

# **MAPPING OF STUDIES ON EMPLOYMENT CREATION OF AGRICULTURE AND AGRO-PROCESSING IN KENYA**

## **FINAL REPORT**

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## Abbreviations and Acronyms

ACET.....	African Center for Economic Transformation
AGDP.....	Agricultural Gross Domestic Product
AGOA.....	African Growth and Opportunity Act
AFFA.....	Agriculture Food and Fisheries Authority
ASCU.....	Agricultural Sector Coordination Unit
ASALs.....	Arid and Semi-Arid Lands
ASDS.....	Agricultural Sector Development Strategy
CAADP.....	Comprehensive African Agriculture Development Programme
COMESA.....	Common Market for Eastern and Southern Africa
EAC.....	East African Community
EPZ.....	Economic Processing Zone
ERS.....	Economic Recovery Strategy
EureGap.....	European Global Agriculture Practices
EU.....	European Union
GDP.....	Gross Domestic Product
GMO.....	Genetically Modified Organism
GOK.....	Government of Kenya
HCDA.....	Horticultural Crops Development Authority
IDS.....	Institute of Development Studies
IGAD.....	Intergovernmental Authority on Development
INCLUDE.....	Inclusive Development
KEPHIS.....	Kenya Plant Health Inspectorate Service
KIPPRA.....	Kenya Institute for Public Policy Research and Analysis
KNBS.....	Kenya National Bureau of Statistics
MI.....	Millennium Development Institute
MoALF.....	Ministry of Agriculture, Livestock and Fisheries
MoIED.....	Ministry of Industrialization and Enterprise Development
MTP.....	Medium Term Plan
NESC.....	National Economic and Social Council
PASGR.....	Partnership for African Social and Governance Research
P-P-Ps.....	Private-Public-Partnerships
SRA.....	Strategy for Revitalization of Agriculture
TIVET.....	Technical Institute for Vocational Education and Training
UNDP.....	United Nations Development Programme
UNEP.....	United Nations Environment Programme
USDA.....	United States Department of Agriculture
USD.....	United States Dollar
Utafiti-sera.....	Research-policy community facilitated by PASGR

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## Executive Summary

Agriculture is the engine of growth in Kenya. The sector contributes 26 percent to the Gross Domestic Product and 60 percent of the formal wage employment in the public and private sectors. Growth in the sector has been modest at an annual average of 2.4 percent in the 2000s. However, the annual growth rate of labour force absorption in the sector is dismal at 2 percent. Although some studies on employment creation in the sector have been conducted, this knowledge has not been synthesized and made available to policy makers and practitioners to implement in the context of Agricultural Sector Development Strategy policies.

The purpose of this desk study was to map emerging information from studies on employment creation in the agricultural sector and agro-processing in Kenya to help in setting up agenda for subsequent work on *Utafiti-Sera* research-policy community whose goal is to inform and influence policies and programmes in employment creation. Literature from studies on employment creation in agricultural sector and agro-processing was accessed through internet searches, library searches in Nairobi and a review of a study on political settlement and employment creation in the sugarcane and flower sub-sectors facilitated by PASGR.

The study was undertaken by the IDS of the University of Nairobi. One-on-one interviews with key senior staff of some agricultural line ministries were also conducted on the research theme. The main policy issues affecting employment creation in the sector are; low agricultural productivity, inadequate public investment, inadequate access to credit, multiple taxes on agricultural produce, roles of National and County Governments on local employment creation, and role of youth in agricultural development. Other constraints relate to; foreign and regional trade policies, policy, legal and institutional reforms, institutional arrangements and coordination, incentives and property rights policies, manipulation of political, cartel and business elite alliances, lack of adoption of biotechnology/technology, participation of the private sector in agricultural development, delivery of agricultural services, and investments in marketing, storage and communication infrastructures, human capacity and education and technologies for soil and water management.

To enhance productivity-oriented agricultural sector, farmer access to timely and quality inputs should be secured by full privatization of the inputs sub-sector including enhancing importation of inputs by farmer organizations and reviewing relevant policies to make input logistics less costly. Productivity and employment creation will be enhanced by competitive pricing and access of inputs. Also, policies promoting timely access and affordability of agricultural finance and improved crop and livestock breeds, investments in infrastructures, relevant human resource skills and management of soils and water, fair taxation of produce and insurance of agricultural enterprises will enhance productivity. The policies can enhance growth, commercialization and competitiveness. Second, policies promoting industrialization, the roles of youth in agricultural development and National and County Governments' roles in local employment creation are needed or clarified to, respectively, provide industrialization standards, incentivize youth involvement in agriculture and initiate priority, relevant context and resources to enhance local employment.

Third, Kenya should review and negotiate for trade policies to make them compatible with foreign and regional trade policies and consumer preferences. This should enhance the goal of agricultural export-led growth. Fourth, a review and reform of the new policies, legal and institutional framework is needed to enhance economies of scale, reduce overlaps, competition and duplication of roles of institutions providing quality assurance services to the sector. Fifth, effective coordination of ASDS programmes on policy engagement, investments and on technical support to especially the private sector is urgent given the number and complexity of the agricultural line ministries and sector stakeholders. Sixth, policies ensuring land access, ownership rights and incentives for investments in agriculture and agro-processing are needed to enhance growth. Seventh, to stem manipulation of political, cartel and business elites in agriculture, specific policies and strategies address the manipulations must be put in place. Eighth, the need to enhance adoption of or introduction of high yielding horticultural crops, coffee, tea, food crop varieties and livestock breeds is needed to contribute to productivity, commercialization and competitiveness of agriculture and agro-processing sub-sectors. Use of agro-processing as a strategy in growth will be critical.

Ninth, the private sector should be encouraged to lead agricultural development through growth by encouraging its participation in policy engagement, investments and providing it technical support. Tenth, agricultural services such as quality assurance, extension and research must be effective and responsive to farmers' needs to improve productivity. Also, there is need to invest in marketing, storage and communication facilities, relevant vocational and technical skills and technologies for sustainable management of soils and water resources to ease marketing output costs, enhance post-harvest treatments and manage natural resources sustainably. Addressing the above issues in a coordinated manner will enhance participation of youth in agriculture and agro-processing and employment creation

## 1. INTRODUCTION

There is a wealth of research-based knowledge on factors that promote or hinder employment creation in agriculture and agro-processing in many African countries. The challenge is to make the knowledge available for use in policy making by policy makers. The aim of this report was to undertake a quick mapping of studies on employment creation in the agriculture and agro-processing sectors in Kenya and synthesize the key policy relevant findings that can be used for policy engagement. The report provides the input to PASGR and INCLUDE's work on research-policy communities (*Utafiti-Sera*)

### 1.1 Objectives of the Study

The overall objective of the study was to review new research evidence and synthesize existing research evidence on employment creation and inclusive growth in the agricultural sector and agro-processing and make recommendations on key emerging issues available for policy dialogue with policy makers.

### 1.2 Methodology

This is a desk study for literature review on employment creation and inclusive growth in the agricultural sector and agro-processing. Four approaches were used to undertake the study. These included internet search for literature on the research topic, consultation of professionals in the major institutions in agricultural policy making and policy research that are knowledgeable in the agricultural sector for known literature on the topic, phone interviews and one-on-one interviews with a couple of key policymakers in the agricultural sector (Appendix 1). Finally, information from presentations on the theme of employment creation in agriculture and agro-processing by invited experts at a workshop on employment creation in the agricultural sector by PASGR and deliberations by participants at the workshop were incorporated into this report. Additionally, technical management staff at Partnership for African Social and Governance Research (PASGR) who briefed the researcher on objectives of the study was consulted at different stages of study preparation. Feedback from the PASGR staff was integrated into study process. A total of 24 literature sources were mapped for the study (Table 1).

A number of key concepts<sup>1</sup> have been used in this manuscript. The main ones are employment, employment creation, unemployment and agro-processing. These are defined below.

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<sup>1</sup> *Employment* An act of engaging in an activity by a person of legal working age for economic gain.

Table 1 : Literature mapping of employment creation of agriculture and agro-processing in Kenya

Sector/Sub-sector	Areas of literature mapped	Number of studies/Analyses
Agriculture	Policy, legal and institutional reforms	2
	Institutional arrangements and coordination	"
	Challenges to employment creation	1
	Needed investments for employment creation	"
	Agribusiness	2
	Government policy documents/policy strategies	3
	Role of youth in employment in agriculture	2
	Government Taskforce report	1
	Education, training and capacity development	1
	Green economy and employment creation	3
	Role of National and County Governments in employment creation	*
	All other topics on employment creation in agriculture	1
	Sub-total	16 <sup>1</sup>
Agro-processing	Efficiency in agro-processing and employment creation	1
	Needed investments for employment creation	"
	Technology and employment creation	"
	Agribusiness	1
	Government policy documents/policy strategies	3
	Opportunities for employment creation	1
	Political settlement and employment creation	1
	Green economy and employment creation	"
	Role of National and County Governments in employment creation	*
	Market linkages and agro-processing in employment creation	1
Sub-total	8 <sup>2</sup>	

Note: Other areas of literature not identified and tabulated also occur to different degrees in the listed areas of literature; "=" Same as the previous area of literature mapping; \* = One source of information from Utafiti-Sera workshop organized by PASGR does not count for literature count; <sup>1</sup> = number of literature sources unique for agriculture; <sup>2</sup> = number of literature sources unique for agro-processing.

<sup>1</sup> *Employment creation* A state of causing opportunity for activity to be available for another person of working age to engage in the activity for economic reason.

