

Ghana: Agriculture Sector Policy Note

Transforming Agriculture for Economic Growth, Job Creation and Food Security

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Transforming Agriculture for Economic Growth, Job Creation and Food Security



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ACRONYMS AND ABBREVIATIONS

[1 US\$ = GHC 4.1]

AGRA	Africa Green Revolution Alliance
ASTI	Agricultural Science and Technology Institute
ASWG	Agriculture Sector Working Group
ARI	Animal Research Institute
AAIP	Afghanistan Agricultural Inputs Project
CAADP	Comprehensive African Agriculture Development Program
CGIAR	Consultative Group for International Agricultural Research
CHED	Cocoa Health and Extension Division
CMC	Cocoa Marketing Company
CSDS	Cocoa Sector Development Strategy
CSSVD	Cocoa Swollen Shoot Virus Disease
COCOBOD	Ghana's Cocoa Board
CSIR	Council for Scientific and Industrial Research
COCOSHE	Cocoa Coffee Sheanut Association
CRIG	Crops Research Institute of Ghana
DPs	Development Partners
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization
FASDEP	Food and Agriculture Sector Development Policy
FORIG	Forestry Research Institute of Ghana
FRI	Food Research Institute
GCP	Ghana Cocoa Platform
GCAP	Ghana Commercial Agriculture Project
GCLMS	Ghana Child Labor Monitoring System
GIDA	Ghana Irrigation Development Authority
GDP	Gross Domestic Product
GSS	Ghana Statistical Services
ICOUR	Irrigation Company of the Upper Region of Ghana
IFPRI	International Food Policy Research Institute
IWMI	International Water Management Institute
KIS	Kpong Irrigation Scheme
KLBIP	Kpong Left Bank Irrigation Project
MESTI	Ministry of Environment, Science, Technology and Innovation
METASIP	Medium-Term Agriculture Sector Investment Plan
MLNR	Ministry of Lands and Natural Resources
MOFA	Ministry of Food and Agriculture
NAFCO	National Food Buffer Stock Company
NPECLC	National Program for the Elimination of Child Labor in Cocoa
NSEZ	Northern Savannah Ecological Zone
OECD	Organization for Economic Cooperation and Development
OPRI	Oil Palm Research Institute
PGRI	Plant Genetic Resources Institute
R&D	Research and Development
SARI	Savannah Agriculture Research Institute
SMEs	Scheme Management Entities
STERRI	Science and Technology Policy Research Institute

SPD	Seed Production Division
SRI	Soil Research Institute
WCF	World Cocoa Foundation
WDI	World Development Indicators
WUAs	Water User Associations
USAID	United States Agency for International Development

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EXECUTIVE SUMMARY

Objective

The objective of this note is to help the Ministry of Food and Agriculture (MoFA) identify strategic policy directions and reform areas that are fundamental to accelerate and sustain agriculture sector growth. Sustained agricultural growth will contribute to overall resiliency of the economy as it undergoes structural transformation as it moves beyond lower middle-income status. The agriculture sector policy note is expected to contribute towards the development of the next generation of Food and Agriculture Sector Development Policy (FASDEP), its related Medium Term Agriculture Sector Investment Plan (METASIP), and the Planting for Food and Jobs Program for 2018-2020, which MoFA is currently developing with support from the African Green Revolution Alliance (AGRA). The Agriculture Sector Policy Note is based on a number of sector studies and reports prepared by the Bank to support the existing investment projects. The main audience for this note is MoFA and its development partners united in the Agriculture Sector Working Group (ASWG). The note will also provide input into the Strategic Country Diagnostics (SCD) and the Country Partnership Framework (CPF) which the Bank will prepare in FY18.

Context

The objective of the Agricultural Sector Policy Note is to help Ghana achieve transformation and modernization of its agriculture sector. There are both challenges and opportunities towards achieving transformation and modernization of the agriculture sector in Ghana. The country's lower medium-income status supported by a growing extractive industries sector (especially oil) is an opportunity as the growth of the middle class increases the demand for high-quality and safe food products. However, high growth in the extractive sector and concomitant real exchange rate appreciation also present the risk of undermining Ghana's agricultural competitiveness as has been observed in other countries such as Nigeria and Angola. These issues underline the special challenges confronting Ghana to sustain and accelerate agriculture growth in the face of economic transformation.

The agricultural sector accounts for one-fifth of Ghana's Gross Domestic Product (GDP), employs nearly half of the workforce and is the main source of livelihood for the majority of the country's poorest households. Two-thirds of non-oil manufacturing depends on agriculture for raw materials. Agriculture and agribusiness account for a major share of all economic activities and livelihoods among smallholder farmers. The major export crop, cocoa, accounts for 20-25 percent of total foreign exchange earnings. Ghana accounts for about 20 percent of global cocoa exports and has an international reputation for high quality cocoa beans (which command a 3-5 percent market premium). Ghana is also known for its ability to deliver on forward cocoa contracts with little counterpart risk to buyers.

Ghana's agricultural sector is characterized by low yields for both staple and cash crops. Cereal yields are estimated at 1.7 t/ha compared to the regional average of 2.0 t/ha and with potential yields in excess of 5.0t/ha (World Development Indicators, WDI, 2016).¹ Average cocoa

¹ World Development Indicators (WDI). 2016. World Bank, Washington DC, United States of America.

yield in Ghana, estimated at 400 – 450 kg/ha, is among the lowest in the world (Ghana COCOBOD, 2015).²

Ghana is a net importer of basic foods (raw and processed) including rice, poultry, sugar, and vegetable oils. The annual food import bill now exceeds the estimated annual \$2 billion earned from cocoa exports. Population growth, high rates of urbanization, and increasing incomes are driving the import bill as they lead to increased demand for more quality and safe foodstuffs such as meat, dairy, and horticulture (fruits & vegetables). In 2015, food imports account for 16.8 percent of total merchandise imports estimated at US\$ 13.3 billion,³ and the food import bill is projected to increase fourfold over the next 20 years, unless local production is substantially increased.

Ghana has significant agricultural potential, particularly in the semi-arid Northern Savannah (agro-)Ecological Zone (NSEZ), including the Afram Plains. Ghana’s agricultural potential in the NSEZ remains mostly untapped. The NSEZ covers over 40 percent of the country’s total surface area, and has about six million hectares of arable land with great potential for commercial production of cereals, sugarcane, cassava, cotton, cashew, shea and livestock. However, agricultural production in the NSEZ is constrained by inadequate infrastructure (especially roads and irrigation) and other poor socio-economic indicators including low education and skills, poor access to finance, complicated land tenure arrangements etc. These factors are compounded by the semi-arid and arid climate which make the savannah particularly susceptible to environmental degradation and climate change. Irrigation development should therefore receive top priority in any effort to exploit the productive potential of the NSEZ.

Key Constraints to sector growth and competitiveness

Low Public Expenditure and Efficiency

Ghana’s public expenditure on agriculture has been declining and lags behind the 10 percent target agreed as part of the Maputo Declaration. A recent public expenditure review of the agricultural sector by the World Bank estimates that spending on agriculture averaged about 5 percent of total spending between 2001 and 2014; while also declining as a percent of total GDP since 2011 reflecting tightening of the country’s fiscal position (Jansen, 2016).⁴ This includes funding to the cocoa sector, implying that non-cocoa public expenditure might only be about half of the estimated 5 percent. Ghana’s public expenditure on agriculture is among the lowest in Africa, and considerably below the Comprehensive African Agriculture Development Program (CAADP) commitment of 10 percent (FAO, 2016).⁵ About two-thirds of the Ministry of Food and Agriculture (MoFA) budget is allocated for operational costs, with Development Partners (DPs) funding more than 70 percent of investment expenditures. Operational costs are mostly allocated to salaries and input subsidies. This crowds-out expenditure on critical public goods such as access infrastructure, irrigation, research and development (R&D), and extension services, among others.

² Ghana Cocoa Board. 2015. The future of Ghana’s cocoa sector. “Building in robustness and resilience to What IF? Scenario Planning Report. Accra, Ghana.

³ World Bank. 2015. World Development Indicators (WDI), global merchandise imports.

⁴ Jansen, Johannes, 2016. Revitalizing agricultural growth through enhanced expenditure targeting. World Bank, Accra, Ghana.

⁵ OECD/FAO, 2016. Agriculture in Sub-Saharan Africa: Prospects and challenges, for the next decade. Rome, Italy.

There are also issues related to agricultural services which have been devolved to the District Assemblies. Although Ghana has implemented its decentralization policy, but a lot still needs to be done to give full meaning to administrative and fiscal decentralization, particularly for key sectors such as agriculture whose functions and services are needed most at the local level. The provision of agricultural extension and other services at the local level remains rather poor, mainly due to low capacity and limited and untimely provision of public funding.

A significant part of agricultural public expenditure is for input subsidies, yet evidence shows that these subsidies are inefficient and generate low returns. The government provides fertilizer subsidies through MoFA as well as to cocoa farmers through COCOBOD. In 2016, MoFA provided subsidies on 180,000 metric tons of granular fertilizer at a cost of GHC 120 million and an unspecified quantity of organic fertilizer at a cost of GHC 18 million, representing an average subsidy of 26 percent. In the cocoa sector, COCOBOD is the principal supplier of fertilizers, pesticides and seedlings. The sustainability of these programs is of concern, given their rising costs and ineffective targeting mechanisms. There are also operational issues, such as late announcements regarding if, when and how the programs are to be implemented each year, resulting in late delivery of fertilizers and creating substantial uncertainty for input suppliers and hindering the development and strengthening of private fertilizer supply networks in the country. (Houssou, Kolavalli, Silver, 2016).⁶ Where subsidies must be implemented in order to address specific market failures affecting farmers' uptake of inputs, there is need to ensure adherence to the principles of smart subsidies, including: (a) targeting farmers that need to learn about proper use of fertilizers; (b) targeting farmers that could use fertilizers profitably but are not able to do so due to working capital constraints; and (c) delivering the subsidy through the private sector by using modern voucher systems.

Agricultural R&D, which is a key driver of productivity growth is inadequately funded and coordinated. In Ghana, spending on agricultural R&D amounts to about 0.7 percent of agricultural output (excluding cocoa), above the Sub-Saharan Africa average of 0.5 percent, but below the rates of regional leaders such as Kenya (1.4 percent) and South Africa (2 percent) (IFPRI/ASTI, 2014).⁷ This is also lower than the 1 percent target set by the African Union. Ghana's institutional mechanism for agricultural research and development is governed by the Council for Scientific and Industrial Research (CSIR). It is estimated that less than 4 percent of the budget annually allocated to CSIR is available to finance new operations. As a result, researchers are almost fully dependent on donor funding which is also limited.

Significant productivity growth in agriculture requires a vibrant agricultural input supply system, particularly for seed. Ghana's seed sector has undergone some significant changes in the past few years, including the establishment of a new seed law and regulations, the appointment of a National Seed Council, and the emergence of a more diversified commercial seed sector. Trip and Mensah-Bonsu (2013)⁸ reviewed factors critical to the development of the seed sector

⁶ Houssou, Nazaire; Kolavalli, Shashidhara; Silver, Jed. 2016. Agricultural intensification, technology adoption, and institutions in Ghana. Washington DC: IFPRI. 2016.

⁷ Nienke Beintema, Gert-Jan Stads, Keith Fuglie, and Paul Heisey, 2012. Global assessment of agricultural R&D spending. Agricultural Science and Technology Indicators (ASTI) and International Food Policy Research Institute (IFPRI).

⁸ Trip, Robert and Akwasi Mensah-Bonsu, 2013. Ghana's commercial seed sector: New incentives or continued complacency. Ghana Strategy Support Program. International Food Policy Research Institute Working Paper 32.

including procedures regarding variety release, seed quality inspection and certification; consumer protection; access to breeder seed; provision of information to farmers; and seed prices and subsidies. They also evaluated the traits of major public sector crop varieties, the nature of farmers seed demand, and the composition of the local seed industry. They concluded that the seed system in Ghana is still largely dependent on public support (with minimal private sector participation), and the seed value-chain (from the production of breeder seed, foundation seed, its multiplication, and the production and distribution of certified seed) has inherent cost inefficiencies that invariably affect the competitiveness of the domestic seed industry. Furthermore, with the limited development of the private sector in this important area, access to good quality seed among smallholder farmers remains a major issue.

The coordination of agricultural sector investments in Ghana needs to be improved. Sector coordination is mainly done through the Agriculture Sector Working Group (ASWG) led by MoFA. The ASWG is a policy dialogue platform for engaging the Government of Ghana and its Development Partners (DPs). The ASWG coordinates the alignment towards the Food and Agriculture Sector Development Plan (FASDEP II), supports the implementation of the medium-term investment plan, and facilitates the preparation of Joint Annual Sector Reviews. However, more needs to be done to strengthen ASWG's impact on sector policy formulation, as well as monitoring and evaluation. Over the last two years, MoFA's participation and leadership has been inconsistent. Furthermore, the funding of METASIP, including its steering and governance structures remains inadequate. The coordination of the DPs' support to the sector needs to be improved. The framework and capacity to facilitate public-private partnerships (PPPs) in the sector needs to be strengthened to further private sector investment in agriculture.

The collection and analysis of agricultural data/statistics is still weak and this undermines proper development planning in the sector. Ghana has not conducted a comprehensive agricultural census for the past 32 years.⁹ In order to obtain annual production data, MoFA relies on Annual Crop and Livestock Surveys conducted at the district level by agricultural extension officers. However, given the limited public funding and other constraints affecting the capacity of public officials, the quality of the data is often challenged.

Impact of Climate Change

Ghana's agriculture is vulnerable to the threat of climate change. Approximately 70 per cent of the population directly or indirectly depends on agriculture and forestry. The agricultural sector's vulnerability to climate change effects threatens the food security and livelihoods of the majority who depend on the sector. While the diversity of agro-climatic conditions, production systems, and crops prevalent in Ghana lowers the level of aggregate risk for the agricultural sector as a whole, the sector faces climate change effects whose causes, frequency, and severity vary between regions, commodities, and years, with strong implications for localized risk management strategies. According to a report by the World Bank¹⁰, climate change is expected to adversely affect the stability of Ghana's agricultural sector with the country's millions of smallholder farmers

⁹ Quiñones, Esteban J.; Muñoz, Juan and Ngeleza, Guylain. 2011. A Strategy for Agricultural Statistics in Ghana. Ghana Strategy Support Program. International Food Policy Research Institute Working Paper 32. According to this paper, the last agricultural census in Ghana was conducted in 1984.

¹⁰ Choudhary, Vikas; D'Alessandro, Stephen. 2015. *Ghana Agricultural Sector Risk Assessment: Risk Prioritization*. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/22498> License: CC BY 3.0 IGO.

particularly vulnerable. The report also highlight that climate change is projected to accentuate the rise in food prices in the future. While the price of rice is projected to increase 60 percent by 2015 without climate change, it could go up by as much as 121 percent once climate change is taken into account. Similarly, while the price of maize is projected to increase 60 percent without climate change, with climate change this increase could be 153 percent. Northern Ghana is more vulnerable to increased volatility in weather patterns caused by climate change than the rest of the country because it is poorer, drier and more heavily dependent on subsistence agriculture. It is therefore important for Ghana to deepen the implementation of its National Climate Change Policy (NCCP) and the Agriculture Sector Implementation Plan, following the set principles in line with the country's Intended Nationally Determined Contributions (INDC) towards climate change mitigation.

Specific challenges affecting the Cocoa Sector

Cocoa is very important to Ghana in terms of rural livelihoods, foreign exchange earnings and employment, as well as being a key driver of sector growth. Cocoa accounts for about 7 percent of the country's GDP and 20-25 percent of total export earnings. Ghana is the second most important producer and exporter of cocoa in the world, accounting for about 20-25 percent of total world supply. Total production increased from 400,000 MT in 1999-2000 to 1,000,000 MT in 2011-2012, but dropped to about 850,000 MT in 2013-2014, and has been fluctuating between 750,000-850,000 MT/year since.

The cocoa sector's low productivity threatens Ghana's competitiveness and position in the international market. The low yields are a result of a multiplicity of factors such as age of the trees, pest and disease infestation, and poor agricultural practices. According to a recent assessment by the World Cocoa Foundation (WCF, 2016),¹¹ of the 2.6 million hectares under cocoa, about 23 percent have trees that are above 30 years old, and about 7 percent have been affected by cocoa swollen shoot virus disease (CSSVD). During the past decades, growth in total cocoa output has been more a result of expansion of area under cultivation than yield increase due to technical change.

Ghana's Cocoa Sector Development Strategy (CSDS II)¹² seeks to modernize Ghana's cocoa sector and promote climate smart cocoa and enhance the productivity of farms, but is yet to be finalized and approved. The vision and strategy for modernizing Ghana's cocoa sector is based on three pillars: competitiveness, resilience, and robustness. To modernize and have a more sustainable cocoa sector, Ghana needs to be more: (a) competitive by increasing the productivity of cocoa producers and improve cost efficiency along the cocoa supply chain; (b) resilient to challenges and risks related to global cocoa markets (demand and supply), and climate change; and (c) robust by being an industry leader through innovation and differentiation by focusing on high quality cocoa and niche markets.

¹¹ World Cocoa Foundation (WCF), 2016. Cocoa Swollen Shoot Virus Disease: A holistic approach to control the disease in West Africa.

¹² Developed by COCOBOD with support from the World Bank, World Cocoa Foundation (WCF) and the Royal Netherlands Embassy between January 2014 and March 2015.

There is a need to reconsider COCOBOD's cocoa inputs program for fertilizer, agro-chemicals and planting materials. The Ghana Cocoa Board (COCOBOD) which governs the cocoa sector implements a distribution program for fertilizer, agro-chemicals and planting materials. Cocoa planting materials (pods and seedlings) are supplied through its Seed Production Division (SPD) and Cocoa Health and Extension Division (CHED) to farmers. Additionally, COCOBOD procures fertilizer and agrochemicals and distributes them to the farmers under its Cocoa High-Tech Program. Even though the distribution, as communicated within the public domain, creates an impression that these inputs are supplied for free, in reality farmers pay for them through the so-called "Industry Costs" that COCOBOD levies when setting the price at which they purchase the cocoa from farmers. In addition, the input distribution system is highly politicized, erratic and often corrupt. In addition, while all farmers effectively pay for cocoa inputs, only selected farmers receive them, and in some cases COCOBOD inputs have been illegally exported to neighboring countries.

