



KENYA BANKERS
ASSOCIATION

Realisation of Full Potential of the Agriculture Sector:

Is Commercial Financing a Core Missing Cog?

A Review of Public Sector
Investments and Commercial
Lending Trends to the
Agricultural Sector in Kenya

June 2018





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The Centre for Research on Financial Markets and Policy® was established by the Kenya Bankers Association in 2012 to offer an array of research, commentary, and dialogue regarding critical policy matters that impact on financial markets in Kenya. The Centre sponsors original research, provides thoughtful commentary, and hosts dialogues and conferences involving scholars and practitioners on key financial market issues. Through these activities, the Centre acts as a platform for intellectual engagement and dialogue between financial market experts, the banking sector and the policy makers in Kenya. It therefore contributes to an informed discussion that influences critical financial market debates and policies.

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While the explicit objectives of the study are outlined in the *Report*, it implicitly seeks to motivate the need for commercial funders to be part of the conversation on matters agricultural sector performance

— ranging from productivity enhancement, to overall sector output performance and food security.

That their voice has at best not been prominent, otherwise missing in this conversation, admittedly means a lost opportunity given that commercial funding is a core piece of the cog of optimal realisation of the agricultural sector's potential. That has underpinned the framing of this study by the Kenya Bankers Association Centre for Research on Financial Markets and Policy®

Realisation of Full Potential of the Agriculture Sector: Is Commercial Financing a Core Missing Cog”?

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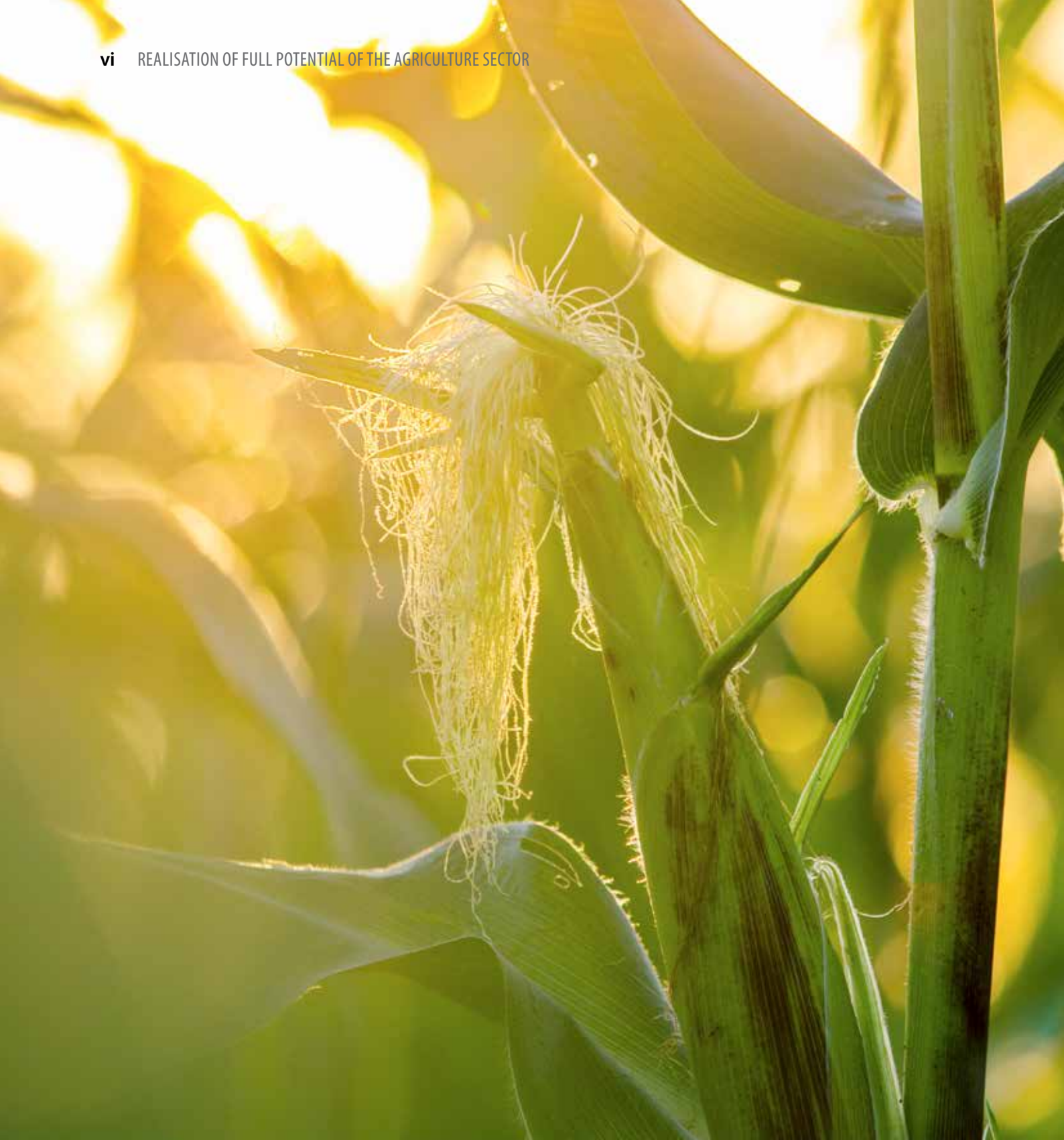
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ABBREVIATIONS

ACGS	Agriculture Credit Guarantee Scheme	KALRO	Kenya Agricultural and Livestock Research Organisation
AFC	Agriculture Finance Corporation	KAVES	Kenya Agricultural Value Chain Enterprises
AfDB	African Development Bank	KBA	Kenya Bankers Association
AFFA	Agriculture Food and Fisheries Authority	KCC	Kenya Cooperative Creameries
AGRA	Alliance for Green Revolution in Africa	Kes	Kenya Shillings
ASDS	Agricultural Sector Development Strategy	KTDA	Kenya Tea Development Authority
ATA	Agricultural Transformation Agenda	MFIs	Micro-Finance Institutions
CAADP	Comprehensive African Agriculture Development Programme	MTEF	Medium Term Expenditure Framework
CBK	Central Bank of Kenya	MTIP	Medium Term Investment Plan
CDF	Commodity Development Fund	NAAIAP	National Agricultural Accelerated Inputs Access Programme
CIDP	County Integrated Development Plan	NMB	National Microfinance Bank of Tanzania
COFOF	Classification of the Functions of Government	NGOs	Non-Governmental Organizations
DOPA	Direct Object Practical Adequate	ReSAKSS	Regional Strategic Analysis and Knowledge Support System
FAOSTAT	Food and Agriculture Organization Statistics	SAP	Structural Adjustment Programmes
FIs	Financial Institutions	SSA	Sub-Saharan Africa
GDP	Gross Domestic Product	SME	Small and Medium Enterprises
IBLI	Index Based Livestock Insurance	TFP	Total Factor Productivity
ICT	Information and Communication Technology	UN	United Nations
IFPRI	International Food Policy Research Institute	USAID	United States Agency for International Development
IMF	International Monetary Fund	USD	United States Dollars



EXECUTIVE SUMMARY

This study aims to establish the reasons for low levels of commercial lending to agriculture compared to the other sectors and whether this state of affairs is a significant constraint to the broad agricultural development endeavour. The study confirms that compared to other sectors, commercial lending to agriculture is indeed disproportionately low, accounting for about 4% of the total lending portfolio for the period 2005–2016. The primary underlying reason for this state of affairs is that the risk-adjusted returns to capital are too low to justify commercial lending to agriculture when other opportunities exist.

Ordinarily, public sector investments are expected to generate public goods that should play a significant de-risking function to the sector. We establish that from 2000 to 2015, Kenya's public expenditure on agriculture as a percentage of total expenditure has stagnated at between 3–6 %, way below the CAADP target of 10%. More importantly, investments aimed at generating public goods in the sector have had a sub-optimal impact. The effect of these investments on risk mitigation, productivity growth and competitiveness are arguably minimal.

Paradoxically, agriculture led-growth and transformation is the most promising and viable pathway to Kenya and Sub-Saharan Africa's economic development. Available evidence suggests that both manufacturing and the service sector face insurmountable structural constraints in the short to medium term. Accordingly, transformation of the agri-food systems comprising predominantly small-scale producers and small to medium scale distribution and processing enterprises (SMEs) remains a priority. This transformation requires a massive infusion of funds from the public and the private sector, including commercial lenders.

We also established that the prevailing business model of most commercial banks favour large scale outfits that utilize of the full range of available financial services. Likewise, the standard risk assessment tools employed by commercial banks are blind to the unique challenges facing the agricultural sector. In the prevailing circumstances therefore, the targeting of resources by commercial lenders is heavily skewed towards the large scale and highly integrated agricultural outfits as opposed to the small-scale enterprises that dominate Kenya's agricultural sector.

Commercial lenders should develop specialized lending products that cater for diverse short to medium term credit needs of SMEs. In addition, the Agricultural Finance Corporation (AFC) – the state agency that lends to the agricultural sector – should respond to long term credit needs of SMEs. On the public-sector front, the focus should shift to targeted investments that de-risk the sector.

The government should promote index insurance schemes through a smart subsidy programme during the initial stages of development in order to catalyse take-up.

Worthy of note, however, is that supply side innovations to improve commercial lending to SMEs in the agricultural sector are constrained by effective demand. Moreover, the ongoing initiatives for blended financing arrangements comprising risk guarantees have not achieved the desired levels of take-up. The primary message from commercial lenders is that there is lack of effective demand for these products.

On the demand side, the agri-food sector would appear to offer the next growth frontier for entrepreneurs in Africa. However, most of the SMEs in the agri-food sector are undercapitalized, making them less attractive to commercial lenders. In order to enhance effective demand for commercial credit, there is need for disruptive business models that generate a pool of adequately capitalized SMEs. The public sector has a critical role to play in facilitating the incubation and development of these business models.

Finally, this analytical work is based on stylised facts. The findings are intended to initiate and advance a conversation between commercial

lenders and the public sector on issues relating to agricultural development. Advancement of the conversation would undeniably call for further analysis (deep dive in specific areas), given that some of the findings and assertions contained in this document reflect a given perspective.

- Few traditional studies on returns to public sector investment have quantified the degree to which these investments generate public goods and de-risk the sector and catalyse economic transformation. In advancing the conversation on the nexus between public sector investment and commercial lending, an empirical analysis of the same should be done.
- There is need for a deeper analysis of the emerging effective demand for agricultural credit, given the evolving financial services landscape and agricultural development imperatives.
- The seemingly sub-optimal performance of development partners and government driven blended finance initiatives such as risk guarantees warrant further investigation. As indicated above and, given the conflicting evidence in the literature and from key informants, the potential for these initiatives in the Kenyan context needs to be established through a deeper empirical analysis.



Chapter 1

INTRODUCTION

This study is motivated by the consideration that the performance of the Kenyan economy is substantially driven by a thriving agriculture sector but the sector's share of credit from the financial sector is small compared to that of other sectors such as manufacturing, trade, and households. Ironically, the sectors attracting relatively more credit than agriculture have a lower share of contribution to GDP.

At the core of the study are two questions: One, what underpins the state of affairs where a strategically important sector in the economy is not, even at the very least, attracting commercial funding to the equitable level of other core economic sectors? Two, is limited commercial funding a core constraint to the sector realising its full potential?

In seeking to address these questions, this study takes cognizance of the fact that agriculture benefits from financial resource allocation mainly from the government that is geared towards addressing the “public good” constraints. Such allocation, presumably aimed at de-risking the sector, would be expended to lead to commercial financing that targets the business dimensions of agriculture.

The view that commercial financing as would for instance be measured by credit to the agriculture is low points to the notion that investments targeting the “public good” investments do not address fully all the key risks limiting commercial financial flows to the sector. Arising out of this is the postulation that such limitation is a core constraint to the potential of the agricultural sector.