<sup>1</sup> *Unemployment* is a state of a person who is able and willing to work but is unable to secure a job.

<sup>1</sup> *Agro-processing* is the process or action taken by a manufacturer of converting primary (raw) agricultural product into commodities suitable for consumption



### **1.3 Organization of the Study**

The study has included a situational analysis in chapter 2 by giving a background to the agricultural sector and agro-processing. This provides a context to the literature review on employment creation. The profile of the sector, its role and contribution to economic role are described. Information on constraints and opportunities for the sector are included here. In chapter 3, an analysis of the agricultural sub-sectors is undertaken from a value chain perspective in section 3. Chapter 4 focuses on a mapping of studies on employment creation by a synthesis of emerging issues in employment creation. Initiatives in employment creation, opportunities and challenges to employment creation are also documented. In chapter 5, conclusions regarding emerging priority issues in employment creation in the agricultural sector and agro-processing are drawn. Implications for policy are finally outlined.

## **2. SITUATIONAL ANALYSIS**

### **2.1 Macro-economic Profile**

Kenya is the largest economy in East Africa with an estimated GDP per capita of \$862 (UNEP, 2014). As a result of free market reforms in the 2000s, the GDP growth accelerated from under 1 percent in 2002 to 7 percent in 2007, the maximum five-year growth rate in Kenya's economic history. Episodes of escalating fuel and world food prices, droughts and floods dampened growth after 2007. GDP growth flattened in 2008 rising to 8.4 percent in 2010 and declined to 5-6 percent thereafter (World Bank, 2016; GOK, 2015a; KIPPRA, 2015; UNEP, 2015).

About 42 percent of the GDP is accounted for by natural resource sectors (agriculture, forestry, fishing, mining, tourism, water supply and energy). The sectors account for more than 70 percent of employment. Kenya's economic growth is driven by the service sector (transport, financial services, communication, wholesale and retail trade etc). This contributes to nearly 75 percent of GDP (UNEP, 2014). Kenya's role as a regional hub in East and Central Africa has facilitated economic growth. The manufacturing sector with a GDP share of about 11.8 percent has stagnated during 2006-2014 because of global and regional competition and weak public expenditure policy and management. Thus export growth mainly agricultural in origin has stalled (World Bank, 2014b, 2016; GOK, 2012a, 2015a; KIPPRA, 2014, 2015). Overall, economic growth in the 2000s has been affected by imbalance between savings and investments, lower investment rate at 20 percent, poor external trade in goods and services, high composition of capital goods and oil imports, high deficit in external current account at 27 percent of the GDP in

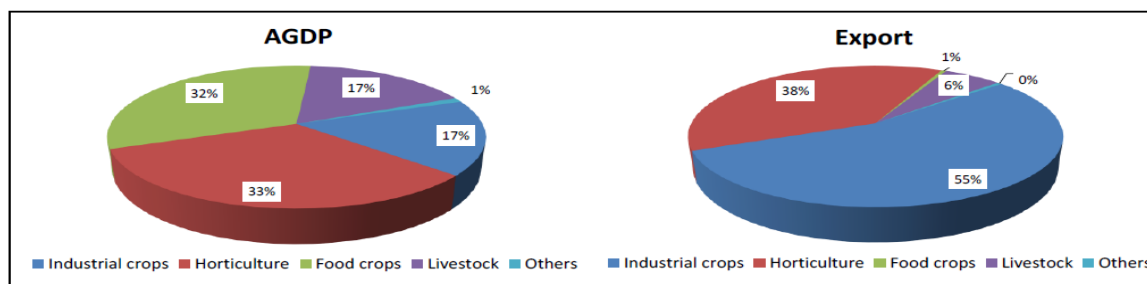
2013 and high foreign investment savings. These conditions mean that growth will not reach MTP II targets by 2020 (World Bank, 2016).

The contribution of agriculture (26 percent) to the national GDP is currently valued at USD 4.5 billion. Another 27 percent valued at USD 5.1 billion is indirectly contributed through linkages with manufacturing and service sectors. The sector accounts for 65 percent of the value of total exports. It employs 40 percent of the total population and 80 percent of the rural population (World Bank, 2016; UNEP, 2015; GOK, 2010). Smallholder agriculture contributes to 70 percent of marketed production. Performance of the agricultural sector therefore influences the development of other sectors. The sector is comprised of six main sub-sectors namely; food crops, industrial crops, horticulture, livestock, fisheries and forestry. The contributions of the sub-sectors to the Agricultural Gross Domestic Product and export earnings are shown (Figure 1). Food, fisheries, horticulture and livestock sub-sectors have a huge potential including for agro-processing due to post-harvest losses (GOK, 2009).

The size of agricultural labor force in wage employment is about 350,000 workers. The labor force is used in mixed farms, large plantations of coffee, tea, sugar, sisal, ranches and agro-industries (dairy, sugar factories, slaughter houses, fish, fruit and vegetable processors, feed manufacturers, and fertilizers and pesticides). The average annual growth rate of employment in formal wage labour is 1.1-2 percent. In manufacturing, the share of agro-industry is about 75 percent. Agro-processing alone contributed to 10 percent of Kenya’s labour force and 31 percent to the GDP (M.A. Consulting, 2010).

The agricultural sector growth revived in the 2000s after shrinking in the two decades before.

Figure 1: Contribution of agricultural sub-sectors to agricultural GDP and agricultural exports



Source: Adapted from GOK, 2009

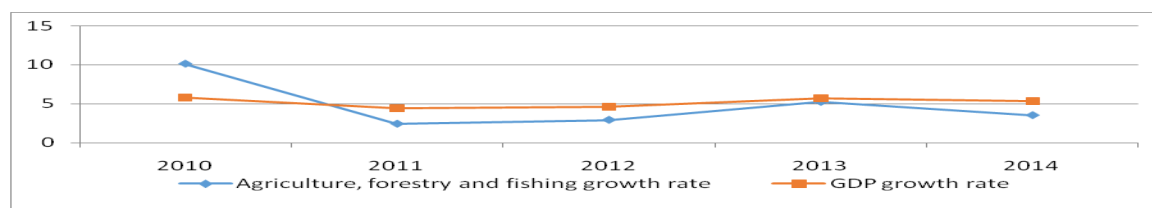
This was due to low investment, mismanagement, collapse of agricultural institutions and negligence of agricultural research and extension. In this period, the sector attained an average annual growth rate of 2.4 percent. This was made possible by the initiation of policy strategies such as Economic Recovery Strategy for Employment and Wealth Creation (ERS) in 2003-2007 followed by Strategy for Revitalizing Agriculture (SRA). Budgetary allocation and sector growth during this period reached 4.5 percent and 6.1 percent in 2007 (GOK, 2009, 2010). Growth rebounded in 2009 reaching peaks of 5.8 and 5.7 percent, respectively, in 2010 and 2014 (KIPPRA, 2015). Overall, growth of the sector has been highly correlated to overall economic growth in the past and present (Figure 2).

The Agricultural Sector Development Strategy (ASDS) initiated in 2008 (MTP I 2007-2012 and MTP II 2013-2017) and earmarked to contribute to a 10 percent growth to the overall economy by 2030 has continued sector growth. Interventions of the ASDS have aimed at; legal, regulatory and institutional reforms, restructuring and privatization of non-core functions, improving delivery of research, extension and advisory support, improving access to quality inputs, financial services and domestic and external markets, and formulating food security policy and programmes (Table 1) (GOK, 2009, 2010). The programmes have emphasized undertaking increased investments in the sector such as revival and expansion of irrigation schemes. Three Acts of Parliament have been consolidated from 131 laws that applied to former parastatals and scheduled crops under MoALF. This has resulted to three regulatory agencies; Agriculture and Food Authority (AFA), Kenya Agriculture and Livestock Research Organization (KALRO) and Kenya Plant Health Inspectorate Service (KEPHIS). Productivity of the sector has stagnated since the reforms were launched most likely because of limited adoption of technologies by smallholders (Figure 3). There is a need for analysis of the policies and legislations (Appendix 2) initiated for any gaps and relevance to wage employment creation. Also, the policies require monitoring and evaluation to ascertain their contribution to employment.

Challenges to the sector include ecosystem overexploitation, pollution, disasters to climate change and a relatively high population growth of 2.8 percent. Other challenges are overdependence on rain-fed agriculture, vulnerability due to a dominant mode of smallholder production, smallholder underutilization of technologies, sub-division of farms due to population pressure and its effects on land degradation. Also, the Investment Act of 2004 is inadequate in providing for incentives on land access, ease on investment processing and harmonization of

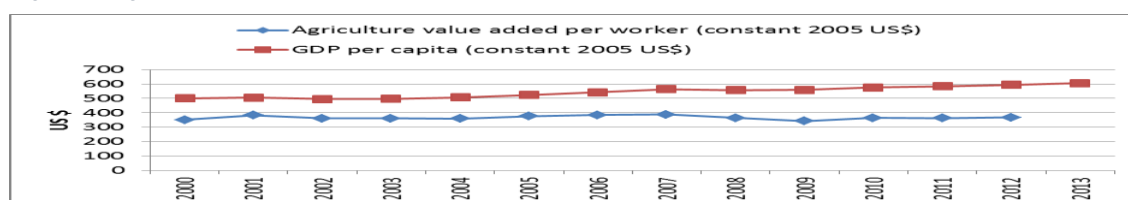
legal provisions on investment and coordination among institutions responsible for their enforcement (GOK, 2015b; M.A. Consulting, 2010). These are expected to exacerbate unemployment and underemployment, high poverty rates and growing inequality (48 percent Gini coefficient) and increase in the level of informal employment from the current high rate of 80 percent. Exploitation of irrigation, value adding and the utilization of agricultural technologies hold prospects for greater productivity and enhanced employment in the sector in the medium to long-term (UNEP, 2015; Karina and Mwaniki, 2011; Alila and Atieno, 2006).

