

# Investing in Africa's Agriculture: Solidifying Foundation for Sustainable and Inclusive Development

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## A. INTRODUCTION

**Agriculture has been essentially the backbone of economic growth for centuries.** The sector has provided employment for the majority of the world population for generations, and has served as a powerful force in transforming of economies towards an industry- and service- based. In many countries, through both productivity increases and farm land expansion, agriculture contributed to the transformation by releasing labor force for the other parts of the economy, providing food security, keeping wage down by providing low cost food, and generating foreign exchange. All these contributions are essential for broader social and economic development (Bruce and Mellor, 1961).

**In the 21<sup>st</sup> century, agriculture remains a fundamental instrument for sustainable development and poverty reduction.** WDR 2008, *Agriculture for Development*, convincingly demonstrates the need to increase investment in agriculture and improve the effectiveness of such investment in order to enhance the sector's role in overall growth, poverty reduction, and environmental sustainability. As an economic activity, agriculture can be a source of growth for the national economy and a provider of investment opportunities for the private sector. Robust empirical evidence from many countries consistently shows that agriculture is several times more efficient in reducing poverty than other sectors, given majority of the world's poor living in rural area and relying on the sector as a major income source (World Bank, 2008). Agriculture can also be a major provider of environmental services, through sequestering carbon, managing watersheds, and preserving biodiversity. Therefore, agriculture offers great promise in today's world for growth, poverty reduction, and environmental sustainability.

**China's successful development in the past three decades exemplifies the powerful role the agricultural sector can play in a country's social and economic transformation.** China's impressive development since early 1980s started with reforming agriculture policies and setting strong incentives for stakeholders at all levels (Box 1). The results have been stunning. From 1980 to 2015, China's average economic growth rate has been about 9 percent annually. GDP per capita increased from around US\$300 in early 1980s to more than US\$8000 in 2015. Agricultural GDP grew by about 4.5 percent annually, and farmers' incomes by 7 percent. Today, with 10 percent of world's arable land, 6.5 percent of world's water resources, China feeds about 20

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percent of the world's population (1.3 billion). China has lifted more than 600 million people out of poverty. China's agriculture is smallholder-based, with more than 200 million small farms with an average holding of 0.65 hectares. China's experience therefore shows that, with the right policy choices, sustained commitment, and effective implementation, smallholder agriculture can be transformed into a dynamic economic force.

#### **Box 1: Summary of China's Agricultural Development Experience**

China's extremely successful development over the past three and half decades started with revitalizing the agricultural sector beginning in the early 1980s. Since then, China has always treated agriculture as a strategically important sector and continuously provided policy and financial support. In retrospect, the following eight areas can be viewed as the major building blocks of China's agricultural sector transformation in the past 35 years:

1. Land reform: dismantling People's Communes and granting smallholder farms with increasingly secure land tenure;
2. Price policy changes: agriculture output prices rose in the first ten years of China's economic reform, while in the rest of reforming world, e.g., central Europe and former Soviet Union, prices fell;
3. Liberalizing markets: it took about 20 years for the government to fully liberalize domestic agricultural output markets and integrate China with the international market;
4. Investing in agricultural technology: since 2000, the increase in investment into agriculture research in China has been faster than in any other country;
5. Investing in rural infrastructure: public expenditure has been mainly used for improving rural infrastructure, including roads, irrigation systems, schools, drinking water, and clinics;
6. Rural industrialization and off-farm job: at its peak level, rural enterprises accounted for 20 percent of national employment, 28 percent of industrial output, and 48 percent of exports;
7. National poverty reduction program for lagging areas: Since 2010, the central government has invested about US\$ 8 billion annually in poverty reduction program funding for the lagging areas since early 1990s through three-10 year's plans, continuously fine-tuning targeting; and
8. Providing subsidies: focusing on high yield seeds, agriculture inputs, and machinery.

*Source: Author's summary*

**Revitalizing Africa's agriculture must be a priority on the continent.** Most African countries are agriculture-based and the sector is crucial to boosting economic growth, creating more jobs, eradicating poverty, and tackling food insecurity and malnutrition, while also safeguarding the continent's environment. The African agricultural sector employs about 65 percent of the continent's labor force, accounts for more than 30 percent of GDP on average, and contributes about 24 percent of economic growth. Despite the fact that the continent is bursting with vast agriculture potential, including an inexpensive labor force, abundant unused fertile farm land, and rich but untapped water resources, Africa as a continent has remained a net importer of agricultural products over the last three decades. The region was spending about US\$ 45 billion on food imports annually, with wheat, rice, vegetable oil, and dairy products on the top of the import list. In addition, agriculture in Africa is increasingly affected by climate change, which further threatens food production, increases smallholders' vulnerability, results in food price shocks, and worsens rural poverty. Therefore, it would be difficult to overstate the importance of agriculture for Africa.

**The importance of agriculture is once again seizing the attention of African governments, business leaders, communities, and development partners.** In 2003, the Comprehensive Africa Agriculture Development Program (CAADP) was adopted by the African Union Summit in Maputo. As the most ambitious and comprehensive agricultural reform effort ever undertaken in Africa, CAADP is fully owned and led by African governments. The four pillars of CAADP cover land, water, infrastructure, trade, technology research and extension, and policy measures for increasing food security and reducing poverty. In 2014, African leaders, through the Malabo Declaration, recommitted to the goals and principles of CAADP and made further commitments in areas such as agricultural financing, trade, resilience, and mutual accountability. The recently adopted Sustainable Development Goals (SDGs) present Africa with a new opportunity to achieve agricultural development milestones.

## **B. AN EVOLVING AND VOLATILE CONTEXT**

**Africa's agricultural sector is facing an evolving and volatile context.** Some important changes and newly emerging trends carry significant implications for the continent's policy and strategy choices. These changes and trends include, but are not limited to, globalization, population increase and urbanization, climate change, growing prevalence of digital technologies, greater attention to the nutritional aspect of a food system, and political instability. Certainly, it is a daunting challenge to effectively navigate in this context to mitigate grave risks while seizing valuable opportunities.