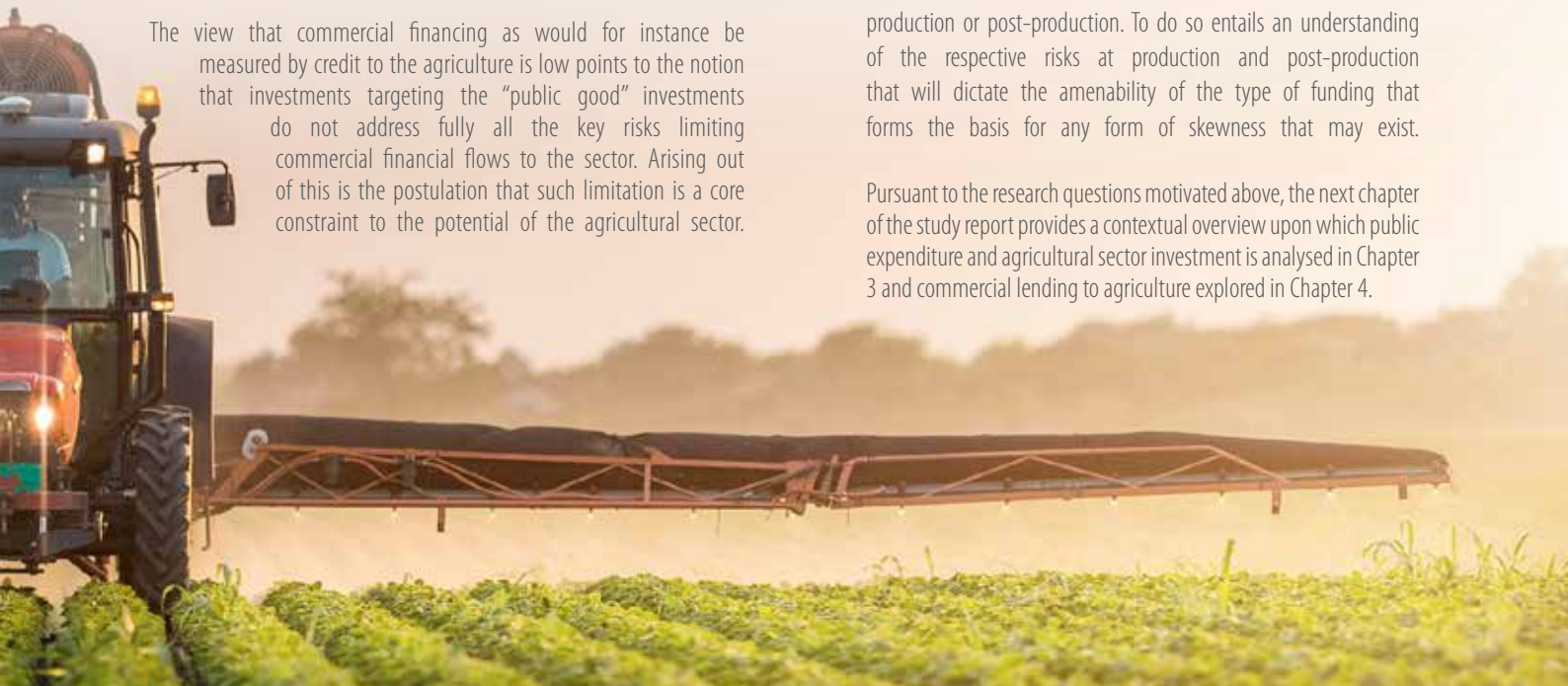
The study puts a spotlight on two aspects:

- The first one is that there is need to interrogate the notion that public funding to agriculture needs to be associated with a corresponding commercial funding, to the extent that the former is linked to the de-risking that is a necessary condition for the latter to happen.

If the public funding allocation and eventual absorption is not associated with increased commercial funding of agriculture, then there is a compelling need for analytical work that will track the public funding – private funding evolution with a view to developing stylized facts on financial resource targeting, the underlying incentives and how they relate to the sector's performance.

- The second is that the appreciation of financial resource targeting generally, and commercial funding in particular, necessitates the undertaking of a critical review of the targeting of such resources. The essence of the review is to ascertain the extent to which financial resources could be skewed towards either production or post-production. To do so entails an understanding of the respective risks at production and post-production that will dictate the amenability of the type of funding that forms the basis for any form of skewness that may exist.

Pursuant to the research questions motivated above, the next chapter of the study report provides a contextual overview upon which public expenditure and agricultural sector investment is analysed in Chapter 3 and commercial lending to agriculture explored in Chapter 4.



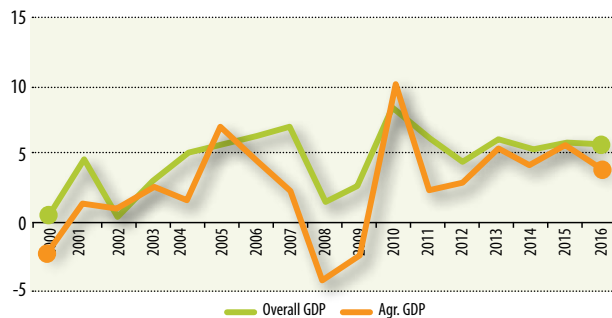


Chapter 2

CONTEXT

It is indisputable that agriculture is critical to the economic performance of most of the developing world, Kenya included. The overall growth of the Kenyan economy is highly correlated to the performance of the agricultural sector (**Figure 1**). Over the years, the small holder players, whose land holdings on average range between 0.2–3.0 hectares, have increasingly dominated the production segment of the sector. They account for 75% of total agricultural output and 70% of the marketed agricultural produce. They produce 70% of the maize, 65% of the coffee, 50% of the tea, 80% of the milk, 85% of the fish and 70% of the beef and related products in the country.

Figure 1: Kenya's economic and agricultural Sector performance

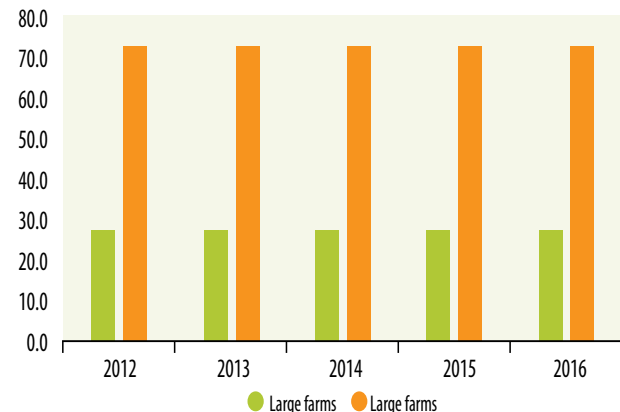


Source: Economic Survey (KNBS), various issues

Notably also, output from small holder farming community account for a large proportion of the marketed produce (**Figure 2**). Accordingly, its role in Kenya's commercial agriculture remains critical and investments aimed at transforming the sector should first and foremost trigger a sustained behavioural change in the small holder segment of Kenya's agricultural sector.

The picture of Kenya's agricultural sector is interesting when viewed through the prism of its transformational promise not just locally but for the vast majority of Sub-Saharan African (SSA) countries. The decade from 2005 to 2015 was characterized by phenomenal economic growth in many African countries, fuelled by commodity price boom that informed the Africa rising mantra.

Figure 2: Share of marketed produce by farm size



Source: Economic Survey, (KNBS, 2017)

There is evidence to suggest that the observed growth has been accompanied by structural changes in the composition of national economies, notably, the increasing share of the services sector's contribution to both GDP and labour force. Whilst agriculture's share has remained constant, there has been a steady decline in the contribution of manufacturing to both GDP and labour force (**Figure 3**). According to Hazel et al. (2017), a few surprises have emerged from this phenomenon (**Box 1**).

BOX 1

A surprise has been the rapid urbanization of Africa. Already, 37% of the population is urbanized, and the UN projects that by 2050 the urban population share will reach 56%. This urbanization is surprising because, unlike the economic transformations of China and some other fast growing Asian economies, workers have not moved into manufacturing. Rather, in much of Africa, industry at large, including

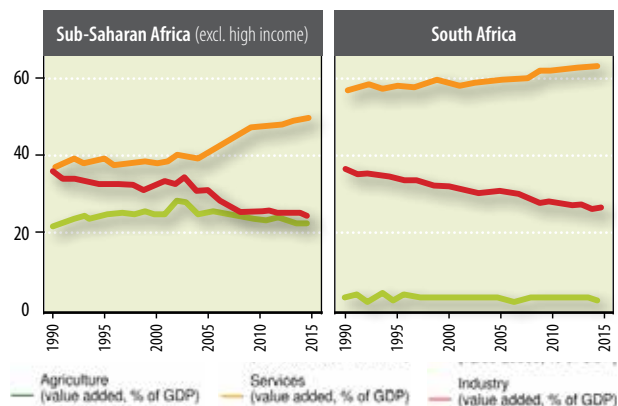
manufacturing, has remained flat while workers have moved into a burgeoning and mostly urban-based services sector. The services sector is now the largest sector in Africa, and already accounts for over half of Africa's total GDP. This pattern of growth has been characterized as “urbanization without industrialization.”

— Source: Hazel, 2017

Recent literature on the aforementioned pattern of transformation paint a sobering picture¹. The service sector in these countries comprise labour-intensive informal activities², generating non-tradable (services) that target the domestic market³. Accordingly, the absence of, or sluggish growth in domestic demand for these services will have a corresponding effect on the service sector growth. Thus, the observed pattern of transformation has limited scope as a pathway to a sustainable economic growth (Hazel, 2017; Rodrik, 2016).

Contrasting agriculture with industry brings further clarity on the former's transformational promise. The manufacturing sector faces an elastic demand for its outputs through either exports or import substitution. Prospects of reversing the negative growth trends for industry (manufacturing) observed in **Figure 3** are arguably not any better. According to a report on manufacturing (AfDB, 2016), the growth of export manufacturing in SSA is constrained by a myriad of structural bottlenecks⁴.

Figure 3: Sector shares in total GDP



Source: African Agriculture Status Report 2017

Undeniably, niche markets exist for export manufacturing in SSA. However, it will take a monumental effort to exploit these markets and generate sufficient spill-overs into mainstream export manufacturing. We are therefore unlikely to witness an end to Sub-Saharan Africa's emerging status as “the supermarket” for manufactured goods from China any time soon.

Based on the foregoing, the real prospect for widespread economic transformation in SSA, Kenya included, lies in agriculture. Africa has the resource base to support intensification on a sustainable basis. Demand for food is growing fast in Africa driven by population growth, urbanization, rising incomes, and changing food consumption patterns.

¹ We pointed out earlier that unprecedented GDP growth was fueled more by commodity price boom as opposed to economic fundamentals.

² The labor productivity for these activities is no different from what obtains in the traditional agriculture

³ Which is also dependent on other factors such as growth in per-capita national income, population growth and changes in consumption patterns.

⁴ Including poor business environment, high transport costs, inadequate and costly port facilities, unreliable power supplies, inadequate access to finance, difficulties in obtaining land, rising labour costs and shortage of skilled workers.

Coupled with favourable intra-regional trade policies, new opportunities for African farmers will continue to emerge. More importantly, agriculture offers the most practical, if not optimal pathway for addressing much of the remaining poverty in Africa. Since most of the producers are small scale and resource poor, productivity growth in the sector is likely to be widespread enough, resulting in a significant dent on poverty.

Contemporary development thinking suggests that, compared to manufacturing and service sectors, agriculture offers the most viable pathway for overall economic transformation. Comparative analyses of growth–poverty elasticities across sectors indicate that more often than not, elasticities for agriculture are usually higher than for non-agriculture (World Bank, 2007).

Much as we begin to make the case for increased investments in agriculture from the foregoing, additional stylised facts are necessary to inform the investment decisions from the private sector. We therefore need to examine both the historical performance trends and the current status of agricultural sector reforms. Such interrogating primarily speaks to the question of what underpins the state of affairs where a strategically important sector in the economy is not, even at the very least, attracting commercial funding to the equitable level of other core economic sectors.

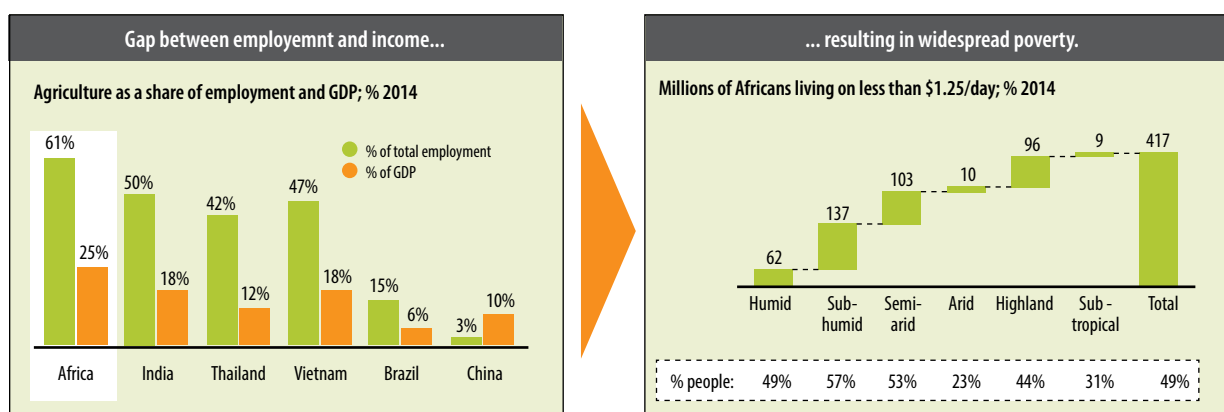
2.1 Performance trends and status of agricultural sector

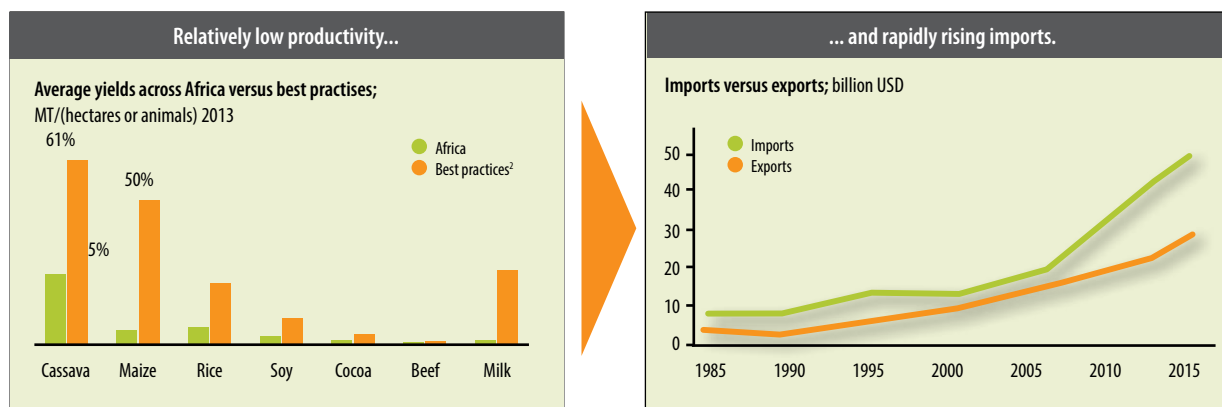
The status of Africa's agriculture is well captured by the African Development Bank (AfDB) in its Feed Africa Strategy (2016). When benchmarked against the rest of the world on the basis of key performance indicators such as land and labour productivity, employment creation and contribution to poverty reduction, Africa's agriculture appears to have substantial slack before it catches up with key emerging markets' economies.