Figure 2: Trends in agricultural GDP and economic growth, 2010-2014



Source: KNBS- Economic Survey, 2014

Figure 3: Agricultural value added per worker and GDP per capita (constant 2005 US\$)



Source: World Bank Development Indicators, 2014a

The targets set by ASDS to be achieved by 2020 with respect to the sector are shown (Table 1).

Table 2: Kenya Vision 2030 targets for growth, food security and poverty reduction by 2020

Indicator	Target in 2020
GDP growth rate (%)	10
Agriculture sector growth rate (%)	7
Poverty rate (%)	25
Reduction in food security (%)	30
Yearly increase in agriculture contribution to GDP (Ksh. billions)	80
Divestiture in state parastatals involved in agriculture value chains	All
Reforms and streamlining of agricultural services	All

Source: GOK, 2009

## 2.2 Current Initiatives in Employment Creation in Agricultural Value Chains

Kenya is facing significant employment problems with unemployment being mainly a challenge for youth. Youth (15-34 years) constitute two thirds of the labour force (World Bank, 2014b, 2016; NESC, 2010, 2011; KIPPRA, 2011, 2012). Unemployment for the youth depends on age and goes as high as 35 percent when the overall national average is about 10 percent. If the current population trend continues, the overall number of unemployed youth is expected to double by 2035.

Youth unemployment is primarily a labor demand problem. The Kenyan economy is not creating enough jobs for young labour market entrants (Wambugu, *et al.*, 2009; NESC, 2010, 2011; KIPPRA, 2011, 2012). For example in 2011, 520,000 jobs were created but only about 14 percent were formal sector jobs. Agriculture currently has 350,000 workforce (World Bank, 2014b, 2016). The average annual growth rate of employment in formal wage employment is dismal at 1.1-2 percent. Youth unemployment is dependent on age, education, social status, gender and community of origin. It is insightful to understand specific barriers to employment for the different youth categories in order to identify options for the different youth categories. This can facilitate proper design and targeting of major interventions towards employment creation.

Youth unemployment is a cross-sectoral challenge with both public and private stake holding. The Ministry of Devolution and Planning and Ministry of Education coordinate youth employment creation strategies and initiatives since 2013 (World Bank, 2014b, 2016). A number of sector policies initiated under the umbrella of Vision 2030 have contributed to initiatives and approaches that have affected youth employment. The initiatives have fallen under: i) those influencing labour demand, ii) those that affect labour supply, and iii) those that facilitate the match between labour supply and demand in the labour market. The short and medium term measures such as Kazi Kwa Vijana (jobs for youth) affecting demand for labour have not impacted wage employment opportunities except for those involving construction and operation of irrigation works.

The medium and long-term strategies have focused on sectoral growth and development. This was done via formulation and implementation of sectoral policies. The policies have included; ASDS (2010-2020), the National Industrialization Policy Framework (GOK, 2012c) and the Kenya National Youth Policy (GOK, 2007). Unfortunately, the youth policy does not specify the role of agriculture in youth development or employment creation for youth (World Bank, 2016;

Afande *et al.*, 2015; FAO, 2014). The other measures have included macroeconomic management for renewed and sustained economic growth, agricultural development, industrial promotion, promotion of industrial harmony and productivity, development of the informal sector and private sector investment promotion and participation in the economy. Lastly, liberalization of the labour market, formulation of labour and employment policies, reforms on education and training systems to vocational and technical training areas and legislation reforms have also been undertaken for employment creation (WB, 2016a, b; NESC, 2010, 2011; KIPPRA, 2011, 2012). The actual employment demand creation initiatives are briefly summarized below.

### 2.2.1 Agriculture

The main initiatives to create formal wage employment in the agricultural sector are captured by the rehabilitation and expansion of publicly managed irrigation schemes. Development of the irrigation sector has been recognized as a major long term strategy towards the achievement of a 10 percent annual economic growth, employment and food security and nutrition through 2030 in Kenya Vision 2030. Over 30,000 hectares have been expanded in the old irrigation schemes with a further 406,000 hectares under development at Galana Kulalu Irrigation Scheme in Tana River County. The expansion of the old irrigation schemes alone should have potentially generated 150,000 wage employment jobs (30,000 X 5 jobs). In addition, the construction of abattoirs in the ASALs according to MTP II programme strategic investments has also generated some wage employment.

### 2.2.2 Agro-processing

The main initiatives going on now in promoting agro-processing are spearheaded by the Ministry of Industrialization and Enterprise Development. The initiative is undertaken in the context that Kenya's manufacturing base has remained static at 11 percent of the GDP since the last decade. Also, only 16 percent of all agricultural exports are processed while the rest is in raw form. Industrial exports have also decreased in absolute terms. Expanding agro-processing is seen as critical to employment creation and economic growth and to attract domestic and foreign investments.

Some of the strategies to realize the goal include: launching sector-specific flagship projects in agro-processing, textiles and leather, creating an enabling environment to accelerate industrial development through industrial parks/zones along infrastructure corridors, enhancement of technical skills, supporting infrastructure and ease of doing business; creating an industrial

development fund; and driving results through Ministerial Delivery Unit. Agro-processing using agricultural produce (tea, coffee, horticulture, dairy) and fish products is expected to create about 1 million jobs at maturity of the programme. Finally, expansion of fish processing, textiles and apparel under the AGOA programme and leather products are to increase wage employment by 12,000, 105,000 and 35,000 jobs (GOK, 2015b).

### **2.3 Challenges for Employment Creation**

The major challenges to employment creation are as follows;

1. The lack of adequate incentives to attract foreigners and local investors are due to inadequate access to land, appropriate laws for land leasing, land fragmentation and lack of appropriate incentives for processing investment permits among others;
2. Inadequate investments in the agricultural sector;
3. Fragmentation of employment creation policies on sectoral basis and lack of coordination of policies and institutions involved in employment creation especially for the youth;
4. Lack of implementation to fidelity of investment and value-chain activities due to self-interests;
5. Lack of policy to address ease of doing business (government bureaucracy) to improve supply, economies of scale, cost reduction, and stimulation of demand;
6. Inadequate enabling environment for private sector led growth in agriculture and thus limited competitiveness in agriculture and agro-processing;
7. High risks for investment in agriculture and agro-processing;
8. Inadequate regulatory practices and enforcement of regulation;
9. High tax rates and multiple taxes, fees, levies and charges for the sector;
10. Access problems for investment credit;
11. Alignment of agricultural sector policy reforms with devolution of county governments;
12. Regional barriers to trade;
13. Poor infrastructures for transportation, storage, post-harvest loss reduction, and preservation which increase costs of agri-business;
14. Inappropriate agricultural education at all levels and Inadequate or irrelevant human resource skills; and
15. Security challenges

These are the main challenges. The challenge of infrastructures is being addressed and can only be solved in the long-run. The problem of enabling environment regarding business registration and licensing is under review and should soon be addressed.



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### 3. A MAPPING OF STUDIES ON EMPLOYMENT CREATION IN AGRICULTURE AND AGRO-PROCESSING

In this section, a mapping of studies on formal employment creation in agriculture and agro-processing is carried out by identifying themes emerging from the literature read and interviews conducted. The themes were identified because of their common occurrence in the literature referenced and also by evaluative assessment by the researcher of their impact on employment creation. The literature on mapping found specific policy-based issues and investments to impact employment creation in agriculture and agro-processing. These are briefly summarized and then elaborated on below.

Among the foremost common emerging policy-oriented themes impacting employment creation are; low agricultural productivity, inadequate public investments in agriculture (World Bank, 2014b, 2016; Osti, *et al.*, 2015; UNEP, 2015; Ndicu, 2015; Mrema and Ndikumana, 2014; Zulich *et al.*, 2014; M.A. Consulting, 2010; Pollin *et al.*, 2007; Heintz and Pollin, 2008), inadequate access to credit, multiple domestic taxes and over-taxation of agricultural produce and agro-forestry products and lack of industrialization/agro-processing policy. In addition, other constraints to employment creation relate to clarity regarding roles of National Government and County Governments in local employment creation for agriculture and agro-processing, lack of integrated policy on role of youth in agriculture, adequacy and relevance of current trade policies in meeting emerging regional and foreign trade requirements (World Bank, 2014b, 2016; UNEP, 2015; M.A. Consulting, 2010; Heintz and Pollin, 2008; Pollin *et al.*, 2007), inadequacy of the recent ASDS policy, legal and institutional reforms (in regard to policy, legislation and mandate relevance and impact as well as the need to rationalize the regulatory agencies to help achieve economies of scale, improve efficiency, quality and synergy and minimize overlapping and duplication at the same time) and inadequate institutional arrangements and their coordination (World Bank, 2014b, 2016; UNEP, 2015; M.A. Consulting, 2010; Pollin *et al.*, 2007; Heintz and Pollin, 2008). Further, manipulation of agriculture and agro-processing sector for personal gain by political, cartel and business alliances for some sectors such as sugarcane industry and the cut-flower can affect sector growth, expansion and employment creation. Expansion of employment creation would depend on the extent to which market forces, foreign consumer preferences, technology and shareholder interests are exerted vis-avis personal interests (Forthcoming Mitullah, *et al.* (2016).