Environmental issues affect the sustainability of Ghana's cocoa sector and threaten Ghana's position in the global cocoa supply chain in the medium to long-term.¹³ Since its introduction in West Africa, cocoa has been a major driver of deforestation in the high forest zones of the regions in which it is grown and it has replaced agricultural activity that incorporated fallowing to maintain land fertility (Gockowski and Sonwa 2007).¹⁴ Cocoa farmers in Ghana have a strong preference for full-sun (as opposed to partially shaded) cocoa because of a belief of higher short-term profits due to their much shorter growing cycle (Obiri et al. 2007).¹⁵ Although there have recently emerged some climate smart cocoa interventions that focus on cocoa agroforestry systems, they remain small scale pilot schemes.

Land tenure issues also affect the sustainability of Ghana's agriculture in general, and the cocoa sector in particular.¹⁶ Poor land management practices and inappropriate resource use threaten the sustainability of agriculture in general. Indigenous norms that regulate land ownership differ among communities and are usually associated with many shortcomings including undefined boundaries, unclear rights and titles, undocumented transactions and disputes which sometimes escalate into full-fledged conflicts.

¹³ More details on environmental issues affecting the cocoa sector are covered in a separate Environment and Natural Resources (ENR) Policy Note.

¹⁴ Gockowski, James; and Sonwa, Denis, 2007. Cocoa Intensification Scenarios and Their Predicted Impact on CO2 Emissions, Biodiversity Conservation and Rural Livelihoods in the Rainforest of West Africa. *Environmental Management*, November 2010.

¹⁵ Obiri, D.B., Geoff, A.B., Morag, A.M., Anglaare, L.C.N. and Cobbina, J. 2007. Financial Analysis of Shaded Cocoa in Ghana. *Agroforestry Systems* 71:139-149.

¹⁶ Detailed land sector issues are covered in a separate Land Policy Note.

Modernization of the cocoa value chain, reform of COCOBOD’s institutional arrangements including greater transparency, and improvements in the policy framework guiding the cocoa sub-sector, are essential to enhance the efficiency of cocoa production and ensure the long-term competitiveness of cocoa exports. Some necessary elements can be found back in the Ghana Cocoa Sector Development Strategy II (CSDS II). In particular, CSDS II explicitly recognizes the urgent need for improved management and accounting systems in COCOBOD, better logistics and more efficient quality control systems, improved targeting and eventual phasing out of government input supply programs, substantial upscaling of tree improvement programs, and transforming the role of COCOBOD from that of a major market player to one of enabler of certification, traceability, and inter-ministerial coordination towards improved landscape management including payments for environmental services.

Opportunities for transforming agriculture in Ghana

Opportunities exist for Ghana to achieve significant transformation of its agricultural sector. Based on the previous section, these opportunities include the following: First, Ghana’s lower medium-income status and a growing extractive industries sector imply an increasing demand by the growing middle-class for high-quality and safe foodstuffs. Second, the size of Ghana’s food import bill creates sufficient space for investments in import-substitution in key import commodities for which the country either already has, or can develop a comparative advantage. Third, Ghana is endowed with vast areas of high agricultural production potential which can support a wide-range of commodities. Fourth, Ghana is experiencing vast demographic transition, with a rapidly increasing labor force as a result of a continuing growth in the share of the population in the youth category. Promotion of youth employment in agriculture/agribusiness value-chains should be an important part of any strategy to achieve sustainable growth and would enable the country to reap the dividend from the demographic transition. Ghana also continues to implement reforms needed to attract more private sector investment – for example by improving the regulatory framework, creation of a “one-stop shop” for investors, easing import restrictions (seeds, equipment), promoting an open, transparent and efficient regime for land administration and governance, improvements in access to finance, and strengthening institutions for research and technology generation aimed at raising sector productivity.

Key Policy Recommendations

The first priority is to improve public expenditure allocation and management as well as budget coordination in agriculture. The government needs to make a serious and sustained funding commitment to the agriculture sector and back up declarations about its importance with major increases in public expenditures on agriculture, at least to the level of 10 percent of the total expenditure as committed under the Maputo Declaration. Budget coordination, prioritization and execution in line with sector development goals and effective implementation are critical. Better coordination of DPs’ support is also urgently required. MoFA should focus on its core function of policy formulation, provision of public goods and monitoring & evaluation, while providing the incentives and space for private sector (including smallholder farmers’) investment. Consistent funding and technical support to devolved public sector agricultural services in the district assemblies is critical to ensure quality support to farmers.

The second priority is for MoFA to improve the collection and analysis of agricultural statistics to produce high quality and credible data for sector planning on a regular basis. It is high time MoFA considers undertaking an agricultural census which will re-establish the benchmark for monitoring sector progress going forward.

Third, MoFA should improve the efficiency and effectiveness of input subsidy programs and fix gaps in input supply legislation. Agricultural input subsidy programs should be reviewed to ensure better alignment of the program objectives and targeting criteria, and adopt smart implementation approaches to avoid market distortions, and promote the development of more sustainable private sector input supply systems. The government should take measures to promote the domestic seed industry and encourage the commercial seed sector, including aligning seed import rules with the harmonized Economic Community of Western African States (ECOWAS) regulation on Seeds in order to ease the flow of seed within the sub-region. It is also important to ensure that the regulations that accompany the Food and Fertilizer Acts which have been revised six years ago should be passed. For example, easing import restrictions (seeds, equipment), and promoting private sector participation in the multiplication of foundation seed and the distribution of certified seed. Also critical is the need to strengthen institutions for research and technology generation.

Fourth, prioritization of public investments in infrastructure, particularly in high agricultural potential areas, such as the NSEZ (including the Afram Plains) is critical to sustain Ghana's agricultural growth. Priority should be placed on access to roads to enhance logistical efficiency, irrigation, research and development, extension, and post-harvest aggregation and value addition. The on-going reform of the Ghana Irrigation Development Authority (GIDA) should be completed to promote public development of privately managed irrigation systems in the NSEZ and elsewhere.

To address land tenure shortcomings, the government should stay the course on reform of land tenure system. This should be done by ensuring the approval of an improved land bill, facilitating the completion of an automated platform for the speedy preparation of land titles and deeds, and strengthening the governance of customary land tenure systems.

The government should promote coordination in the the implementation of its National Climate-Smart Agriculture and Food Security Action Plan, following the principles laid down in the National Climate Change Policy as well as the Intended Nationally Determined Contributions (INDC). The Government should also strengthen research on climate-smart agricultural technologies, strengthen the research-extension linkages to promote farmers' technology adoption especially in fragile but high potential environments such as the NSEZ.

Recommendations for the cocoa sector

In the cocoa sector, the first priority is to ensure that the Cocoa Sector Development Strategy (CSDS II) is finalized and approved, and governance arrangements are strengthened to improve inclusion of all key stakeholders in decision-making. This can be achieved by reviving the Ghana Cocoa Platform (GCP) as the country's PPP platform for coordination of interventions in the sector. It is also important to strengthen civil society engagement and advocacy on a wide range of issues impacting the sector. The input supply and subsidy system should be reviewed to

improve targeting efficiency and equity in farmers' access, with a possible vision of phasing out gradually over time. COCOBOD should actively support an increased private sector role in input supply and support services, while maintaining a pivotal role in monitoring and regulation to ensure safety and quality of inputs.

Second, COCOBOD's current organizational structure and functions should be reviewed to make the institution operate in a more efficient manner. There is need to improve data collection and analyses, mapping and registration of farmers to promote farm and farmer identification, introduce digital accounting and management information systems, improve the logistical, quality control and traceability systems, tree rehabilitation, cocoa agroforestry, sustainable land use management, and better coordination of programs and projects.

Third, there is the need to improve productive and social infrastructures, and strengthen the role of women and youth in the sector, while adhering to international commitments restricting the use of child labor in cocoa production.¹⁷ For more than 4 years, Ghana has not submitted a national report on efforts to eliminate the worst forms of child labor (WFCL) in cocoa in compliance with the Harken-Engel Protocol. This breach can have dire consequence for the country in terms of cocoa trading. The Ghana Child Labor Monitoring System (GCLMS) developed to monitor WFCL and remediate children at risk of trafficking has lacked funding and institutional support. It is recommended that the government resumes funding to revitalize the National Program for the Elimination of Worst Forms of Child Labor in Cocoa (NPECLC) to coordinate and report on public and private sector efforts in this area.

¹⁷ Detailed issues are highlighted in the section on cocoa.

1. INTRODUCTION

1.1 In Ghana, the agricultural sector accounts for one-fifth of Gross Domestic Product (GDP), employs nearly half of the workforce and is the main source of livelihood for the majority of the country’s poorest households. Two-thirds of non-oil manufacturing depends on agriculture for raw materials. Agriculture and linked agribusinesses account for a major share of all economic activities and livelihoods among smallholder farmers. The major export crop, cocoa, accounts for 20-25 percent of total foreign exchange earnings. Ghana accounts for nearly 20 percent of global cocoa exports and has an international reputation for high quality cocoa beans (and commands a 3-5 percent market premium). Ghana is also known for its ability to deliver on forward contracts with little counterpart risk to buyers.

1.2 However, despite its important role in the Ghanaian economy, the agricultural sector is characterized by low yields for staple as well as cash crops. Cereal yields are estimated at 1.7t/ha compared to the regional average of 2.0 t/ha, and with potential yields in excess of 5.0t/ha¹⁸ (Figure 1 Average cocoa yields in Ghana, estimated at 400 – 450 kg/ha, are among the lowest in the world (Ghana COCOBOD, 2015).¹⁹ For most of the staple commodities, there is a 43 – 66 percent yield gap (Table 1).

Table 1: Actual and Potential Crop Yields in Ghana (mt/ha)

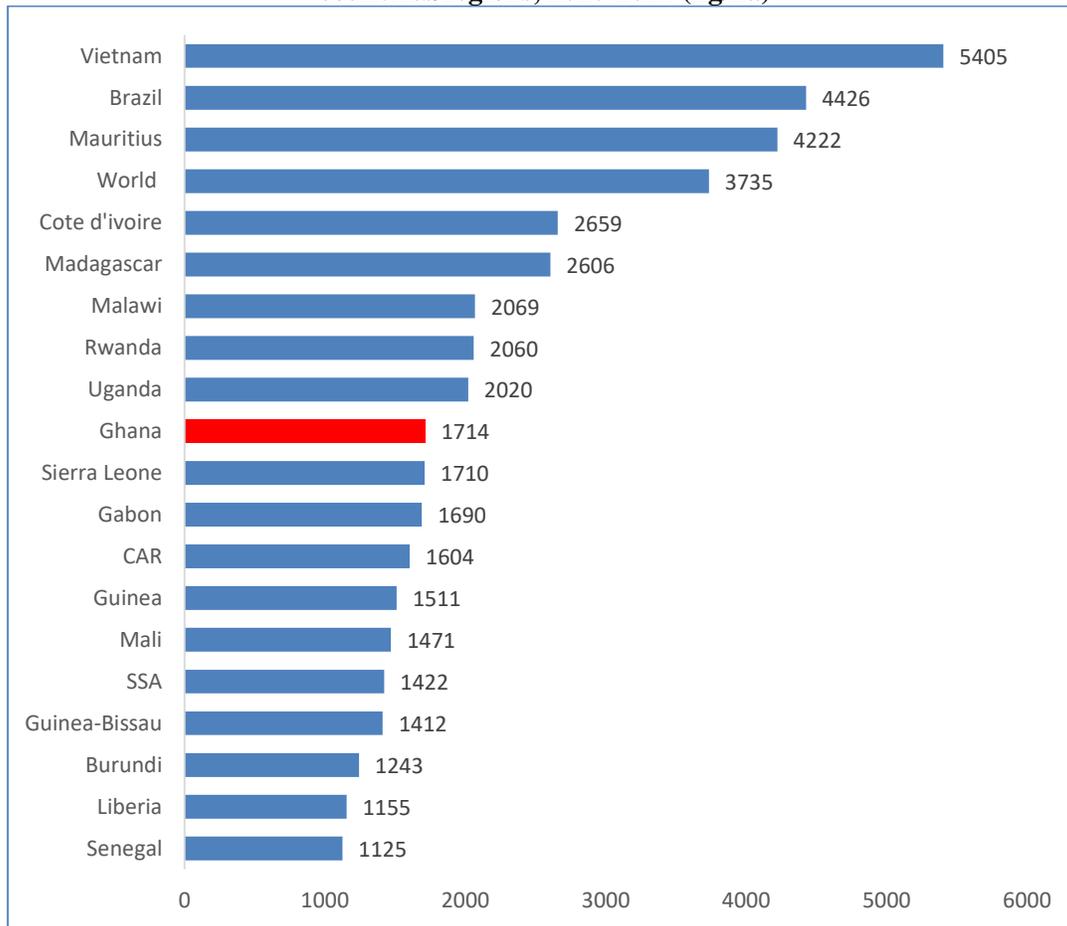
Commodity	Potential	2008	2009	2010	2011	2012	2013	2014	Actual as % of Potential
Maize	5.0	1.7	1.7	1.9	1.7	1.4	1.7	1.7	35.0
Rice (paddy)	6.0	2.3	2.4	2.7	2.4	2.5	2.6	2.7	45.0
Cassava	48.7	13.5	13.8	15.4	15.8	16.7	18.3	18.6	38.0
Yam	49.0	14.2	15.3	15.5	14.5	15.6	16.8	16.6	34.0
Sorghum	2.0	1.2	1.3	13.0	1.2	1.2	1.1	1.1	57.0
Cowpea	3.0	1.2	1.7	1.8	1.6	1.8	1.2	1.2	41.0

Source: *SRID (2010, 2011); MoFA (2011, 2012, 2014)*; 2008-10: “Agriculture in Ghana – Facts and Figures (2010)” Statistics, Research and Information Directorate (SRID), MoFA (2011); 2011: “Agriculture in Ghana – Facts and Figures (2011)” Statistics, Research and Information Directorate (SRID), MoFA (2012); 2012-15 and potential yields: MoFA (2014).

¹⁸ World Development Indicators (WDI). 2016. World Bank, Washington DC, United States of America.

¹⁹ Ghana Cocoa Board. 2015. The future of Ghana’s cocoa sector. “Building in robustness and resilience to What IF? Scenario Planning Report. Accra, Ghana.

Figure 1: Cereal yield²⁰, average sub-Saharan Africa compared to other non-African countries/regions, 2010-2014 (kg/ha)



Source: FAOSTAT

1.3 As a result of the low productivity, Ghana continues to be a net importer of basic foods (raw and processed) such as rice, poultry, sugar, vegetable oils. Population growth, high rates of urbanization, and increasing incomes are driving the import bill as a result of increased demand for more quality and safe foodstuffs such as meat, dairy, and fresh and processed vegetables. In 2015, food imports accounted for 16.8 percent of total merchandise imports estimated at US\$ 13.3 billion,²¹ and the food import bill is projected to increase fourfold over the next 20 years, unless local production is substantially increased.

1.4 The goal for Ghana's agricultural sector policy is to transform and modernize the sector in order to achieve food security and create jobs. The Food and Agriculture Sector Plan

²⁰ Cereal yield, measured as kilograms per hectare of harvested land, includes wheat, rice, maize, barley, oats, rye, millet, sorghum, buckwheat, and mixed grains. Production data on cereals relate to crops harvested for dry grain only. Cereal crops harvested for hay or harvested green for food, feed, or silage and those used for grazing are excluded. FAO allocates production data to the calendar year in which the bulk of the harvest took place. Most of a crop harvested near the end of a year will be used in the following year.

²¹ World Bank. 2015. World Development Indicators (WDI), global merchandise imports.

(FASDEP II) emphasizes the sustainable utilization of all resources and commercialization of activities in the sector with a focus on market-driven growth. The policy also targets fewer commodities for food security and income diversification, especially of resource poor farmers. The focus is on increased efficiency throughout the commodity value chain, through the application of science and technology, and with improved environmental sustainability. Greater engagement of, and collaboration with the private sector is emphasized to facilitate implementation of the policy and investment plan.

Approach and methodology of the Policy Note

1.5 This Agriculture Sector Policy Note has been prepared based on a number of studies and stakeholder consultations conducted by the World Bank. The first set of studies and consultations focused on the cocoa sector. A cocoa sector development scenario planning exercise was conducted which culminated into a scenario planning report as input into the preparation of the new Cocoa Sector Development Strategy (CSDS II). Most of this work was undertaken from 2014-2015. A second study was commissioned as part of the preparation of the final report and road-map for inclusive agriculture-led transformation of Ghana's Northern Savannah Ecological Zone (NSEZ). This was preceded by a high-level Agricultural Investment Workshop (AIW, held in Tamale June 21-23, 2016) whose objective was to identify the short, medium and long-term priorities for the economic transformation of the NSEZ.²² In 2017, after the Government announced plans to launch the Planting for Food and Jobs Program as a new flagship sector program aimed at rapidly increasing food production and creating jobs, a number of brainstorming and discussions sessions were held to provide input into the preparation of the program.

1.6 The summary version of the main sector issues and policy recommendations was discussed with the key development partners in the agricultural sector. This was undertaken as part of the quality validation process to provide sector input into the Policy Advisory Note which the Bank prepared and submitted to the country's new administration. Also, the agricultural public expenditure review is part of the broader public expenditure review study whose findings have been widely disseminated. The full report was validated during a stakeholder workshop held May 29-30, 2017.

Outline of the Note

1.7 This Agriculture Sector Policy Note is structured as follows: Section 2 describes the structure of the agricultural sector and its role in the economy, while section 3 discusses the production of key staple crops and cocoa, Ghana's most important cash crop. Section 4 highlights the major constraints to sector growth and competitiveness. Section 5 highlights the key opportunities for agricultural transformation. Section 6 concludes with the details of recommended policies covering the key areas of the sector, with a particular focus on how improving the sector's productivity and foster its modernization.

²² This workshop was convened by the Savannah Accelerated Development Authority (SADA) and supported by the World Bank and USAID. It was opened by the Minister of Finance and closed by the former State President of Ghana.

2. Agriculture in the Ghanaian Economy

The macro context

2.1 Ghana’s agricultural sector is crucial to the country’s sustainable long-term growth and development. Even though the rapid increase in the extractive sector (minerals, oil and gas) has diminished the relative size of the agricultural sector in the overall economy, agriculture remains vital to employment, income generation and poverty reduction. Agriculture employs 45 percent of the national labor force—far more than any other sector. Because rural poverty rates significantly exceed the national average, and agriculture and other primary sector activities are essential to the livelihoods of the country’s poorest households, agriculture development is critical for poverty reduction. Despite the changing dynamics, inclusive agricultural growth remains so effective in reducing poverty, especially when large numbers of the poor depend on farming. Even with more rapid rural-urban migration, the majority of the poor in Ghana will continue to be rural for decades to come.