In Africa, agriculture's share of employment and GDP is 61% and 25% respectively, yet 49% of the population live on less than \$1.25 per day (Figure 4). This implies that Africa's agriculture is not creating as much value as it should, compared to say Brazil and China that generate more wealth from fewer people. Viewed from a productivity dimension, the average yield for key staples and some export crops remain way below the global best practice.

As a consequence, SSA has remained a net importer of food over the last three decades, with the gap between exports and imports widening from 2005 (Figure 4). The scarce financial resources that are allocated to food imports have a huge opportunity cost to these economies, given the fragile balance of payment position of most countries in SSA, even more so given the huge potential investment opportunities in Africa's agri-food systems.

Figure 4: Status of Africa's agriculture



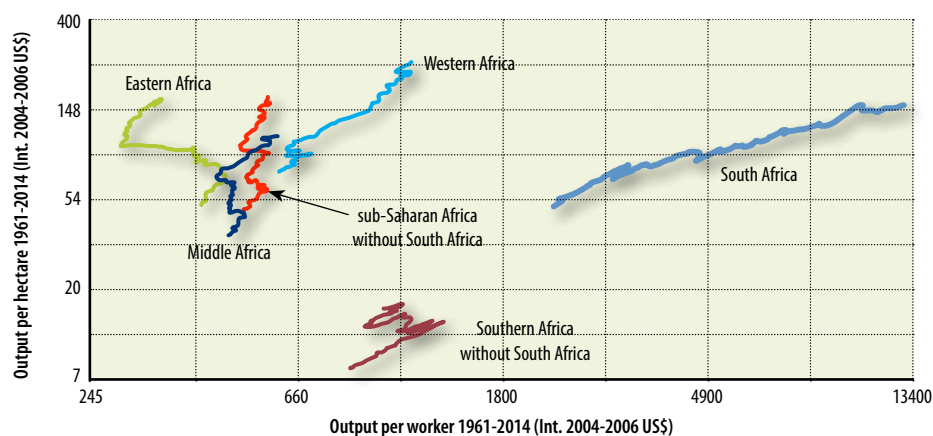


Source: African Development Bank (2016). (2 Best practice=average of top 10 in the world in the yield of the commodity. 3 Imports and exports out of Africa i.e. excluding intra Africa trade).

An analysis of trends in both land and labour productivity from 1961–2014 underscores the sluggish performance of Africa’s agriculture (**Figure 5**). Whilst land productivity has recorded modest growth, the same cannot be said about labour productivity. Eastern Africa for example recorded a decline in labour productivity at some point. Southern Africa excluding South Africa also recorded relatively low levels of land productivity.

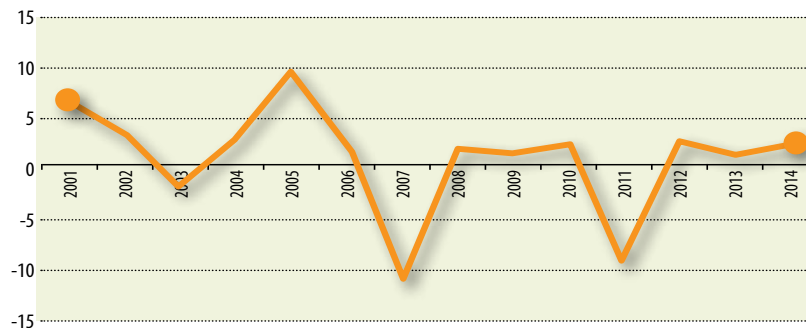
Total Factor Productivity (TFP), defined as “the portion of output not explained by the amount of inputs used in production,” is one of the standard indicators of measuring productivity growth. Growth in TFP over time is thus a reliable pointer to a transforming economy. In the case of Kenya, agricultural TFP growth has been low and erratic over the last decade and a half. Except in 2005, the growth has been below 5% with negative growth rate recorded in 2003, 2007 and 2011 (**Figure 6**).

Figure 5: Sub-Saharan Africa’s land and labour productivity (1961–2014)



Source: African Agriculture Status Report (2017)

Figure 6: TFP Growth in Kenya's Agricultural Sector (2001-2014)



Source: Fuglie, (2012) and Fuglie (2015)

This is a pointer to the fact that Kenya's agricultural sector has been underperforming for the last two decades.

Odiambo et al., (2004) shows that growth in agricultural output had been on the decline after initial impressive performance in the decade after independence. The study revealed that 90% of growth in agriculture sector was attributable to land, labour and capital, with labour accounting for about 48% the overall growth. Importantly, the study also established that the Kenya's trade policy, climate, and government expenditure on agriculture were key determinants of agricultural total factor productivity growth.

At commodity level, the story is pretty much the same. For instance, average maize yield in Kenya has stagnated at slightly less than 2 tons per hectare for the past decade compared to potential yields of 6 tons per hectare. Whilst this level of productivity is comparable to the African average, it is well below the global average of 5 tons per hectare (Figure 7).

A similar pattern is observed in the case of vegetables, with Kenya's yield being above Africa's but below the world's average (Figure 8). Instructively, the foregoing evidence is a pointer to the potential for agricultural productivity growth in Africa (Box 2).

Figure 7: Average farm level productivity of maize (2004-2014).

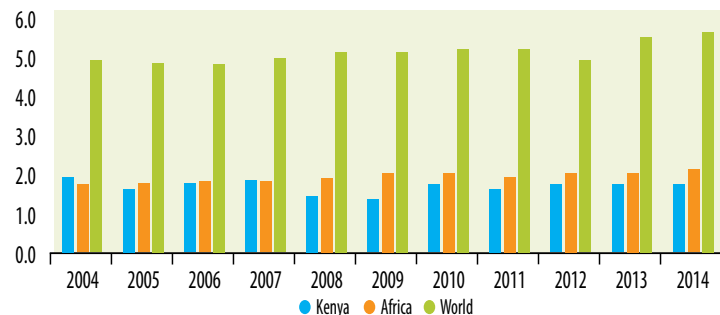
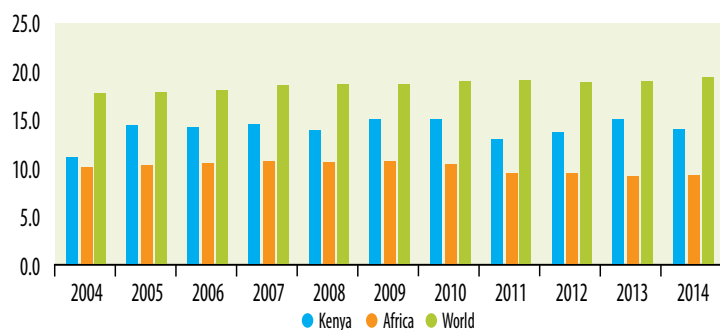


Figure 8: Average farm level productivity of vegetables (2004-2014)



Source: FAOSTAT

BOX 2

“This potential is evidenced by the low yields Africa currently achieves compared with those of similar agro-ecological zones (FAO & World Bank, 2009), experimental trials, and best farmer practices (Jirstrom, Andersson, & Djurfeldt, 2011). There is also considerable untapped irrigation potential and remaining uncultivated land that

could be brought into production. You et al. (2011) estimate that sub-Saharan Africa could profitably increase its irrigated crop area from surface and groundwater supplies from 7 to 21 million hectares by 2050.”

Source: Hazel, 2017

Figure 9: Barriers crippling Africa's agriculture sector

Under-performing value chains	Limited coordination of <u>research and development</u>	Insufficient utilization of <u>inputs and mechanization</u>	Limited reach of extension to boost <u>on-farm production</u>	Poorly organized post-harvest <u>aggregation and transport</u>	Inconsistent capacity for effective <u>value addition</u>	Poorly developed <u>market linkages</u> and trade corridors
Insufficient infrastructure	Insufficient transport, energy, water, waste management and other <u>hard infrastructure</u> , leading to uncompetitive cost structures			Undeveloped <u>soft infrastructure</u> including aging smallholder farmers and a lack of skills for commercial agriculture and agro-allied industries		
Limited access to agricultural finance	Real and perceived <u>risk</u> limiting private sector investment		High <u>service cost</u> due to small deal sizes, lack of credit data, and low capacity in agricultural lending		Limited <u>market attractiveness</u> relative to perceived higher returns outside of the agriculture sector	
Adverse agri-business environment	Unfavorable <u>market access and incentives</u> limiting trade and capacity to produce high-quality products		Ineffective <u>sector regulation</u> creating long lead times for new technologies and inconsistent trade policies		Unsupportive <u>business enabling environment</u> restricting land tenure and general ease of doing business	
Limited inclusivity, sustainability and nutrition	Insufficient <u>inclusivity</u> of women and youth in agricultural development		Limited incentives to ensure <u>sustainability</u> and climate-resilient practices		Limited access and affordability of commodities with high <u>nutrition</u> levels	

Source: African Development Bank Strategy for African Agricultural Transformation (2016-2025).

Chapter 3

PUBLIC EXPENDITURE AND AGRICULTURAL SECTOR INVESTMENT

The foregoing overview leads to the inference that Kenya's agricultural sector performance over the last 5 decades, just like that of the rest of SSA, has been sub-optimal. This begs the question: why has public sector expenditure on agriculture not generated sufficient public goods to de-risk the sector? To answer the question, this study critically reviews past trends in public sector expenditure on agriculture in Kenya.

3.1 Public expenditure patterns

The Maputo Declaration of 2003 at the Africa Union Heads of State Summit set clear targets, both for public sector investments in, and the corresponding growth for Africa's agricultural sector. Each member state was expected to allocate 10% of its annual budget to agriculture.

Based on agricultural sector growth models developed with the help of the International Food Policy Research Institute (IFPRI), the public-sector investments, coupled with the private capital inflows would generate a 6% annual growth in the agricultural sector (agricultural GDP growth).

Over the past decade and a half, the Comprehensive African Agriculture Development Programme (CAADP) has provided the framework and guideline for public sector investments in Africa's agriculture. After 10 years of CAADP implementation, the primary observable achievement is that of galvanizing selected African governments to increase budgetary allocation to agriculture.

Whilst there has been much debate about what exactly constitutes agricultural spending, the CAADP framework developed a guidance note for reporting on agriculture spending. Relying mainly on the Classification of Functions of Government (COFOG) developed by the International Monetary Fund (IMF) with allowance for additional related expenditures



not in agriculture but with direct bearing on the sector, the guidelines have pretty much settled this debate.

As noted by Bingxin and Zhang (2014), Kenya has adopted the COFOG definition in reporting agriculture spending that includes agriculture (crop and livestock), fisheries, forestry and hunting. In addition, public expenditure into agriculture can be classified into three major categories: 1) capital (investment) expenditure that involve building of durable assets as a means to improve the productive capacity of the sector; 2) recurrent expenditure that is basically consumption expenditure incurred year after year and do not create any productive assets; 3) development expenditure

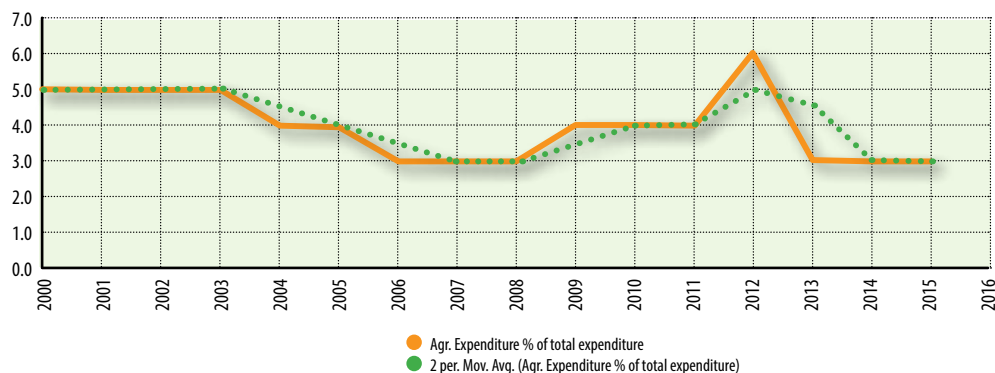
is where resources are channelled towards promoting economic growth and development and may entail portions of capital and recurrent expenditure.

Based on the CAADP guidelines and targets on public expenditure (at least 10% of the budget), Kenya is not one of the star performers in Africa. The total budget allocation for the sector has remained below 5% over the past decade and a half (**Figure 10**). Despite the rhetoric on the importance of agriculture as the engine for economic growth and transformation in Kenya, the budget allocation patterns paint a different picture.

The allocation to agriculture has remained relatively constant in the wake of an ever-increasing national government budgets (**Figure 11**).