The lack of an integrated policy for involving the youth in agriculture and agro-processing is a major policy problem for the agricultural sector (World Bank, 2014b, 2016; Afande *et al.*, 2015; AGRA, 2015; FAO, 2014; Osti *et al.*, 2015; M.A. Consulting, 2010). Other policy constraints to employment creation include; inadequate incentives and property rights policies in relation to access to land and investments and socio-cultural constraints, inadequate adoption or lack of technology/biotechnology to promote agribusiness and agro-processing and productivity, inadequate participation of the private sector in the agricultural sector and need for reforms of delivery of agricultural services.

Finally, the lack of specific investments in the agricultural sector also constrains employment creation in the sector. The specific investments needed to leverage productivity in agriculture and agro-processing include investments in agro-processing technologies and other capital as a strategy for increasing productivity through value addition, investments in irrigation, storage and post-harvest loss facilities and roads and communication facilities and capacity building, training and education that enhance vocational and technical skills required for agriculture and agro-processing value chains (World Bank, 2016, b; UNEP, 2014, 2015; FAO, 2014; Mrema and Ndikumana, 2014; M.A. Consulting, 2010; Wambugu *et al.*, 2009; Heintz and Pollin, 2008; Pollin *et al.*, 2007). Finally, investments in and development and management of natural resources crucial to the production of agricultural produce and raw materials features importantly in literature in relation to agricultural productivity, sustainable production and clean healthy environments for human habitation (World Bank, 2016; AGRA, 2015; UNEP, 2014, 2015; Züllich *et al.*, 2014; Karina and Mwaniki, 2011; M.A. Consulting, 2010; Dansson *et al.*, 2004).

Although the mentioned issues were found as emerging in employment creation, there was disagreement in literature regarding the role of trade regulations and labour bargaining in employment creation in Kenya. The issues of labour policy and industry and labour relations were therefore not included and discussed as a driver of employment creation. The emerging issues are now discussed briefly. Although a review of literature on employment creation of agriculture and agro-processing in Kenya has indicated that management of the national economy for growth and stability is crucial for employment creation in agricultural sector and agro-processing, this is rather macroeconomic and generic. Economic policy approaches to create an environment conducive to the realization of an employment development agenda nationally and in agriculture and agro-processing is therefore not discussed. Interpretation of the

mapping of studies here should take into account the fact that both farmers and businesses are implied in the discussions. The reason for this is that growth focused employment creation affects productivity and quality of agricultural produce at the farm level through the value chain up to the processing stage of the produce concerned.

### 3.1 Policy, legal and institutional framework

#### *Low agricultural productivity*

*Findings* Productivity refers to the quantity of agricultural commodity produced per acre or in case of dairy/livestock, it is the quantity of milk/livestock produced per cow/acre per year. After early 1980s and upto 1990s, the productivity of Kenya's agricultural commodities was generally on the decline or remained constant (Gerdin, 2007). In the period 1997-2007, the productivity of maize and especially dairy increased impressively while that of sugarcane and coffee declined. The productivity of other commodities such as Irish potatoes, cabbages and other crops either declined or fluctuated (Kibaara *et al.*, 2008). The productivity of most commodities has increased since ASDS programme was initiated in 2008 (GOK, 2015). The productivity increase has been driven by adoption of high yield hybrid seeds and livestock breeds, increase in the density of agricultural input stockists, expansion of fertilizer use and access to extension services and markets (World Bank, 2016; UNEP, 2014, 2015). Access to land is a threat to continued productivity growth due to land sub-divisions though (Kibaaara *et al.*, 2008).

In particular, literature indicates that investments in agro-processing would be the best strategy for transforming agriculture in Africa and Kenya in particular. This is related to growth in the agricultural sector and specifically agricultural productivity which is a major constraint to sector growth (World Bank, 2014b, 2016; Osti, *et al.*, 2015; UNEP, 2015; Ndicu, 2015; Mrema and Ndikumana, 2014; Züllich *et al.*, 2014; M.A. Consulting, 2010; Pollin *et al.*, 2007; Heintz and Pollin, 2008). Such transformation can greatly contribute to agricultural productivity, income growth, employment creation and poverty reduction (World Bank, 2014b, 2016; ACET, 2015; UNEP, 2014, 2015; Züllich *et al.*, 2014). In addition, development and management of natural resources (soil and water) crucial to the production of agricultural produce and raw materials features importantly in literature in relation to agricultural productivity, sustainable production and clean healthy environments for human habitation (World Bank, 2016; UNEP, 2014, 2015; Züllich *et al.*, 2014; Karina and Mwaniki, 2011; M.A. Consulting, 2010; Dansson *et al.*, 2004).

*Conclusion* Creation of access to land, technology, knowledge for production, stockists and markets is necessary to contribute to increased agricultural productivity, food security, poverty

reduction and employment in agriculture. Utilization of technologies and knowledge that conserve soil and water resources will contribute to productivity and sustainable production.

*Recommendation* Sustained implementation of fertilizer cost reduction programme by MoALF is needed to enhance productivity growth as well as promotion of free market for agricultural inputs and natural resource conserving technologies.

#### *Inadequate public investments in agriculture sector and agro-processing*

Among the most common emerging themes impacting employment creation is inadequate public investment in agricultural development (World Bank, 2016; Afande *et al.*, 2015; UNEP, 2015; M.A. Consulting, 2010; Heintz and Pollin, 2008; Pollin *et al.*, 2007). There has been a strong correlation between agricultural sector growth due to public investment through budgetary allocation and overall economic growth in the 2000s and even in the decades before (Figure 3). For example in the 1990s sector growth was only an annual average of 1.3 percent during Structural Adjustment Programme of the World Bank due to low investment, poor sequencing of privatization, mismanagement, collapse of agricultural institutions and negligence of agricultural research and extension. This was occasioned by a reduction in budgetary allocation to the sector to 2 percent from an average allocation of 13 percent in the 1960-70 decades. The implementation of Economic Recovery for Employment and Wealth creation and Strategy for Revitalizing Agriculture, respectively, between 2003 and 2007 resulted in an annual average sector growth of 2.4 percent when budgetary allocation reached 4.5 to 6.5 percent. The ASDS policy was initiated in 2008. It emphasized policy and institutional and legal reforms in the sector, increased budgetary allocation to agriculture, revival and expansion of irrigation schemes, and improved access by smallholders to especially fertilizers and certified seeds. During this period, sector growth rebounded reaching peaks of 5.8 and 5.7 percent in 2010 and 2014.

The low budgetary allocation to the sector is accompanied by further problems of a skewed allocation between personnel, recurrent expenditure and capital budget components as well as low budget absorption (KIPPRA, 2015).

*Conclusions* Increasing allocation to the sector and emphasizing priority areas such as marketing, storage facilities for post-harvest treatment of produce, energy infrastructures, human capacity and training and support to cooperatives and agribusinesses will likely enhance sector productivity, growth and employment creation. Problems related to the balance among

personnel budget, recurrent expenditures, capital budget and budgetary absorption need to be addressed fully.

*Recommendations* A concerted effort must be made to make budgetary allocation progress towards the NEPAD Compact Agreement target allocation to the sector of 10 percent and a balancing of the budget components among personnel, recurrent expenditure and capital investment.

*Inadequate access to agricultural credit*

*Findings* Regarding credit access, only 3.5 percent of formal bank credit is available for lending to the agricultural sector. This is made worse since banks are also located far from rural areas where farming takes place making it difficult for farmers to physically access them. The interest rates are too high for agriculture whether this concerns businesses or smallholder production. This is because credit institutions attribute high risks to agricultural lending. Generally, smallholders cannot satisfy the collateral requirements for agricultural finance. Capital lending to agriculture also does not take into account the actual needs and cyclical and seasonal nature of agriculture. Moreover, youth and women who are expected to play the greatest role in agribusiness in place of their retiring parents are not given priority in lending since they cannot meet collateral loan requirements among others. Agricultural enterprises are therefore in a difficult position accessing credit for business expansion and employment creation.

Credit shortage is partly caused by an imbalance between savings and investments, their adequacy and priority for investments in potential growth areas in the agricultural sector. Savings are generally lower than investments. Overall investments are inadequate and currently stand at 20 percent of the GDP. In particular, literature indicates that investments in agro-processing would be the best strategy for transforming agriculture in Africa and Kenya in particular. This is related to growth in the agricultural sector and specifically agricultural productivity which is a major constraint to sector growth (World Bank, 2014b, 2016; Osti, *et al.*, 2015; UNEP, 2015; Ndicu, 2015; Mrema and Ndikumana, 2014; Zulich *et al.*, 2014; M.A. Consulting, 2010; Pollin *et al.*, 2007; Heintz and Pollin, 2008). Such transformation can greatly contribute to agricultural productivity, income growth, employment creation and poverty reduction (World Bank, 2014b, 2016; ACET, 2015; UNEP, 2014, 2015; Zulich *et al.*, 2014).

*Conclusion* Access to credit by agribusinesses and smallholders will generate increased agricultural production and productivity. This is likely to initiate value addition and employment creation.

*Recommendations* In order to address the high risks which the finance sector attributes to lending to agriculture, public investment is needed to insure finance sector against the risks. The problem posed by physical access to banks in rural areas maybe overcome by mobile banking and electronic-based banking and loaning system which are pioneered in Kenya.