2.2 The agriculture sector contributes more than one-fifth of Ghana’s GDP, and agricultural exports—principally cocoa—are a key source of foreign exchange.²³ Moreover and until oil production came on board in 2011, an estimated two-thirds of Ghanaian manufacturing depended on agricultural inputs; hence agriculture’s performance has been also important for the competitiveness of non-oil manufacturing.²⁴ While agricultural output is increasing, the sector’s growth performance has been highly erratic, and the average annual agricultural growth rate is well below both the overall GDP growth rate (Table 2).

Table 2: Productivity growth rates by sector (%)

	2008	2009	2010	2011	2012	2013	2014	2015
Agriculture	7.4	7.2	5.3	0.8	2.3	5.7	4.6	2.4
- Crops	8.6	10.2	5.0	3.7	0.8	5.9	5.7	2.0
of which cocoa	3.2	5.0	26.6	14.0	-9.5	2.6	4.3	-1.4
- Livestock	5.1	4.4	4.6	5.1	5.2	5.3	5.3	5.3
- Forestry	-3.3	0.7	10.1	-14.0	6.8	4.6	3.8	3.8
- Fishing	17.4	-5.7	1.5	-8.7	9.1	5.7	-5.6	1.2
Industry	15.1	4.5	6.9	41.6	11.0	6.6	0.8	1.2
Services	8.0	5.6	9.8	9.4	12.1	10.0	5.6	5.7

Note: All figures are in constant 2006 prices

Source: MoFA (2015), Ghana Statistical Service, Revised 2014 Annual GDP Bulletin (June, 2015)

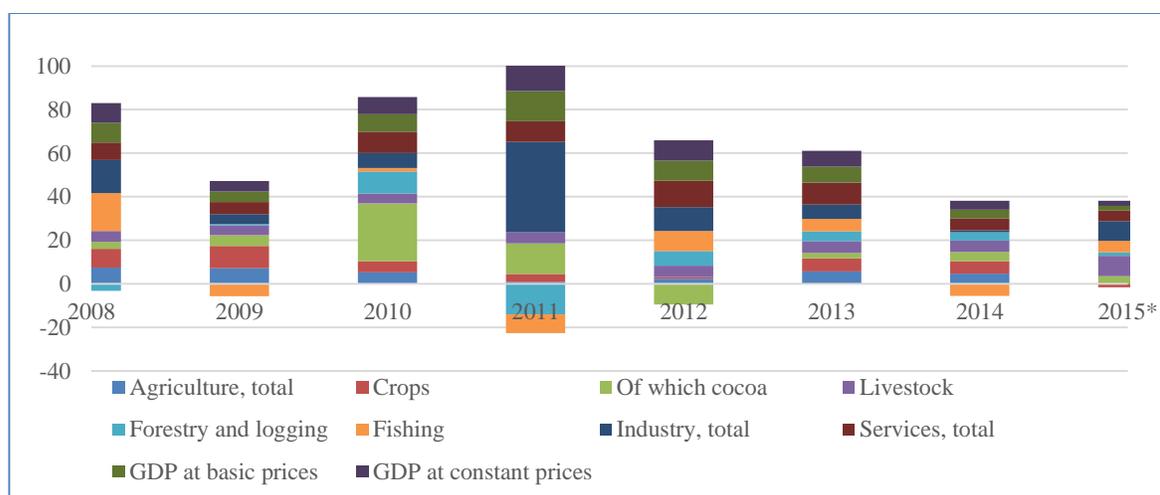
2.3 Ghana’s annual agricultural growth rate over the past 8 years (2008 – 2015) has averaged around 4.2 percent, which is significantly below the target growth rate of 6 percent (Figure 2). This a slight drop from the average growth rate of over 5 percent achieved during the

²³ “Agriculture in Ghana – Facts and Figures (2014)” Statistics, Research and Information Directorate (SRID), MoFA (2015).

²⁴ World Bank (2009) and Breisinger (2008).

period 2001 – 2006. The Ghana Statistical Services (GSS) projected a further slowdown to 3.3 percent in 2016.

Figure 2: Sector contributions to real GDP growth (%)



Source: MOFA, 2015.

3. Production of major staple crops

3.1 Increasing total output and yield of staples has been an important objective of Ghana’s agricultural policy to-date. Yet, the data over the last decade indicate that while total output has somewhat increased (see Table 3), yield growth rate has lagged behind output growth, suggesting that expansion in area cultivated has been the main driver of output growth. As shown in Table 3 and 4, while output has been growing at about 4 percent per year (for cereals) and over 10 percent per year for roots and tubers, annual yield growth during the same time averaged 1.7 percent for cereals and less than 5 percent for roots and tubers.

Table 3: Crop production (000’ metric tons)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Maize	1171	1189	1220	1470	1620	1872	1684	1950	1765	1762	1692
Rice	237	250	185	302	391	492	464	481	570	604	688
Cassava	9567	9638	10218	11351	12231	13504	14241	14547	15990	16524	17213
Yam	3923	4288	4376	4895	5778	5861	5855	6639	7075	7119	7296
Sorghum	305	315	155	331	351	353	287	280	257	259	264
Soybeans	39	54	50	75	113	145	165	152	139	141	142
Millet	185	165	113	165	113	194	246	219	183	180	--
Cowpea	144	167	119	180	205	219	237	223	200	201	--

Source: MoFA (2015), Ghana Statistical Service, Revised 2014 Annual GDP Bulletin (June, 2015)

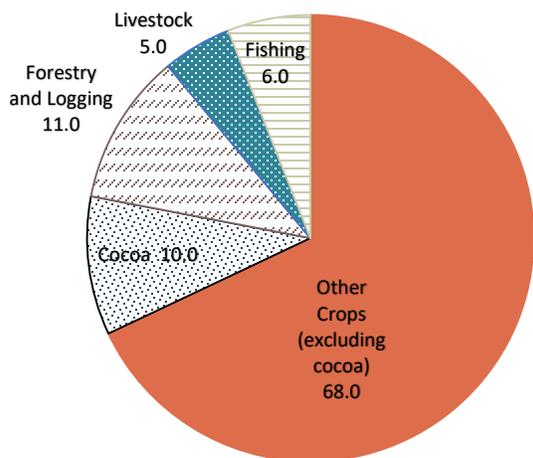
Table 4: Area cultivated (000' hectares)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Maize	740	793	790	846	954	992	1023	1042	1023	1025
Rice	120	125	109	133	162	181	197	189	216	224
Cassava	750	790	801	840	886	875	889	869	875	889
Yam	300	325	324	348	379	385	204	426	422	428
Sorghum	305	320	208	276	267	253	243	231	226	227
Soybeans	45	52	47	62	77	91	86	85	85	87
Millet	185	200	163	182	187	177	180	172	--	--
Cowpea	180	185	139	161	163	167	182	169	162	166

Source: MoFA (2015), Ghana Statistical Service, Revised 2014 Annual GDP Bulletin (June, 2015)

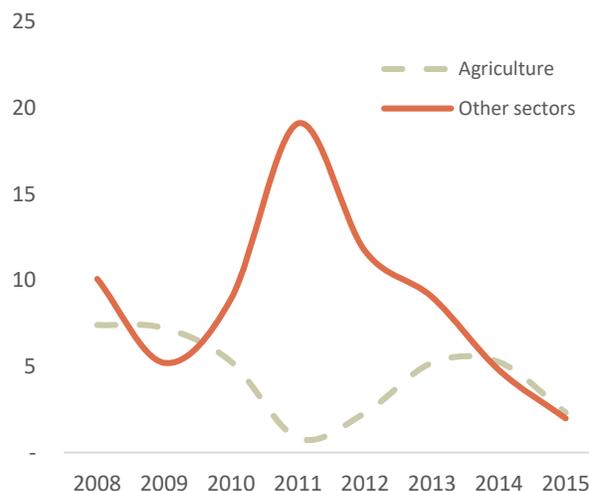
3.2 Crop production dominates the agricultural sector, accounting for more than 75 percent of total output, while livestock, fishing, and forestry comprise the remaining 25 percent. Ghana is the world’s second-largest cocoa producer after Côte d’Ivoire, and cocoa represents over 10 percent of agricultural production (Figure 3.1). Other key crops include staple foods such as maize, cassava, and yam. While domestic rice production is on the rise, imports still meet about half of the country’s rapidly growing demand. Growth in agriculture has also largely lagged behind all the other key sectors (Figure 3.2).

Figure 3.1: Agricultural Production by Subsector, 2014



Source: MoFA (2015)

Figure 3.2: Agricultural Growth vs. Growth in All Other sectors, 2008-2014



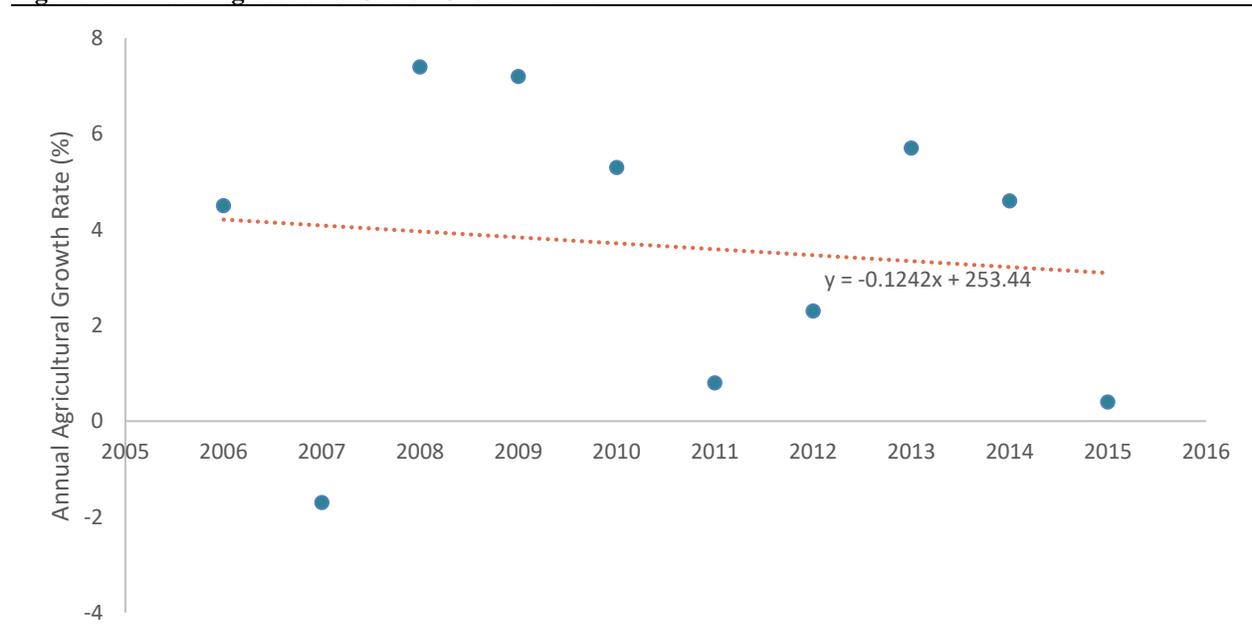
Source: SRID; World Bank data

3.3 The agricultural sector provides a critical source of employment for the 300,000-350,000 new workers who enter the Ghanaian labor force each year. The economy’s fastest-growing sector, extractive industries, is highly capital intensive and employs only a small fraction of unskilled workers. By contrast, agriculture employs a huge number of unskilled workers and provides livelihoods for more than 70 percent of the rural population, including a large share of the country’s poorest households. The agricultural sector will likely continue to contribute to net

job growth over the medium term,²⁵ and improving agricultural output will remain vital to poverty reduction. Analysis done recently through the on-going private sector diagnostic indicates that agribusiness has among the highest multipliers (1.8) and creates 750 jobs for every additional million dollar of output. Agriculture and related sectors have also the highest potential to employ women and youth because it is the key primary sector, and employer of last resort for the majority of the population. In this context, the agricultural sector’s slowing growth rate (Figure 4) raises development policy concerns that extend well beyond its immediate macroeconomic impact.

3.4 Ghana’s recent poverty dynamics further underscore the importance of the agricultural sector. Following significant progress in poverty reduction over the past decade, moderate and extreme poverty rates as well as inequality have hardly changed in recent years.²⁶ Meanwhile, the international experience has shown that agricultural growth reduces poverty by about three times as much as non-agricultural growth.²⁷ In addition to fostering poverty reduction and inclusive growth, investments and policies designed to support agricultural productivity will be critical to facilitate the structural transformation of the Ghanaian economy and to manage the ongoing process of urbanization.

Figure 4: Annual Agricultural Sector Growth Rates



Source: Author’s calculations

3.5 The agricultural sector experienced a sharp deterioration in its terms of trade from 2011. As can be seen from Figure 5, Ghana’s agricultural terms of trade, measured as a ratio of food and non-food price indices has been on the decline, with a sharp fall after 2011. While the impact of the extractive industries on Ghana’s non-resource economy has not yet been fully explored, the agricultural sector experienced a sharp deterioration in its terms of trade from 2011

²⁵ World Bank, 2016a.

²⁶ World Bank, 2016b.

²⁷ Christiansen *et al.*, 2013; Christiansen and Kaminski, 2015.

when Ghana started its oil production. However, this could have also been exacerbated by the sharp decline in public spending to the sector also from around 2011 (see Figure 6).

Figure 5: Agricultural Terms of Trade, Expressed as the Ratio of the Food to Nonfood Price Indices

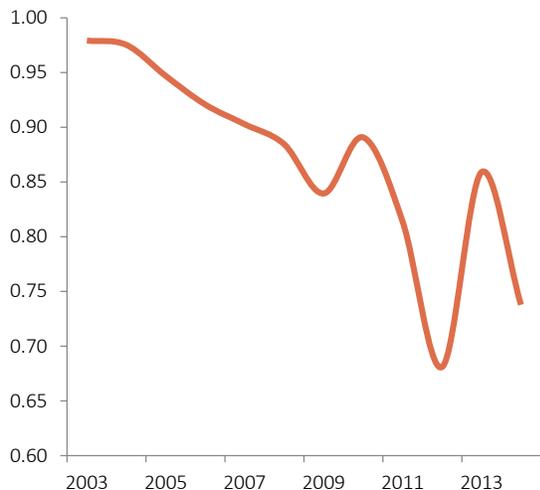
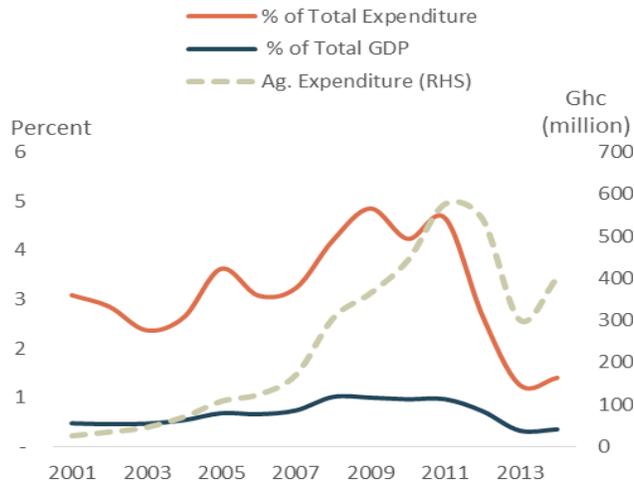


Figure 6: Public Spending in the Agricultural Sector



Source: Author's calculations based on SRID and World Bank data.

Cocoa sector performance and issues

3.6 Cocoa is Ghana's most important agricultural export commodity, yet the cocoa subsector operates far below its potential. Ghana is the world's second-largest cocoa producer, representing over one-fifth of global cocoa production. The cocoa subsector accounts for about 12 percent of total agricultural value added, 7 percent GDP, and 20-25 percent of export earnings. Cocoa is a key source of foreign exchange and the country's largest non-resource export. However, after peaking at 1 million tons in 2011-12, cocoa production seems to have plateaued at an average of around 800,000 tons per year (Table 5).

Table 5: Ghana's position in global cocoa supply

	2014/15	% of global supply	2015/16	% of global supply	2016/17	% of global supply
Cameroon	232	5.4	211	5.3	250	5.5
Cote d'Ivoire	1796	42.1	1581	39.9	1900	41.7
Ghana	740	17.4	778	19.6	850	18.7
Nigeria	195	4.6	200	5.0	230	5.1
Others	110	2.6	141	3.6	135	3.0
Total Africa	3074	72.1	2911	73.4	3365	73.9
Brazil	230	5.4	140	3.5	190	4.2
Ecuador	261	6.1	232	5.9	270	5.9
Others	286	6.7	285	7.2	306	6.7
Total America	777	18.2	657	16.6	766	16.8
Indonesia	325	7.6	320	8.1	330	7.2
Papua New Guinea	36	0.8	36	0.9	41	0.9
Others Asia & Oceania	39	0.9	41	1.0	50	1.1
Total Asia & Oceania	400	9.4	397	10.0	421	9.2
World Total	4261	100	3965	100	4552	100

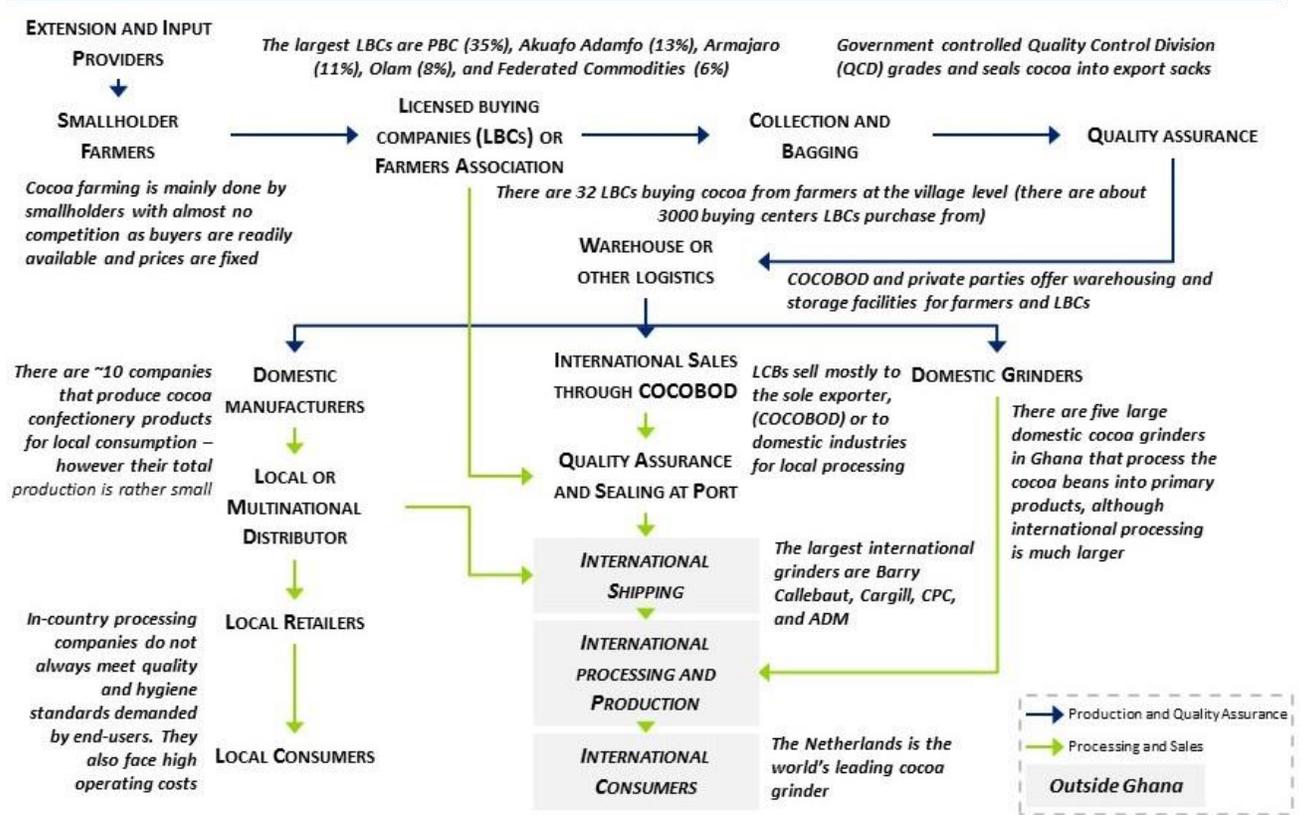
Source: ICCO Quarterly Bulletin of Cocoa Statistics, Vol. XLIII, No.1, published 28-02-2017.