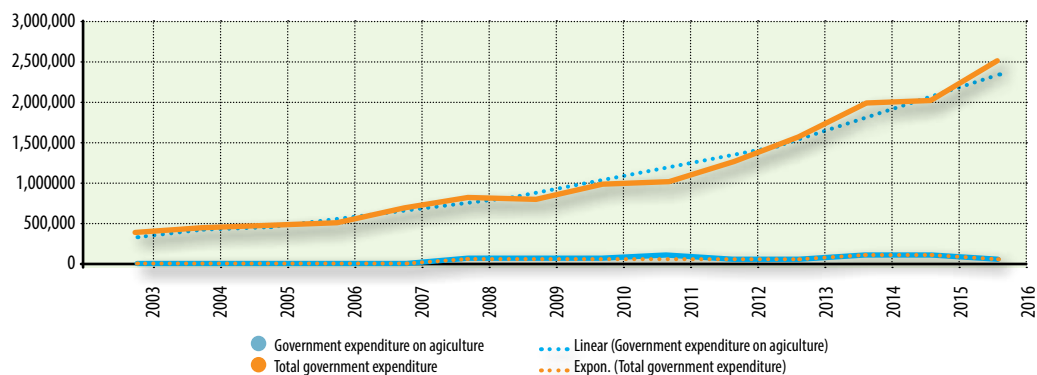
The trends above begs the question on whether or not the observed public expenditure is appropriately targeted at generating public goods. We therefore examine the extent to which the public goods generated from public expenditure address the key risks limiting commercial financial flows to the sector. We seek to use the Kenyan case to illustrate the challenges with planning and targeting of agricultural sector investments.

Figure 10: Agriculture spending in Kenya as a % of total spending



Source: Economic Survey (KNBS), Various Issues.

Figure 11: Agriculture budget compared to overall budget (2003-2016) – Kes Millions



Source: Economic Surveys (KNBS), various Issues.

3.2 Public expenditure: Investment or consumption

The justification for public expenditure on public goods is premised on their very nature: non-excludability and non-rivalry in consumption. Accordingly, there is little or no incentive for the private sector to invest in their production. Invariably, financing of public goods and services is a preserve of government, although the delivery function could be carried out by the private sector (Oruko and Ndungu 2009).

During the Structural Adjustment Programmes (SAP) period, most governments realigned their functions and investments to focus on the generation of public goods. The subsequent Post-Washington Consensus paradigm went further to affirm the role of public sector investments in redressing market failure and leveraging effect on private capital investments. In the present context, we use public investments in agricultural research and extension, irrigation and general infrastructure to illustrate our point.

3.2.1 General hard and soft infrastructure (transport, electricity and telecommunication)

Infrastructure services such as roads, electricity and telecommunication are considered important in stimulating agriculture investment and growth. The major problem is that these services are still limited in most parts of rural Kenya. Evidence abound on the positive impact of infrastructure services on agriculture and on overall economic development.

Sufficiency in physical infrastructure reduces the cost of post-harvest handling and processing. Presently, mobile telephony is having a transformative impact on delivery of extension services, market information and financial services. Based on anecdotal evidence gathered during the present study, this is the one area where past public-sector investments through increased expenditure, policy and regulatory reforms, could have generated the greatest impact.

3.2.2 Specific hard infrastructure (irrigation)

Rain-fed agriculture has been cited as the 'curse' of smallholder agriculture in Kenya and Africa in general; rains periodically fail leading to frequent

crop failures and livestock deaths⁵. Public investment in irrigation has been cited a major driver of the Asian green revolution in the 1960s and 1970s.

In Kenya, only 5.4% of potential surface water, 9.4% of ground water resources and 16–35% of irrigable land potential are utilized for irrigation (Chebwek, 2000; Ngigi, 2000). The irrigation infrastructure in Kenya can be classified into three broad design and management categories.

- i. Large-scale surface irrigation schemes that are constructed, operated and maintained by government (e.g. Mwea, Ahero and Bura). In this design, the smallholder farmers have a limited role in management.
- ii. Private smallholder irrigation systems that draw water using pumps or gravity from streams to irrigate relatively small areas. They are managed either by individuals or a group of farmers.
- iii. Agro-industrial irrigation of high-value crops (notably flowers and other horticultural crops). These are developed and financed by private sector and rely on pumping-based technologies in combination with drip or sprinkler irrigation.

It is noteworthy that social returns to public sector investment in large-scale surface irrigation schemes that are constructed, operated and maintained by government are arguably not that great. Yet, over the past few years, the government has intensified efforts to increase area under irrigation by establishing new large-scale surface irrigation schemes (Galana-Kulalu, Thakwe dam, Thiba dam) or reviving previously collapsed schemes (Bura).

3.2.3 Specific soft infrastructure (agricultural research and extension services)

That use of new technologies and innovations (products of agricultural research) are the main drivers of agricultural productivity growth is not in doubt. More importantly, agricultural research investments generate decent social returns; Pardey et al., (2016) report an average internal rate of return to agricultural research of 42.3% per year for Sub-Saharan Africa.

⁵ This is made worse by climate change that has increased the frequency and severity of droughts

In Kenya, average rate of return to investment in maize research over the period (1955–1988) was 68% (Karanja, 1990). Public funding of agricultural research in Kenya has been less volatile compared to the rest of sub-Saharan Africa—owing to long standing support from development partners. In 2014, the total agriculture research spending as a share of Agriculture GDP stood at 0.8%.

Over the years, these investments generated productivity increasing technologies such as improved drought tolerant seed varieties and the associated management practices. These seed varieties are multiplied and distributed by private seed companies and retail outlets. Adoption of these varieties and practices by a large number of small holder farms creates viable business enterprises (from production to distribution) in the agricultural sector.

By the same token, a consensus exists that extension services, if functioning effectively, can improve agricultural productivity through provision of information that helps farmers optimize their use of limited resources (Muyanga and Jayne, 2008). Public funding for agricultural extension and advisory services facilitates access to relevant information by the majority of poor small-scale producers. By way of example, additional investments in the generating of down-scaled weather information would invariably improve resource poor farmers' response to short term weather variability.

Clearly therefore, appropriate and well targeted public-sector investments in agricultural research and extension could generate public goods that enhance productivity growth. Embedded in some of these goods are attributes that contribute to de-risking the sector.

Unfortunately, over the last decade, funding to the public sector agricultural research system has dwindled and the Kenya Agricultural and Livestock Services (KALRO) is now a pale shadow of its former self. Public universities aren't doing any better: they focus more on training undergraduates than research. Hopefully, the newly introduced National Research Fund will serve to improve their fortunes. The public-sector extension system has struggled with a series of reforms over the last two decades. This is the one sector that could be ripe for privatisation, especially of the delivery component.

3.3 Public sector investment planning and execution

Kenya has over the years formulated and implemented policies and investment strategies to drive agricultural sector productivity growth. The most recent one was the Agricultural Sector Development Strategy (ASDS, 2010–2020) with the primary objectives of ensuring food and nutritional security for all Kenyans, as well as increasing incomes and employment in the rural areas.

The main intervention areas identified in the ASDS include: i) Sustainable land and natural resource management; ii) Agribusiness, access to markets and value addition; iii) Food and nutrition security; iv) Research and extension vi) Legal, regulatory and institutional reforms and vii) Inputs and financial services.

Upon the formulation of ASDS, the first Medium Term Investment Plan (MTIP) 2010–2015 was developed. Prepared through a consultative process involving both the public and private sector stakeholders, the MTIP identified priority investment areas with detailed budgets for the subsector investment projections. To finance the MTIP plan, the government of Kenya was to provide Kes. 161.22 billion (65.3 percent) of the total development budget cost, and requested development partners and the private sector to provide an estimated Kes. 77 billion (31.2 percent) and Kes. 2.56 billion (1 percent), respectively⁶.

The implementation status and evaluation reports for the MTIP were not available to us during this study. Nonetheless, a rigorous ex-ante analysis undertaken by IFPRI/ ReSAKSS in 2012 indicated that if the plan were to be strictly implemented, it would generate superior growth and poverty reduction outcomes (Mabiso et al., 2012).

The policy framework guiding agricultural sector planning and investment changed in 2013. The Constitution of Kenya, 2010 introduced two levels of government: the national and the county governments. Part 2 of the Fourth Schedule specifies the role of national government in agriculture as formulation of policies (agriculture and veterinary policies), and capacity building and technical assistance to counties. The roles of the county governments are identified as facilitating,

⁶ See page 14 column 2 paragraph 2 for categorisation of government expenditure.

executing and overseeing implementation of national policies on agriculture. However, the two levels of government, though distinct and autonomous, must inevitably work together in discharging the devolved functions.

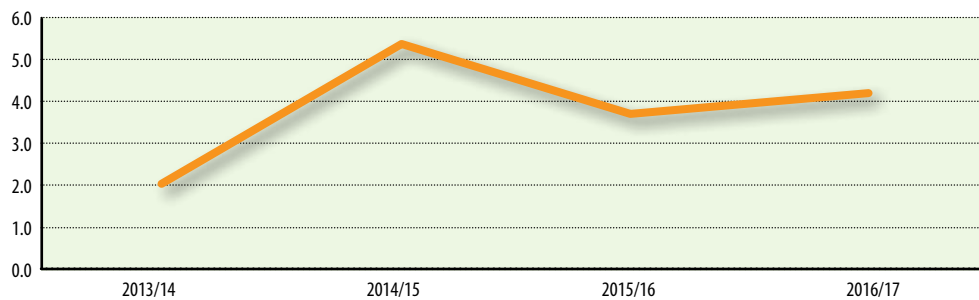
Devolution of agricultural functions in Kenya was premised on the principle of inclusion of local stakeholders in problem identification, priority setting, budgeting and planning to make services more responsive to local needs (Poulton, 2009). However, the first generation of County Integrated Development Plans (CIDPs) were hurriedly crafted to enable county government access finance from the national treasury.

They were formulated without any robust analysis to inform priority setting and without much stakeholder consultation.

In the case of agriculture, the confusion was further aggravated by the tussle among the counties, private sector and national governments over an array regulatory and taxation issues. As a consequence, agricultural expenditure trends at the county level continue to mirror those at the national level (**Figure 12** and **Figure 13**).

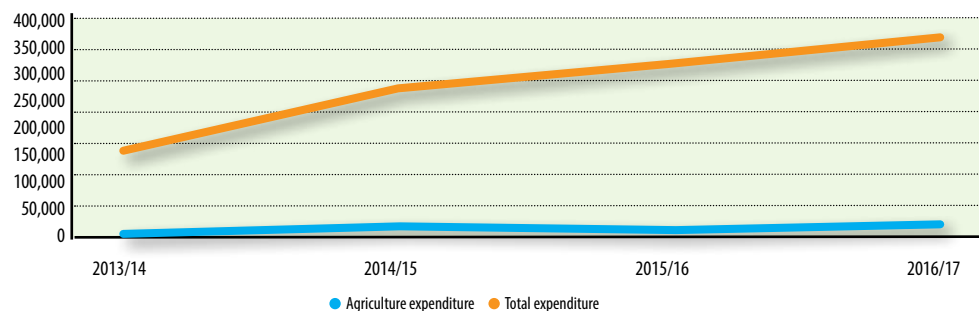
There is a worrying pattern of counties spending on purchasing goods that should be provided by private sector (given their techno-economic

Figure 12: Agriculture spending at county level as a % of total spending



Source: Economic Survey (KNBS) (2017).

Figure 13: Comparing between agriculture and total expenditure at the county (Kes Millions)



Source: Economic Survey (KNBS), various issues

characteristics of such purchases), with the attendant effect of crowding out potential private capital inflows into the agricultural sector.

Example based on 2014/15 financial year in include the following:

- Embu County incurred Kes. 9.46 million on acquisition of agricultural machinery.
- Garissa County spent a total of Kes. 83 million on purchase of agricultural equipment.
- Kitui County purchased agricultural machinery at Kes. 21.6 million.
- Kwale county spent Kes.64.81million on purchase of agricultural inputs (i.e. fertilizer, certified seeds among others) in order to boost local farming.
- Kes.15.66 million was spent on purchase of graders in Homa-Bay County
- In Meru County, Kes 50.2 million was spent on specialized supplies for agriculture, fisheries and livestock equipment.

Likewise, based on expenditure figures from 2014/15 financial year, a selected sample of county governments recorded an overspend on recurrent budget allocation yet the majority were unable to absorb all of the development component (**Table 1**).

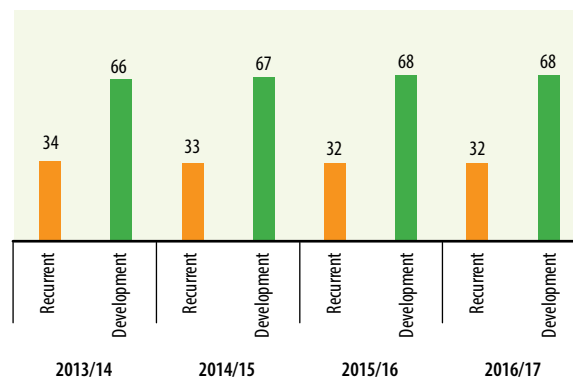
Table 1: Absorption rate of agricultural budget by select counties (2014/15) financial year

County	Recurrent (%)	Development (%)
Taita Taveta	494	70
Muranga	257	49
Machakos	119	21
Homa Bay	105	84
Nyandarua	102	86
Nakuru	100	58
Wajir	100	59

Source: Controller of Budget, 2015.

Consistently over the last 5 years, a substantial share of the national agriculture budget (over 65%) has been allocated to development activities (Figure 14). The large share of development expenditure could in part, be explained by the allocation to irrigation development budget which has risen from a mere Kes. 100 million in 2014 to about Kes.4.8 billion in 2017 (Economic Survey, 2017).