*Multiple National and County Governments taxation of agricultural products.*

*Findings* In the immediate past and at the moment, fiscal policy has affected agricultural sector unfairly. Farmers face direct and indirect taxes which make agriculture less competitive regionally and globally. Both the National Government and County Governments impose multiple taxes, leeves, cesses and fees on farm inputs, farm produce, agro-forestry products and services provided in the sector. The taxation distorts market prices. This makes agricultural produce uncompetitive and in some cases put barriers to their movement across counties.

Policy emphasizing reductions in government spending and borrowing from domestic sources can go a long way in keeping real interest rates down. In the case of Kenya, effective collection of taxes from domestic tax payers can make a difference since tax collection is a problem. External borrowing and foreign aid can be used to fund infrastructures that support agriculture.

*Conclusions* Public resources must be availed to finance an employment-oriented development focus. Markets are not likely to channel resources to fill the gap needed for the investments. Tax incentives can also promote value addition in agro-processing. This can encourage industrialization in especially rural areas.

*Recommendations* A rationalized taxation system that takes away biases in agricultural taxation in relation to other sectors would create a favorable environment for production and marketing of agricultural products. Tax incentives for agricultural machinery, agro-processing equipment and incomes should be worked out to promote investments in agriculture and agro-processing.

*Lack of industrialization/agro-processing policy*

*Findings* Sessional Paper No. 9 of 2012 on the National Industrialization Policy Framework for Kenya 2012-2030 (GOK, 2012c) is not yet translated into industrialization policy. Currently,

there is only a strategy for industrialization. Growth of agricultural sector can be promoted by a policy in industrialization. Industrialization policy that can develop agriculture and agro-processing value chains can greatly contribute to agribusiness, productivity and commercialization of agriculture. Value addition would enhance productivity. The greatest impact from such a policy can be expected from sub-sectors such as food crops, horticulture, aquaculture, fisheries, dairy and poultry among others. The sub-sectors have great potential for growth due to the expected economic opportunities in future due to population and income growth, urbanization, consumer taste preferences for processed food and regional trade among others.

*Conclusion* A policy that addresses industrialization to enhance agro-processing is therefore needed. Industrialization policy should specifically address agro-processing by specifying the goal, sub-sector plans, standards, targets for each food sub-sector, laws and resource needs. Such a policy would be critical to attracting domestic and foreign investors and expanding agro-processing for employment creation and economic growth.

*Recommendation* A policy that addresses industrialization to enhance agro-processing is therefore needed to identify agro-processing goal, objectives, plans, standards and resource and expertise needs.

#### *Lack of integrated policy addressing youth role in agricultural development*

*Findings* The role of the youth in agricultural transformation is critical since youth makes up 67 percent of the labour force. It is noteworthy, however, to observe that the National Youth Policy does not outline the role of agriculture in integrated policy and programmes intended to address the socio-economic problems of youth including unemployment and poverty among others (World Bank, 2016; Afande *et al.*, 2015; FAO, 2014). Yet youth aspirations and perceptions are negative towards agriculture due to lack of access to land, credit, markets, poor income from agriculture and socio-economic differences among youth based on age, education, gender and community of origin (World Bank, 2014b, 2016; Afande *et al.*, 2015; AGRA, 2015; FAO, 2014; Osti *et al.*, 2015). Life aspirations of the youth is more positive to high status white collar professional occupations away from agriculture (World Bank, 2016; Afande *et al.*, 2015; AGRA, 2015; Osti *et al.*, 2015; FAO, 2014).



Therefore, a clear and integrated policy for involving the youth who are crucial to driving agricultural sector productivity to contribute to a 10 percent overall growth of the economy by 2020 through participation in policy processes and value chain activities is needed. The future of agriculture is in doubt as the average age of the Kenyan farmer is over 60 years. Parents of the youth are retiring from agriculture but the youth is not willing to replace them in farming. Youth are expected to be receptive to new ideas and innovations and yet they are not for working in agriculture sector. The commercialization, competitiveness and productivity aimed for in agricultural development in ASDS are therefore at stake.

*Conclusions* One of the most critical needs for policy to address concerns the negative attitude of youth towards agriculture. A national youth conference is necessary for dialogue on policy for integrating youth into agriculture and agro-processing value chains. The negative perceptions about agriculture may be changed however, through education using communication interventions. Such intervention can lead to attitudinal change for youth who do not have stronger aspirations for white collar professions (AGRA, 2015; Afande *et al.*, 2015; Osti *et al.*, 2015; FAO, 2014).

*Recommendations* A policy for integrating youth in agriculture and agro-processing value chains that take into account their input in policy processes, their lack of or inadequate access to land, credit, markets, technology and extension services and differences in age, education, gender, socio-economic status, and community of origin is urgently needed. Efforts should target programmes in different channels to provide education and agricultural literacy to the youth who are willing to engage with agriculture at any value chain stage. The goal of this would be to change their mindset on negative perceptions of agriculture. This should include promotion to the youth of the great opportunities existing in the agricultural and agro-processing value chains and potential utilization of information technologies in planning, marketing and information sourcing for the sector. Other strategies can include implementation of a policy on development of agriculture and agro-processing value chains and creating awards for agriculture champions throughout the country. Such integrated policy should be multi-sectoral (AGRA, 2015; Afande *et al.*, 2015; FAO, 2014) and involve labour, education, and agriculture sector ministries among others.

### *Roles of National Government and County Governments in local employment creation*

*Findings* The involvement of County Governments in identifying and prioritizing funding of agriculture and agro-processing programmes and services can increase local employment opportunities at the Counties. An example of such support to agriculture is the case of Nyandarua County (Personal communication, Utafiti Sera, June 2016). Specifically, the prospect of increased availability of funds to invest in services in agriculture at County Government level should enhance employment creation in agriculture and agro-processing in sub-sectors such as poultry, beef production, fisheries, horticulture and dairy among others. The timeliness, availability and regularity of the funds is important for employment creation at local levels.

*Conclusions* Clear roles of National and County Governments is necessary for smooth policy translation, resource allocation and employment creation at local levels. Participation of County Governments in employment creation through services to agriculture and agro-processing This would build in relevance, priority employment needs, focus on local employment creation and poverty reduction and sustainability of such efforts.

*Recommendations* County Governments should apply increased, timely budget allocation in prioritized programme and service areas and in a consistent and regular manner to enhance employment opportunities in agriculture and agro-processing sustainably.

### *Foreign/Regional trade Policy*

*Findings* It is important to further review policy, legal, and institutional frameworks of the institutions assigned policy and regulatory roles regarding agricultural services in view of the complex institutional reforms, multiple laws and regulations that have been undertaken recently. The review is also necessary because potential overlap of institutional mandates regarding policies and laws potentially exists among national agencies as well as between national and county governments. This can create conflicts and contribute to loss of productivity and competitiveness in the sector. Second, the laws and regulations in place are not well aligned to investment in a liberalized economic environment. The private sector is not therefore fully enabled to lead agricultural environment as envisaged in the ASDS 2020-2030.

Further, Kenya is a signatory to regional, multilateral and bi-lateral trade agreements and technical cooperation at the global level. Food crops, industrial crops, horticulture, livestock

products and fisheries export products among others must meet sanitary and phytosanitary standards and among other requirements necessary for accomplishing trade transactions arising from the above agreements. Specifically, to trade with the EU and maximize incomes to farmers and agribusinesses, the EU standards for health and hygiene for fisheries, horticultural produce, flowers and other commodities must be adopted and satisfied by farmers and horticultural contract firms. Maximum chemical residue requirements for commodities exported to the EU such as flowers, horticultural produce and coffee must therefore be met. EureGap standards are the best examples of such standard requirements by the EU. Also, geographic traceability requirements for agricultural commodities by the EU and other trade partners should be met through appropriate policies and legislations. These requirements are new, far reaching and entail high transaction costs for our relatively underdeveloped agriculture. Negotiations with the EU regarding the extent to which such standards must be met will be called for. Kenya must satisfy trade requirements for regional blocks of which it is a signatory such as COMESA which is now a major destination for Kenya's exports.

There is need for concerned stakeholders and foreign parties to collaborate and facilitate a review of legal, institutional and trade policies to maximize economic cooperation and regional integration in the case of regional trade blocks. Also, Kenya's trade negotiations with the EU in particular and other parties regarding coffee, tea, sugarcane, horticulture and staple foods should be undertaken within the framework of its trade blocks such as the EAC and COMESA for example. Such reviews promote trade, incomes and employment creation.

In order to maximize employment for the internationally traded commodities such as coffee, tea and horticultural produce, policies promoting value addition and geographic indications policy must be adopted and legislated for. Value addition will increase trade values, volumes and income margins to farmers. Geographic indication or branding for products such as especially coffee will reflect consumer preference for a product such as Arabic coffee taste to consumers and geographic origin of the product. Premium prices will be paid for Kenya's coffee of which sixty percent has aroma and taste highly valued in overseas coffee markets. More incomes should accrue to farmers and agribusiness. More employment will be created in the relevant sub-sectors.

*Conclusions* A review of policy, legal, and institutional frameworks of the institutions assigned policy and regulatory roles regarding quality assurance services, value addition and geographic

indications are necessary in view of the complex institutional reforms, multiple laws and regulations that have been undertaken.

*Recommendations* Review Policy, legal and institutional framework and negotiate for trade policies including value addition to commodities and geographic indications to promote trade.