3.7 Unlike other crops, cocoa production operates under a controlled marketing system.

COCOBOD manages the subsector under the authority of the Ministry of Finance.²⁸ It controls the marketing of cocoa exports and, via its subsidiaries, delivers inputs, research and extension services, pest and disease control, and some forms of infrastructure. As a result, the cocoa value chain is unusually complicated and subject to heavy government intervention (Figure 7). COCOBOD purchases cocoa through Licensed Buying Companies (LBCs), which sell primarily to the Cocoa Marketing Company (CMC), another COCOBOD subsidiary. The subsector's current structure results from the partial privatization of a state-owned monopoly.

²⁸ Under the new Government, it has been announced that the cocoa sub-sector will be under the Ministry of Food and Agriculture (MoFA).

Figure 7: Organization of the cocoa value-chain in Ghana



Source: Cocoa Sector Scenario Planning, World Bank Staff

3.8 The COCOBOD system has a number of important advantages. COCOBOD has managed to increase the share of the export price received by farmers without fully liberalizing domestic and export markets, and the way in which internal cocoa marketing is organized assures that farmers are paid promptly. COCOBOD’s quality-control apparatus is also effective, and as a result Ghanaian cocoa receives a price premium of 3-5 percent on the world market. In addition, the Cocoa Marketing Company’s use of forward contracts mitigates the price and exchange-rate risks faced by buyers, though it does so by effectively transferring these risk to farmers. Finally, the Cocoa Research Institute, which is also a COCOBOD subsidiary, is among the country’s most important agricultural research agencies.

3.9 However, COCOBOD has not been fully successful in promoting the development of the cocoa subsector. COCOBOD has not been able to fully achieve one of its most important goals, which is to stabilize farm-gate prices at levels that permit farmers to earn a decent return. Instead, successive governments have prioritized revenue collection, treating the final price received by farmers as a secondary consideration rather than an objective. The sub-sector’s development strategy, which should provide the direction and guidance on many issues affecting the development of cocoa, is still yet to be finalized and approved (Box 1).

Box 1: The Ghana Cocoa Sector Development Strategy II

For Ghana to continue to remain a key leader in the global cocoa supply chain, there is need to have a strategy that will guide the development of the sector as well as provide a framework for public-private partnerships in order to leverage stronger investment in this key sector. Ghana's Cocoa Sector Development Strategy (CSDS II) developed by COCOBOD seeks to modernize Ghana's cocoa sector and produce climate smart cocoa through increased farm productivity. The vision and strategy for modernizing Ghana's cocoa sector is based on three pillars: competitiveness, resilience, and robustness. To modernize and have a more sustainable cocoa sector, Ghana needs to be more: (a) competitive by increasing the productivity of cocoa producers and improve cost efficiency along the cocoa supply chain; (b) resilient to challenges and risks related to global cocoa markets (demand and supply), and climate change; and (c) robust by being an industry leader through innovation and differentiation by focusing on high quality cocoa and niche markets. The Strategy was developed following a number of scenario planning exercises in 2015, supported by the World Bank, World Cocoa Foundation, the Royal Netherlands Embassy and Solidaridad. However, it is still to be finalized, approved and notified by the government.

3.10 Furthermore, COCOBOD's price-setting mechanism distorts economic incentives to farmers. COCOBOD sets yearly producer prices in advance of the harvest season, and the Cocoa Marketing Company sells about 70 percent of the country's cocoa exports via forward contracts. The producer price is based on a cost-plus principle, which reflects the expected export price, the operating costs of COCOBOD and its subsidiaries, explicit taxes, and farmers' production costs. Through this system COCOBOD pays producers at least 70 percent of the so-called "net free-on-board (FOB) price," which it defines as the FOB price minus allowances for "industry costs" and direct marketing costs.²⁹ Industry costs have been rising over time and are now estimated at close to 15 percent of the FOB price. They mainly include the cost of input supply programs and social programs targeting cocoa farmers. Direct marketing costs include transportation, storage and quality control. As a result, the producer price is often different from the real FOB price (Figure 8a), and the producer share in the real FOB price is typically below 70 percent, even when there is an upward swing in international prices, as observed in recent years (Figure 7b). This price setting mechanism may be distorting the incentives for producers to invest in productivity enhancing practices. However, a comparative assessment with Côte d'Ivoire shows that price setting mechanisms are similar between the two global cocoa supply giants, and Ghana's producer price seems to be slightly higher that of Côte d'Ivoire (Box 2).

²⁹ The term "FOB price" refers to an export's final value in the exporting country.

Figure 8a: Ghana: Cocoa prices

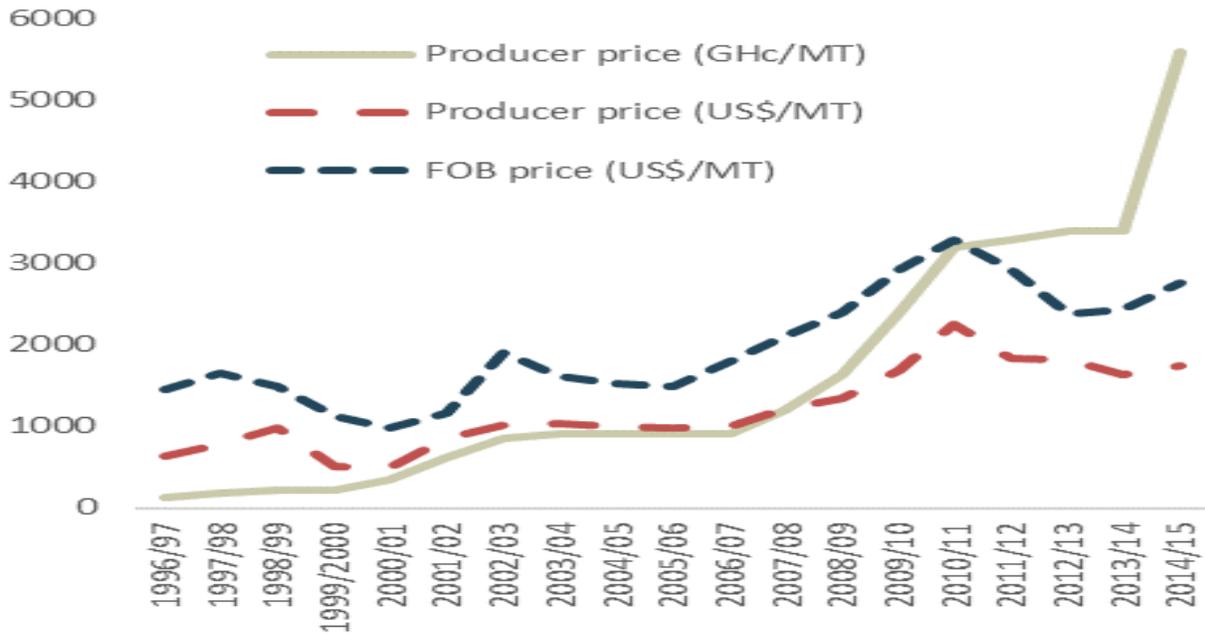
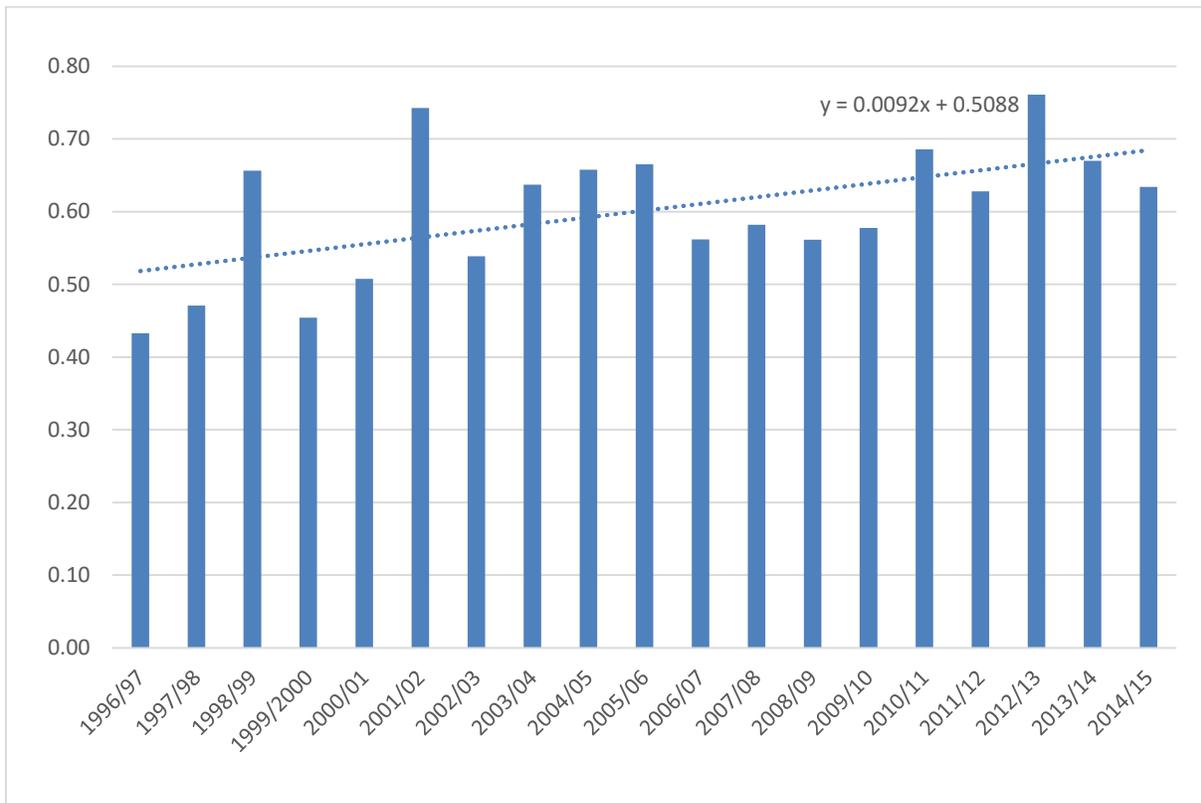


Figure 8b: Ghana, Cocoa producer prices as a share of FOB prices (%)



Box 2: Cocoa farm-gate comparative analysis: Ghana and Côte d’Ivoire (2015)

A comparative analysis of cocoa earnings at the farm-gate indicates that Côte d’Ivoire has higher farm size (averaging 3.5 ha) and higher yield (averaging 0.49 mt/ha) compared to Ghana with average cocoa farm size estimated at 2.6 ha and yield averaging 0.42 mt/ha. The farm-gate price is higher in Ghana (\$1,630/mt) compared to Côte d’Ivoire (\$1,487/mt). However, net income per farm is lower in Ghana (\$1,400) compared to Côte d’Ivoire (\$1,656) mainly due to lower productivity.

	Cote d'Ivoire	Ghana
Yield (t/ha)	0.49	0.42
Size of the farm (ha)	3.5	2.6
Total output (tons)	1.7	1.1
Farm-gate price (\$/ton)	1,487	1,630
total cocoa income (\$)	2,528	1,793
Input cost (\$/ton)	872	393
Net income (\$)	1,656	1,400
FOB price (\$/ton)	3,120	3,120
Producer price as % of FOB	47.7	52.2

Source: Authors’ own calculations based on data from www.cocobarometer.org

3.11 The COCOBOD system also ensures that that the state receives a share of the FOB price for cocoa exports. Even though the official tax on cocoa exports has fallen over time to about 3-4 percent, the government retains a substantial share of the FOB price, which is effectively a form of direct taxation. Cocoa is the only export commodity from which foreign-exchange earnings flow directly into the central bank. Although no official data are available, total direct taxation—defined as the sum of COCOBOD’s costs, industry costs and explicit taxes—can be estimated at between 25 and 30 percent of the FOB price. In addition, the depreciation of the cedi since 2011 has acted as a form of implicit taxation. The export margin in Ghana is roughly double that of Côte d’Ivoire and many times higher than the margins of most Asian cocoa exporters. In addition, COCOBOD’s marketing and quality-control subsidiaries have little incentive to increase their efficiency, and their shares of the FOB price have increased even as production levels have risen.

3.12 COCOBOD is the principal supplier of fertilizers, pesticides and seedlings, and its dominant role in the cocoa supply chain is a cause of uncertainty and inefficiency. Though often referred to as “free inputs,” the cost of the inputs supplied by COCOBOD is reflected in the price farmers receive for their cocoa. Moreover, input distribution is often erratic and while all farmers effectively pay for cocoa inputs, only selected farmers actually receive them, and in some cases COCOBOD inputs have been illegally exported to neighboring countries.

3.13 Cocoa marketing costs in Ghana are high by international standards. Total marketing costs are estimated at between 25 and 30 percent of the FOB price. This includes direct marketing

costs of about 17 percentage points, plus an estimated 8-10 percentage points to offset COCOBOD's costs. COCOBOD's "industry costs" estimate varies significantly from year to year, but on average they amount to approximately 15 percent of the FOB price. Direct marketing costs are also high due to poor road infrastructure, inefficient port handling, and costs associated with quality control.

3.14 COCOBOD's pricing mechanism also limits competition in the cocoa subsector. The fixed price that LBCs pay farmers based on minimum quality standards effectively eliminates the possibility of price competition or product differentiation, and it discourages farmers from investing in quality beyond the minimum standard required. Moreover, prices are uniform across the country and do not reflect regional differences in production costs or local environmental and social impacts. However, even in the absence of meaningful price competition among buyers, farmers have benefited from a marked decrease in the collusion that characterized contract negotiations in the past when the state was the sole buyer.

4. Key Constraints affecting agricultural sector growth and competitiveness

Ghana's Public Expenditure in Agriculture

4.1 Public spending on agricultural development in Ghana is low both by regional and international standards, and spending levels have declined in recent years. While Ghana currently lacks an institutional mechanism to systematically collect, process, and publish agricultural expenditure data,³⁰ spending on the sector appears to have comprised just 5.2 percent of total spending between 2001 and 2014 (**Error! Reference source not found.**). Moreover, agricultural spending began to decline in 2007, and this trend accelerated in 2011. Nominal spending fell from GH¢ 576 million in 2011 to an estimated GH¢ 400 million in 2014, while the sector's share in total spending dropped from 4.2 to just 1.2 percent. Agricultural spending has also declined sharply relative to sectoral output, and by 2014 it equaled just 1.3 percent, far below the rates of regional comparators, such as Burkina Faso (8 percent), Ethiopia (6 percent), Uganda (5 percent), and Kenya (4 percent) - see also Figure 10.

4.2 A large share of agricultural spending is devoted to the cocoa subsector. According to African Union directives, spending by COCOBOD should be excluded when calculating public agricultural spending. Excluding the cocoa subsector has a major impact on the estimated size of agricultural spending in Ghana, as COCOBOD's expenditures are very high relative to the value of cocoa production. For example, between 2006 and 2011, the share of public agricultural spending devoted to the cocoa subsector averaged three times the subsector's share in total agricultural output.³¹ Removing COCOBOD from the equation cuts agricultural spending as a share of total spending in half, from an average of 5.2 percent to an average of just 2.6 percent over the period.

³⁰ The agricultural expenditure analysis presented in this chapter is based on data compiled by the MoFA in collaboration with Ghana's development partners. See: World Bank (2013); Benin (2014); and Kolavalli *et al.* (2015).

³¹ See World Bank (2013).

Table 6: Public Spending on Agriculture, 2001-2015

	In GH¢ millions	As a percentage of		
		Total spending	Agricultural output	GDP
2001	25	5.3	1.9	0.7
2002	34	5.0	2.1	0.7
2003	45	4.6	1.9	0.7
2004	70	4.6	2.9	1.1
2005	107	6.2	3.1	1.2
2006	123	5.7	3.6	1.3
2007	170	6.1	4.5	1.5
2008	305	5.7	5.3	1.8
2009	364	4.5	5.0	1.7
2010	442	4.2	5.0	1.6
2011	576	4.2	3.6	0.9
2012	540	2.4	2.3	0.5
2013	300	1.2	1.1	0.2
2014	400	1.2	1.3	0.3

Source: Author's calculations based on IFPRI data and own best estimates

4.3 Under the 2003 Maputo Declaration, Ghana committed to allocate at least 10 percent of its national budget to agriculture by 2008. Ghana is also a signatory to the common agricultural policy of the ECOWAS, which includes similar objectives. While an earlier study by the World Bank indicated that the government had met its Maputo Declaration spending target in 2009, 2010, and 2011, lack of clarity on what should count as expenditure in the sector and the fragmented nature of the budget cast doubt on this assessment.³² For example, in the World Bank assessment, public expenditures on feeder roads and debt servicing were counted as part of the total public agricultural spending, counting these toward the 10 percent target. While adding these items may be justified to the extent that they are agriculture-related expenditures, their omission from the preceding years' expenditures makes the levels not comparable over time. An additional challenge stems from the weakness in public expenditure recording in Ghana due to the fragmented nature of its budget. For example, the MoFA's 2011 agricultural spending estimate was calculated as a share of GH¢ 4.6 billion in total government spending, yet consolidated figures from the Ministry of Finance put total government spending at GH¢ 13.7 billion—roughly three times the level reported by the MoFA. Using the Ministry of Finance's figures reduces the share of agricultural expenditures (including spending by the COCOBOD) from an average of 12.5 percent of total government spending to just 4.6 percent over the 2009-2011 period. In fact, some of the recent studies have indicated that Ghana may never have achieved the 10 percent expenditure target, and classification issues might be the underlying factor.³³ Furthermore, Ghana's agricultural spending was well below that of most regional comparators in 2014 (**Error! Reference source not found.**).