### *Globalization*

**Globalization has a complex impact on agriculture.** In general, globalization can enhance the role of agriculture as an engine of growth in low-income countries by making it possible for agriculture to grow considerably faster than domestic consumption. However, developing countries should take into account some new features associated with globalization in their policy making process. **First**, cost reduction and associated production increase constantly occurs in agriculture, and the pace is accelerating, partly due to the forces of globalization.<sup>1</sup> Generally, smallholder farmers, who are more vulnerable to lower price competition, will more likely experience a decline in income, and could eventually revert to minimum subsistence agriculture. They could become poorer and more food insecure. **Second**, cost reductions largely derive from technological advances. Low-income countries that are not rapidly expanding their agricultural research capacity (or improving their access to new technologies) will not experience these cost reductions and hence as others reduce costs, and as prices decline, incomes of the non-innovators will decline. Nowhere is this more dramatic than in Africa, which has suffered from growing competition from increasingly efficient production of first oil palm, then cocoa, and now coffee from Asian countries that have been spending on research. **Third**, WTO rules constrain the extent to which developing countries can protect themselves through effectively investing more in their agricultural sector. This is mainly because that the protectionist measures of the past are being allowed to continue in high-income countries, whilst many low-income countries are opening their

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<sup>1</sup> As one example, the reduced cost of freight (ocean freight rates fell by 30 percent between 1985 and 2004) have lowered the costs of international agricultural trade, which has put African farmers in much tighter competition, even in African markets, with agricultural producers from outside the continent.

borders to imports which are often subsidized. **Fourth**, a new feature in the globalization context is the increase of South-South trade. With the world economy slowing down, trade among developing countries has increased. For example, China is now the biggest trading partner for Brazil and Argentina in agricultural products. South-South trade will continue to be a robust driver of agricultural growth in the next few years as compared to a relatively stagnant trade with developed countries.

### ***Population increase and urbanization***

**Population increase significantly raising the demand for food.** It is projected that by 2050, the world's population will reach 9 billion. To feed these people, food production would need to increase by at least 50 percent (World Bank, 2013). Global demand for crops is also expected to rise rapidly during the next two decades because of greater per-capita food consumption and increasing use of biofuels.<sup>2</sup> In Africa, it is estimated that food production has to increase 60 percent in next 15 year to feed the continent's population which is growing at 3 percent per annum, while the rest of the world is at less than 1.5 percent (World Bank, 2016). However, production has not kept up with ever expanding demand and the deficit has been filled through increased imports. As a result, Africa's imports of food and agricultural products have increased by 15 percent per year since 2000. This diverts considerable resources from domestic investment and job creation opportunities. It also increases the vulnerability of Africa's poor and already food-insecure people to external shock factors (Annan, Conway and Dryden (eds.), 2016).

**Africa is also experiencing a rapid urbanization process which puts additional pressure on agriculture due to changes of food consumption patterns and migration of youth to urban areas.**<sup>3</sup> With an average annual rate of urbanization of 1.4 percent between 2010 and 2015, Africa is the second-fastest urbanizing continent, second only to Asia (Sy (eds.), 2016). The share of Africans living in urban areas is projected to grow from 36 percent in 2010 to 50 percent by 2030 and 60 percent by 2050 (World Bank, 2015). Depending on policy choices, including those for agriculture, Africa's urbanization rate can lead to economic growth and transformation, and poverty reduction. Alternatively, it could also lead to increased inequality, urban poverty, and the proliferation of slums (Collier, 2016). Associated with the urbanization process, the migration to urban centers mainly by the youth could have an impact on the overall supply if a commensurate rise in productivity is not achieved to fill the gaps created by this potential movement of productive section of the populace – the situation can be dire when it is only the old and women that are left in the farm.<sup>4</sup>

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<sup>2</sup> World Bank Group, Agriculture Action Plan, 2013-2015.

<sup>3</sup> Due to lower activity levels, urbanites tend to consume fewer calories per person than do their rural counterparts. However, since urban people tend to consume greater quantities of meat, vegetable oil, highly processed foods, and other higher value food products, urbanization is associated with greater per capita demand for total food production.

<sup>4</sup> However, there are some indications that the youth in Africa are still returning to agriculture for employment due to the limited absorptive capacity of the other sectors to employ the labor released from the rural areas. (NEPAD, 2015)

## *Climate change*

**Climate change poses a major challenge to African agriculture.** Drought, change in rainfall patterns, floods, inundation due to sea-level rise (rendering coastal farmlands inaccessible including the intrusion of saline water to aquifers which thereby denies adaptive measures) will all affect agriculture. UNFCCC identified four major impacts to agriculture and food security in Africa:

- Agricultural production severely compromised due to loss of land, shorter growing seasons, and more uncertainty about what and when to plant;
- Worsening of food insecurity and an increase in the number of people at risk from hunger;
- Yields from rain-fed crops could be halved by 2020 in some countries. Net revenues from crops could fall by 90 percent by 2100; and
- Already compromised fish stocks depleted further by rising water temperatures.

**The effects of climate change will be mostly daunting in drylands of Africa,** which account for 43 percent of the continent's land surface, about 75 percent of the area used for agriculture, and are home to about 50 percent of the population, including a disproportionate share of the poor. Due to complex interactions among many different factors, vulnerability in drylands is high and is rising, jeopardizing the long-term livelihood prospects for hundreds of millions of people. Climate change, which is expected to increase the frequency and severity of extreme weather events, will exacerbate this challenge (Raffaello and Morris (eds), 2015).