Figure 14: Share of recurrent and development budget for Ministry of Agriculture (%): 2013-2017



Source: Economic Survey (KNBS), 2017

Inferences from the trends above lead us to a number of questions. The first inference that warrants interrogation is related to Kenya's buy-in and domestication of the African Union led CAADP initiative. Over the last decade, the CAADP framework provided a rallying vision for resource mobilization and the associated details for investment planning and execution. Over this period, Kenya's public-sector investments on agriculture remained way below the CAADP target, unlike star performers such as Ethiopia, Cape Verde and Rwanda.

Undeniably, a dogmatic approach to the domestication of the 10% allocation target could be counterproductive, given other factors such as the Medium-Term Expenditure Framework (MTEF) ceilings and sector absorption capacity. However, evidence from the policy and planning documents suggest that growth and transformation of Kenya's agriculture was largely constrained by inadequate levels of investment.



Related to the question on levels of investment is the perennial challenge of implementation / execution capacity, both at policy and programming level. At policy level, despite the availability of evidence (in temporal waves), Kenya continues to struggle with the implementation of policies on regulation and development of agriculture. Inconsistencies manifest themselves in the ad-hoc approach to fertilizer imports, strategies for managing the reforms in the sugar sub-sector, debt forgiveness/writing-off of loans owed to the Agricultural Finance Cooperation by cattle keepers and management of strategic food reserves, to cite but a few.

At programme implementation level, the capacity challenge is borne out by the failure of county governments to prioritize, design and execute relevant investment programmes that are customized to their local needs. Both the institutional architecture (structure of the agriculture executive) and the programmes are a mirror image of the national level Ministry of Agriculture of yester-years.

The general drift in this study's inferences from the public-sector investment analysis above is that they have been sub-optimal both in quantity and

quality. However, as the saying goes, every dark cloud has a silver lining. In spite of the challenges above, we picked out a few programmes that stand out as potential pilots for best practices at scale. The Kenya Agricultural Value Chains Programme (KAVES) implemented over the last five years from 2012 is an example.

A USAID funded flagship Feed the Future programme, KAVES focused on raising the productivity of small holder farmers by developing or integrating them into existing value chains. Rooted in the philosophy of farming as a business, the value chain approach addresses the bottlenecks ranging from input markets to production and output markets. Likewise, the Ministry of Agriculture invested in both index insurance (crops and livestock) insurance and blended finance initiatives.

In its Feed Africa Strategy, AfDB (2016) makes a compelling case for a shift in the investment strategy in order to catalyse and drive agricultural transformation in Africa. The proposed interventions include, development of value chains, innovative finance instruments and index insurance. In the next section, we analyse these investment options both from a productivity enhancing and de-risking dimensions.



Chapter 4

COMMERCIAL LENDING TO AGRICULTURE

BOX 3

Because the African Agricultural Transformation Agenda (ATA) requires a large investment for transformation, it is important that the private sector is properly incentivized to participate. Thus, the ATA will position agriculture as a business and focus on the creation of competitive returns through innovative blended finance structures, financial sector development, and other efforts.

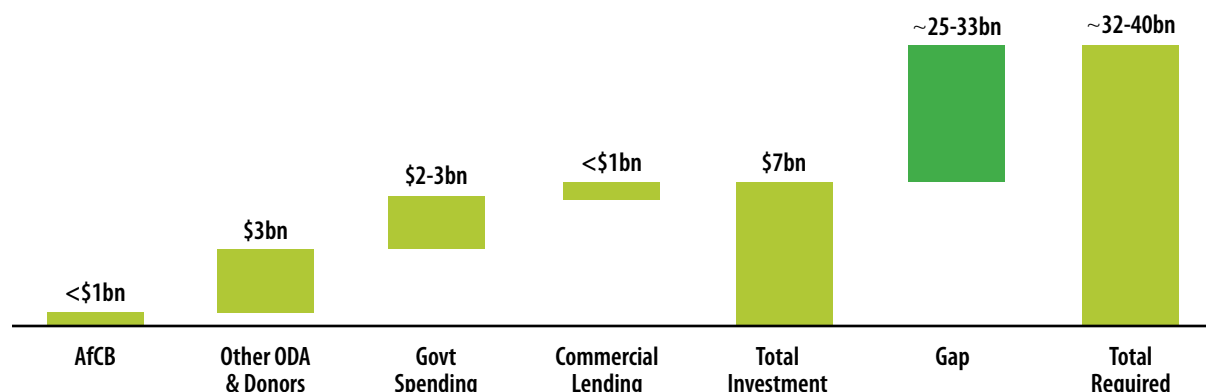
Creating attractive investment opportunities will allow it to target a variety of pools of capital, including: multi-lateral development banks and bi laterals; governments and Central Banks; foundations and donors; commercial lenders; private equity venture capital firms; sovereign wealth funds, pension funds, and other sources of institutional capital.

4.1 Status of commercial financing of agricultural development

As indicated in Section 2, the AfDB has developed a strategy for transforming Africa's agricultural sector. To make this transformation

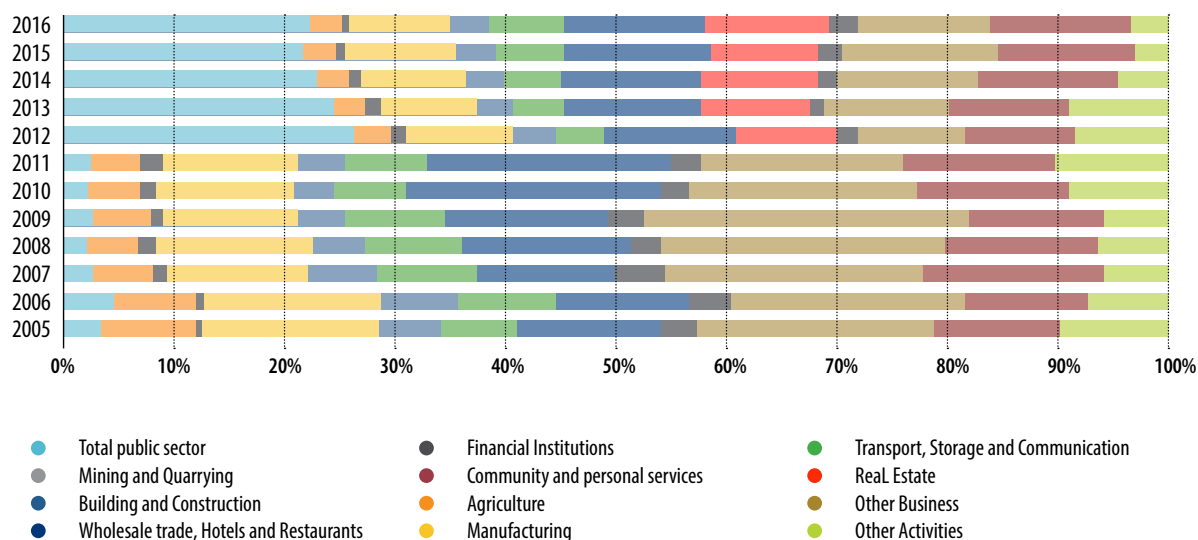
happen, an annual investment outlay of USD 32-40 Billion is required over the next 10 years, as opposed to the status quo of USD 7 billion, to which commercial lending only contributes USD 1 billion. Accordingly, an additional USD 25-33 billion is required annually over the next ten years (Box 3 and Figure 15).

Figure 15: Current vs. required funding levels for agricultural transformation in Africa (USD bn / year)



Source: African Development Bank Strategy for African Agricultural Transformation (2016-2025).

Figure 16: Commercial banks' bills, loans and advances by sector shares



Source: Economic Survey (KNBS), various issues.

Presently, commercial lending to agriculture in Africa is approximately \$660m out of total of USD 14 billion per year- nearly 4.6% of annual lending (AfDB, 2016). In the case of Kenya, when compared with other sectors, commercial lending to agriculture is disproportionately low, accounting for about 4% of the total lending portfolio for the period 2005–2016 (Figure 16). Despite the dramatic rise in credit availability in the 2000s, only a small proportion was directed to agriculture⁷.

4.2 Explaining the low levels of commercial lending to agriculture

Access to commercial credit in agriculture is constrained primarily by: 1) real and perceived risk limiting private sector investment, 2) high service cost

due to small deal sizes, lack of credit data, and low capacity in agricultural lending, and 3) limited market attractiveness relative to perceived higher returns outside of the agriculture sector (Figure 16).

USAID (2012) outlines the following as key impediments to agricultural financing in sub-Saharan Africa (including Kenya): poor rural infrastructure; poor credit culture as a result of government interventions such as debt forgiveness; banks have limited branch coverage in the agricultural areas; banking staff have limited understanding of agricultural value chains; and lack of clear land ownership rights. Accordingly, the current risk-adjusted returns to capital are too low to justify investment in the sector when other opportunities exist (AfDB, 2016).

The business of agricultural production is a risky venture. Typically, in remote parts of Africa where small holdings dominate, vulnerability to

⁷ This improvement was induced by a shift in policy on reserve ratio and interest rates on government paper, in addition to innovations in financial services such as increased use of mobile money.

external shocks such as weather events and outbreak of pests and diseases is an ever-present feature. Coupled with the relatively long production cycles and failure in insurance markets, the lending risks to agriculture, especially are relatively high. According to the World Bank (2015), financial institutions in developing countries encounter several challenges when lending to agriculture sector.

Broadly, these challenges include: high transaction costs of reaching remote rural populations, higher perceptions of non-repayment due to sector-specific risks, such as production, price and market. In addition, financial institutions lack of knowledge in how to manage transaction costs, the above mentioned agriculture-specific risks, and how to market financial services to agricultural clients.

Most commercial lending institutions in Kenya are discouraged by the inherently high risk associated with agricultural production as above outlined. The main barriers that financial institutions in Kenya face when lending to smallholder farmers for example are: lack of credible and verifiable data on smallholder farmers that could support agriculture lending decisions, and smallholders' lack of collateral for securing loans and high transaction costs of reaching remote rural (AGRA, 2017). As a consequence, evidence abound that rather than price the risk, the commercial lenders prefer not to lend to this category of borrowers.

In recognition of the unique challenges facing the agricultural sector, both the government and the development partners have invested in initiatives to promote commercial lending to agriculture. The Agricultural Finance Corporation (AFC) was set up primary to address the unique credit needs of farmers. Undeniably, the AFC was the "go to" agricultural lending institution during the Pre-Structural Adjustment Programmes era. Over the last three decades though, owing largely to structural changes in the agri-food sector, AFC has not been able to respond to the needs of a large section of poor rural farmers.

AFC requires farmers to have tangible security and sets a minimum acreage of land holding for which they would approve a loan. These requirements are not too different from those of a typical commercial banking outfit. For example, Equity Bank offers agribusiness loans that target agro-dealers, agro-processors, agro-inputs manufacturers, agro-importers and exporters. The appraisal process requires the prospective borrower to either hold an account with the Bank, provide a clear purpose of the loan, have ability to repay and have relevant business licenses.

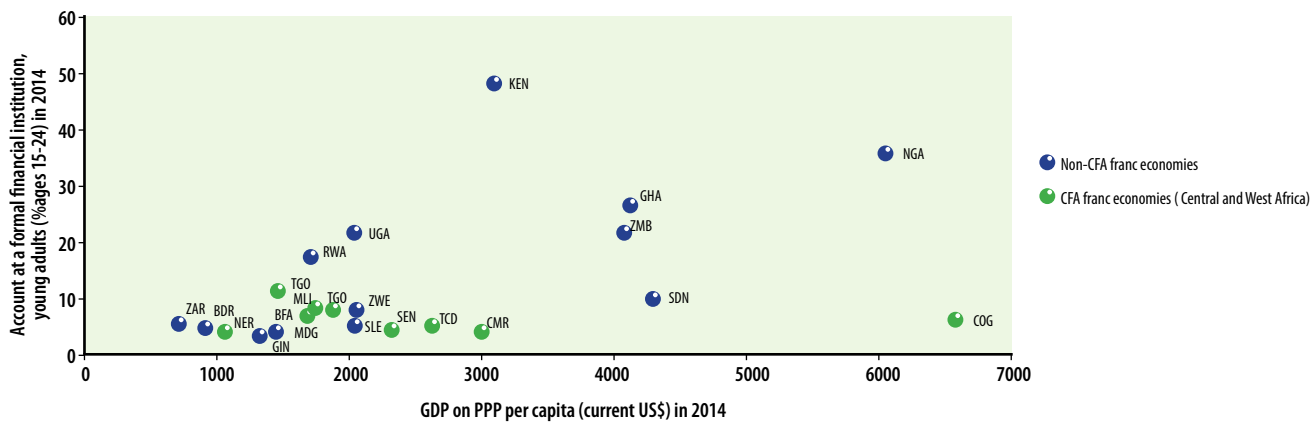
That commercial lending to agriculture remains a challenge against the backdrop of a vibrant and innovative financial sector is a puzzle that needs unravelling. Kenya has acquired an almost celebrity status as a cradle for innovation and inclusion in the financial sector (Osoro and Muriithi, 2017; AGRA, 2014; Fannou and Rutten, 2015). Kenya is touted to have a "forward-looking and innovative policy and regulatory environment" that fosters innovation and growth of the financial sector.