³² World Bank, 2013.

³³ Benin, 2014; Kolavalli *et al.*, 2015.

Figure 9: Agriculture Spending in Sub-Saharan Africa as a Share of Total Public Spending, 2014



Source: World Bank (2016c) based on data from IFPRI (2015)

4.4 A large share of agricultural spending finances the MoFA’s routine operating expenses. Salaries and other forms of recurrent spending account for two-thirds of the MoFA’s total budget, leaving a very modest envelope for investment.³⁴ Since 2011, the MoFA’s expenditures have risen sharply in nominal terms, even as overall spending on the agricultural sector has declined. International donors account for much of the increase in MoFA spending. Donor contributions to the MoFA rose from GH¢ 98.5 million in 2013 to GH¢ 160.1 million in 2014, while domestic public spending on the MoFA fell from GH¢ 108.2 million to GH¢ 73.0 million. As a result, donor financing expanded from 17 percent of the MoFA’s budget in 2006 to over 50 percent in 2014.³⁵

4.5 Donor financing plays an increasingly important role in the MoFA’s investment budget. Donor funding rose from 40 percent of the MoFA’s total investment expenditures in 2006 to 61 percent in 2011 (**Error! Reference source not found.**). While more recent figures are not yet available, this share likely exceeded 80 percent in 2014. Donor financing accounts for a smaller percentage of the MoFA’s recurrent expenditures, but this has also grown over time.

4.6 There are issues around the efficiency and quality of public spending in agriculture. Agricultural spending is not well targeted. Major government (MoFA) initiatives such as the Agricultural Mechanization Program, the Block Farming Program, the National Food Buffer Stock Company, and the Fertilizer Subsidy Program (see Box 4 for an evaluation of the latter) have

³⁴ Akroyd and Smith, 2007.

³⁵ In 2006, the MoFA was known as the Ministry of Agriculture.

produced mixed results. Moreover, these programs tend to crowd out investment in proven strategies for promoting sustainable long-term productivity growth, such as encouraging the use of improved seeds and fertilizers, expanding irrigation networks. Investment in irrigation development is especially low at about 3 percent of agricultural spending. The Ghana Irrigation Development Authority (GIDA) receives no investment budget from the government, which provides financing for salaries only.³⁶

Table 7: Ministry of Food and Agriculture, Financing Composition and Expenditure Breakdown, 2006-2011

	Gov. Spending	Donor Spending	Total Spending	Investment	Current Spending	Donors Contributions (%)		
						Total	Capital Spending	Operational Spending
2005	101	37.3	138.3	46.1	92.2	27	49.7	15.7
2006	134.5	27.4	161.9	54.0	107.9	16.9	40.4	5.2
2007	163.7	44	207.7	69.2	138.5	21.1	45.7	8.8
2008	186.5	78.5	265	88.3	176.7	29.6	39.8	24.5
2009	156.1	97.9	254	84.7	169.3	38.5	64.7	25.4
2010	169.1	98.9	268	89.3	178.7	36.9	57.6	26.6
2011	190.3	112.4	302.7	100.9	201.8	37.3	61.2	25.4

Note: Investment is assumed to represent one-third of total spending.

Source: Data in red are authors' calculations, other data are from Kolavalli (2015).

4.7 In a context of chronic agricultural underinvestment, enhancing the efficiency and quality of sectoral spending could generate substantial gains in productivity, employment, and rural poverty reduction without compromising the government's ongoing fiscal consolidation.³⁷ From 2008 to 2014, real public spending on agriculture was negatively correlated with agricultural output growth (-0.39), suggesting an inefficient allocation of expenditures. Public spending on the livestock, fisheries, and forestry subsectors is significantly higher than their respective shares in agricultural output. Spending on cocoa exceeds its share in agricultural output by a factor of three; however, a recent study by the International Food Policy Research Institute (IFPRI)³⁸ concluded that the rate of return to public spending in the non-cocoa sector is significantly higher than in the cocoa sector.

4.8 The international experience reveals how better expenditure targeting can drive agricultural growth. Between the 1980s and 2000s, investment in agricultural research and development and the expansion of irrigation networks generated significant productivity growth and sustained increases in rural incomes throughout much of the developing world. In India, the government played a key role in creating a vibrant maize industry by deregulating seed imports, developing improved seed varieties, attracting private investment, and tightening linkages with

³⁶ Ghana currently has less than 20,000 hectares under irrigation, and most irrigation systems are inadequately maintained. Under the World Bank-financed Ghana Commercial Agriculture Project, most irrigation schemes are being rehabilitated, and the institutions that govern the irrigation subsector are being reformed.

³⁷ Younger, 2015.

³⁸ Benin, 2016.

consumer markets.³⁹ In Kenya, the robust growth of the horticultural subsector was spurred by the government's efforts to liberalize the foreign-exchange market, facilitate seed and fertilizer imports, eliminate constraints on the airfreight market, streamline customs processes and phytosanitary certification procedures, enforce intellectual property rights, and promote collaborative trade and investment strategies between the public and private sectors.⁴⁰

4.9 Tight expenditure oversight and regular data collection are necessary to measure the effectiveness of public spending, but the MoFA suffers from critical deficiencies in both areas. The available data are not sufficient to enable a reliable analysis of the returns to different types of expenditures, and no information on agricultural investment by region is currently available. Ideally, MoFA should produce spatially disaggregated time-series data showing spending on agricultural subsectors, functions, and activities in each region. Increasing investment in systematic data collection should be a priority objective of a government-wide effort to enhance information management and improve public expenditure targeting. MoFA is currently seeking assistance from Ghana's development partners to strengthen its data-collection capacity.

4.10 It is also critical to highlight that challenges on agricultural statistics stem from ineffective decentralization. The experience with fiscal decentralization in Ghana, Nigeria and Sudan is interpreted as autonomy of decentralized governments, such that the central government provides funds to decentralized governments (regions and districts) and these decentralized governments use the fiscal transfers according to their own plans with no reporting mechanisms back to the central government. This leads to a situation where MOFA is unable to track how much is spent on the sector by the decentralized governments, and whether such spending is consistent with sector plans and priorities, as contained in the FASDEP and METASIP. and FASDEP II. It is therefore important for the country to learn from countries which are on track towards a better approach for fiscal decentralization e.g. Rwanda among others, in order to improve its own system.

Achieving Agriculture's Growth Potential

4.11 For decades, Ghana's agricultural growth has been driven by the expansion of cultivated areas rather than by increased productivity. Ghana lags many other West African countries in terms of per hectare yields for most crops.⁴¹ Actual yields remain far below their potential, and per-hectare productivity has been largely stagnant over time. Production surveys carried out by the International Food Policy Research Institute and the US Agency for International Development have found even lower yields than the official MoFA figures, suggesting that the MoFA may be significantly underestimating yield gaps. A study undertaken by Benin et.al. 2016⁴² indicates that the extent to which a country could achieve higher and sustained rates of productivity growth depends on the utilization of the productivity-enhancing inputs (improved seed, fertilizer) and this is influenced by the relative abundance/scarcity of land, labour and capital and their relative prices. Technical know-how, skills and education and availability of extension workers also determines the extent of technology adoption and diffusion. Agro-ecological factors and other

³⁹ Naik, 2006.

⁴⁰ Whitaker and Kolavalli, 2006.

⁴¹ FAOSTAT, 2016.

⁴² Benin, S., (Ed), 2016. Agricultural productivity in Africa: Trends, Patterns and Determinants. International Food Policy Research Institute (IFPRI), Washington, D.C

natural factors, which often determine the level of perceived risks among farmers also affect technology adoption and diffusion. The analysis further shows that due to relatively higher population density in Ghana compared to other countries in the sub-region, productivity growth will have to derive from intensifying the use of productivity enhancing inputs, particularly high quality seed and fertilizer.

4.12 Despite the economic importance of cocoa, and the large share of agricultural spending devoted to it, Ghana’s average cocoa yield per hectare is among the lowest in the world. The cocoa yield gap is estimated at more than 100 percent, meaning that the existing area of cultivated land could produce twice as much cocoa as it does currently. Productivity growth is constrained by the slow adoption of new technologies and limited access to inputs, especially improved seed and fertilizer. In addition to the same productivity issues that affect other crops, cocoa output is also inhibited by unnecessarily distortive interventions of the public sector.

4.13 Better expenditure targeting could enable policymakers to address key bottlenecks to agricultural productivity and competitiveness. These include: (i) inadequate research and extension services; (ii) financial constraints, especially among smallholder farmers; (iii) obstacles to accessing domestic and international markets; (iv) limited irrigation development, particularly in Ghana’s semi-arid northern regions; and (v) insecure land tenure. Shifting financial and administrative resources to these five priority areas could greatly enhance the efficiency of agricultural spending.

4.14 Linking farmers to markets is essential to agricultural development and rural poverty reduction. Integrating smallholder farmers into value chains boosts income levels, encourages technology transfer, supports diversification, and facilitates agribusiness investments. The Ghana Commercial Agriculture Project (GCAP) attempts to leverage the benefits of integration by supporting the commercialization of smallholder farming through Public-Private Partnership (PPP)-type arrangements with large agricultural investors. The project also helps to improve smallholder productivity and tighten market linkages via the nucleus farmer-outgrower model, while building the government’s investment-promotion capacity, strengthening land tenure, promoting sustainable land-access arrangements, supporting private investors through matching grants, expanding and rehabilitating irrigation networks, and promoting institutional reform in the irrigation subsector.

4.15 Adoption of smart-subsidies for promoting smallholder farmer’s uptake of improved quality seed and fertilizer should only be implemented when there is identified market failure. There is there is need to ensure adherence to the principles of smart subsidies, which include, but not limited to: (a) targeting farmers that need to learn about proper use of fertilizers; (b) targeting farmers that could use fertilizers profitably but are not able to do so due to working capital constraints; and (c) delivering the subsidy through the private sector by using modern voucher systems. This will help to reduce inefficiencies associated with most subsidy programs (see Box 3).

Box 3: Ghana's fertilizer subsidy program

Fertilizer subsidies: Average fertilizer use in Ghana is about 8 kg/ha – which is low even for African standards. The National Fertilizer Subsidy Program is one of Government of Ghana's major agricultural interventions instituted in 2008 as a direct response to increased global fertilizer and food prices with the goal of increasing fertilizer use among smallholder farmers and to prevent a decline in crop production below 2007 output levels. Even though the food crisis has long subsided, the fertilizer subsidy program continues until today. During 2008-2009, a coupon system was used that basically involved a 50% subsidy. In 2010 the coupon system made way for a waybill system in an effort to reduce the cost of administering the program and stem diversion of fertilizers from intended target beneficiaries. Under the waybill system fertilizer companies get reimbursed for the difference between the purchasing price as stipulated in the contract with the government, and the price at which the companies' agents (or district offices of MoFA where there are no agents present) sell the fertilizer to farmers (which is also part of the contract). The difference is supposed to reflect average transportation and handling costs between the port and the final destination, as well as agents' commission and margins. In 2013 some changes were made in the fertilizer (and seed) subsidy program, including improved targeting (focus on smallholders in the north), limiting the quantity per farmer and, most importantly, reducing the subsidy element for fertilizer to less than 30%.

The goal of the subsidy program was to increase fertilizer use rate to at least 50 kg/ha as recommended in the Medium Term Agricultural Sector Investment Plan (METASIP). One of the stated objectives of the Fertilizer Subsidy Program is to raise the profitability of farm production. However, subsidies alone are not sufficient to reach optimal levels of fertilizer use, let alone to increase the profitability of farming. While evaluations carried out under controlled conditions at research stations suggest a substantial yield response from higher levels of fertilizer use, research by IFPRI (in collaboration with the Crops Research Institute (CRI) and the Savannah Agricultural Research Institute (SARI)) has determined that yield response (and therefore profitability) of fertilizer under actual farmer' conditions - where other factors that determine yield may not be available at optimal levels – is much lower.

It is also important to note a number of other important pitfalls of the fertilizer subsidy program in Ghana. The first concerns the timeliness of the program – both farmers and retailers complain about subsidized fertilizer arriving late, especially in the south where the growing season starts earliest. Second, fertilizer distributors feel that procedures associated with the waybill system remain cumbersome including a lack of clarity of the procedures on all aspects of the operations.

Finally, the available evidence regarding the impact of the program is largely limited to an IFPRI-led study for maize and suggests that for open pollinated varieties under actual farmer conditions, fertilizer is profitable only at relatively low levels of usage. However, as shown by e.g. Wienco in its large outgrowers scheme in northern Ghana (which involves more than 10,000 maize farmers under its Masara N'arzuki Farmers Association), a different picture emerges once hybrid varieties are introduced and improved agronomic practices are adhered to. Combined these substantially raise the level of fertilizer use that can be economically justified – even without subsidies.

4.16 The other critical, but often neglected factor is that Ghana's largely traditional land-tenure system is not conducive to agricultural investment. Formal land registration processes remain highly inefficient, and landowners often lack enforceable titles, especially in rural areas. The World Bank is supporting a series of land administration projects designed to strengthen ownership rights by creating an up-to-date inventory of land resources and introducing a modern land-registration framework. Greater tenure security will facilitate access to land, promote

investment, and reduce the frequency of land-related conflicts. Following the development of a model land-lease agreement, the GCAP is supporting the establishment of a Lands Commission database in which landowners can register land available for lease to investors.

Agriculture Research and Extension Development

4.17 A strong agricultural research and extension system is essential for agricultural growth. Recent analytical work has confirmed that in Sub-Saharan Africa, investment in the development and dissemination of new technologies is the primary driver of agricultural productivity growth, exerting a greater influence than all other drivers combined (**Error! Reference source not found.**). The Council for Scientific and Industrial Research (CSIR) is the country’s leading public agricultural research and development agency.⁴³ CSIR operates ten food and agriculture research institutes, and it employed a total of 379 full-time equivalent researchers in 2011. The Cocoa Research Institute of Ghana, a subsidiary of the COCOBOD, employs an additional 51 full-time equivalent researchers and studies cocoa and other tree crops, such as kola and cashew. Ghanaian universities and technical schools also conduct limited agricultural research and development.

Table 8: Drivers of Agricultural Productivity Growth in Sub-Saharan Africa

Driver	Contribution to cumulative TFP growth (%)
Agricultural research and development	51
Improvement in agriculture’s terms of trade with market and trade policy reform	20
Reduction in Conflict	18
Increase in farmer education	8
HIV/AIDS therapy to infected adult population	2

Source: Africa’s Pulse 2016

4.18 Ghana has a rather extensive agricultural research network. Ghana’s main agency for agricultural R&D is the Council for Scientific and Industrial Research (CSIR) and its 13 research institutes, of which 10 are engaged in agricultural and related research activities (see Box 5. The CSIR provides the main research institutional framework for agricultural technology development and innovation. Other agricultural research institutions outside of the CSIR also exist including the Cocoa Research Institute of Ghana (CRIG), Biotechnology Nuclear Agricultural Research Institute (BNARI) and the Marine Fisheries Research Division (MFRD). This is complemented by research work in tertiary educational institutions.

⁴³ CSIR is part of the Ministry of Environment, Science, Technology and Innovation.

Figure 10(a): Number of Full-Time Equivalent (FTE) Researchers in Ghana National Agricultural R&D

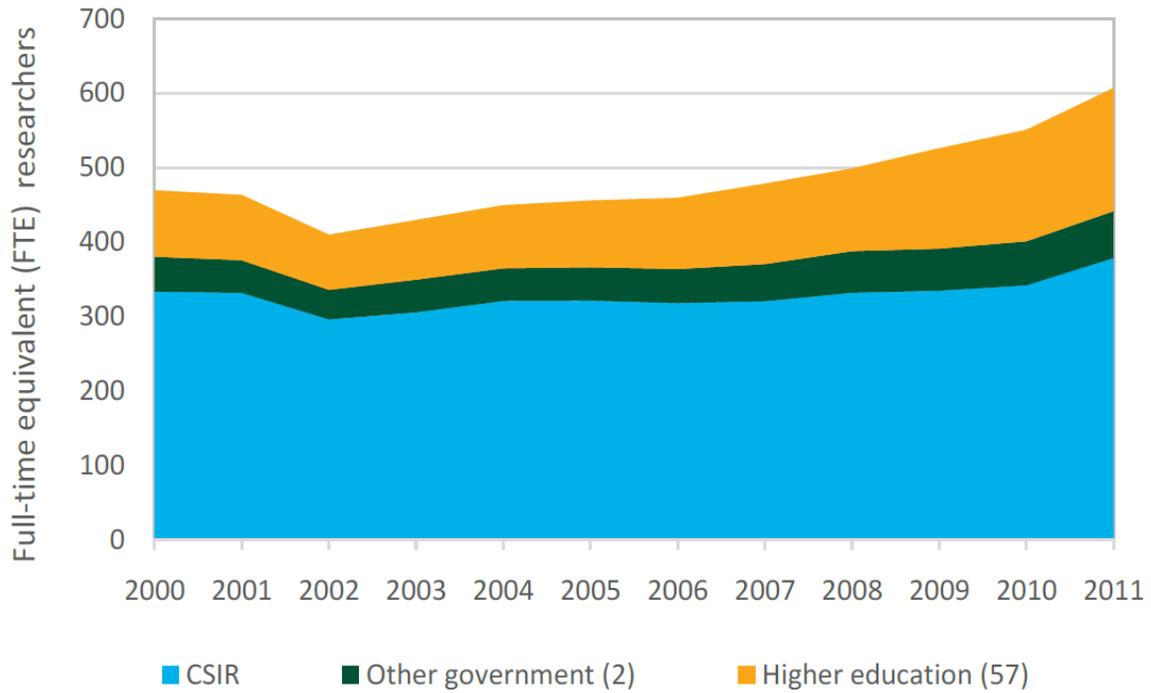
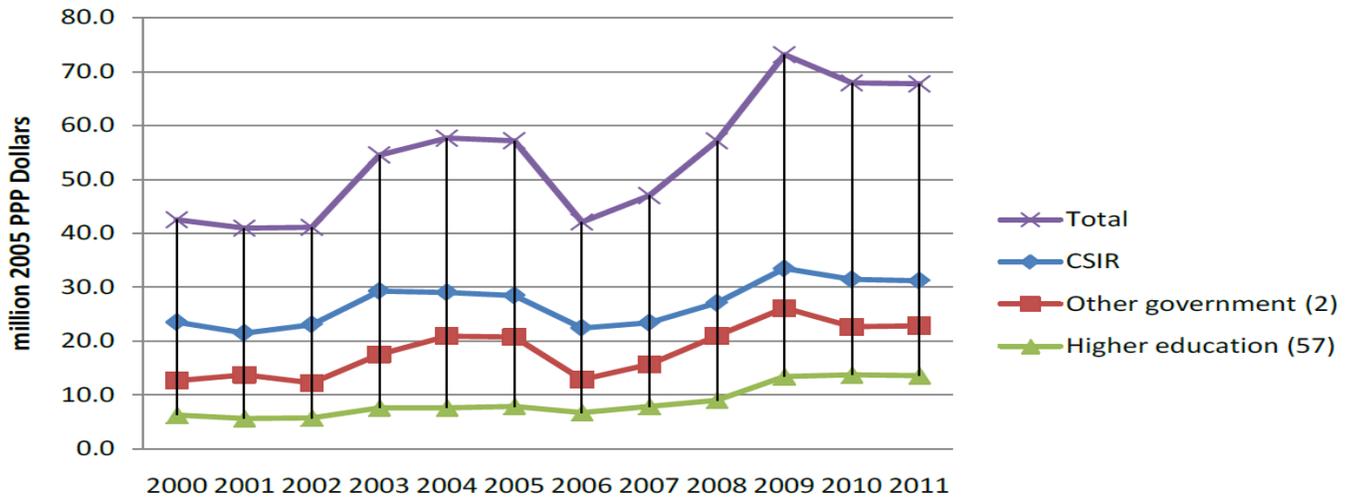


Figure 10(b): Funding of Ghana's National Agricultural R&D (US\$ million)



Source: Asare, R and Essegbey, G.O., 2016.⁴⁴

⁴⁴ Asare, R., and Essegbey, G.O., 2016. Funding of Agricultural Research and Development in Ghana: The case of the Council for Scientific and Institutional Research (CSIR). Science and Technology Policy Institute, Accra, Ghana: Technology and Investment 2016, 7. Pp. 40-50.