**Thus the need for adaption to climate change is of paramount importance.** According to a World Bank study, even assuming that the right adaptation measures are taken, some countries will suffer a huge productivity loss by 2050, estimated at 19.9 percent for Burkina Faso and 30.5 percent for Niger (World Bank, 2007). In 2015, weather extremes associated with El Niño are already linked to a drought in Ethiopia that has left over 10 million in need of food aid (IFPRI, 2016). The impact differs across the different countries of SSA and sub-regions, but the overall trend is clear – climate change will be the main challenge facing the future of SSA agriculture. This entails the need for a substantial investment in adaptation.

**Consequences of climate change go beyond just declining yields.** The 2015 Global Nutrition Report estimates that by 2050, climate change will result in additional price increases of 5-25 percent for the most important crops – rice, wheat, maize, and soybeans – and that higher feed prices will result in higher meat prices. Not only in terms of quantity, the Report suggests that food quality will also be affected. The elevated levels of CO<sub>2</sub> emissions in 2050 are associated with substantial declines in the zinc, iron, and protein content of wheat, rice, field peas, and soy beans. In addition, food safety may also be compromised by climate change. High temperatures and extreme weather conditions create a more favorable environment for food-borne pathogens such as campylobacter and salmonella that reduces people's ability to absorb nutrients.

## *Digital technology-related opportunities*

**Digital technologies bring new opportunities for African's agriculture.** Like the Chinese proverb, challenges always come along with opportunities. Utilizing digital technology in agriculture is both one of the biggest opportunities and the trend for future growth. Currently,

digital innovations are helping agricultural growth in three major ways (World Bank, 2016).<sup>5</sup> **First**, digital technology enhances agricultural productivity, and digital technology helps to break down the barriers for new production technologies to reach farmers. In cooperation with agricultural research and extension services, organizations such as Digital Green, the Grameen Foundation, and TechnoServe deliver timely, relevant, and actionable information and advice to farmers in South Asia, Latin America, and Sub-Saharan Africa, respectively, at a dramatically lower cost than traditional services can. In Nigeria, government in partnership with mobile operators, use phones to coordinate the distribution of seeds and subsidized fertilizers in remote areas through e-vouchers. In China, farmers use an Uber-like app to book machinery services during peak seasons (China Daily, 2016). **Second**, digital technology increases market transparency. Traditionally, high search costs discourage competition and encourage inefficient goods allocation across markets. Digital technologies have dramatically reduced the search costs incurred by farmers and traders, and hence overcome an important constraint in the context of limited infrastructure. **Third**, digital technologies improve logistics and quality control. With globalized food systems, ensuring food safety has become more urgent and complex. New innovations enable digital tracking systems from producer to consumer, which is important for developing countries that want to expand their exports. There is a great potential for the internet and digital technologies to improve rural economies. However, to unleash the potential, it is important to have sustainable business models to attract private sector investments in small-scale agriculture.

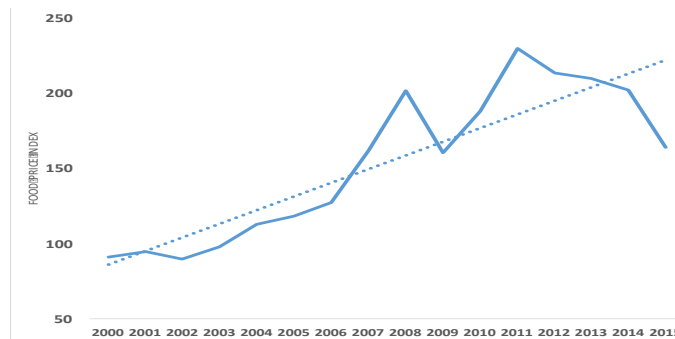
### *Market volatility*

**Market volatility exposes smallholders to more risks.** Agricultural prices have increased, and so does the short-term food price volatility. Higher agricultural prices give farmers incentive to produce more; but the farmers are also easily weakened by frequent price variations and higher input costs. In the past 10 years, the world experienced two big food price spikes (Figure 1). The first one happened in 2008, where the food price index rose by nearly 60 percent from 2006 to its peak in 2008. After a decline of 20 percent in the following year in 2009, it started to grow again in 2010, and reached the second and biggest price spike in 2011. Broader agricultural prices also increased in 2011 and 2012 along with food prices, raising the value of agricultural land. Although the food price index gradually declined in the years since 2011, it is still 50 percent greater as compared to its base level in 2002-2004. Higher food prices and food price volatility, along with higher input costs, are likely to continue in the foreseeable future (FAO, 2016).

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<sup>5</sup> The World Bank. 2016. World Development Report 2016: Digital Dividends. Sector focus 1: Agriculture.

Figure 1: Recent food price spikes, 2000-2015<sup>6</sup>



Source: Food and Agriculture organization of the United Nations (FAO, 2016)

### *Importance of nutrition aspects*

**In addition to food security, civil society increasingly pays more attention to the nutritional aspects of food.** As the food system supplier, agriculture is highly relevant to nutrition. Malnutrition is a staggering challenge and a huge barrier to poverty elimination. It is the underlying cause of 45 percent of under-5 child deaths each year, and about one in three children in developing countries are stunted. Stunting can lead to long-term, harmful effects on physical and intellectual development, as well as lower lifetime income-earning potential, which compromises future human capital and holds back productivity (including agricultural productivity) and economic growth. But nutrition is more than just food availability; it also connects to health, water sanitation, education and social protection etc. (IFPRI, 2015). The significance of nutrition in poverty alleviation and human development has long been underestimated. In 2014, out of the proposed 169 SDG targets, nutrition is mentioned in only one; which shows that this situation has not changed. Problems with high weight and obesity are not mentioned even once in the entire new SDG documentation, and none of the three implementation targets to achieve SDG 2 (“End hunger, achieve food security and improved nutrition, and promote sustainable agriculture”) mentions nutrition actions. As in agriculture, most agriculturalists do not consider improving human health as the ultimate goal of agricultural development, “beyond providing sufficient calories, but rather a broader agenda recognizing the important role that agriculture plays as a major livelihood and driver of economic growth in countries (Shekar, 2015).” To bridge the disconnection between nutrition and agriculture, sectors need to work together to create a global food system that is more nutrition aware.

