished population. With respect to the first objective, productivity-led growth is the most sustainable form of growth in any sector. In the agriculture sector, it can also be inclusive if it ensures sustainable poverty reduction by increasing the real incomes of smallholder farm households. If, for example, USAID assistance to develop local agricultural R&D enables countries to develop and disseminate scale-appropriate technologies for both food crops and export crops, USAID assistance will support inclusive and sustainable agriculture-led growth. USAID’s programs to promote the private sector and markets will also benefit from the reduction in farm production costs that would result from improved local agricultural R&D&E systems. Success in reducing costs in farm production and marketing systems (*i.e.*, productivity gains) will also support the creation of many new, higher-earning, non-farm jobs in both the upstream and downstream parts of the value chains, enhancing development inclusiveness.

²² U.S. Government Global Food Security Strategy 2017–2021, <https://www.usaid.gov/what-we-do/agriculture-and-food-security/us-government-global-food-security-strategy>.

Identify Programs That Promote Agricultural Productivity Growth to Increase Resilience

A focus on agricultural productivity-led growth also increases macroeconomic and microeconomic resilience. At the microlevel, people and communities with higher incomes are better able to build assets and cope with shocks and stresses (Cisse & Barrett, 2015). They are also better able to invest in the human capital of their children (Beegle & Christiaensen, 2019). The R&D needed for agricultural productivity-led growth can and should focus on developing climate-smart agriculture that increases farmers' resilience to weather shocks and promoting African farmers' adoption of sustainable land management practices that reverse the growing problem of land and soil degradation of African farmland (Montpellier Panel, 2014). These are priority areas for improved resilience of households and communities. If the research output is scale appropriate, it will also support inclusive agricultural productivity growth.

Productivity-led agricultural growth increases macroeconomic resilience as well. Programs that improve crop yield stability in the face of weather shocks support overall economic growth—due to the continued high correlation between agricultural and GDP growth—and thereby mobilizes greater public resources for investing in social and economic infrastructure, all of which increase growth, transformation, and macroeconomic resilience. Productivity-led growth in the sector where poor people earn their income reduces inequality, which supports resilience. Higher GDP also gives countries the resources to develop their own coping programs for shocks that cannot be prevented or mitigated.

Resources are limited, especially in poor countries. In some circumstances, it may not be possible to identify potential high-productivity investments because the natural habitat or other conditions are too poor. Prioritizing funds suggests that investments in agricultural productivity growth should be directed to areas where the potential reward to inclusive growth is high, as these will increase overall economic growth and resilience. In other areas, micro-resilience may best be supported by other investments—such as in human capital development and connectivity to support migration—rather than potentially low reward investments in agricultural productivity growth. Safety net mechanisms, such as household cash transfers, can support consumption and allow households to choose for themselves the investments which would allow them to maximize their welfare.

Promoting agricultural productivity growth is essential for developing youth livelihoods. Africa's rapid agricultural sector growth of the last 20 years absorbed a large share of the rapid labor force growth while increasing sector incomes. It also helped the rural nonfarm sector absorb labor sustainably (Filmer & Fox, 2014). It is not possible for countries to create enough new employment opportunities outside the agricultural and broader AFS sectors for all the youth expected to enter the labor force over the next 20 years (Filmer & Fox, 2014). Evidence shows that where the AFS sectors offer opportunities to earn a decent living, youth enter, which benefits the AFS sectors as African youth today have more education than their parents and can be early



Photo from flickr Feed the Future collection

adopters of new technology developed by local R&D systems (Mabiso & Benfica, 2019; Yeboah & Jayne, 2018).