4.19 The main constraint facing the sustainability of Ghana’s agricultural research network is the declining public funding and the likely effects this has on its core mandate. A recent analysis (Asare and Essegbey, 2016) shows that while the number of Full-Time Researchers (FTE) increased from 470 in 2000 to 607 in 2011, the trend in public R&D expenditure levelled off by 2011 (Figures 10(a) and 10(b)). Furthermore, given the increasing trend in FTE, the structure of the R&D expenditure is dominated by staff emoluments. On average, staff salaries account for 78 per cent of the total agricultural R&D expenditure in CSIR, while operating and program cost and capital investments account for 20 per cent and 2 per cent, respectively. Over time, there has been a drastic decline in capital investments from 6.7 per cent of total R&D expenditure in 2000 to 0.1 per cent in 2011. Government budget accounts for over 85 percent of the R&D funding and there has been an increasing gap between budgeted and actual expenditure. As such available funding has largely been used to pay researchers without the provision of requisite financial resources for the necessary R&D infrastructure. Maintenance, rehabilitation and operation of infrastructure such as laboratories, offices and equipment for research and development have also become a major challenge.

4.20 Agricultural research tends to be highly fragmented among many small, externally financed projects with limited coordination and minimal private sector involvement. There is little contact between researchers and extension agents, and technological-adoption studies are rare.⁴⁵ Research spending accounts for about 0.7 percent of agricultural output (excluding cocoa⁴⁶), above the SSA average of 0.5 percent, but below the rates of regional leaders, such as Kenya (1.4 percent) and South Africa (2 percent), as well as the African Union target of 1 percent. Moreover, many research projects are not geared towards solving the most urgent constraints faced by farmers. In addition, human-resource constraints are serious and growing. Nearly 40 percent of agricultural researchers in Ghana are over 50 years old, and only about one-third hold doctoral degrees. Salaries consume 80 percent of the research budget, leaving few resources for investment in physical infrastructure, equipment, staff development, and information systems. It is estimated that less than 4 percent of the CSIR budget is available to finance new operations. As a result, researchers are almost totally dependent on donor funding, which is unpredictable and allocated according to donor objectives that are not necessary consistent with those of the government or with the interests of farmers.

4.21 Filling existing and anticipated staffing gaps at CSIR’s institutes will require the creation of detailed human-resource development plans, including training schedules and career tracks. CSIR should prioritize doctoral-level training and mentoring programs for junior scientists. In addition, CSIR’s management will need to create a more conducive work environment by developing opportunities for scientific achievement and career advancement. For example, promotion should be based on scientific merit rather than seniority. Meanwhile, raising the retirement age to 65 would slow the impending loss of senior researchers in the short-to-medium term.

4.22 There is almost no private sector participation in agricultural research in Ghana. Private firms import hybrid seeds, fertilizers, pesticides, and new livestock breeds, but Ghana lacks the strong biosafety and regulatory framework necessary to take full advantage of biotechnology

⁴⁵ The latest adoption study on maize dates from 1997, and no similar studies have been done for rice or cassava.

⁴⁶ Beintema *et al.*, 2014.

and transgenics. Conducting timely evaluations of emerging genetic traits would enable them to be rapidly approved and inserted into existing commercial crop varieties. Currently, private firms that import sophisticated productive technologies tend to focus on export-oriented cash crops, such as oil palm, while technological uptake among smallholders who produce cereals, tubers, and other food crops remains limited. Adopting more stringent labelling rules would help to improve quality control along the seed supply chain, and authorities should facilitate joint ventures between multinationals and local seed companies. Furthermore, easing of regulations related to importation of foundation seed, and easing of restrictions related to intellectual property rights would help to develop a more competitive seed domestic sector, capable of supplying quality seed which is critical for productivity growth.⁴⁷

4.23 The challenges affecting the R&D system are also reflected in the seed system which is largely public-sector driven, with a legal and regulatory framework that imposes some restrictions on the participation of the private sector. Ghana's seed sector has undergone some significant changes in the past few years, with approval of the new seed law and regulations (Plant Breeders Law of 2013), the appointment of the National Seed Council, and the emergence of a more diversified commercial seed sector. However, while the new legal framework promises new incentives to spur the seed industry, the direction of the seed system development is determined by the agronomic and economic considerations and that there are several important issues that policymakers need to address if Ghana's commercial seed sector is to progress. Three of these are related to the implementation and enforcement of regulations (for variety release, seed certification, and consumer protection) that come under the responsibility of the National Seed Council. Other issues concern the management of CSIR's agricultural research institutes (breeder seed supply and information provision), and the other issue is seed price (Tripp, R and Mensah-Bonsu, A, 2013). All these issues have implications on the development of the seed systems and the associated productivity which determines the rate of return (ROR) of R&D system.

4.24 Promoting technology transfer is often the most cost-effective way to boost agricultural productivity, yet Ghana has made little progress in encouraging the adoption of improved technologies. Many agricultural innovations remain underutilized despite their proven productivity benefits, such as the improved cassava varieties developed with support from the World Bank-financed West Africa Agricultural Productivity Project (WAAPP). Overcoming this apparent "last mile" problem by encouraging farmers to adopt existing technologies will require more effective extension services. However, these services are inherently expensive, and expanding public agricultural extension may be infeasible in the context of the ongoing fiscal consolidation. The government should therefore explore innovative strategies for encouraging private sector engagement in agricultural extension and forge new PPPs in the agricultural sector.

4.25 To expand access to private extension services, the government should develop a new framework for collaborating with agricultural input companies, distributors and dealers, transport and logistics providers, food processors and retailers, and telecom operators. Whereas public extension services are typically focused on the supply side, private services are usually driven by the quality and scale demands of agro-processors, wholesalers, and exporters. Under a fully private extension system, the costs of extension services are financed by the efficiency improvements they generate. As farmers adopt new technologies, marginal yields

⁴⁷ Enabling the Business of Agriculture (2016)

increase, output quality improves, economies of scale develop, and new opportunities for value-addition arise. If these efforts are successful, improved farmer productivity and the elaboration of agricultural value chains will more than offset the cost of providing extension services.

4.26 While they offer significant advantages, private extension services are not always a perfect substitute for public services, even within a single geographic area. In certain cases, PPPs may provide a superior alternative to wholly public or private systems.⁴⁸ Under one common PPP framework the government provides vouchers to farmers, who then redeem them for private training services. Subsidizing outgrower schemes in which nucleus farms transfer knowledge to smallholders is another promising option, one that is currently being pursued as part of the World Bank-financed Ghana Commercial Agriculture Project (GCAP).

4.27 Beyond marginal productivity, strengthening the resiliency of agricultural production should be a top policy priority. This includes mitigating the impact of short-term weather-related fluctuations on agricultural output and coping with the complex long-term effects of climate change. A recently completed World Bank risk assessment concluded that farming households in Ghana's northern regions are most susceptible to production and price shocks, including those caused by seasonal droughts and flooding as well as persistent increases in temperature, and that climate change is intensifying all of these risks.⁴⁹

4.28 Promoting the adoption of drought-tolerant and fast-maturing crop varieties and improving water-management systems will enable farmers to better adapt their production methods to an increasingly unpredictable climate. The World Bank-supported Sustainable Land and Water Management Project and the West Africa Regional Fisheries Program both focus on promoting the sustainable management of land, water, and other natural resources through accelerated technology transfer. In addition, the GCAP is promoting improved rain-fed rice cultivation in the Savannah Accelerated Development Authority (SADA) zone⁵⁰ by providing matching investment grants to rice producers.

4.29 In addition to technology transfer, infrastructure investment is crucial to agricultural resilience and long-term productivity growth. Improved transportation and storage infrastructure can help reduce post-harvest losses and mitigate price volatility, and more efficient and extensive irrigation systems will be vital to increase crop yields and reduce vulnerability to weather-related shocks. However, irrigation investment currently represents just 3 percent of total public spending on agriculture. Expanding irrigation access will require not only rehabilitating and modernizing public irrigation and drainage systems, but also reforming the institutions that oversee them. With support from the GCAP, the government has begun a reform program targeting the Ghana Irrigation Development Authority and the Irrigation Company of the Upper Region, accompanied by investments in the rehabilitation of existing irrigation infrastructure. Once the rehabilitation process is complete, management responsibilities will be handed over to private

⁴⁸ Zhou and Baby, 2015.

⁴⁹ Choudhary *et al.*, 2015.

⁵⁰ The SADA zone includes the Northern Region, Upper East Region, Upper West Region and bordering districts of the Brong Ahafo Region and Volta Region. The SADA zone covers about 54 percent of Ghana's land area but is home to only 5 million people, less than 20 percent of Ghana's population. Most of the SADA zone is semi-arid. According to a 2015 World Bank Poverty Assessment, the SADA zone has a poverty rate of over 40 percent, roughly double the national average of 21.4 percent.

firms and/or local user associations depending on the size of each scheme. Irrigation development is especially crucial in the SADA zone, which has enormous potential for agricultural production that can only be exploited once adequate water resources are made available.

Irrigation Potential in Ghana

4.30 Irrigation development in Ghana lags behind its overall potential. An assessment of the total agricultural land under irrigation carried out by the Ghana Irrigation Development Authority (GIDA) and the International Water Management Institute (IWMI) in 2011 indicates that there is currently a total area of 206,868 hectares of arable land under irrigation (GIDA/IWMI, 2015). This figure represents 2.6 percent of the total land area under cultivation and 41 percent of irrigable land. About 90 percent (186,000 hectares) of the irrigated area is in informal irrigation schemes developed by private individuals with minimal support, if any, from the public sector. About 10,668 hectares (5 percent) is in formal irrigation schemes developed by the GIDA and by NGOs for smallholder farmers (see Table 9). The remaining 10,200 hectares (5 percent) are commercial schemes developed by agribusinesses with little or no public support. The total land under public schemes developed by GIDA range between 12, 000 - 14,000 hectares, of which about 8,700 hectares are developed, while only about 3,600 hectares are actually irrigated, implying that there is low water conveyance of the public irrigation schemes. Ghana, also, has over 56,000 underground water sources which can be tapped using groundwater abstraction systems (Kortatsi *et al.*, 1995), but it is largely undeveloped and underutilized.

Table 9: Total Area under Irrigation (2009 - 2012), hectares

Type of Irrigation project	2009	2010	2011	2012
Existing Irrigation Schemes	10,067	10,127	10,668	10,668
Additional Area after Rehabilitation	500	500	481	481
Small Scale Irrigation Development Project	1,279	1,682	0	0
Small Farms Irrigation Project	322	324	110	110
Surface Water Extraction	0	0	0	0
Ground Water Extraction	0	0	0	0
MCA	0	0	450	450
Sub-Total	12,168	12,633	11,709	11,709
Informal and private Irrigation Area Under Cultivation	17,636	17,636	17,636	17,636
Grand Total	29,804	30,269	29,345	29,345

Source: Ghana Irrigation Development Authority, MoFA, 2013.

4.31 The major problems affecting the development of efficient irrigation systems in many countries, particularly in Sub-Saharan Africa (SSA) relate to deficiencies in scheme management and capacity among the water-users. Public irrigation schemes suffer from inadequate management in terms of production planning and efficient water control mechanisms, which invariably result in rapid dilapidation due to lack of adequate operations and maintenance. This is exacerbated by the limited organizational capacity among the water-users to efficiently use

and pay for the water. In the case of Ghana, there is need to reform the Ghana Irrigation Development Authority (GIDA) and Irrigation Company of the Upper Region (ICOUR) in order to improve their capacity to provide scheme management services. There is also need to enhance the capacity of water-user associations (WUAs) in production planning and marketing to ensure that farmers are able to pay for the water, as well as meet the operations and maintenance costs. Furthermore, there is need to develop Public-Private partnerships (PPPs) to leverage private sector investment in irrigation development. Ghana has a few successful case studies upon which to build (see Box 4). This is important to ensure sustainable irrigation development and avoid the cycle of costly rehabilitations which are done periodically by the Government mostly with support from development partners.

Box 4: Facilitating the entry of agribusiness investors into Ghana's irrigation sector: The case of Vegpro Limited and Golden Exotic Limited.

Ghana has the potential to be a competitive destination for commercial agribusiness investors. Among other factors, Ghana has comparatively low land costs, competitive labor rates, ease of access to EU/western markets, competitive freight rates with relatively more frequent flights to the major global markets (i.e. Europe and North America), reasonable infrastructure, access to water for irrigation and favorable policy and regulatory framework including political stability.

Over the last decade, Ghana has attracted considerable foreign direct investment in the agribusiness sector covering many commodities including horticulture, fisheries, cereals, cocoa and oil palm. Two examples of such agribusinesses which have invested in horticultural production and export are Vegpro Limited and Golden Exotic Limited. In 2011, Vegpro (Ghana) Limited, a subsidiary of the VP Group started production and export of horticultural commodities such as baby corn and butternut squash. Golden Exotics Limited started business in 2003 and has established plantations of banana and pineapple in Ghana.

Both companies are operating in the irrigation schemes along the River Volta within the irrigated command area of Kpong Irrigation Scheme (KIS) in the case of Golden Exotic and Kpong Left Bank Irrigation Project (KLBIP) in the case of Vegpro. Both schemes are being rehabilitated and modernized to meet the demands of both smallholder farmers as well as agribusinesses. Scheme management services are being strengthened through the reform of the Ghana Irrigation Development Services (GIDA) to begun scheme management entities (SMEs). Financial support for these improvements and reforms is provided by the World Bank and USAID through the Ghana Commercial Agriculture Project (GCAP) and the Government of Ghana.

Apart from Vegpro and Golden Exotics, a considerable number of agribusinesses are already operational in Ghana e.g. Blueskies, Wienco, Agdevco, Iwad and Agritop. A proper PPP framework would attract these firms to work with government in the transformation of the agricultural sector.

5. Key Opportunities for agricultural transformation

5.1 Ghana’s lower medium-income status combined with the emerging oil economy imply a growing middle-class whose demand for quality and safe foodstuff is rapidly increasing. This derived demand will compel producers and other players in the food value-chain to look for better ways to intensify their production and trading practices to meet rapidly changing market requirements. The rapidly increasing demand for quality and safe foodstuffs and the fact that Ghana’s food markets are currently stocked largely with imported commodities, imply ample opportunity for import substitution. Given the current consumer tastes, shaped largely by imported foodstuffs, import substitution will not simply be about improving productivity, but would also involve food safety issues, improved post-harvest management at farm-level, agro-processing, etc. Producers and food processors adaptation to these changing consumer tastes and preferences is what will continue to drive the transformation of the production systems and innovations throughout the food value chain.

5.2 Ghana is currently a net importer of basic foods (raw and processed) such as rice, poultry, sugar, vegetable oils, and the import bill is growing. The annual food import bill now exceeds the estimated annual \$2 billion earned from cocoa exports. Population growth, high rates of urbanization, and increasing incomes are driving the demand for imported foodstuffs as a result of increased demand for more quality and safe foodstuffs such as meat, dairy, and fresh and processed vegetables. In 2015, food imports account for 16.8 percent of total merchandise imports estimated at US\$13.3 billion,⁵¹ and the food import bill is projected to increase fourfold over the next 20 years, unless local production is increased (Table 10). The food import bill is large enough to create adequate space for investors to increase investment in the sector to take advantage of import substitution. Rapid urbanization and associated shifts in consumer preferences are also boosting demand for processed foods, much of which is currently satisfied by imports. Food demand in urban areas is projected to increase fourfold over the next 20 years.