### *Political instability and conflicts*

**Political instability and conflicts in some African countries generate negative impacts on agricultural development.** Political instability and conflicts in Nigeria, Central African Republic, Somalia, South Sudan – and to a lesser degree in Mali, DRC and Mozambique -- has made it difficult to continue agriculture through a huge swath of farmland areas. In North-East Nigeria,

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<sup>6</sup> FAO’s world food price index consists of the average of 5 commodity groups (meat, dairy, cereal, vegetable oil, and sugar) indices, weighted with the average export shares of each of the groups for 2002-2004.

for example, a 20-30 percent decrease in crop yields and decline in livestock productivity resulted from the instability caused by Boko Haram. The amount of land being used to grow food in this region has dropped by almost 70 per cent over the past year. According to WDR 2011, “People in fragile and conflict-affected states are more than twice as likely to be undernourished as those in other developing countries...” Continuing conflicts and violence in these countries drew less attention compared to instability in some other regions, but nevertheless slowed progress in reducing hunger and food insecurity (IFPRI, 2016). Instability coupled with a dwindled food supply will further deteriorate stability thereby posing as an additional challenge in feeding the continent with its own production.

### **C. AGRICULTURE STRATEGY WITHIN THE CHANGING CONTEXT**

#### **Strategy of Agricultural Development needs to be adapted to the ever-changing context.**

Agricultural development has gone through three major phases starting with the Green Revolution from 1960s to the 1980s. Improved productivity in staple crops such as maize, wheat, and rice doubled the amount of food produced, and saved hundreds of millions of lives. The efforts proved that large-scale progress against hunger and poverty is possible. The big achievement in the first phase gave governments and donors a sense that the issue of food shortage had been tackled. Therefore, their attention shifted to other areas and concerns. From 1980 to 2004, donor countries cut the percentage of development assistance for agriculture from more than 16 percent to less than four percent. Developing countries’ public spending in agriculture accounted for only four percent of total public expenditure. Africa and South Asia were the most affected regions in this second phase of productivity stagnation and decline. For example, farmers in Sub-Saharan Africa today harvest only over a ton of cereal per acre, while the average of Indian farmer gets twice the amount, Chinese farmers about five times the amount, and American farmers about seven times the amount. (Gates Foundation 2011).

#### **In recent years, rising food price and food insecurity are prompting governments and organizations to better understand the importance of supporting agricultural development.**

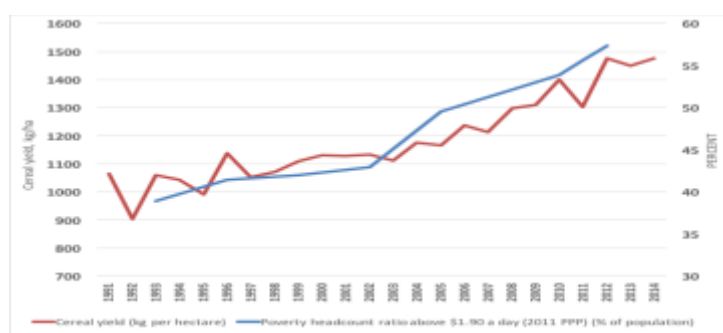
Five important thematic areas were identified by the World Bank in 2010 for agricultural development, namely, a) improving agricultural productivity and climate resiliencies; b) strengthening smallholders’ links to markets; c) facilitating rural non-farm sector growth to increase job opportunities; d) reducing risk, vulnerability, and gender inequality; and e) enhancing environmental services and sustainability (World Bank, 2013). Today, these five thematic areas are still relevant and important to achieving the targets of reducing poverty and hunger, and improving environmental sustainability.

**Raising agricultural productivity is the most direct and effective way to help farmers, especially small farmers, produce more food so they can improve their nutrition, become self-sufficient, increase their incomes, and build better lives.** Evidence from even the poorest regions such as Sub-Saharan Africa shows that there has been a strong correlation between higher cereal yields and a higher share of the population above the poverty line (Figure 2). One precondition of harnessing benefits from the improved productivity is to ensure smallholders’ wide participation in the growth process as observed in Rwanda and Ethiopia. Otherwise, the improved productivity will not automatically translate into poverty reduction, as observed in the case of Zambia. Many



measures could contribute to productivity improvement, such as support for increased adoption of improved technology, improved agricultural water management in irrigated and rain-fed areas, tenure security and land markets, increased access to inputs, and strengthened agricultural innovation systems.

Figure 2: Poverty reduction closely correlated with higher yields in SSA



Source: Townsend, 2015.

**Integrating smallholders into marketing and value chains is another powerful tool to support agriculture.** Traditional marketing channels are being replaced by more complex and coordinated networks linking farmers, processors, retailers and others, and serving both the export market and local processors and supermarkets. At the same time, with increased incomes, food consumption patterns are becoming more diversified, with people consuming more meat, dairy products, fruits and vegetables. Consumers are putting more emphasis on the quality and safety of food and the demand for convenience foods with safety assurance is increasing too. New value chains are emerging to meet these changes and demands<sup>7</sup>. Active participation of the private sector is essential in making “value chains approach” work.

**But new focus areas have emerged in the evolving and volatile context, in addition to the five exiting thematic areas.** In the World Bank’s Agriculture Action Plan 2013-2015, six new focus areas have been identified, namely, climate-smart agriculture, landscape approach, nutrition, long-term risk management, private sector involvement, and south-south collaboration.