Leveraging ICT technology has generated a dynamic microfinance sector and a vibrant mobile payment system (Osoro and Muriithi, 2017; Fanou and Rutten, 2015). As a consequence, Kenya stands out as a leader in the area of financial inclusion in SSA when judged using a unidimensional indicator; account ownership at a formal financial institution, (**Figure 17 and Figure 18**)⁸.

The seemingly limited impact of these innovations on commercial lending to agriculture could be a pointer to the existence of underlying systemic constraints on the one hand, and opportunities for further development of Kenya's financial services sector on the other hand. We examine these constraints opportunities both from the demand and supply side in the next section.

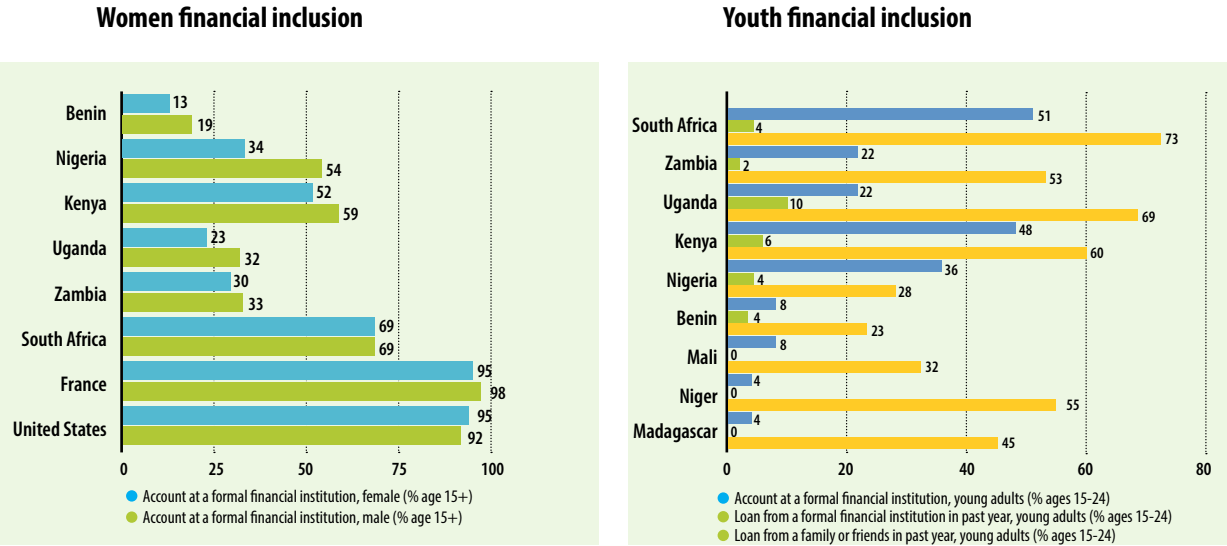
⁸ Based on the DOPA principle for evaluation of indicators, this indicator and the associated metric does not satisfy the Adequacy criterion (Osoro and Muriithi 2017).

Figure 17: Financial inclusion and income per capita in selected SSA countries



Sources: Global Financial Inclusion Database, World Bank (2015) and International Monetary Fund (2015).

Figure 18: Levels of financial inclusion in SSA (by gender and age)



Source: Global Financial Inclusion Database, World Bank (2015).

4.3 Agricultural credit: a peek at demand and supply dynamics

Framing demand and supply for financial services within the agricultural transformation agenda serves two purposes. First, it facilitates a more nuanced analysis of opportunities for developing farming, especially small holder sector as a business, in addition widening the scope of analysis to include business opportunities in the broader agri-food systems. Second, it facilitates the identification of priority “actionable recommendations” for both the public sector and commercial lenders.

In so doing, we need to revisit the kind of transformation that Kenya needs. Available evidence suggests that a small holder system focused transformation is what Africa needs, given that most of the workforce is currently employed in small-scale farming and along agricultural value chains (Hazell et al., 2017).

A food system transformation based on large-scale commercial farming, with large agribusinesses, although highly productive, are typically capital intensive with limited scope for additional employment creation. A large proportion (80%) of the farms in Africa stand on less than 2 hectares. Even within this group, there is a fair amount of heterogeneity.

In the context of assessing demand for financial services (especially credit), appreciation of this heterogeneity logically leads us to exploring plausible segmentation scheme for small holder farms. Accordingly, access to markets, household assets, agricultural potential, and non-farm income diversification are some of the criteria used to define a typology of small-holder farms. Hazel and Rahman (2014), categorized small holder farmers into 3 groups; Commercial, transition and Subsistence-oriented (**Box 4**).

Peck et al., (2013) developed a segmentation scheme based on a range of financial services needs for agricultural households (**Table 2**).

BOX 4

Commercial smallholder farmers are successfully linked to value chains and run their farms on a business basis. They may be full or part time farmers.

Small farms in transition have favourable non-farm opportunities and obtain much of their income from non-farm sources. In the absence of significant new opportunities in farming that can give a competitive return to their labour and capital as non-farm opportunities, many transition farmers are likely to leave farming altogether or, if they continue to live on their farms, farm largely for their own consumption.

Subsistence-oriented small farms are marginalized for a variety of reasons that are hard to change, such as being located in remote areas with limited agricultural potential. Many of the same factors that prevent them being more successful farmers also prevent them from accessing non-farm jobs and becoming transition farmers. Subsistence-oriented farms frequently sell small amounts of produce at harvest to obtain cash income but are typically net buyers of staple food over the entire year.

Source: Hazel and Rahman, 2014.

Table 2: Financial services needs based smallholder farmer categorization

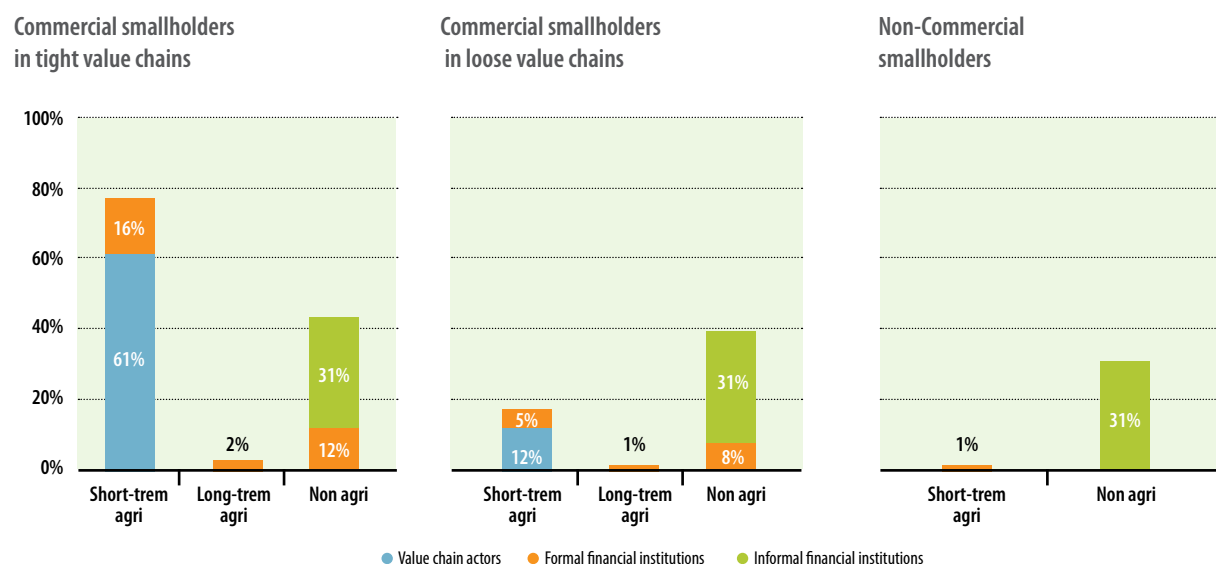
Critical indicator	Commercial small holder farmers in tight value chains	Commercial smallholders in loose value chains	Non-commercial smallholders
Access to credit and financial services	Likely to demand and use a wider range of financial services from both formal and informal financial service providers. More attractive customers for lenders, particularly as they become increasingly engaged in the production of high-end crops and livestock and enter production contracts with buyers. They primary target of most specialized agricultural finance approaches, particularly related to contract farming, equipment leasing, and long-term loans for investments.	They have access to a wider range of financial services and may be looking for opportunities to further diversify their assets and sources of income. Accordingly, they complement a range of other suppliers, including banks, credit unions, deposit-taking microfinance institutions (MFIs), input suppliers, and microcredit providers with a degree of specialization in agricultural lending.	They are largely limited to informal financial mechanisms and simple tools, such as local savings and loan groups, to meet their relatively basic financial service needs. Their financial transactions tend to be too small to interest the formal financial sector. Household cash flows are usually not robust or diversified enough to ensure repayment of loans for agricultural production, and the family is unlikely to have collateral to offer that would be acceptable to a formal lender.
Participation in output markets	Have the capacity to generate reliable, high-quality outputs that are sold on a contract basis through relatively highly organized value chains. Staple crops may be sold more informally through local and regional markets.	They generate some level of surplus to sell into open unstructured local markets and not the tightly organized value chains characteristic of export crops.	Any irregular, small amounts of surplus would be sold in an informal local market. They are not connected to a structured value chain of any kind.
Primary household characteristics	They take a more business-like approach to farming. A sizeable portion of their agricultural income may be derived from higher-value specialty crops, though they are also likely to grow some staple crops as well. As relatively larger producers, they may hire people to support some of their agricultural activities.	Their crop mix usually focuses on staple crops and could also include some higher-value crops (e.g., sugar, tea, coffee, oilseeds). Their household income comes from a diverse range of both agricultural and non-agricultural activities.	They farm not as a vocation or strategic business choice, but to contribute to their own sustenance and survival. Production focused on staple crops (e.g., cereals, roots and tubers, pulses) and could include small livestock (e.g., hens, goats, pigs). Limited use of purchased inputs and mechanization.

Source: Adapted from Peck et al., (2013).

From the foregoing, commercial smallholder farmers in tight value chains would appear to be the most promising target clients for commercial lenders. To a lesser extent, the smallholders in loose value chains who desire to transition into fully commercial farming could be considered as well. Figure 19 suggests that even for the smallholders in tight value chains, the formal financial institutions (FIs) only provide a small fraction of their agriculture related financial needs (16% of short term agricultural and 12% of non-agricultural).

Not surprisingly, the proportion is even lower for commercial smallholders in loose value chain and non-commercial small holders (**Figure 19**). Instructively also, regardless of the smallholder segment, the informal financial institutions provide 31% of the non-agricultural related credit, and the long term agricultural related financial needs remain largely unmet.

Figure 19: Credit supply from FIs and value chain actors (% of total credit requirements)



Source: The Initiative for Smallholder Finance (2016).

Arguably therefore, business transactions between producers and value chain actors (market intermediaries) engaged in aggregation appears to be the primary vehicle for short term agricultural credit. If indeed this scenario obtains, then credit is a critical contract enabler between aggregators and farmers/farmer organizations.

- There is scope for development of specialized lending products. These could include specific products for aggregators (typically large scale commercial credit worthy producers) for bulk procurement of inputs (fertilizers, seeds, chemicals) and timely purchase of outputs from the small holder farmers.
- There is additional scope for expanding the onward lending portfolio to MFIs (both formal and non-formal). There is evidence to suggest that banks have developed products to cater for traditional savings-led member owned institutions and NGOs

- There is scope for bundled products that cater for both agricultural and non-agricultural needs, especially for the two segments of commercial smallholders. In any case, some commercial banks have also downscaled to serve lower-income market segments in some parts of Africa. For example, the National Microfinance Bank of Tanzania (NMB) developed innovative knowledge-driven approaches such as combining credit with warehousing in order to increase its lending to the agribusiness sector.
- “Land Bank type” institutions such as the Agricultural Finance Corporation could play a greater role in meeting both the medium and long-term credit needs of commercial small-holder farmers.

Key informant interviews with representative of commercial banks confirmed the perception of risk towards the agricultural sector. More importantly, the discussions provided insights into the standard business



practice for commercial banks. Typically, appraisal of potential clients is based on a whole range of needs and services including treasury, trade finance, project finance and payments.

This categorization scheme does not discriminate between large scale agricultural, manufacturing or service industry outfits. For example, Bamburi Cement, Kakuzi⁹ Plc and Hotel Intercontinental would typically need the full range of banking services in equal measure. Accordingly, a credit application from Kakuzi Plc would be evaluated using similar criteria to that from Bamburi or Hotel Intercontinental.

Given that the traditional multinational banks such as Barclays Bank of Kenya and Standard Chartered Bank tend to prefer the less risky larger outfits described above, their SME portfolio, especially one that is agriculture –inclined is not well developed. In addition, the archetypal commercial banks still face a relatively higher cost of service delivery to the SME sector, compared to larger outfits. The low levels of investment in developing the SME portfolio is especially manifest in their capacity to service the sector.

⁹ With the origins of the company dating from 1906, over the years Kakuzi Plc has developed a well-balanced and market focused product mix. This includes the cultivation, manufacture and marketing of tea, growing, packing and marketing of avocados, development of macadamia nut orchards, livestock farming, a joint pineapple growing operation with Del Monte, other horticultural crops and forestry development.

Typically, there is a disconnect between the credit team that conducts the risks assessment and the frontline staff that performs the on-site business viability appraisal. Moreover, in the case of agriculture, most frontline staff do not have sufficient information to facilitate the back-room risk analysis. These findings from key informant interviews confirm the assertions that the SME, especially agriculture oriented are considered too risky by the commercial lenders.