Table 10: Summary of Ghana’s merchandise imports

	2000	2015
Total imports value (US\$ million)	2,973	13,291
<i>of which (% of total)</i>		
Food	12.8	16.8
Agricultural raw materials	2.4	0.8
Fuels	21.4	3.7
Ores and metals	0.8	1.2
Manufactures	61.6	76.5

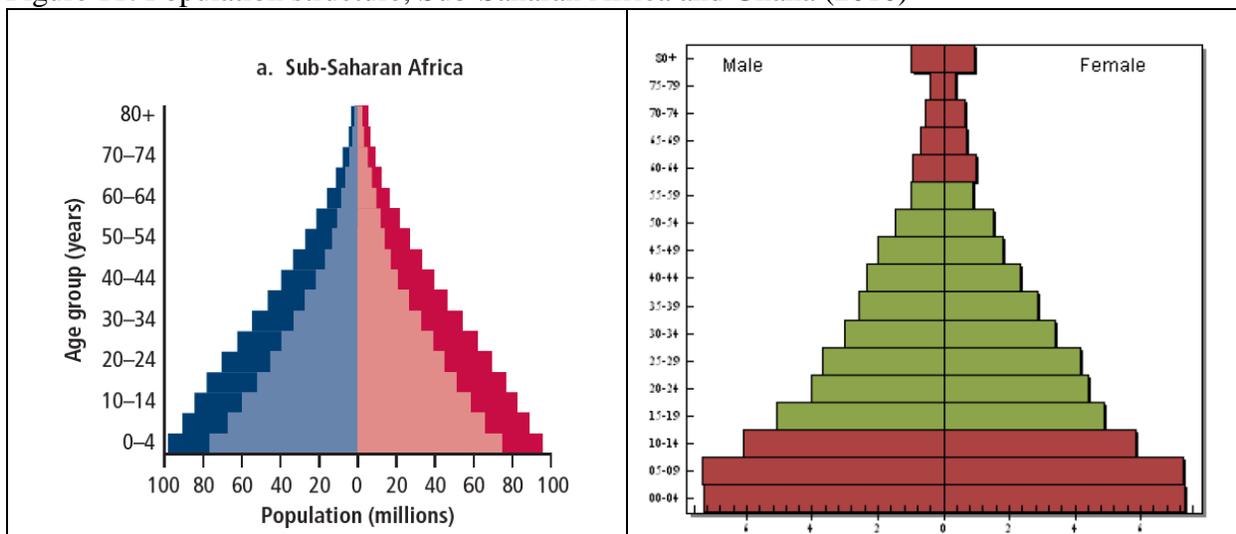
Source: World Development Indicators

5.3 Another important factor that creates an opportunity for agriculture transformation in Ghana is the demographic transition towards an increasingly young population. Just like most of the rest of Sub-Saharan Africa, Ghana has over 35-40 percent of its population in the youth category (see Figure 11). Better strategies to promote youth employment in

⁵¹ World Bank. 2015. World Development Indicators (WDI), global merchandise imports.

agriculture/agribusiness value-chains is important for achieving sustainable growth and enable the country to reap the dividend from the demographic transition.

Figure 11: Population structure, Sub-Saharan Africa and Ghana (2010)



Source: Ghana Statistics (2010).

5.4 Ghana also continues to implement reforms required to open-up to private sector investment. These measures include improving the regulatory framework and promoting open, transparent and efficient regime for land administration and governance, and strengthening institutions for research and technology generation aimed at raising sector productivity. The current government is committed to promoting private sector growth as a basis for improving economic growth and fiscal policy (as outlined in the 2017 budget statement) allocates fiscal space for the private sector to grow. It is crucial for agricultural transformation that the trend towards improved regulatory reform to create better policy environment for private sector investment is sustained and strengthened.

5.5 Ghana is endowed with areas with high agricultural production potential that can support the growing of a wide-range of commodities. For example, the Northern Savannah Ecological Zone (NSEZ), Afram plains, the Accra plains and other high agricultural potential areas are endowed with abundant and fertile land for the production of a wide range of commodities.

5.6 Given its vast size, low population density and availability of water resources, the Northern Savannah Ecological Zone (NSEZ) is considered to have one of the highest potentials for agricultural production in Ghana. The NSEZ covers 54 percent of the country's surface area (comprising the Upper East, Upper West and the Northern Regions as well as the northern districts of Brong-Ahafo and Volta Regions - Figure 12). The NSEZ has about six million hectares of arable land, with great potential for commercial production of cereals/grains, sugar cane, cassava, cotton, shea and livestock (Table 11).

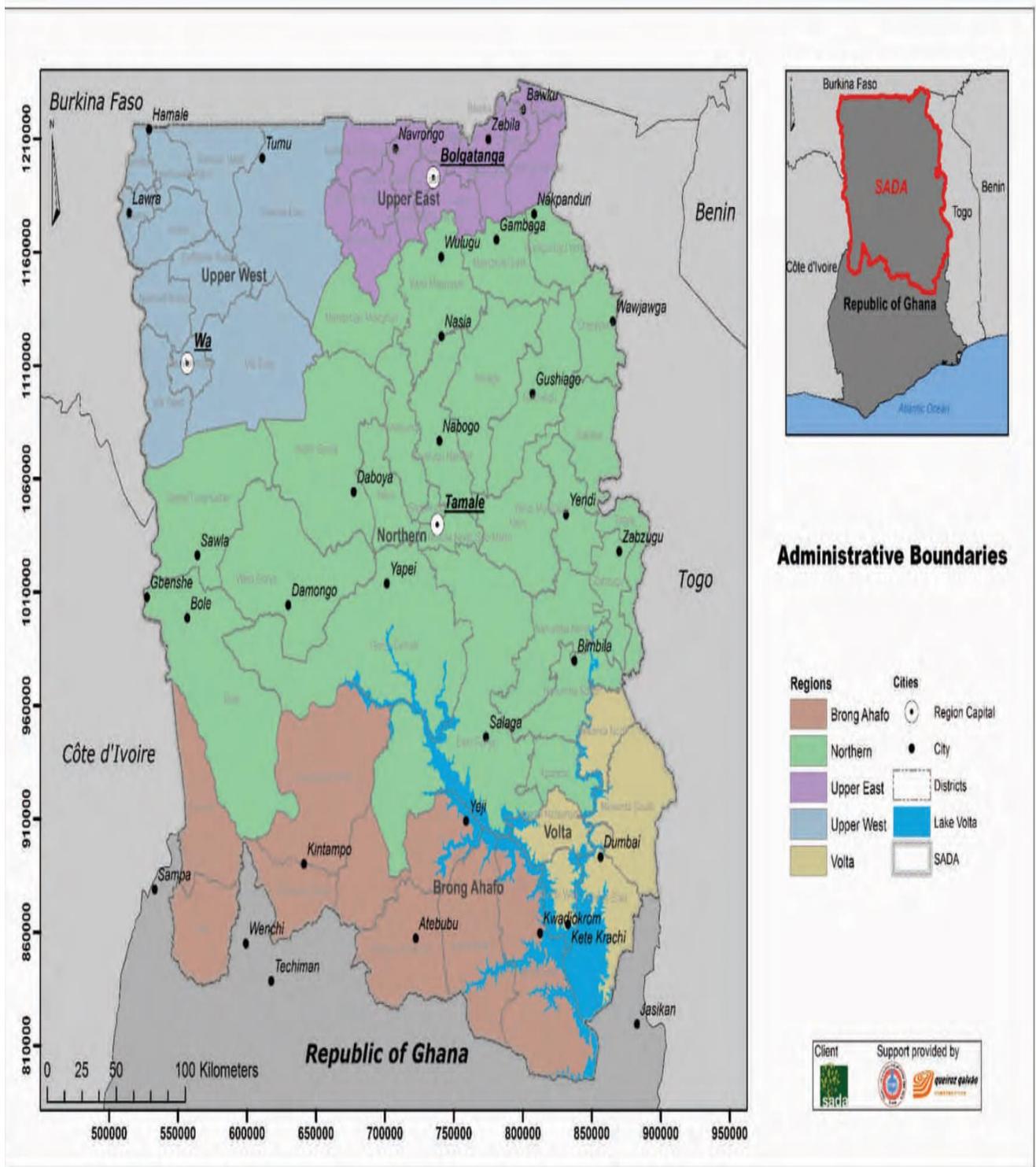
5.7 According to the Masterplan for the “Inclusive Agriculture-led Economic Transformation of the NSEZ”, the area is endowed with key features that are associated with significant agricultural growth potential. These include:

- *Large tracts of land available for agricultural expansion:* More than 6 million hectares of arable land which is suitable for a wide range of crops, livestock, forestry and aquaculture production
- *Significant irrigation potential:* The NSEZ has 23 large and medium sized dam sites which can be developed for multiple uses such as hydropower generation, irrigation development, flood control, aquaculture; some of these dams are estimated to be able to command 209,000 to 547,000 hectares of irrigable land; there are also an estimated 104 small dam sites across 95 catchment areas with potential to harness over 104,000 hectares under irrigation.

5.8 The existing agricultural potential of the NSEZ is estimated to attract between US\$ 1.9 – 2.3 billion of private investment in agriculture, down-stream processing and irrigation infrastructure development. This could also create over 400,000 permanent jobs along the targeted value-chains.

5.9 However, despite its potential, the NSEZ remains the poorest region in the country. According to the Ghana Living Standards Survey (GLSS), the northern regions collectively are home to more than one-third of all poor households in the country. Social indicators such education, health, access to safe water as well as maternal and child health are among the lowest in the country. Furthermore, the generally poor state of infrastructure means that the vast agricultural and other productive potentials that the region possesses remain largely unexploited, resulting in low per capita incomes and a relatively low contribution to Ghana’s Gross Domestic Product (GDP). While Ghana is a lower middle income country, the northern regions, with over 40 per cent of Ghana’s land area and 30 per cent of its population, remain the least developed. Whilst Ghana as a whole has achieved the extreme poverty reduction goal (as per the Millennium Development Goals), the northern regions have consistently lagged behind.

Figure 12: NSEZ political regions and districts



Source: Resources and Masterplan for the Transformation of Agriculture in the SADA Zone

Table 11: Agricultural potential zones, and their commodity suitability in the NSEZ

AGRIBUSINESS DEVELOPMENT ZONE	KEY URBAN CENTRES	POTENTIAL VALUE CHAINS	PRIORITY PUBLIC INFRASTRUCTURE PROJECTS	POTENTIAL PRIVATE INVESTMENT PROJECTS
Zone 1	Bolgatanga, Navrongo, Bawku, Zebila, Gambaga, Nakpanduri, Bongo	Livestock, rice, fruits (cashew, pineapple, mango), vegetables, grains, cereals and oil seeds	Pwalugu Multi-purpose Dam, Tamne Irrigation Scheme, second dam on the Tono river	Rice mill, rice out-grower scheme, vegetable oil mill, vegetables and fruits packing house and processing, beef slaughterhouse, grains, cereals and oilseeds out-grower scheme
Zone 2	Tamale, Nasia, Nabogo, Savelugu, Wulugu, Wale, Gushiago, Daboya	Rice, grains, cereals and oil seeds, poultry, sugar and livestock	Nasia-Nabogo Irrigation Scheme, Pwalugu Irrigation Scheme, Fumbisi Valley Irrigation Scheme	Rice mill, Rice anchor farms and out-grower scheme, soybean-maize anchor farms and out-grower schemes, poultry farms and out-grower schemes, sugar estate, out-growers scheme and mill, vegetable oil and feed mill
Zone 3	Yendi, Bimbila, Salaga, Makango, Kete Krachi, Dambai, Nkwanta	Rice, grains, cereals and oil seeds, sugar, perennial fruit crops, aquaculture, cotton, cassava, livestock	Juale Multi-purpose dam, the Daka River Valley Irrigation Scheme and a grains harbour terminal at Makango	Rice mill, rice anchor farms and out-grower schemes, soybean-maize-cotton anchor farms and out-grower schemes, fruit trees out-grower schemes, cotton processing and ginnery, cassava processing facility, aquaculture out-grower scheme, fruit packaging house and juice factory
Zone 4	Atebubu, Amantin, Sawaba, Yeji	Fruits under irrigation (mango, banana, pineapple, citrus, etc.), cassava, yams, rice, grains, cereals and oil seeds, planted forests, sugar	Lake harbour at Yeji, improvement of road connections, pumped irrigation across the lake	Fruit trees seedlings production, aquaculture out-grower scheme, fruit trees out-grower scheme, vegetables out-grower scheme, cassava processing, vegetables packing house, Yeji port and barges, forest farms and bio-energy plants
Zone 5	Buipe, Kintampo, Damongo, Bole	Grains, cereals and oil seeds, poultry, juices and fresh-cut fruits from perennial fruit crops (cashew, mango, citrus), pineapple, non-traditional crops in the Zone (coffee, cocoa, oil palm), sugar	Bui Irrigation Scheme, Jambito and Ntereso hydropower stations, Major port and Industrial Estate in Buipe	Maize-soybean anchor farms and out-grower schemes, Fruit trees seedlings production, fruit out-grower schemes, fruit packing house and juice production facility, sugar estate, out-grower schemes and mill
Zone 6	Lawra, Wa, Sawla, Tumu	Grains, cereals and oil seeds, livestock, cotton, cashew	Koulibi Hydropower dam, Kanyambia, Sissili and Kulpaw multi-purpose dams	Cotton processing and ginnery, cotton out-grower scheme, cashew nuts out-grower scheme and processing facility, maize-soybeans-cotton anchor farms, and out-grower scheme, shea butter out-grower

Note: Grains, cereals and oilseeds include mainly maize, soybean, groundnuts, pearl millet, sorghum, cowpea and cotton. Rice is highlighted separately as well as cotton in special cases.

Source: This table was prepared based on the 6 Agribusiness Development Zones presented in the SADA Agricultural Master Plan.

5.10 Like other savannah zones in the world, while the potential is huge for the NSEZ to transform itself into a major bread-basket for Ghana, there are also many risks that may affect investment in the zone. One of the major risks to agricultural development, particularly for fragile ecosystems such as those in the NSEZ is climate change. The effects of climate change tend to be felt strongest in fragile agro-ecological zones, including the savannah zone with low rainfall and high susceptibility to environmental degradation. The NSEZ also experiences low productivity due to a multiplicity of factors including low intensity and poorly distributed rainfall, inadequate infrastructure, limited access to markets, and the high cost of doing business which invariably affects competitiveness.

5.11 However, experience from other countries which have zones with similar conditions shows that these constraints can be overcome. A typical fairly recent example is the Guinea savannah of which the NSEZ is part. Also the Cerrado of Brazil (see details in World Bank, 2009)⁵² was a lagging region which went through a period of agricultural-led transformation. The transformation achieved in each of these international experiences came about due to: (i) large-scale investment in productive and social infrastructure; (ii) strengthening of institutions; (iii) adjusting the policies and incentives in a manner that promotes commercial agriculture and larger farms while also supporting smaller farms to improve productivity and integrate better in markets.

The New Flagship Program: The Planting for Food and Jobs

5.12 Another opportunity to spur agricultural transformation could emanate from better design and implementation of a sector strategy in line with the new flagship program, i.e. the Planting for Food and Jobs. MoFA recently launched the Planting for Food and Jobs program which aims to rapidly increase food production to achieve food self-sufficiency and create jobs. The program focuses on five key staple crops: maize, rice, soybean, sorghum and vegetables. Its implementation is anchored on five pillars: (i) provision of improved seeds; (ii) supply of fertilizers; (iii) provision of extension services; (iv) marketing arrangements and reduction of post-harvest losses; and (v) an electronic platform to capture and monitor program implementation. The program aims at raising output and creating 750,000 jobs within the agricultural value-chain. It targets 200,000 farmers in all 216 districts of Ghana. For more details, see Box 4.

Box 4: Key elements of the Planting for Food and Jobs Program

The planting for food and jobs is a national campaign unveiled by the new government for the rapid growth in the production of key staple crops (mainly maize, rice, soybean, sorghum and vegetables). The campaign, which was launched by the State President of Ghana on April 19, 2017, aims at promoting growth in food production and creating jobs, particularly for the youth across the country. The campaign's key pillars of support to over 200,000 farmers covering all the 216 districts include: improved seed, fertilizer, extension services, marketing and e-agriculture.

The program's target for 2017 are 1 million metric tons of additional food output and creation of over 750,000 jobs. The program cost is estimated at GHC560 million (about US\$140 million) and the estimated incremental production is valued at over GHC1.3 billion (about US\$420 million). Although this is a public-sector driven program, the delivery of the key inputs will be done through the private sector.

⁵² World Bank, 2009. Awakening African Sleeping Giant: Prospects for Commercial Agriculture in the Guinea Savannah Zone and beyond. World Bank, Washington DC.

5.13 However, there is need to refine its design, align its implementation arrangements with private sector delivery systems while the government creates the policy space, and promote its capacity for quality monitoring. There has been a lot of expediency in the development and launching of the program. As such, the linkages between the proposed program and the sector policy (FASDEP) and investment framework (METASIP) remain rather unclear which may disrupt medium to long-term sector development planning. The Planting for Food and Jobs program should be embedded in the revised/updated sector policy and investment framework for the next 4-5 years. This will help sustain the existing medium-term sector development planning while also providing the framework for further sector support by most DPs whose capacity to mobilize resources for the 2017 program is limited.

5.14 Furthermore, as a result of the expediency, the Results Framework, results indicators and targets, as well as the M&E strategy require significant strengthening. It is not clear how the results indicator targets were estimated, and how the monitoring for results will be undertaken to ensure that the outcome targets are achieved. The targets for 2017 seem too ambitious and without a proper system of monitoring for the results, it is unlikely that the program will achieve its objectives. It is critical that the results indicators be clearly defined, the related targets be realistic and their measurement be clearly highlighted. The electronic monitoring is a good idea if there is already a well-tested e-monitoring platform which can easily be customized to the needs of the program. However, first a proper baseline should be established against which to measure the results. Furthermore, it is important to put in place a performance assessment strategy which should cascade the targets from those responsible for overseeing implementation at the local, regional and national level – and linked to a clear and transparent performance assessment system with appropriate rewards and sanctions.

5.15 The risk assessment of the program should be further strengthened. Given the many stakeholders involved in implementation of the program, a number of risks may surface including: (i) risk of coordination failure; (ii) risk of elite capture; (iii) risk of free-riders/opportunists. Normally programs that are driven by the public sector face many risks related to moral hazard. These risks, if not properly mitigated may affect the achievement of the program targets. It is important to ensure extensive consultation with key stakeholders in order to identify these risks and put in place appropriate mitigation plans with well-established implementation and monitoring arrangements.

5.16 The program' targeting strategy, focusing on already existing farmers who are expected to work closely with out-growers, needs to be better elaborated. While the description of the program's targeting strategy focusing on already established farmers seems well thought-through, it may be challenging to implement in practice leading to significant exclusion and inclusion errors. Given the very short-term planning, with the season about to start, there is need to build enough capacity for those who will implement the targeting strategy on the ground. Detailed criteria for identifying target farmers need to be established. Otherwise, with significant targeting errors, achieving the outcome targets as well as recovery will be challenging. Given that 2017 season is meant to be a pilot, it is important to pay particular attention to these issues. Furthermore, there are existing programs (e.g. Ghana Commercial Agriculture Project) which are implemented using a similar approach and have generated valuable experiences from which lessons can be drawn to inform the refinement of the program design in the subsequent years.