#### *Regional policy*

*Findings* Kenya is a net exporter of processed agricultural products to the African continent and regional economic blocks that she holds memberships in. In future, Kenya should expand regional trade by venturing into adding value to traditional tropical horticultural products such as fruits (mangoes, guavas, oranges etc), foods, fisheries and meats including game meat among other products. One problematic area for regional trade on commodities commonly traded in EAC across the borders (maize etc) is in regard to tariff barriers that are imposed by members rationalized on a range of issues such as plant health, packaging and drying standards among others. Some long-term solutions to these problems require Kenya to promote and advocate for each EAC country to focus on her comparative advantage for the commonly traded commodities in EAC and negotiation for all standards including health, hygiene and commodity processing standards that are used as excuses for non-tariff barriers among some EAC members against other members.

*Conclusions* There is need for the country to maintain comparative advantage in agricultural exports and focus on developing regional trade block within Africa and policies and institutional framework consistent with the requirements of the trade blocks. This is particularly so in relation to value added products in agriculture from industrial crops, horticulture, and food crop sub-sectors. Kenya should also negotiate with EAC members to accept the principle of comparative advantage in commodity production in trade amongst members and common commodity standards for trade that should include conventional standards such in health, processing, packaging and marketing. The above should increase trade and employment in agriculture and agro-processing.

*Recommendations* Interventions addressing inadequate policy and legal framework should focus on implementation of the following activities; development of appropriate policy framework, review and harmonization of legal and regulatory framework, promotion of fiscal incentives for agricultural development and enhancing bilateral and multilateral agricultural trade

via trade negotiations. Kenya should negotiate for the principle of comparative advantage for commodity production (maize, horticultural crops etc.), among EAC members as well as commonly agreed or conventional standards for commonly traded commodities to avoid non-tariff barriers in regional trade. Kenya should also negotiate for an EAC framework for adoption in regional trade negotiations with the rest of African trade blocks. These activities should be undertaken participatorily among trade parties, sector stakeholders, agribusinesses and interested none state actors.

#### *Policy, legal and institutional reforms*

*Findings* One of the 5 flagship projects of the ASDS was to prepare and consolidate agricultural policy, institutions and appropriate legal provisions for the sector through reforms. A total of 131 laws were consolidated into three Acts which created three institutions dealing with regulatory services. The Agriculture, Fisheries and Food Authority (AFA) Act 2013 created the authority AFA to regulate the three agriculture sub-sectors (agriculture, fisheries and livestock). The Kenya Agricultural and Livestock Research Act 2013 created Kenya Agricultural and Livestock Research Organization (KALRO) with a mandate for agricultural and livestock research. The Kenya Plant Health Inspectorate Services (KEPHIS) Act 2012 created KEPHIS to regulate plant health and diseases in Kenya.

Fundamental issues among other policy and legislation issues concern who is in charge of policy development and clear roles of the National and County Governments in employment creation in agriculture. The prospect for additional resources for investment in agriculture by County Governments after the agriculture function was devolved means that more resources are available in counties for employment creation. The stability and availability of funds in counties should positively influence local employment creation by County Governments. Irregular availability, deficiency in such funds and poor absorption rates have had the opposite effect on employment creation in a number of counties. A mechanism bringing the National and County Governments together in policy formulation and translation and resource acquisition and application is then crucial.

Regarding policy and legislation reforms that have taken place, gap analysis for the policies and legislations has not been undertaken to document if they are relevant for wage employment creation in the agriculture sector and to what extent this is the case. Second, the status of implementation of these new legislations is so far not documented. This should reflect the extent

to which the ASDS policy goal of a productive, commercially viable sector and equitable participation for youth and women especially in the sector has been attained. Moreover, the monitoring and evaluation plans for implementation of the policies, legislations and reformed institutions were not drawn. Implementation of such plans can reflect a status of success for the legislations and how monitoring and evaluation results can guide reviews of the policies, legislations and institutional frameworks for relevance and greater effectiveness in future. That is, the policies and legislations should be evaluated in terms of the extent to which they are contributing to commercialization and competitiveness in agriculture and agro-processing.

Services that provide quality assurance and human health protection and safety greatly contribute to loss reduction and productivity along the value chains. The services reduce the risks of plant and livestock diseases that have prevented land utilization and livestock losses from disease and pest incidences. The services therefore contribute to cost reduction in agricultural sector and enhance export trade in plant products. In addition, the services provide enforcement against environmental pollution and adulteration and counterfeiting of fertilizers, pesticides and seeds. The problems have become common. The agencies that deal with these critical services are the Kenya Plant Inspectorate Services, Kenya Plant Health Inspectorate Services, the Pesticides Control Products Board, the Veterinary Department, Kenya Bureau of Standards and the National Environmental Management Authority. Because of the large number of agencies involved in plant protection and health, disease control in livestock, quality assurance and human health and safety, there may be a need to rationalize the regulatory agencies. This would help achieve economies of scale, improve efficiency, quality and synergy and minimize overlapping and duplication at the same time (UNEP, 2014). A review of the laws regulating the above services is necessary to enhance agency enforcement mandates.

For example, there is duplication of provisions for legislations in the Crops Act No. 16 of 2013 (Section 3 and 34) (GOK, 2013) and Plant Protection Act (CAP 324 laws of Kenya) (GOK, 2012b) regarding infected areas and powers to recommend establishment of subsidiary bodies and aspects of disease and pest control. Additionally, clause 40(2) of the Crops Act 2013 on disease and pest control should be considered for amendment. Further, a number of issues pertain to Agricultural Produce Export Act (CAP 319 laws of Kenya) (GOK, 1923). This was repealed and its repeal again deferred by the Kenya Gazette Legal Notice No. 110 of 2014 on commencement of the Crops Act. Moreover, the AFFA Act 2013 and Crops Act 2013 do not adequately cover the provisions of CAP 319 especially on conditions and requirements of export

of agricultural products. Further, the Agricultural Produce for Export (horticultural produce) general rules and regulations of 2008 of CAP 319 were signed by the Minister for Agriculture but not gazetted. This renders the regulations to have no legal basis. There are many examples of legal lacunae that require addressing through joint collaborations of AFFA, MoALF and KEPHIS and other key stakeholders.

*Conclusions* A review of new policies, legislations and institutional reforms carried out under the ASDS by MoALF, AFA, KEPHIS, KALRO and the private sector for regulating quality assurance services such as plant health and disease control is urgently needed to make the services contribute to employment creation.

*Recommendations* AFA, MoALF, KEPHIS, the private sector and other key stakeholders to conduct gap analysis for the new policies and legislations to document if they are relevant for wage employment creation in the agriculture sector and to what extent this is the case. Second, the status of implementation of these new legislations should be documented to reflect the extent to which the ASDS policy goal of a productive, commercially viable agriculture and equitable participation for youth and women especially in the sector has been attained.

Because of the large number of agencies involved in plant protection and health, disease control in livestock, quality assurance and human health and safety, there may be a need to further rationalize the regulatory agencies. This would help achieve economies of scale, improve efficiency, quality and synergy and minimize overlapping and duplication at the same time. A review of the laws regulating the above services is necessary to enhance agency enforcement mandates. Immediate attention should be focused on the following Acts of Parliament regarding any duplication, omissions, conflicts and so forth; Plant Protection Act Cap 324, KEPHIS Act 2012, AFFA Act 2013, Crops Act No. 16 of 2013, Agricultural Produce for Export Act CAP 319.

*Incentives policy, property rights and socio-cultural constraints*

*Findings* Incentives related to resource access, investments in the agricultural sector and procedures for processing investments are not attractive enough both for domestic and foreign investors including smallholders. The incentives are related to; access to land, land ownership rights, access to capital, access to various physical and communication infrastructures, business enabling environment, market information, taxation, and advisory services among

others. There is differential access to land landownership rights which bias access against especially youth and women due to cultural practices, level of education, age, gender and community of origin. Access to land in Kenya is for example constrained by citizenship status, age and gender. Access to land mainly occurs through inheritance and not through market mechanisms such as land leasing and purchase. Moreover, foreigners cannot buy and own land in Kenya. This is a disincentive to long-term foreign investors to invest in the agricultural sector. Youth and women even when they are constitutionally allowed rights of ownership of land, are not allowed by culture to buy, own, inherit, make decision over land and use the resource. Also, land laws do not provide for simple enforceable land lease agreements as legal tools for alternative access to land by the disadvantaged groups. This discourages agricultural land leasing which is unenforceable.

*Conclusions* Incentives for access to land, land ownership rights for youth and women, access to capital, access to various physical and communication infrastructures, business enabling environment, market information, taxation, and advisory services for agribusinesses and farmer organizations are needed.

*Recommendations* Investors should be provided with incentives for access to land, extension, income taxes, taxes on agricultural machinery and equipments and simple and one stop shop for processing business transactions related to investment, taxes, licenses and other procedures among others.

#### *Political settlement among political elites and commodity cartels*

*Findings* Preliminary findings of a case study on the role of political settlement among national political elites, local political elites and cartels on the one hand and political elites and business elites in the sugarcane and cut-flower sub-sectors, respectively, by Mitullah, *et al.* (Forthcoming, 2016) indicates that the outcomes of such alliances on employment creation for the sugarcane and cut-flower industries have are different. Alliances among national and local political elites do not necessarily lead to expansion and sustainable employment creation in the sugar industry. Cartels in the sugarcane industry and political elites have interests which are in conflict with the growth and employment creation in the sugarcane industry. Political elites circumvent policies for development of the sugar industry and employment creation. Constraints to sugarcane industry include infrastructure, technology, and credit to farmers among others. On the other



hand, the cut-flower growth and employment creation is driven by market forces, interests of shareholders which may include political elites, foreign consumers, and technology.