In Kenya, the commercial bank with a long history of lending to the agricultural sector is the Cooperative Bank of Kenya. Their agricultural lending portfolio targets farmer-based cooperatives, focusing on dairy and coffee primary production societies, although other commodity-based groups also benefit. The tea sub-sector benefits from the agricultural facility through the Kenya Tea Development Authority (KTDA) and individual factories. The motivation to develop the agriculture portfolio at the cooperative bank stems from the need for specialised products for the sector where even processors without security struggle to get credit.

The main products are structured around short and longer-term value chain financing and comprise the following; short term facility for purchase of farm inputs repayable in one year, facility for capital expenditure repayable in four years, and longer term asset financing. In the case of dairying, the advances are channelled through the anchor client, the Kenya Cooperative



Creameries (KCC), although not many other anchors are willing to take credit risk on behalf of their clients. The KCC also benefits from long term asset financing for processing plants development.

4.4 Potential innovations from a lending perspective

It is worthy of emphasis that the micro-finance business model provides a viable option for further innovation and growth. Evidence suggest that commitment to serving farmers through modification of products, focusing on individual lending, hiring special loans officers, better tracking of their clients are the primary reasons why MFIs have been successful. Above all, the MFIs that operate in the agricultural sector have enhanced their understanding of Africa's predominantly small holder agriculture.

Nonetheless, the MFIs still face a myriad of challenges. Even though most of the MFI's have recently embraced ICT, their operating costs remain high compared to global benchmarks; this is reflected in the relatively high interest rates that are unaffordable to their target clients. In addition, they are unable to meet the larger and long-term credit needs of value chain actors (Meyer, 2013). Accordingly, if the MFI business model is to be deployed at scale by commercial lenders, these challenges must be addressed through innovations.

Most commercial banks in Kenya have leveraged technology to cut both operational and transactions costs. Mobile payment and mobile banking are having a dramatic positive impact on the banks (critical performance indicators) and customers (access to credit and financial services) as illustrated by the Kenya Commercial Bank (KCB M-Pesa), Commercial Bank of Africa (M-Shwari) and Equity Bank (Equitel) initiatives.

Besides enhancing access to financial services in general, the digital financial services generate sufficient quality data, in a more cost-effective fashion and in real time. This data not only provides a better understanding of small holder farmers and the rural economy in general, it also facilitates improved offer and de-risking of financial services. Both psychometric and biometric technology are already in use in Kenya, generating crucial information about borrowers' intentions and ability to repay their loans. These few examples provide but a flavour of "the innovation possibility frontier." In order to make this happen, a partnership between public sector and the private sector is necessary in this space. The momentum for this is already in place as illustrated below.

Borrowing from established financial instruments and learning from the ups and downs of innovative financing market globally, commercial lenders in partnership with public institutions could innovate and better address the market failures associated with agricultural credit markets in general. As indicated above, there is an array of microfinance institutions (MFIs), ranging from specialized banks / products, NGOs and savings and credit organizations that serve lower-income market segment.

In Kenya, several programmes have been initiated by both the government and the development partners to promote commercial lending to agriculture. Commonly referred to as blended finance initiatives, their primary aim is to significantly reduce the risk to commercial banks, thereby crowding in private and institutional funding into the agricultural sector. Some of the blended finance programmes in Kenya include; Kilimo-Biashara Agricultural Credit Program, Agricultural Credit Guarantee Scheme (ACGS) and Commodities Development Fund (CDF).

- Kilimo-Biashara Agricultural Credit Program, a risk-sharing innovation, is a partnership between the Government of Kenya, International Fund for Agricultural Development (IFAD), Alliance

for Green Revolution in Africa (AGRA) and Equity Bank with the aim of facilitating access to affordable financial services by farmers and agro-dealers.

- Agricultural Credit Guarantee Scheme (ACGS) another risk-sharing public private partnership that operates under National Agricultural Accelerated Inputs Access Programme (NAAIAP) and offers loans to farmers through Kenya Women Microfinance Bank, Cooperative Bank, Family Bank and Equity Bank. Through ACGS, 25,071 farmers had benefited with Kes. 3.4 billion as at December 2014.
- CDF is a partnership between the Government of Kenya and Agriculture, Food and Fisheries Authority (AFFA) and was as a result of mergers between coffee development fund and sugar development fund. The fund has disbursed Kes. 421 million as loan to farmers in the coffee sector.

In the absence of solid evidence generated from a rigorous evaluation design, the jury remains out on the scope for scalability of these initiatives. What is evident though is that commercial lenders can play a bigger

role in financing private sector led and small holder focused agricultural transformation. Accordingly, the millions of small holding enterprises in the agri-food systems (ranging from input distribution; farm production; output aggregation, distribution and retail) must transform into viable business units that can attract credit from commercial lenders¹⁰.

We therefore revisit the kind of investment and support required from the public sector that would enhance the risk-adjusted returns on capital for the commercial lenders in a liberalised credit market such as Kenya. Likewise, we take a peek at the possible disruptive business models that could emerge therefrom i.e. supply response from the private sector.

4.5 Getting out of the box: disruptive business models

Over the last three decades, most agricultural development initiatives in Kenya have focused creating market outlets for small holder produce. Notable success has been recorded in the horticulture for export sector where a sizable number of smallholders are participating in tight value chains as the case of Mango value chain would illustrate (**Table 3**).

¹⁰ Table 3 on page 27 provides an illustration of small holdings in agri-food sector.



Table 3: The mango value chain in Kenya

Actor	Description
Farmers	Grow fresh mangoes both as a commercial or traditional crop depending on the location
Input suppliers	These are engaged in sourcing mango farm inputs from distributors/ agents, and selling to farmers while in some cases distributing directly to the farm gates
Farm input manufacturers	They are private companies or institutions that manufacture and distribution of agrochemicals to farmers
Distributors /transporters	Include individual enterprises and farmers who distribution and promotion of farm inputs
Farm input dealers	Input traders and retailers that the source, supply, and distribute farm inputs to mango farmers
Nursery producer	Mainly are small scale, and a few farmer groups that multiply and distribute planting materials (seedlings)
Mobile traders	They are small and not stationary; they buy produce from farmers and sell to retailers, wholesalers and consumers; they mostly use bicycle and motorcycle as means of transport
Brokers	They are individuals who link farmers to buyers, wholesalers and consumers to mango farmers, at a commission.
Wholesalers	Buy and sell produce in bulk from farmers and sale to retailers, supermarkets and consumers
Retailers	Buy and sell in small quantities and are mostly individuals including kiosk/stall owners and hawkers; some retailers also buy from farmers directly
Transporters	Transports mangoes from farmers to wholesalers, retailers and supermarkets
Consumers	Individuals consumers, institutions and corporations
Exporters	Sort, grade and package mangoes for the export markets (mainly EU, south Africa)
Processors	The process mango into pulp and juice; source from farmers and wholesalers

Source: Oruko and Diiro (2015).

Even with this level of success, scope for further development of the mango value chain was identified by Oruko and Diiro (2015). In order to develop the mango value chain for both domestic and export market, the majority if not all of the necessary investments decisions and opportunities require private as opposed to public capital (**Box 5**).

On the domestic market front, there is opportunity for a disruptive business model in the smallholder dairying sector. The stall feeding (zero-grazing) production model where farmers typically keep 2-3 animals appears to have reached its productivity growth frontier. Opportunities for productivity

growth lie in pooling of the primary asset (cows) in order to derive the necessary economies of scale in production.

This business model would typically have 50-60 animals in one dairy unit, warranting additional investments in hired labour and professional management. The individual livestock owners would be shareholders in a well-capitalized business; an attractive client for commercial lending when evaluated by the standard key performance indicators derived from best practice guidelines.

BOX 5

In the case of mangoes in Kenya, responsiveness of processors and consumers to reduction in farm price could also be increased by improving the processing capacity. Specifically, if farmers are organized to facilitate aggregation and quality control, sufficient economies of scale would be generated to warrant investment in a large-scale processing plant for fresh juice or pulp. In addition, targeted advertising could promote consumption of fresh or pulp juice

from small scale cottage industry type processors. Evidence abound on growing demand from emerging small-scale retail outlets and restaurants. Finally, exporters could exploit the potential seasonal sellers-market in the middle-east give that the main harvesting season in Kenya coincides with the off-season period in India and other Asian countries.

Source: Oruko and Diiro (2015).

The opportunities above notwithstanding, additional public-sector investments are needed in order to help smallholders overcome the many constraints that prevent them from integrating into more lucrative value chains. As noted by Hazel (2017), “If the Small and Medium Enterprises (SMEs) are to prosper along value chains, then they too may need support. In addition to access to good roads and transport systems, they need an enabling business and regulatory environment, reliable supplies of energy and water, secure rights over land for building, access to financial services, and often training in relevant technical and managerial skills.”

At production level, additional public-sector support could be directed at developing crop and livestock index insurance products in order to realize a broad-based productivity growth in the small holder system. Results from a randomized controlled experiment in Ghana revealed that insurance leads to significantly larger agricultural investment and riskier production choices especially if these investments are not strongly weighted towards risk reduction (Karlan et al., 2012). More importantly, the results also suggest that the risk-adjusted returns to investment in farming without insurance are lower than returns outside agriculture. One of the key informants from the commercial bank also identified use of insurance as one of the strategies for risk mitigation.

4.6 Key take away

That that public-sector financing of agricultural development is not sufficient, given Kenya’s growth and transformation objectives, is not in doubt. Given the opportunity for private sector-led agricultural growth and transformation agenda, commercial lending to agriculture could indeed be the missing cog. However, commercial lending to agriculture in Kenya remains a challenge, owing to both demand and supply side constraints.

The prevailing business model of most commercial banks favour large scale outfits that take advantage of the full range of available financial services. Likewise, the standard risk assessment tools employed by commercial banks are blind to the unique challenges in the agricultural sector. In the prevailing circumstances therefore, the targeting of resources by commercial lenders is heavily skewed towards the large scale and highly integrated agricultural outfits, as opposed to the small-scale enterprises that dominate Kenya’s agricultural sector.

Supply side innovations to improve commercial lending to SMEs in the agricultural sector are constrained by lack of effective demand. Moreover, the ongoing initiatives for blended financing arrangements comprising risk guarantees have not achieved the desired levels of take-up. The primary message from commercial lenders is that there is lack of effective demand

for these products. Commercial lending is not a philanthropic endeavour, it is a business that will only thrive and grow on a robust effective demand environment.

On the demand side, the agri-food sector would appear to offer the next growth frontier for entrepreneurs in Africa. However, most of the SME's in the agri-food sector are undercapitalized, making them less attractive to commercial lenders. In order to increased effective demand for commercial credit, there is need for disruptive business models that generate a pool of adequately capitalized SME's. The public sector has a critical role to play in facilitating the incubation and development of these business models. Accordingly, public extension and advisory services must evolve and respond to the changing knowledge and information needs of the agricultural SME's.

Based on this review, it is apparent that the previous engagement between the public sector and the commercial lending fraternity have not been broad enough to embrace matters agricultural development. There has been lack of congruence on perceptions of the potential of risk guarantee schemes and their impact on availability to credit from commercial lenders compared government officials. More importantly, the general understanding of the potential role of commercial lending in agricultural development endeavour in Kenya is fairly limited. Accordingly, this document should serve as a catalyst for initiating this conversation.

Finally, the present analytical work is based on stylised facts. The findings are intended to initiate and advance a conversation between commercial lenders and the public sector on matters agricultural development. Advancement of the conversation would undeniably call for further analysis (deep dive) in specific areas, given that some of the findings and assertions contained in this document reflect a given perspective. The following specific areas warrant a more detailed analysis.

- Few traditional studies on returns to public sector investment have quantified the degree to which these investments generate public



goods that de-risk the sector and catalyse economic transformation. In advancing the conversation on the nexus between public sector investment and commercial lending, an empirical analysis of the same should be done.

- There is need for a deeper analysis of the emerging effective demand for agricultural credit, given the evolving financial services landscape and agricultural development imperatives.
- The seemingly sub-optimal performance of development partners and government driven blended finance initiatives such as risk guarantees warrants further investigation. As indicated above and, given the conflicting evidence in the literature and key informants, the potential for these initiatives in the Kenyan context needs to be established through a deeper empirical analysis.