Identify Synergistic Agricultural, Health, and Nutrition Interventions

Sustainably increasing rural incomes is one of the most effective ways of fighting malnutrition, especially calorie deficits. As poor households gain additional income, they tend to spend much of it on calories, protein, and calcium (Bhargava, 2015). Adequate healthcare, especially for children subjected to diarrhea, stomach viruses, and other morbidities, is also necessary to prevent nutrient loss. Income increases, complemented by expansion of rural health services, improve access to healthcare. However, it has long been recognized that income increases alone may not be enough, especially for increased intake of micronutrients such as iron and vitamins that are critical to maternal and child health. This is because foods high in these nutrients are not often affordable at the typical household incomes found in low- and LMICs. Moreover, households may lack knowledge of the importance of these nutrients and how to acquire them through dietary diversity. Providing nutritional supplements, along with accessible nutritional information, is often needed at these low-income levels, which is why USAID has a multi-sectoral approach to improved nutrition.

USG Has Deep Experience in Building Institutions That Support Agricultural Productivity

Not only is supporting agricultural productivity-led development important for the USAID and USG foreign assistance objectives, but it is one of USAID's comparative

advantages in the development partner space. Few donors have the depth of expertise and experience that USAID does in this area. It is widely recognized that agriculture was the foundation of U.S. development, at least through the first half of the 20th century as the manufacturing sector grew its share of output and employment. Many U.S. agencies and institutions still exist that are potential role models for SSA, but which need to be adapted to contemporary African circumstances (Eicher, 1999). USAID has a particular comparative advantage in the areas where public policy and programs are weak or insufficient to achieve the progress African countries need agricultural R&D/science, extension systems, private sector-led development, and entrepreneurship supported by tertiary education and should use it. For example, leveraging the capacity already built within the U.S. land-grant university system in R&D, extension, technology transfer, and stakeholder engagement, as well as engagement with a robust agri-food private sector, presents USAID with an opportunity for efficient knowledge-based intervention.²³

Keeping the Focus on the Fundamental Drivers of Economic Transformation

USAID and RFS should not divert their attention away from inclusive farm-level productivity growth. Most other bilateral donors are either not engaged in the agricultural sector at all or are not focused on boosting productivity and encouraging private investment to develop agricultural value chains. In part, this may reflect a misunderstanding of the role of agriculture in economic growth. For example, a recent European Union (EU) audit of its development assistance to Kenya concluded that “the agriculture sector is not a source of job creation in the numbers that Kenya needs,” while manufacturing has “a great potential to create jobs,” and recommended that the EU withdraw its assistance to the agricultural sector (Chadwick, 2020). Not only does this view not consider the limited potential employment gains of a manufacturing-led growth strategy given the globalized, more capital intensive manufacturing sector today, but it ignores the extensive evidence summarized in this paper regarding the importance of the agricultural sector in expanding employment and income growth in all other sectors of African economies and in building more resilient households, communities, and economies.

²³ As an example, Michigan State University and Purdue University were invited in 2019 to conceptualize and develop a locally led agricultural policy research institute in Malawi to provide policy guidance to the Government of Malawi. This model puts local researchers in the lead, while MSU and Purdue develops institutional capacity, provides trainings, mentorship, and quality control in the background. Within a six-month period since the official launch of the MwAPATA Institute (www.mwapata.mw), the Malawi government is relying heavily on MwAPATA to provide technical guidance and policy support on a wide range of issues.

6.2 How USAID Should Support Agricultural Productivity-Led Growth

Supporting agricultural research, development, and extension is among the most effective interventions to promote Africa's economic transformation (Economist Intelligence Unit, 2008; Fuglie *et al.*, 2020). Through its direct impact on farmers' behavior and production practices and therefore on incomes and food security, context-specific R&D delivered to farmers through an effective extension system is a critical element of a rural transformation strategy. As noted above, by working through the public and land-grant universities and the CGIAR, USAID has a long-standing commitment in this area and a wealth of experience unmatched by other donors.

Transitioning to agricultural productivity-led growth will require a range of sector-specific public investments as well—sustained investment in international and national crop and animal science, bi-directional extension systems, and continuously identifying ways to improve the farm and agribusiness enabling environment through support to locally led agricultural policy research institutes, to name a few. Although USAID is not active in all these areas, USAID mission staff can assist governments in the design and prioritization of the investment programs—including piloting strategies as needed.