5.17 The program’s governance arrangements should be more aligned to existing arrangements to avoid creating another layer of bureaucracy which may affect implementation. The program’s proposed governance arrangements include a number of layers of committees at the national, regional and local levels. There is a risk that these bureaucratic layers might create delays in decision making and may therefore affect implementation if not well coordinated. Furthermore, running of all these layers of committees may entail significant program costs. The program secretariat should weigh the costs and benefits of such committees, and where possible have one main Steering Committee which will have the key decision making responsibility with oversight and coordination functions put elsewhere.

5.18 For sustainability, the program’s delivery mechanisms under the program should crowd-in rather than crowd-out private sector supply systems. Given that the delivery of the program inputs as well as off-take of program outputs will primarily be undertaken by the private sector while the government’s role will be limited to facilitation, it is important to ensure that the private sector is sensitized early enough in order to re-adjust their investment plans. The private sector (in particular aggregators and other commodity off-takers) should not be brought in only at a later stage. Furthermore, there is need to prioritize the planning for output marketing since it is critical to ensure that production decisions are in tandem and/or influenced by the market.

5.19 Given the weaknesses of the current public extension system, there is need to enhance extension delivery through the promotion of e-extension. Scaling-up the use of the e-extension platform (established through WAAPP) will be critical to ensure that all farmers that will benefit under the program should have adequate and timely extension advisory services.

5.20 To ensure that farmers have access to good quality seed and fertilizer, there is a need to develop the capacity for monitoring and regulatory compliance. The seed system should ensure that the necessary testing protocols are undertaken to ensure that quality seeds are delivered by the private sector to farmers. Also, MoFA should ensure that spot checks are done to ensure that the right quantities and quality of fertilizers are delivered to the farmers. Without quality seed and fertilizer, yield and output targets will not be achieved. Furthermore, the program should define the expected environmental and social issues that may result from its implementation to develop adequate safeguard mechanisms to mitigate against any adverse outcomes.

5.21 There is need to strike a balance between food and nutrition security and employment creation objectives. Given its focus on staple crops and vegetables, the program has the potential to achieve both employment creation as well as enhance food security and nutrition. However, there is also need in the subsequent years to shift the focus towards high value agriculture, including commodities such as horticulture which is typically at least 3 times as labour-intensive as cereals and has higher post-harvest value addition potential.

6. Key policy recommendations

This section summarizes the key recommendations in light of the key sector issues and challenges discussed in the previous sections of this Policy Note.

6.1 While the government is engaged in an important process of fiscal consolidation, and its resource envelope is limited, there is need to focus on improving the quality and efficiency of public spending in order to achieve the government’s development policy goals. Research has shown that a one percent increase in public spending on agriculture is associated with a 0.15 percent increase in Ghana’s agricultural labor productivity,⁵³ yet agricultural spending in Ghana as a share of the total budget is one of the lowest in Africa. Given agriculture’s pivotal importance to employment, income growth, and poverty reduction, the government should reverse these trends if it is to achieve its sectoral and national development objectives, and the Medium-Term Expenditure Framework should include a strategy for sustainably increasing public spending into the agricultural sector. In order to improve the quality and efficiency of public expenditure in agriculture, there is need for better expenditure prioritization and targeting areas that can generate important efficiency gains and returns. The budgetary dominance of recurrent over development spending is a major source of inefficiency. Policymakers should re-evaluate the size of the current MoFA workforce and strive to strike a better balance between operational and investment spending in the agriculture sector. The most cost-effective investments are likely to be in core infrastructure, especially roads and irrigation networks, as well as technology generation, dissemination, education and skills development.⁵⁴

6.3 Combined with increased funding for agricultural research, regulatory reform could facilitate the adoption of new technologies.⁵⁵ Eliminating unnecessary requirements, burdensome procedures, and other administrative barriers to testing and registering new crop varieties and improved agricultural inputs would foster private investment in agricultural research and promote the commercialization of technological innovations. In addition, clarifying and reinforcing intellectual property rights, strengthening quality assurance in seed markets, and rigorously enforcing seed-labelling rules would further support private investment in agricultural technology and the elaboration of the input value chain.

6.4 A combination of public and private investment in irrigation systems would increase cropping intensity and bolster the agricultural sector’s resilience to weather-related shocks. Climate change is increasing the unpredictability of rainfall in Ghana. Limited access to irrigation, low rates of technological uptake, and the limited use of modern production methods exacerbate output volatility and contribute to food insecurity. These trends will only intensify the vulnerability of the agricultural sector unless measures are taken to mitigate these risks, including investment in irrigation, the development and introduction of drought-tolerant and shorter-duration crop varieties—especially staple grains such as maize and rice—and improved water management techniques on rain-fed farmland. There is need for the country to deepen the implementation of the National Climate Change Policy (NCCP) by adopting the already developed implementation

⁵³ Benin *et al.*, 2009.

⁵⁴ World Bank, 2009; Seek, 2013.

⁵⁵ Asare and Essegbey, 2016.

plan prepared by MoFA.⁵⁶ It is also important to ensure that a set of principles for climate-smart agriculture are adhered in the implementation of the plan. These include: (i) sustainable increase in agricultural productivity and incomes; (ii) adapt and build resilience to climate change; (iii) reduce and/or remove greenhouse gas (GHG) emissions, where possible; (iv) climate-risk management such as crop insurance; and (v) re-orienting agricultural research and development towards climate resilient technologies and management practices.⁵⁷

6.5 The government’s overarching agricultural investment strategy should focus on reducing unit production costs and narrowing yield gaps by increasing per-hectare productivity. In order to leverage a limited investment envelope, the authorities should continue to provide conditional support to private agricultural investors through methods such as the GCAP matching grants already in use to spur linkages between agribusinesses and smallholder farmers. Similarly, establishing Public-Private-Partnerships (PPPs) to provide extension services can help to maximize the productivity impact of public spending. However, the government should avoid efforts to directly organize agricultural production or to subsidize input procurement, especially in cases where public involvement crowds-out private sector activity.

6.6 When public investment targets a specific value chain, it should complement—rather than supplant—the ongoing development of the private sector. Agricultural investment should be part of a coherent investment strategy with clearly defined and widely supported objectives. For example, the Masara-N’Arziki maize outgrower scheme provides a positive example of how public-private collaboration can be used to foster a holistic approach to input supply, storage, and processing. However, similar initiatives in the rice subsector have been less successful, which may be due to the fact that rice is primarily grown in government-managed irrigation systems. These systems are slated for privatization, and this process could shift incentives in favor of demand-driven investment and offer new opportunities for public-private collaboration.

6.7 Refocusing the regional distribution of agricultural spending on the Northern Savannah Ecological Zone (NSEZ) and other areas with high agricultural potential could accelerate gains in output growth, poverty reduction, and rural income generation. The NSEZ, Afram plains, the Accra plains and other high agricultural potential areas are among the country’s poorest regions, yet they have considerable untapped agricultural potential. Unlocking this potential will require infrastructure investments, especially improvements to the road network, which are beyond the scope of the MoFA or Ghana’s other agricultural agencies. The government and its development partners should formulate a comprehensive strategy for promoting agricultural development in these zones that leverages complementarities between investments in different sectors.

⁵⁶ Ghana has a National Climate-Smart Agriculture and Food Security Action Plan (NCSAFSAP) (2015) prepared by the Ministry of Food and Agriculture to operationalize the NCCP in order to effectively integrate Climate Change into Food and Agriculture sector development policies and programs. The Policy areas of NCCP that the National Climate-Smart Agriculture Action Plan focuses include: (i) Agriculture and food security – emphasizing climate resilient agriculture and food systems; (ii) Disaster preparedness and response – climate resilient infrastructure; (iii) Resources Management – carbon sinks and resilient ecosystems; (iv) Equitable social Development; and (v) Appropriate Energy and infrastructure development – minimize greenhouse emission.

⁵⁷ These set of principles are also in line with Ghana’s Intended Nationally Determined Contributions (INDC) towards climate-change mitigation, developed in 2015 which commits the country to an emission reduction goal of lowering its GHG emissions by 15 percent relative to a business-as-usual (BAU) scenario emission of 73.95MtCO₂e₂ by 2030.

6.8 Land-tenure reform will be crucial to bolster private investment in Ghana's agricultural sector, and major progress in strengthening land and property rights can be achieved at a modest fiscal cost. Insecure property rights are a major obstacle to private investment in agriculture, as the difficulty of enforcing land titles discourages both the purchase of large commercial estates and private investment in physical improvements, such as irrigation networks and storage facilities. Moreover, the inability of farmers to borrow against equity is a major credit constraint.⁵⁸ While strengthening property rights is not within the immediate purview of the MoFA, the agricultural agencies can serve as important advocates for tenure reform within the public sector. There is need to work with the Ministry of Lands and Natural Resources (MLNR) to speed-up the finalization and approval of the National Land Bill aimed at improving land tenure governance

6.9 There is an urgent need to modernize the cocoa value chain in order to boost productivity and hedge against exogenous economic and climate-related shocks. Phasing-out inefficient public input-supply programs could reduce fiscal costs and create space for greater private sector participation in the cocoa value chain. Moreover, mapping cocoa farms and collecting more extensive farm-level productivity data could enhance the targeting of public sector support and help private investors identify emerging opportunities. Enhanced environmental policies and production standards would boost productivity and support the sustainability of the cocoa industry.

6.10 The COCOBOD's impact on the cocoa subsector is mixed, and reforms to its institutional arrangements and policy framework could greatly increase cocoa output with a minimal budgetary impact. The Board's accounting and management information systems should be upgraded to identify inefficiencies in its operations and resolve weaknesses in the targeting of its interventions. To support long-term planning and investment at the farm level, the COCOBOD should reorient its forward-sales mechanism to guarantee minimum producer prices. The COCOBOD should also leverage PPPs to expand the provision of semi-public goods, such as extension services, technology transfer, and disease and pest control.

6.11 Greater transparency in the management of the cocoa subsector, combined with further market liberalization, will be crucial to enhance the efficiency of cocoa production and ensure the long-term competitiveness of cocoa exports. The COCOBOD should be required to publish detailed information on how its price margin is calculated. Over time, the board should scale back its involvement in both the input and output sides of the supply chain. On the output side, the COCOBOD should focus on regulating a competitive purchasing process and ensuring that no single buyer exerts excessive market power. On the input side, it should cease to provide inputs directly and instead concentrate on establishing a stable and hospitable environment for private input providers. The board should periodically estimate marketing costs for cocoa, including domestic transportation, quality control and other costs, and recommend measures to lower them. Finally, the COCOBOD should coordinate the numerous programs and projects being implemented under Ghana's recently finalized Second Cocoa Sector Development Strategy.

6.12. Modernization of the cocoa value chain, reform of COCOBOD's institutional arrangements including greater transparency, and improvements in the policy framework

⁵⁸ Institute of Statistical, Social and Economic Research, 2015.

guiding the cocoa sub-sector, are essential to enhance the efficiency of cocoa production and ensure the long-term competitiveness of cocoa exports. Some necessary elements can be found back in the Ghana Cocoa Sector Development Strategy II (CSDS II) that was submitted for Parliamentary approval in 2017. In particular, CSDS II explicitly recognizes the urgent need for improved management and accounting systems in COCOBOD, better logistics and more efficient quality control systems, improved targeting and eventual phasing out of government input supply programs, substantial upscaling of tree improvement programs, and transforming the role of COCOBOD from that of a major market player to one of enabler of certification, traceability, and inter-ministerial coordination towards improved landscape management including payments for environmental services.

Table 12: Summary of key recommendations

Issue/Constraint	Recommendation	Expected outcome in the medium to long-term
1. Low and declining public expenditure in agriculture		
Ghana's public expenditure on agriculture has been declining and lags behind 10% target agreed under the Maputo Declaration	<ul style="list-style-type: none"> • Improve the quality and efficiency of public expenditure allocation and management • Improve budget coordination and prioritization in agriculture. • Improve budget allocation to key sub-sectors that are critical for agriculture growth (e.g. R&D, Irrigation, public expenditure in high potential zones). • Establish mechanisms for tracking the use of public spending allocated to local governments 	<ul style="list-style-type: none"> • Increase in the productivity of cereals and other key commodities. • High and sustained sector growth. • Improved/additional full-time equivalent jobs in agriculture in the medium to long-term. • Inclusive and sustained poverty reduction. • Improved public sector service provision (e.g. extension advisory services)
Ineffective provision of extension services especially at the District Assemblies	<ul style="list-style-type: none"> • Improve public funding to local governments through the Decentralization policy • Promote e-extension 	
Significant agricultural budget is spent on subsidies for inputs and other facilities and yet evidence shows this has led to inefficiencies and low returns relative to the cost	<ul style="list-style-type: none"> • Review subsidy programs to ensure better alignment of program objectives and targeting criteria • Adopt market-smart approaches to avoid market distortions • Promote the development of more sustainable private sector input supply systems. 	

Issue/Constraint	Recommendation	Expected outcome in the medium to long-term
Limited coordination of agricultural sector investments	<ul style="list-style-type: none"> • Strengthen the Agricultural Sector Working Group (ASWG) • Update the Food and Agriculture Sector Development Policy (FASDEP) and the Medium-Term Agriculture Sector Investment Plan (METASIP) • Improve the collection and analysis of agricultural data/statistics for better planning 	<ul style="list-style-type: none"> • Improved sector coordination/investment • Improved sector planning
2. Cocoa sector's low productivity threatening Ghana's competitiveness and position in the international market		
Low cocoa productivity	<ul style="list-style-type: none"> • Replant and rehabilitate old and disease-affected cocoa trees 	<ul style="list-style-type: none"> • Increase productivity of the cocoa sector from the current low levels
Ghana's Cocoa Sector Development Strategy (CSDS II) is yet to be finalized and approved.	<ul style="list-style-type: none"> • Finalize and approve the CSDS II • Improve cocoa sector governance to strengthen the inclusion of all key stakeholders in decision-making (e.g. revamp and revive Ghana Cocoa Platform) • Review COCOBOD's current organizational structure and functions to make the institution operate more efficiently. • Improve data collection and analysis, mapping and registration of farmers for better farmer-identification and support 	<ul style="list-style-type: none"> • Sustained global market share • Sustained high quality cocoa in order to continue earning a premium
Cocoa inputs programs (fertilizer, agro-chemicals and planting materials) need to be reviewed for efficiency	<ul style="list-style-type: none"> • Review subsidy programs to ensure better alignment of program objectives and targeting criteria • Adopt market-smart subsidy approaches to avoid market distortions • Promote the development of more sustainable private sector input supply systems. 	

Issue/Constraint	Recommendation	Expected outcome in the medium to long-term
Environmental and climate change issues affecting the sustainability of the cocoa sector	<ul style="list-style-type: none"> • Promote climate-smart cocoa agro-forestry in order to curb deforestation • Promote cocoa-forestry initiatives (CIF) • Address the underlying causes of environmentally unsustainable practices such as illegal mining in the cocoa plantations. 	
Land tenure issues affecting the sustainability of the cocoa sector	<ul style="list-style-type: none"> • Speed-up the finalization and approval of the National Land Bill aimed at improving land tenure governance • Strengthen land rights to encourage greater investment in land productivity improvements and develop efficient land markets. • Improve access to land by the poor 	
Cocoa sector mechanisms for setting producer price may be distorting incentives to farmers	<ul style="list-style-type: none"> • Adopt transparent mechanisms for setting the producer price for cocoa farmers. • Avoid implicit taxation of the cocoa producers 	<ul style="list-style-type: none"> • Improved incentives for productivity enhancements
Weak public-private partnership affecting private sector participation in the cocoa sector	<ul style="list-style-type: none"> • Strengthen PPP frameworks to attract more private sector investment in cocoa sector 	<ul style="list-style-type: none"> • Improved investment and jobs creation in the cocoa sector
Weak social issues affecting the cocoa sector	<ul style="list-style-type: none"> • Improve productive and social infrastructure in the cocoa producing areas • Strengthen the role of women and youth in cocoa • Adhere to international commitments restricting the use of child labor in cocoa production (e.g. support the National Program for the Elimination of Worst Forms of Child Labor in cocoa – NPECLC) 	<ul style="list-style-type: none"> • Improved social inclusion and livelihoods in the cocoa sector
3. Public expenditure in the sector is not well focused on high potential areas		

Issue/Constraint	Recommendation	Expected outcome in the medium to long-term
Public investments in infrastructure is limited in the high agriculture potential areas e.g. NSEZ, Afram plains, Accra plains etc.	<ul style="list-style-type: none"> Promote investment in productive infrastructure in high potential areas i.e. feeder roads, social infrastructure, irrigation, R&D, extension, storage/logistics 	<ul style="list-style-type: none"> Attract increased investment in high potential areas to promote high sector growth
4. The Planting for Food and Jobs initiative is not well aligned to the existing sector strategy and investment plan		
The linkage between the proposed program and the sector policy (FASDEP) and investment framework (METASIP) is still unclear	<ul style="list-style-type: none"> Embed the Planting for Food and Jobs program in the revised/updated sector policy and investment framework for the next 4-5 years 	<ul style="list-style-type: none"> Improved and well-integrated medium-term sector planning framework to which all development partners can align their support
The Results Framework, the results indicators and targets, as well as the M&E strategy requires significant strengthening	<ul style="list-style-type: none"> Review and improve the results framework for the program within the overall framework of the updated METASIP. 	<ul style="list-style-type: none"> Improved performance monitoring of the sector
The program's risk assessment is weak	<ul style="list-style-type: none"> Strengthen the risk assessment and mitigation framework of the program in order to address: (i) risk of coordination failure; (ii) risk of elite capture; (iii) risk of free-riders/opportunists. 	<ul style="list-style-type: none"> Strong risk mitigation framework

APPENDIX 1: BACKGROUND PAPERS/CONFERENCES

Cocoa Sector Scenario Planning Study – supported by the World Bank and undertaken by COCOBOD (2014 – 15).

Towards Inclusive Agriculture-led Economic Transformation of the Northern Savannah Zone of Ghana – supported by the World Bank and undertaken by the Savannah Accelerated Development Authority (SADA, December 2016)

High-Level Agricultural Investment Workshop (AIW) organized by SADA with support from the World Bank (June, 2016).

Agriculture Public Expenditure Review – supported by the World Bank Economic Management / Agriculture Teams (2015 – 16).⁵⁹

Agriculture Sector Policy Note – summary included in the Bank’s Policy Advisory Note submitted to the Government of Ghana

Cocoa Sector Policy Note – summary of the cocoa sector policy issues and recommendations

Ghana Agriculture Sector Review Report – first draft prepared for the World Bank by staff of the University of Ghana, Legon (assignment not completed).

⁵⁹ Main report validated with the Government and main stakeholders (Accra, June 2017). Chapter 5 of this main report focuses on agriculture public expenditure review and was prepared by Johannes Jansen, Senior Agricultural Economist.

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