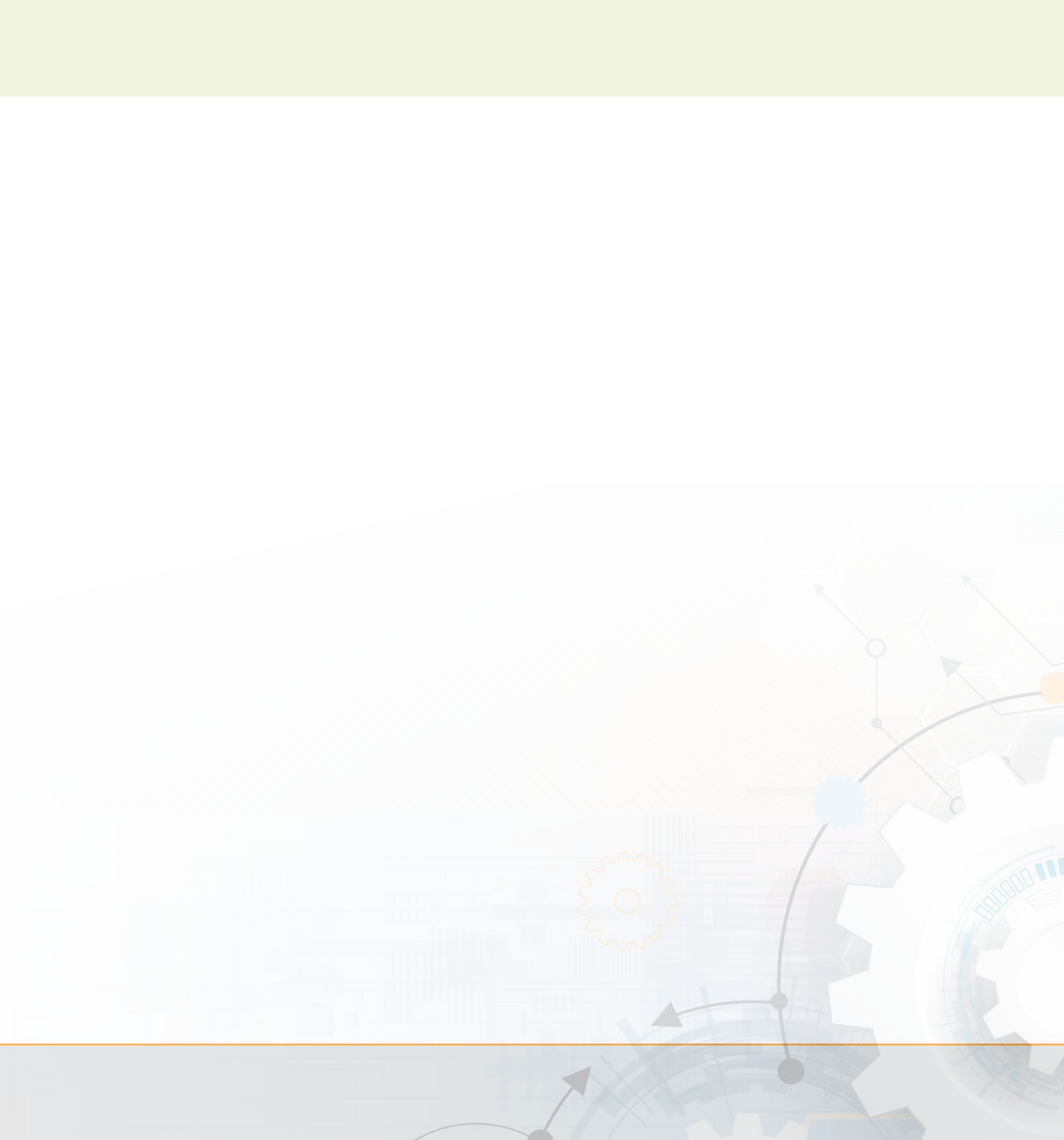
BIBLIOGRAPHY

1. African Development Bank (AfDB) 2016. *Feed Africa: Strategy for African Agricultural Transformation 2016–2025*. The African Development Bank. Abidjan
2. Alliance for a Green Revolution in Africa (AGRA). 2014. *African Agriculture Status Report 2014: Climate change and small holder agriculture in sub-Saharan Africa*. Nairobi, Kenya: Alliance for a Green Revolution for Africa (AGRA). Issue No. 2.
3. Alliance for a Green Revolution in Africa (AGRA). 2015. *Africa Agriculture Status Report: Youth in Agriculture in Sub-Saharan Africa*. Nairobi, Kenya. Issue No. 3.
4. AGRA. (2016). *African Agriculture Status Report 2016: Progress towards agricultural transformation*. Nairobi, Kenya: Alliance for a Green Revolution for Africa (AGRA). Issue No. 4.
5. AGRA. (2017). *Africa Agriculture Status Report: The Business of Smallholder Agriculture in Sub-Saharan Africa* (Issue 5). Nairobi, Kenya: Alliance for a Green Revolution in Africa (AGRA).
6. Issue No. 5.
7. AGRA. (2017). *Bridging the Gap: The Role of Data in Deepening Smallholder Financing*. Nairobi: Alliance for a Green Revolution in Africa (AGRA).
8. Alene, A.D. and Coulibaly, O. 2009. *The impact of agriculture research on productivity and poverty in sub-Saharan Africa*. Food Policy 34:198–209.
9. Benin, S., and Yu, B. 2013. *Complying the Maputo Declaration Target: Trends in public agricultural expenditures and implications for pursuit of optimal allocation of public agricultural spending*. ReSAKSS Annual Trends and Outlook Report 2012. International Food Policy Research Institute (IFPRI).
10. CBK (Central Bank of Kenya), 2013. *Kenya Financial Sector Stability Report*. CBK, Nairobi, Kenya
11. CBK (Central Bank of Kenya), 2014. *Kenya Financial Sector Stability Report*. CBK, Nairobi, Kenya
12. CBK (Central Bank of Kenya), 2015. *Kenya Financial Sector Stability Report*. CBK, Nairobi, Kenya.
13. CBK. (2016b). *Bank Supervision Annual Report 2016*. Nairobi: Central Bank of Kenya (CBK).
14. Chebwek, H.J., 2000. *The Role of Ministry of Environment and Natural Resources (MENR) in Irrigation Development in Kenya*. Proceedings of the 3rd Regional Workshop on Evaluation of Smallholder Irrigation and Drainage Development in Kenya, February 22–25, 2000 held in Kisumu, Kenya. Page 8–9.
15. Christen, R. P., & Anderson, J. (2013). *Segmentation of smallholder households: Meeting the range of financial needs in agriculture families*. CGAP Focus Note 85. Washington, DC: World Bank Group. Retrieved from <http://www.cgap.org/sites/default/files/Focus-Note-Segmentation-of-Smallholder-Households-April-2013.pdf>.
16. D'Alessandro, S. P., Caballero, J., Lichte, J., & Simpkin, S. (2015). *Kenya: Agricultural Sector Risk Assessment*. Agriculture Global Practice Technical Assistance paper. Washington, DC: The World Bank.
17. Evenson, R.E. 2001. Economic impacts of agricultural research and extension. In: Gardner, B.L. and Pausse, G.C. (eds). *Handbook of Agricultural Economics*. Volume 1, Part A. pp. 573–628.
18. FAO, & World Bank. (2009). *Awakening Africa's sleeping giant: Prospects for commercial agriculture in the Guinea Savannah Zone and beyond*. Washington, DC: The World Bank.

19. Fanou, L.S. and L. Rutten 2015. Innovative and Inclusive Finance for Youth in Agriculture. In: (AGRA). 2015. *Africa Agriculture Status Report: Youth in Agriculture in Sub-Saharan Africa*. Nairobi, Kenya. Issue No. 3.
20. Fuglie, K.O., 2012. Productivity Growth and Technology Capital in the Global Agricultural Economy. In: Fuglie K., Wang, S.L. and Ball, V.E. (eds.) *Productivity Growth in Agriculture: An International Perspective*. CAB International, Wallingford, UK, pp. 335–368.
21. Fuglie, K.O., 2015. *Accounting for Growth in Global Agriculture*. Bio-based and Applied Economics 4(3): 221–54.
22. Government of Kenya. (2010). *Agricultural Sector Development Strategy (ASDS) 2010–2020*. Nairobi: Government of Kenya.
23. Peter B. R. Hazell, P.R.B 2017. *Why an inclusive agricultural transformation is Africa's way forward*. In: *Africa Agriculture Status Report: The Business of Smallholder Agriculture in Sub-Saharan Africa* (Issue 5). Nairobi, Kenya: Alliance for a Green Revolution in Africa (AGRA).
24. Hazell, P., & Rahman, A. 2014. *Concluding chapter: The policy agenda*. In P. Hazell, & A. Rahman (Eds.), *New directions for smallholder agriculture*. (pp. 527–558). Oxford: Oxford University Press.
25. Jirstrom, M., Andersson, A., & Djurfeldt, G. (2011). *Smallholders caught in poverty—flickering signs in agricultural dynamism*. In G. Djurfeldt, E. Aryeetey, & A. Isinika (Eds.), *African smallholders: Food crops, markets and policy* (pp. 74–106). Wallingford, Oxford: CAB.
26. Kamenchu I. J. 2013, “Factors Leading to Slow Adoption of Derivatives Use in Kenya: A Case Study of Commercial Banks in Kenya. *International Journal of Economics and Finance*. Vol1, Issue 3, 455 – 468.
27. Karanja, D.D., 1990. *The rate of return to Maize research in Kenya (1955–1988)*. Msc Thesis, Michigan State University, Michigan, USA.
28. Karlan, D., Osei, R. D., Osei-Akoto, I., & Udry, C. (2012). *Agricultural decisions after relaxing credit and risk constraints* (NBER Working Paper Series 18463). Cambridge, USA: National Bureau of Economic Research.
29. KNBS. (2000). *Economic Survey 2000*. Nairobi: Kenya National Bureau of Statistics (KNBS).
30. KNBS. (2005). *Economic Survey 2005*. Nairobi: Kenya National Bureau of Statistics (KNBS).
31. KNBS. (2008). *Economic Survey 2008*. Nairobi: Kenya National Bureau of Statistics (KNBS).
32. KNBS. (2010). *Economic Survey 2010*. Nairobi: Kenya National Bureau of Statistics (KNBS).
33. KNBS. (2012). *Economic Survey 2012*. Nairobi: Kenya National Bureau of Statistics (KNBS).
34. KNBS. (2017). *Economic Survey 2017*. Nairobi: Kenya National Bureau of Statistics (KNBS).
35. Mabiso, A, Pauw, K and Benin, S., 2012. *Agricultural Growth and Poverty Reduction in Kenya: Technical Analysis for the Agricultural Sectoral Development Strategy (ASDS)—Medium Term Investment Plan (MTIP)*. ReSAKSS Working Paper #35. IFPRI, Washington DC, USA.
36. Meyer, R. (2013). *Microcredit and agriculture: challenges, successes, and prospects*. In J. P. Gueyie, R. Manos, & J. Yaron, eds., *Microfinance in Developing Countries: Issues, Policies and Performance Evaluation* (pp. 199–222). New York: Palgrave Macmillan.
37. Muyanga, M. and T.S. Jayne. 2008. *Private Agricultural Extension System in Kenya: Practice and Policy Lessons*. *Journal of Agricultural Education and Extension*, Vol. 14 (2), pp111–124.
38. Ngigi, S. N. 2000. *Review of irrigation development in Kenya*. Paper presented at the Third SWIM Workshop on the Changing Face of Smallholder Irrigation in Kenya, 19 October 2000, Nairobi, Kenya.
39. Odhiambo, W., Nyangito, H.O., and Nzuma, J., 2004. *Sources and determinants of agriculture growth and productivity in Kenya*. KIPPRA

Discussion No. 34. KIPPRA Nairobi, Kenya.

40. Oruko L and D. Gracious 2015: *The effect of post-harvest loss reduction on producer prices and economic welfare of value chain actors*. Consultancy report prepared for the Rockefeller Foundation, Nairobi, Kenya.
41. Oruko L and L. Ndung'u. 2009. *An analysis of Animal Healthcare Service Delivery in Kenya*. In: *Institutional economics perspectives on African agricultural development*. Johann F. Kirsten, Andrew R. Doward, Colin Poulton, and Nick Vink (ED) International Food Policy Research Institute, Washington, DC, USA. ISBN 978-0-89629-781-4. PP 257–272.
42. Osoro J and D. Muriithi D. 2017, *Financial inclusion: How do you know that you are there? Draft paper for the 6th Kenya Bankers Association Annual Banking Research Conference*, 28-29 September, Nairobi, Kenya.
43. Panos Varangis, Rong Chen, Toshiaki Ono, Hedwig Siewertsen, Atsuko Toda, Rachel Sberro-Kessler 2017. *Strengthening Financial Systems for Smallholders*. In: *Africa Agriculture Status Report: The Business of Smallholder Agriculture in Sub-Saharan Africa* (Issue 5). Nairobi, Kenya: Alliance for a Green Revolution in Africa (AGRA).
44. Pardey, P.G., Andrade, R.S., Hurley, T.M., Rao, X., Liebenberg, F.G., 2016. *Returns to food and agriculture R&D investments in SSA, 1975–1988*. Food Policy 65 pp 1–8.
45. Poulton, C. 2009. *Democratic Politics and State Capacity Building: Ministries of Agriculture in Malawi and Kenya*. Future Agricultures Research Paper 014. University of Sussex, Brighton BN1 9RE, UK.
46. Rodrik, D. (2016). *An African growth miracle*. *Journal of African Economies*, 2016, 1–18. <https://doi-org.libproxy.ifpri.org/10.1093/jae/ejw027>.
47. Thirtle, C., Lin, L. and Piesse, J. 2003. *The impact of research-led agricultural productivity growth on poverty reduction in Africa, Asia and Latin America*. World Development 31(12):1959–1975.
48. USAID (2012). *Lending to the agriculture sector – A Toolkit*. Washington DC: USAID.
49. World Bank (2015). *Agriculture Finance*. Washington, DC: The World Bank.
50. World Bank. (2007). *World Development Report 2008: Agriculture for Development*. Washington, DC: The World Bank.
51. You, L., Ringer, C., Wood-Sichra, U., Robertson, R., Wood, S., Zhu, T. Sun, Y. (2011). *What is the irrigation potential for Africa? A combined biophysical and socioeconomic approach*. Food Policy, 36, 770–782.
52. Yu, Bingxin & Zhang, Haisen (2014). *Public account and coding system in Kenya: The trend and pattern of agricultural expenditure*. IFPRI discussion paper 1396, International Food Policy Research Institute (IFPRI).





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