**Importance and urgency of developing climate-smart agriculture (CSA) have been recognized by governments, donors, and the private sector.** The increasingly frequent and intensified extreme weather conditions such as droughts and floods, temperatures rising on a global scale, and agriculture’s vulnerability to climate change all call for a more climate-smart agriculture. CSA is an approach that helps to guide the actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate. CSA actions should be two fold. One is to increase the resilience of agriculture to climate change, especially for low-income countries where climate change is projected to have larger impacts on lowering yields; and the other is to lower agriculture’s net greenhouse gas (GHG) emissions.

<sup>7</sup> FAO. “Agricultural Marketing”. Rural Infrastructure and Agro-business Division. Accessed May 30<sup>th</sup>, 2016. Retrieved from <http://www.fao.org/ag/ags/agricultural-marketing-linkages/en/>

Agriculture accounts for at least 14 percent of global GHG emissions (Russell, 2014). Related to CSA, in response to the increasingly volatile environment, a holistic approach to **long-term risk management** that focuses on the interactions between different types of risks, of strategies undertaken by farmers, and of government policies that impact on risk management is needed.

**An integrated landscape approach is an upgraded version of enhancing environmental services and sustainability.** Farms, forests, water bodies and settlements are not isolated elements, but part of a wider landscape in which all land uses are integrated. Landscapes should be managed in a more integrated manner, including restoring the two billion hectares of degraded landscapes globally. The landscape approach and agriculture are intertwined as the goal of food security and nutrition improvements cannot be achieved without a well-functioning ecosystem. The Loess Plateau Watershed Rehabilitation Project in China is one of the best practice examples of utilizing the landscape approach. The project has returned a devastated area to sustainable agricultural production, improving the livelihood of 2.5 million people and food securities in an area where food was once scarce.

**Nutrition and agriculture are strongly correlated as food plays a vital role in both sectors.** Food is the key output of agricultural activities while also serving as the key input into nutrition. Without agriculture there is no food or nutrition, but simply increasing agricultural productivity in agriculture does not automatically translate into improved nutrition for the population, especially for children under 5. Actions to carry out this strategy will require an enabling policy environment supported by governments to encourage improvements in nutrition through agriculture, and key investments in agricultural programs beyond just targeting increased income and yield, but enhancing nutrition outcomes.

**Creating a conducive investment climate for private sector's participation is also key.** Private sector is incentivized by the sufficient returns to investment in African agriculture but Africa's poor institutional quality remains the biggest hurdle. Attracting private investment in agriculture relies not only on a wide set of policies going beyond agricultural policy, but also on the policy coherence across sectors. Sectoral policies including trade and investment, education, research and development, infrastructure, financial market, environment and tax policies are all crucial to creating a sound business climate in agriculture (OECD, 2014). When the policies and laws are in place, the governments need to make sure they are clear and accessible to all agricultural investors. The policy framework's clarity and transparency fosters investment through helping businesses to assess investment opportunities on a more informed and timely basis and reduce transaction costs. Investor will be more confident when the government is transparent on policy implementation and predictable on possible regulation changes. The improved policy environment will in particular support investment by small agricultural investors trying to enter as well as foreign investors who have to adapt to different regulatory and administrative systems.

**South-South Cooperation (SSC) should be continuously strengthened.** SSC is the mutual sharing and exchange of development solutions - knowledge, experience and good practices, policies, technology and resources - between and among countries in the global South. SSC is significant in the context of agricultural development in Africa since economic restructuring has done little to foster agricultural development in Africa. For example, both Chinese approaches to

smallholder agriculture and Brazilian experience in transforming the Cerrado region are highly relevant to Africa. Successful and fresh experiences, accumulated from addressing similar challenges at similar development stages, are much more powerful and convincing than outdated and mismatched prescriptions from standardized textbooks.

#### **D. INVESTING AFRICA'S AGRICULTURE**

##### *A still overall favorable environment*

**The environment for investing in Africa agriculture is still favorable overall, although some hurdles have to be overcome.** On the positive side, important long-term advantages for expanding African agricultural sector remain unchanged, such as a booming urban food market, increasingly improved availability of modern agricultural technologies, abundant key resources (e.g., land, water, and labor), higher level of interest from development partners and private sector, and more efficient regional collaboration (NEPAD, CAADP, AGRA<sup>8</sup> etc.). However, due to domestic and external shocks, the GDP growth forecast is not as encouraging as it was a few years ago. The global GDP growth rate in 2015 is estimated to be at its lowest since 1998, and a slight rebound is forecasted in 2016 with high degree of uncertainty (Sy (eds.), 2016).<sup>9</sup> Downward GDP growth means less government revenue and hence it will be more difficult for many governments to reach the CAADP target of 10 percent of public expenditure for agriculture. As IFPRI (2016) research shows, by 2010, only 10 out of the 47 countries met the CAADP target.<sup>10</sup>

**Africa is poised for unprecedented growth in food markets.** Assuming that the 6 percent annual growth target set by the New Partnership for Africa's Development is met through 2030, and marginal expenditures on food are at 0.5 (down from about 0.6 currently), total food and beverage markets in Sub-Saharan Africa will reach US\$ 1,000 billion by 2030 (Figure 3), up from US\$ 313 billion currently. This market, assuming a net agricultural trade deficit is converted from US\$ 10 billion currently to a US\$ 20 billion surplus in 2030, would provide agricultural value added in the region of US\$ 500 billion relative to US\$ 150 billion now. The majority of the increase in food consumption will occur in cities. Based on United Nations projections of urbanization and assuming that the per capita value of food consumption is 25 percent higher in urban areas than in rural areas, the urban market is set to expand fourfold in 20 years. In other words, commercial value chains, including processing, transport, and retail networks, must be in