*Conclusion* The alliances among political and business elites do not necessarily lead to prioritization of employment generation for the agricultural sector. Policies for different sub-sectors in agriculture and agro-processing must be specific and address the problems of political, cartel and business alliances.

*Recommendations* To address manipulation of cartels as well as political and business elites will require putting in place industry specific policies and strategies which address the issues and coordinate the industry.

#### *Biotechnology/Technology*

*Findings* Kenya has the potential to achieve market-led agricultural transformation despite unfavorable conditions such as dependency on rain-fed agriculture, diversification in smallholder agriculture, high input and output marketing costs, price volatility, inefficient land, labour and credit markets and a vibrant private sector. Yields of most agricultural commodities rarely reach a half of the potential yields. Although proven high yield technologies and husbandry practices exist, they are rarely adopted. When they are adopted, the rates of uptake are rather slow to effect productivity growth. Biotechnology is one example of innovations in agriculture that can be adopted for example in cotton production to increase yield and productivity, control pests and reduce costs of production in the cotton sub-sector and make the sub-sector commercially viable. However, because of negative societal perceptions of risks from GMOs, introduction and utilization of biotechnology is suspended in Kenya at the moment due to sensational media reports. Hope of revival of the textile industry in Kenya could depend on uptake of this technology but social and political situations and fear of GMOs based on unfounded and unscientific beliefs is holding back the potential contribution of biotechnology to industrial crops sub-sector.

To realize one of the two thrusts of ASDS which is “increasing productivity, commercialization and competitiveness of agricultural commodities and enterprises”, it is important to prioritize activities that reduce costs and enhance the benefits of adoption and utilization of high yielding inputs and husbandry practices. When such activities are combined with institutional innovations, technological advancement can be realized. The goal by Vision 2030 for

agriculture's contribution to an annual growth rate of 7 percent to overall economic growth by 2020 can then be realized through a productive, commercialized and competitive agricultural sector. Increased productivity, commercialization and competitiveness of the agricultural commodities will facilitate agricultural exports growth regionally and globally. This can earn the country foreign exchange and create employment. Where agriculture is technology-led, experience has shown that poverty alleviation and food security can be achieved. The tenets of Vision 2030 regarding these specific goals can then be met.

A combination of technical improvements with institutional innovations can make use of integrated systems through soil and water management, pest control, crop-livestock interactions and agro-forestry. Such systems can be enhanced when infrastructures supporting agriculture such as road networks and marketing storage and irrigation facilities are made available. These would positively affect production costs, production efficiency and marketing output costs.

*Conclusions* Production systems that combine soil improvements, intensified input application, new crop and livestock varieties and farmer cooperative value chains would need public support. Additionally, supporting institutional arrangements that ensure input supply and post-harvest management and processing would ensure that the critical contribution of these activities to value addition, productivity and competitiveness are realized. Greater employment can then be realized.

*Recommendations* To commercialize agriculture and agro-processing and make them productive and competitive, technologies for soil improvements, water management, new crop and livestock varieties, and post-harvest processing need to be enhanced or introduced. Reforming institutions to be effective is needed for technological advancement.

#### *Institutional arrangements and coordination*

*Findings* The agricultural sector in Kenya is comprised of ten line ministries of agriculture, fisheries, livestock, lands, water and irrigation, cooperative development and marketing, environment and mineral resources, science and technology, and regional development among others. This is in addition to coordination of the development of the ASALS within the former Ministry of Development of Northern Kenya and Other Arid Lands. The ASDS has rooted for an inclusive stakeholder participation-driven sector wide approach to agricultural development. The Agricultural Sector Coordination Unit (ASCU) based at the Ministry of Agriculture, Livestock and

Fisheries has been coordinating the process but inertia seems to have gone down for unknown reasons. The consultation-driven approach among the ministry, private sector, development partners, farmers organizations and non-state actors is meant to generate policy consensus and eliminate duplication of activities and resource wastage.

*Conclusions* Given the large and diversified agricultural sector ministries, partners, farmers, non-state actors and the private sector, implementation of the ASDS and sustainable agriculture will require strong partnerships and commitment between the government and the multiple stakeholders. A strong coordination mechanism to bring together the stakeholders to implement the ASDS programme is a priority. The mechanism needs to be re-invigorated or re-established and reviewed for its effectiveness in accomplishing its mandate over time.

*Recommendations* Perhaps, a mechanism that is in the form of a permanent advisory council or committee in which the Ministry of Agriculture, Livestock and Fisheries act as the chair may deal with the low inertia that has afflicted ASCU. Alternatively, line ministries of agriculture critical to realization of ASDS goals could chair rotationally such a coordination body.

#### *Encouraging participation of the private sector*

*Findings* Profitable value addition for agriculture produce is minimal because of a large proportion of processing and marketing costs in final prices due to the unconventional technologies that smallholders or even processors employ. In Kenya, formal agro-processing requires appropriate technology, operational knowledge and skills and linkage with services and consumer markets for product disposal. Undertaking small scale or formal agro-processing requires substantial credit. Yet the Kenya financial markets have a policy of excluding agriculture businesses from lending except for large established businesses. To illustrate this point, only 3.5 percent of formal bank loans go to the sector and yet over 75 percent of formal and informal employment is provided by the sector. Opportunities for adding value to farm produce such as dairy produce, fruits, fisheries and meat are lost. There is a great potential for value addition to dairy produce of which only about 4 percent of the output is added value. Most of harvested fruits have post-harvest losses at the farm, retail markets and wholesale markets. For both milk and fruits, losses from wastage go as high as 50 percent or more of the total outputs of each commodity. There is a great opportunity for the government to promote private sector investment in value addition activities. This would make the value chains for produce in

which wastage occurs to be productive and support farmer livelihoods and employment creation.

*Conclusions* Private sector led agricultural development is to be realized from entry of the private sector into services (production, processing, transportation, storage and marketing) formerly provided by state corporations. This has been challenging because of lack of investments in areas where such services are provided. The private sector therefore needs support to leverage physical, financial, human resource, and institutional constraints on investments in agriculture. Areas in which businesses that can help create formal jobs for employment in agriculture include improvement of access to credit and technology for farm production, input supply, storage and assembly, processing, distribution, retailing and wholesaling. Supporting development of the ‘software’ dimensions of the private sector to enter services in agricultural production would require capacity development of farmer cooperatives and private sector organizations. Other ‘software’ services in which support for capacity development of the private sector is needed are development of business plans, preparation of feasibility studies for investment, marketing and market networking, business negotiations, and policy sensitization and engagement. Encouraging a private sector led growth in the agricultural sector should enhance productivity, commercialization and competitiveness of agricultural and agro-processing value chains.

*Recommendations* Support to the private sector on credit access, provision of communication and transport, storage and marketing facilities in agricultural areas, participation in policy processes and technical support are needed for a private sector led –growth in agriculture and agro-processing.

#### *Reforming delivery of agricultural services*

*Findings* The impact of agricultural services such as research, extension, input supply, quality assurance and livestock disease control among others depends on availability of technology, access to technology, information, and the necessary services in a timely and costly manner. This can ensure sustained growth in agricultural productivity is achieved. The provision of technologies of crop, livestock and natural resources management which are key in enhancing agricultural productivity and production efficiency is a mandate of research institutions. However, research exists to serve the technology needs of farmers and farmer organizations.

Therefore a mechanism for making agricultural research and extension more relevant and responsive to farmers' and trader needs is required.

*Conclusions* Research should therefore be accountable to farmers. The process of prioritizing research problems must involve farmers and agriculture value chain stakeholders. In particular, research should integrate the holistic farm and market issues in technology development. Continuous reforms of legal and regulatory frameworks governing public and private services should be enhanced to ensure Kenya's agriculture is competitive globally.

*Recommendations* Private and public extension information services model should be continued. Private extension services should continue to provide services based on farmer needs and the value the services add to the agricultural system. Laws for quality assurance and in-service capacity development to update professional knowledge for extension and technical service provision should be required. This would ensure that international standards in meeting product quality and health and safety requirements are attained. This would impact positively trade in agricultural products and employment.

## **3.2 Investments**

### *Agro-processing*

*Findings* Economic transformation in Kenya needs to include modernizing agriculture to increase the productivity of smallholders. Using agriculture as a basis for manufacturing and services by expanding agro-processing and other agribusinesses is the best way for creating jobs for especially the youth (ACET, 2015; GOK, 2015b). The population increase in urban areas in Kenya is expected to triple the current estimated urban population by 2030. Also, the rural population is expected to double its current level in the same period. Demographic and urbanization changes will be associated with income growth and taste preferences for processed high value products.

Transforming subsistence agriculture into commercial agriculture can be done through outgrower schemes or other commercially scalable models. Agro-processing can offer a big step in generating employment, income and foreign exchange. Such efforts can be anchored by appropriately designed policies to overcome barriers to prevent domestic investors from emerging, reaching scale and achieving global competitiveness. In the case of Kenya, raw materials for agro-processing exist and a lot of it go to waste. The best examples are milk, fruits

and horticultural products which experience substantial post-harvest losses because of supply chain constraints regarding market information, poor road networks, poor or lack of wholesale and retail facilities for storage and preservation of the produce. Post-harvest losses can be turned around by investments in agro-processing facilities, cold storage facilities and parallel development in transport and energy infrastructures. A lot of fruits are supplied from Rift Valley, Eastern, Western and Nyanza regions of the country which have minimal investments in electricity which is critical for cold storage processing. Odero *et al.* (2015) reported skewed investments in electrification in Kenya. Nairobi alone had 69 percent electricity connection in 2011 compared to the rest of the country. Rural electricity connection was only 4 percent of the national connection in the same period. There was minimal comparable investment in electrification in the western portion of the country which has high potential for agro-processing. Possibilities exist for marketing value added products locally and in COMESA, EAC and other African countries. Production can also be expanded by processing traditional fruits such as mangoes, guavas and oranges and selling the products locally and in the regional markets already familiar with the fruits.