Support National Systems or Use Alternative Approaches for Delivering Technical Innovation to African Farmers

In light of the priority on self-reliance, it may be important to assess whether progress on sustainable agricultural productivity growth is best achieved through a sustained commitment to improving the functioning of national agricultural R&D&E systems or continuing the current approach of developing alternative channels for directly reaching African farmers. Although some donor-funded projects have provided valuable services to beneficiaries, they may be preventing private and public resources from operating in the technology diffusion space and prolong the time before political commitment for sustainable self-reliant national systems of R&D&E can be established. Many aspects of technical innovation and extension are public goods. Projects and programs funded by donors with a limited time span should be designed carefully to avoid crowding out investments that governments themselves could be encouraged to make as part of a self-reliant AFS (Edwards, 2011).

Draw Upon Successful Experiences

The experience of Ethiopia proves that with strong political resolve, even the poorest and most shock-prone countries of the world can make huge strides to make their people more resilient and self-reliant. Along this growth trajectory, there will be inevitable shocks that require humanitarian assistance. However, the impact of these shocks should be progressively mitigated as countries become more resilient and self-reliant. An agricultural productivity-led growth strategy can help countries progress along this path.

Diversity of Circumstances Requires Diverse Strategies

Diverse circumstances within SSA mean that USAID cannot apply a one-size-fits-all approach. Building up public R&D and extension in countries with only weak levels of political stability and low government capacity is challenging and will pay low dividends if other issues such as property rights and public safety are not yet addressed. In these fragile states, restoring infrastructure and reducing extreme deprivation in rural areas may be the most effective strategy. Addressing nutritional deficits through post-natal healthcare and food supplements will be more effective than relying on increased agricultural incomes in this situation and in many other LIC settings. Meanwhile, the governance and economic policy challenges in resource-rich countries will also require a different approach, perhaps more focused on rural infrastructure, financial inclusion, and other policies that will support increases in earnings in both the farm and non-farm sectors in rural areas. Improving the efficiency of social spending in rural areas through decentralized incentives and outcome monitoring will most likely be a high-value investment as well, with positive effects on productivity in both sectors.

Reassess and Reengage Efforts of African Development Partners

We recognize, however, that simply calling for greater spending on agricultural research in and by African countries is unlikely to move the needle on the critical need to build national capacity for agricultural innovation. The record of past failures and institutional rivalries shows that additional investments in agricultural research without digesting lessons would be a mistake. Rather, we recommend a detailed stocktaking to assess progress and chart a way forward. A specially commissioned report on this issue could address the following elements: (1) estimating the overall continent-wide cost envelope for agricultural research that is likely to be required to achieve productivity targets; (2) identifying some best-bet technologies that could give early and high returns while the remainder are under development; (3) assessing the institutional configuration that would recognize local needs, transboundary/regional opportunities and imperatives, and appropriate roles for the private sector; and (4) expanding or initiating policy and extension system reforms necessary to create an enabling environment supportive of rapid, widespread, and equitable adoption of innovations emanating from agricultural research.

In the spirit of self-reliance, USAID may explore supporting African continental and regional initiatives (e.g., by the African Union, ECOWAS, AfDB) aimed at agricultural productivity growth and policy efforts to encourage inclusive private investment in agriculture. USAID could leverage additional commitments from these organizations through cost-sharing and joint programs. Other modalities of support that build self-reliance could include targeted government-to-government funds to motivate budget improvements and encourage initiatives that prioritize agriculture within an economic transformation framework. To improve government capacity to plan and implement

development policies and programs, U.S. technical support to African-led policy analysis units may be increasingly effective in influencing public perceptions and African policy makers to promote an enabling environment that produces transformational impact compared to externally led policy research.