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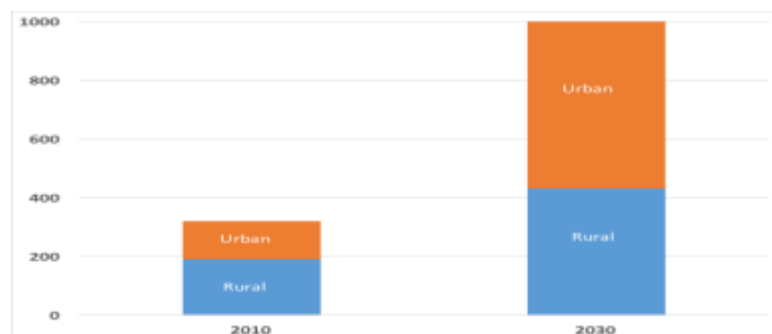
<sup>8</sup> NEPAD stands for New Partnership for Africa's Development, and AGRA stands for Alliance for a Green Revolution in Africa

<sup>9</sup> In 2015 and 2016, however, the continent faces a "triple threat" from the changing global environment: (1) prices of Africa's main exports, oil and metals, have fallen significantly, driven by robust supplies and low demand, and are expected to remain low as the commodity super cycle has come to an end; (2) the economy of Africa's main bilateral trading partner, China, is slowing down; and (3) external borrowing costs are increasing as the U.S. Federal Reserve further raises U.S. interest rates, and the options for borrowing are becoming more limited. One could even add a fourth threat—climate change—as East and Southern Africa expect to bear the likely brutal effects of El Niño in 2016 (Brookings, 2016).

<sup>10</sup> There is another issue is the structure of agriculture related expenditure, even for those countries which have achieved the CAADP target. For example, in selected African countries, about 10-15% of agricultural public spending is on R&D, with the remaining 85-90% on other activities, including a big share on agricultural input subsidies.

place for an additional urban food and beverage consumption of about US\$ 400 billion. This scenario represents an exciting growth opportunity for all types of firms.

Figure 3: Retail value of food & beverages, SSA (in US\$M)



Source: World Bank. 2013. “Growing Africa - Unlocking the Potential of Agribusiness”.

**With Africa’s deeper integration into the world’s economy, modern technologies have been increasingly used in both African agriculture and agribusiness.** Technology and innovations have tremendous potential to increase agricultural productivity, enhance the integration of value chains, and improve market performance. With the rapid expansion of internet and mobile services in Africa, a BBC article in 2015 entitled “Telephone farmers’ reaping the benefits of agri-tech” gives vivid examples of how innovations are transforming farmers’ lives in Africa. In Kenya, tech giant IBM’s EZ-Farm project is exploring how sophisticated data analytics can help farmers keep in touch with what is really happening on their out-of-town smallholdings. In Nairobi, a more affordable app called MbuguChoise uses location-based GPS to help farmers explore crop information such as what seed varieties are available, who sells them, and what properties they have, such as maturation periods and drought tolerance.<sup>11</sup> ICTs also help farmers to sell their produce. With the rapid expansion of mobile services in Africa, Short Message Services (SMS) are now more commonly used by farmers to access real-time market information, and have a big potential in offering mechanisms for linking buyers and sellers and conducting market transactions. The practices of utilizing ICTs in market transactions has increased prices paid to African farmers by 10-20 percent, increased traders’ profits, and reduced prices to consumers. Many of the applications are still in the pilot or development phase, and there is a long way to go. Ensuring that every smallholder farmer in Africa has access to modern technology in their daily farming practice will require not only technology advancement, but also policy support and financing assistance from the government to startups, farmers, and stakeholders in the value chain.

**Africa has the natural resources to greatly expand agricultural production.** Africa is the continent that has the largest surface area of uncultivated arable land. It has 45 percent of the world’s land area suitable for sustainable production expansion. Cultivable lands (excluding forest areas) in Africa are three times larger than the land currently cultivated. Paradoxically, Sub-

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<sup>11</sup> Jackson, Tom, “Telephone farmers’ reaping the benefits of agri-tech”, July 31, 2015, Accessed May 10, 2016, retrieved from <http://www.bbc.com/news/business-33610593>

Saharan Africa's other asset is the extensive nature of most of its farming systems. This means that there is significant room for improvement in terms of farmland productivity (NEPAD, 2013). Africa also has abundant water resources that are greatly underutilized with only 2-3 percent of renewable water resources are being used in Africa. However, Africa's natural resource endowments are unevenly distributed. Around 60 percent of cultivable land still available is concentrated in seven countries in East and Central Africa, while the central African region contains almost 50 percent of the continent's water resources and less than 20 percent of its population. Political risks concerning the management of transboundary natural resources may arise and accelerating climate change also has a widespread impact.

**Africa's demography is moving towards an explosion of the working-age population.** Africa is a remarkably young continent at present, with half of its population below the age of 20. The age distribution of Africa's population follows a pyramid shape that is typical at an early stage of industrialization. Fertility remains high, but infant mortality has declined because of modern medicine and better nutrition and education. It is certain that in the next twenty years the current group of age 19 and younger will join the labor force and Africa will undergo the kind of explosive labor-force growth that China experienced after 1980. In particular, the working-age population in Africa is projected to rise from 536 million in 2015 to 922 million in 2035 (Dollar, 2016). With the right policy environment, institutions and global support, Africa's population growth will become a major driver for its agricultural development as well as for the overall economy.

**Enhanced regional collaboration indicate good momentum in Africa's agricultural development.** CAADP is entirely African-led and African-owned and represents African leaders' collective vision for agriculture in Africa. Participating leaders agreed to increase public investment in agriculture by a minimum of 10 percent of their national budgets and to raise agricultural productivity by at least 6 percent. So far, 30 countries have signed CAADP Compacts and incorporated them into their agricultural agenda.<sup>12</sup> AGRA is another regional collaborative scheme that is playing a vital role in the regional agriculture. Formed in 2006, AGRA aims at "doubling yields and income for 30 million farming households in 2020." In the past decade, AGRA has developed a strong research capacity and has programs successfully implemented all across the continent. CAADP, AGRA and other regional collaborations deliver a message that a consensus has been reached among African countries that agriculture is of crucial importance to the continent's future.

### ***Investment areas with high returns***

**The CAADP's four pillars<sup>13</sup> provide a good guideline to key investment areas in African agriculture.** Instead of broadly discussing all possible investment areas, this paper instead highlights five specific areas, taking into account their importance and China's comparative advantages, including potential Chinese investors' interest. The five areas are: irrigation, rural

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<sup>12</sup> <http://www.nepad-caadp.net/about-us>

<sup>13</sup> Pillar 1: Extending the area under sustainable land management and reliable water control systems; Pillar 2: Improving rural infrastructure and trade-related capacities for market access; Pillar 3: Increasing food supply, reducing hunger, and improving responses to food emergency crises; and Pillar 4: Improving agriculture research, technology dissemination and adoption.

infrastructure (e.g., road, storage facilities, marketing places), agriculture technology exchange and education, farm machinery, and value chains.

**Serious lack of irrigation has been identified as one of the main reasons why the Green Revolution has largely bypassed Africa.** Irrigation does not currently play a significant role in African agriculture; food production in Africa is almost entirely rain-fed. Irrigated area as a share of total cultivated area is estimated at only 6 percent for Africa, by far the lowest irrigation development rate of any region in the world (e.g., 37 percent for Asia). There is also a large variation across sub-regions in Africa and the stark contrast in water use between northern Africa and Sub-Saharan Africa. Whereas only 4 percent of area cultivated in Sub-Saharan Africa is equipped for irrigation, 28 percent of northern African agriculture is irrigated. Additional irrigation potential remains small in northern Africa, but is significant in Sub-Saharan Africa. Much of the irrigation development in the north has been implemented through the unsustainable withdrawal of groundwater resources (in Libya, for example) or the use of water resources that were generated elsewhere (e.g., Egypt's use of Nile water for irrigation). Thus, whereas agricultural withdrawals as a share of total renewable water resources reach a high of 21.9 percent in northern Africa, that share is only 1 percent in Sub-Saharan Africa. Among the regions in Sub-Saharan Africa, only southern Africa, led by South Africa, withdraws 6 percent of total renewable water resources for agriculture. The average rate of expansion of irrigated area over the past 30 years was 2.3 percent in both Sub-Saharan Africa and all of Africa. Expansion slowed to 1.1 percent per year during 2000–2003 but has since picked up as a result of renewed investments by multilateral and bilateral donors and foundations. Nearly three-fourths of African countries showed a zero rate of recent expansion. The value of irrigation is remarkable in Africa: 6 percent irrigated agriculture accounts for nearly 38 percent of the continent's agricultural output value. Therefore, the potential of irrigation development for Africa, and in particular for Sub-Saharan Africa, is huge.<sup>14</sup>

**Addressing Africa's severe infrastructure deficit is another key to revitalizing Africa's agriculture.** The current state of roads, wholesale and retail marketing channels, and storage facilities poses a significant hurdle for farmers. For example, the dire state of the continent's roads and storage facilities results in a substantial proportion of agricultural production never reaching the end user. The World Bank reported in 2011 that the amount of grain losses in Sub-Saharan Africa amounts to US\$4bn each year, which in turn is more than the amount of annual food aid received in the region and equivalent to the annual caloric requirement of 48 million people. The African Postharvest Losses Information System (APHLIS) estimates that between 10 percent and 23 percent of total cereal production goes to waste in Africa post-harvest. Of this, 2 to 5 percent is due to farm storage, 1 to 2 percent occurs during the transport to the market phase and a further 2 to 4 percent goes to waste in the market storage facilities. In fact, a study undertaken in Uganda, Tanzania, and Kenya in 2008, found that transport costs make up about 76 percent of total maize marketing costs (Teravaninthorn and Raballand, 2008). While the remainder of the losses typically occur at the farm level, the abovementioned areas present an opportunity for government to make

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<sup>14</sup> This paragraph draws heavily from IFPRI's paper "What Is the Irrigation Potential for Africa? A Combined Biophysical and Socioeconomic Approach".

a significant contribution by upgrading roads and establishing co-operative organizations which could result in better storage facilities. However, investments should not concentrate on individual aspects, but on the integration of all individual components as they are all intertwined (landscape approach). The returns from investment in one area will only be maximized when the whole value chain is functioning well. For example, in order to maximize returns from investment in water management infrastructure, it is also necessary to invest in the development of other infrastructures such as storage, rural electrification and telecommunications, and roads.

**Special attention should be given to agricultural value chains.** Value chains are the full range of value-adding activities required to bring a product or service through the different phases of production, including procurement of raw materials and other inputs, assembly, physical transformation, acquisition of required services such as transport or cooling, and ultimately response to consumer demand (World Bank, 2010). There is an increasing adoption of the value chain approach by development and business communities in the African agriculture and agribusiness sectors with a belief that it can help design value-added interventions, lower transaction costs, diversify rural economies, and increase rural household incomes in SSA countries. The approach also changes the conventional view of viewing agriculture as a means of survival, but instead as businesses linked to local and global markets. Value chains vary not only by products but also by country. It is crucial to identify the opportunities and constraints in different value chains before making investments. For example, rice production in Senegal is competitive in terms of production cost when being benchmarked against leading rice exporter Thailand, but the expansion in competitiveness is held back, however, by the difficulty of accessing secured, tradable land rights, which discourages significant private investments in irrigation systems.