Set Agricultural Productivity-Led Growth within a Broader Economic Transformation Agenda

Realizing agricultural productivity-led, inclusive growth in rural areas is not enough to restart and continue Africa's economic transformation. A broader agenda of complementary issues was laid out in Section 5.0. Unless proactively addressed, challenges in the education system, the financial system, the regulatory environment including the development of institutions that provide security and protection of private property for all, infrastructural development, urban governance, and the public sector's capacity for economic policy formulation and implementation will impede economic transformation and progress in resiliency. However, there are often few tradeoffs among these priorities and supporting agricultural productivity growth. An effective agricultural productivity-led growth strategy will require some of the same policy reforms and investments as a strategy focused on shifting economic resources into non-farm sectors. Progress on an enabling environment for private investment more broadly and efficient delivery of social and economic services benefits productivity-led growth in all sectors. Thus, USAID and its partner countries do not need to make a choice between supporting diversification and supporting agricultural productivity-led growth.

USAID is not investing in all these areas in Africa. However, as part of its "Redefining our Relationship with Partner Governments" initiative, USAID missions are engaging governments on a wide range of issues related to strengthening government development programs and improved expenditure prioritization for results. This effort should include agricultural sector programs, as well as how to coordinate programs across ministries and agencies in support of inclusive economic transformation. USAID can support the activities of other development partners who are investing in the above areas and can coordinate its programs more closely with those of pan-African organizations and committed African governments. Remaining relevant will in fact depend on such an approach.

USAID can also build on the policy and technical assistance model in place in the agricultural sector with U.S. public and land-grant universities to support long-term partnerships between African-led policy institutes and U.S. universities and research institutes to simultaneously build capacity and provide policy guidance to African governments.

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APPENDIX 1

Categorization of Sub-Saharan African Countries as Fragile, Resource-Rich, and by Income Status

This appendix explains the criterion used to classify the countries of sub-Saharan Africa into the four categories presented in the report. Criteria were defined to reflect the predominant characteristics of a country during 2000–2018, the period over which outcome indicators were assessed.

Fragile States

We define a state as “fragile” if its Fragile States Index (FSI) score is 100 or greater. The FSI is a composite of 12 indicators, each scored 0 to 10 (with 10 indicating greatest fragility), which has been compiled annually since 2006 by the *Fund for Peace*. FSI scores range from 0 (least fragile) to 120 (most fragile). For the 2000–2018 period, we categorize a country as being fragile if it has an FSI score of 100 or greater at least 80 percent of the years during this period.

Resource-Rich Countries (Not Fragile)

Countries whose exports consist primarily of extractive resources (petroleum, minerals, and precious metals) face unique governance and economic challenges that can stymie long-term economic development. These pressures may not be felt immediately but can build up over time if resource dependence continues. Using data from the *Atlas of Economic Complexity* produced by the Harvard University Growth Lab (2020), we define a country as being “resource-rich” if it is not fragile and 50 percent or more on average of its annual total export earnings from 1995–2005 came from petroleum, minerals, and precious metals. Back-casting the estimate to 1995 takes into account the lag effect of resource dependence on development outcomes since 2000—the main focus of our analysis.

Low-Income Countries (Not Fragile or Resource-Rich)

For the rest of the countries in sub-Saharan Africa, we used the World Bank country classification by income group that predominated during 2010–2018. These classifications are based on average Gross National Income per capita of a country in current US\$. World Bank cut-off points vary from year to year. A country was “low income” if it was neither fragile nor resource rich and was classified by the World Bank as low income most years during 2010–2018.

Lower-Middle-Income Countries (Not Fragile or Resource-Rich)

Similarly, countries that were not fragile nor resource-rich but were classified by the World Bank predominantly as “lower-middle-income” during 2010–2018 fall into this category.

Others

Countries that the World Bank classified as predominantly upper-middle income or high income over 2010–2018 were classified as “other” and are excluded from our analysis.

These countries are very few (e.g., South Africa, Mauritius), often have unique histories and conditions, and do not feature prominently in the activities of most international development organizations.

Table 3 in the main report indicates how each country in sub-Saharan Africa was classified by this study.

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