**Agricultural mechanization still remains low and underdeveloped in Africa.** Sub-Saharan Africa remains the region in the world with the lowest power usage (manual, animal and mechanical) and the lowest level of farm mechanization. Farming systems in SSA are dominated by small-holder peasant farmers which in most cases are based on subsistence farming. In SSA the principal power source is humans who cultivate, by hand, between 50 percent and 80 percent of the area under production. The average number of tractors is about 28 tractors per 10,000 ha, only about ten percent of the average tractor usages in other regions (FAO, 2012). The use of manual power dominates in Central Africa whereas in Western and Eastern Africa more use is made of draught animals. In SSA, tractor usage is highest in Southern Africa. Increasing the levels of farm mechanization, particularly targeted at smallholders, is one of the major means of raising agricultural production in many SSA countries. With the current momentum of agricultural development in Africa, new opportunities are also occurring for mechanization development. The major ones include the trend of rural-urban migration of young people which leads to increased agricultural wages, especially during peak labor-demand seasons. The labor shortage and higher wages increase farmers' incentives to invest in machines. While western technologies are less suited and affordable for smallholder farmers in Africa, new emerging providers such as China and India, with similar agriculture patterns, have stepped in and have provided new sources of farm machinery which is continually coming on to local markets. This machinery is often more suitable for African conditions and is considerably cheaper than machinery manufactured in

Western Europe or North America (FAO, 2013). According to a recent survey among 171 manufacturers of farm equipment conducted by the Agri-evolution Alliance, 43 percent of manufacturers believe that – already today – Africa is ‘very important’ or ‘absolutely essential’ for their company’s business. Looking at the sales perspectives for agricultural machinery over the next 5 to 15 years, 3 out of every 4 respondents (73.6 percent) believe the African market to hold ‘great’ or even ‘very strong’ market potential (The World Bank, 2016).

**Africa agriculture needs significantly better software, such as technologies R&D, agriculture education and training institutions, and extension system.** African farmers need new technology—higher-yielding, more resilient food crops that deliver bountiful harvests. According to the World Bank, the heterogeneity of both agro-ecological conditions and crop production (maize, cassava, millet, sorghum, cassava, yams, sweet potatoes, etc.) suggests that “outside” technologies are often not directly transferable to improve the Africa’s productivity. In other words, the productivity revolution in Africa needs a tailored approach and a more careful contextualization to better fit with Africa’s specific agricultural conditions.<sup>15</sup> In addition to investing in technology research and development, it is also important to have a strong agriculture education and training (AET) institution for higher human capital levels. The challenges Africa is facing in its AET are two-fold: **First**, there is a discrepancy between AET and the skills required in the industry. The traditional training systems that have been used to produce public servants for government administrations are outdated and do not fit the current end-users’ needs which are gradually shifting towards value addition, private sector orientation and market-driven systems, global challenges on trade, subsidies, climate change and resilience. **Second**, financing for AET from private sector and development partners has been decreasing. The current AET system fails to show agribusiness partners the benefits for investing, and investment-fatigue among development partners who need a clear understanding of the impact of their actions in this sector on the improvement of farmers’ livelihoods. To facilitate the successful reform of AET requires more financial support for African institutions to enhance research capacities in agriculture, and also the strengthening South-South learning and collaboration. In addition, the role of agriculture extension in national agricultural development is pertinent. In Africa, as in many other regions, national agriculture extension and advisory systems have undergone major changes during the past decades, from complete public services to more private sector involvement with different models. Public-private partnership should be more actively explored and new digital technologies should be utilized to ensure that services can be sustained and extended to every part of the African countries.

**China has accumulated rich expertise and successful experiences in all of the above identified investment areas over the past three decades.** China is therefore in a uniquely advantageous position to assist African countries in addressing the relevant challenges. It is very encouraging to see that China-Africa collaboration on agriculture has always been one of themes in the past a few decades, especially since the establishment of Forum on China Africa Cooperation (FOCAC) in 2006. China also has committed large amount of financial resources to support the China-Africa agriculture collaboration, such as encouraging both state-owned as well as private-owned

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<sup>15</sup> Nin-Pratt and McBride 2014; World Bank 2008.



companies to invest in agriculture (e.g., processing, trade), strengthening bilateral cooperation in agricultural technology (e.g., establishing at least 15 agriculture technology demonstration centers), conducting joint research to explore seed resources, and engaging in infrastructure construction, including agriculture-related infrastructure. China is also very strong in agriculture education, at both higher level as well as vocational level. As its economy is increasingly market-oriented, China also accumulated some good experiences in establishing an extension system through public-private partnership. In recent years, the World Bank and China have also committed to work more closely to support African agricultural sector, such as exploring more new and efficient model of agriculture technology exchange (particularly on dryland agriculture), higher education on agriculture, as well as possible joint financing agriculture and rural development projects.

## **E. CONCLUSIONS**

**Agriculture remains a strong option for eradicating extreme poverty and promoting shared prosperity.** Agriculture offers great promise in dealing with many of the challenges facing the 21<sup>st</sup> century including climate change, increasing population, and demand for better food nutrition. Throughout history, many countries have successfully demonstrated the tremendous contribution that a dynamic agricultural sector can make to its fruitful social and economic transformation; of which, China is the most recent example.

**Africa needs a vibrant, sustainable and resilient agricultural sector to achieve its economic potential.** The sector's importance is self-evident: it is the primary source of food and income for Africans; it provides up to 60 percent of all jobs on the continent; it needs to produce 50 percent more food in next one and half decades to feed the continent's growing population; poverty is till mainly a rural phenomenon; and there is a huge food and beverage market by 2030 which calls for a stronger agricultural sector. At the same time, Africa is endowed with abundant natural resources (such as land, labor, and water) which are essential for agricultural development. The importance of the sector is increasingly recognized by the region's governments, business leaders, communities, and traditional and newly emerged development partners.

**More and better investments in agriculture is needed to unleash virtuous growth cycles for Africa.** Increased investment should target irrigation, rural infrastructure (e.g., road, storage facilities), agriculture R&D, farm mechanization, value chain development, and agriculture education and training. African governments should work hard to create an enabling investment environment through evidence-based policy making, sustained commitments to the sector, and effective implementation of relevant programs in different ways, including public-private partnerships. International development partners and investors should actively mobilize knowledge and financial resource to support Africa's agricultural development, since a vibrant, sustainable and resilient agricultural sector is in both Africa's and the world's best interest.

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