Possibilities also exist for value addition for green coffee which should be exploited. The existing possibilities involve exploiting high-value niche markets by processing coffee through efficient wet processing to produce specialty coffee. . Washing parchment coffee instead of selling in the above process adds premium to Arabica coffee. A fifteen percent net value added margin is realizable from this process in Tanzania for example The other opportunity for value addition for coffee can be achieved through marketing coffee as certified fair-trade and organic coffee. The world markets share for fair-trade for coffee is minimal at 2 percent though. Other strategies for adding value to coffee at a higher scale of cooperation such as hubs requires cooperation at say African continental level and may be too complex for Africa at the current level of socio-economic development. Agro-processing can be initiated through attraction of foreign and local investors via economic incentives. Providing vocational technical skills, capacity building and education in support of agro-processing can go a long way in making the strategy succeed.

*Conclusions* Income, food demand due to population growth and consumer food preference changes will drive growth in agro-processing both nationally and regionally in East Africa. A policy specifying specific goals for agro-processing, facilitating value chain development, specifying standards for agro-processing through the value chain to meet international standards, providing legislations, indicating implementation strategies, and facilitating

acquisition of resources for agro-processing among other needs is overdue to tap the benefits of income growth in future.

*Recommendations* There is need for initiating a policy on agro-processing to enhance agribusiness, commercialization, value-addition, productivity and employment in agriculture. The policy should guide resource acquisition, standards, legislations and other issues in agriculture and agro-processing.

### *Infrastructures*

*Findings* Infrastructures such as road, rail, port facilities, irrigation works, marketing facilities and cold storage among others influence agricultural productivity, marketing output costs, incomes and value addition to agricultural produce. Communication and road infrastructures facilitate information access to farmers and markets about supply chain. In addition, labour access to agricultural industries, farms and markets is eased by these facilities. Most of agricultural production areas in Kenya are rural and isolated from the major export and domestic markets and, regional and global markets. Inadequate infrastructure has been cited as the reason for high costs of production, low returns to farmers and inability of the country to attract foreign investors to Kenya in general. However, the government has invested substantially in large infrastructure development projects including the SGR that connects Mombasa to Nairobi at an initial cost of \$300 billion. The Galana Kulalu Irrigation project in Tana River County was also initiated in 2014 and expected to irrigate about 406,000 hectares of land for production of maize and horticultural crops with dam construction.

The MTP II investment programme of the SDS also saw expansion and rehabilitation of publicly funded irrigation schemes such as Mwea and Ahero Rice Irrigation Schemes among others. The programme reported completion of a total of 2000 kilometers of tarmacked roads all over the country. Although these projects are substantial, the country's need for infrastructural projects far outstrips what is already completed or ongoing. The services provided by the infrastructures will only be fully available in the future.

*Conclusions* Investments in infrastructures will lower production and marketing output costs. When combined with value-addition, productivity, commercialization and greater income and employment will be realized for Kenya.

*Recommendations* Investments in infrastructures can be made through P-P-Ps, attraction of FDIs, public investments and lease out of facilities and incentives to the private sector and farmers' organizations.

### *Energy*

*Findings* Energy, its cost structure and reliability is the driver of Kenya's economy. It therefore determines economic growth. It is public record that some companies have relocated to other East African countries from Kenya because of the high cost and reliability problems of Kenya's electrical energy. At present, energy demand is adequate after over 250 Megawatts Olkaria Geothermal Power Station was commissioned in 2014 at Olkaria in Naivasha County. Large, small and medium sized agricultural firms can set up in economic clusters located in rural areas with high demand for agro-processing and initiate agro-processing projects. This can help farm labour be shed off to factories based on agro-processing and non-agricultural enterprises in rural areas. Smallholder agriculture can be made more productive this way.

*Conclusions* Energy availability and reliability determine whether manufacturing can be undertaken at all and the costs of marketed outputs. Some of the challenges for electrical power energy include a 20 percent loss due to illegal connections, over regulation of power generators and high costs of producing and redistributing electrical power.

*Recommendations* Target electrical power installations in counties that have high demand for electricity for agro-processing. Over regulation for electrical power generators should be minimized.

### *Capacity building, training and education*

*Findings* The main points about education are four; one human resource needs for the different sectors and different levels of skill needs is not well-aligned to the demands of the labour market, two the number of individuals with vocational and technical skills in modern agriculture are not adequate, the cost of acquisition of technical and vocational skills is out of reach of potential individuals and three a strong linkage between agricultural industries and training and educational institutions is needed to align training and education to impart knowledge and skills needed by the industry. There is therefore need to assess the demand for graduates with technical skills relevant to value chain activities and agro-processing in Kenya. Further, Technical and Vocational Education Training (TIVET) curriculum should be further reviewed to



emphasize training on the critical technical and human skills that the agricultural sector needs. At the technician level, training should be differentiated by the educational attainment and experience of trainees such as post-primary graduates, post-secondary graduates and tertiary graduates. Younger youth from poor households can be supported to gain education and training through bursaries since access to training and education is constrained by the low socio-economic status of the rural households. Older youth can be provided training and vocational skills by apprenticeships. This can be achieved through work voucher systems since many youth are neither willing nor able to pay for investments in education and skills training due to low returns to the investments.

*Conclusions* Relevant technical and vocational skills are needed to promote productivity and value addition in agricultural sector. Support for capacity development will give trainees incentives for training.

*Recommendations* Regular education and vocational and technical training systems should be revamped to produce labour skills relevant for the agricultural labour market. The Labour and Employment Policy must enforce student or trainee requirement of internship training in the industry before they are formally employed after graduation. This enables interns to acquire technical and human skills at the workplace. Curricula on agriculture and agro-processing that address the agricultural value chains should be strengthened and re-introduced at all levels of education and training.

#### *Sustainable land and natural resources management*

*Findings* High population density has resulted in soil nutrient depletion, destruction of vegetation cover, over cultivation of land, overgrazing and erosion.

*Conclusions* Adoption of sustainable agriculture policy should result in increased production from higher diffusion of low external input techniques that result in higher nutrient density and lower pest density. Risks in agricultural production should also be reduced with the introduction of these technologies.

*Recommendations* Land-use regulations need to be promoted in especially ecologically threatened areas. Degraded natural capital and ecosystem services need to be rehabilitated to promote sustainable land use and help to close gaps in inequalities and poverty. Thus

productive, commercialized, competitive and sustainable agricultural systems should emerge. This should increase employment.

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## 4. CONCLUSIONS AND RECOMMENDATIONS

### 4.1 Conclusions

The major policy issues that affect wage employment creation in the agricultural sector and agro-processing in Kenya include; low agricultural productivity, inadequate public investments, inadequate access to credit, multiple taxes for agricultural and agro-processing products, lack of industrialization policy, role of youth in agricultural development, roles of National and County Governments in local employment creation, foreign and regional trade policies and consumer preferences, legal and institutional reforms and institutional arrangements and coordination of institutions mandated to regulate and provide critical services to the sector. The other issues include inadequate incentives and property rights policies, lack of adoption of biotechnology/technology, participation of the private sector in agricultural development and engagement with policy, delivery of agricultural services and investments in agro-processing or value addition in agriculture as a strategy in agricultural development, relevant human vocational and technical and human skills and in technologies for soil and water management. One conclusion is that back and forward linkages between the agricultural sector and agro-processing and other sectors must be made stronger since policies and programmes in agriculture line ministries interact with each other including credit or finance issues among many other multi-sectoral issues of education. Second, inappropriateness of some policies or omission of the necessary policies such as an integrated policy on youth development from agriculture, also do influence agricultural growth.

Therefore, agricultural growth and employment creation can only be possible when the relevant policies are initiated or their weaknesses are corrected. The last conclusion is that there is need for the key stakeholders in the agricultural sector to convene urgently to identify any gaps, inadequacies, overlaps in policies, laws and institutional mandates recently enacted to make the necessary reforms to guide the provision of quality assurance services to the agricultural sector.

### 4.2 Recommendations

These findings of the mapping of literature in this study have policy implications. An attempt has been made to make the recommendations as practical as possible. These are explored briefly.

1. Farmer access to timely and quality inputs can be achieved by full privatization of the inputs sub-sector to enhance competitive pricing and availability of inputs, importation of inputs by farmer organizations and initiating fertilizer cost reduction policy to make input logistics less costly.
2. Make budgetary allocation progress towards the NEPAD Compact Agreement target allocation to the sector of 10 percent, balance budget components among personnel, recurrent expenditure and capital investments and by increasing the efficiency of tax collection to maximize revenues and accountable budgetary management.
3. Access to credit by farmers and agriculture enterprises can be increased by the government setting up funds to reduce the risks that finance institutions take in lending to large scale and smallholder enterprises to ensure full risk coverage for the full amounts of credit loaned out.
4. Taxes in agriculture and agro-processing can be reduced by legislation to ensure taxation of agricultural produce is rationalized and only income is taxed and not a multiplicity of taxes, duties, levees, and cesses on agriculture produce and agro-processing products.
5. A policy that addresses industrialization to enhance agro-processing is therefore needed to identify agro-processing goal, objectives, plans, standards and resource and expertise needs.
6. Integrated policy for youth involvement in agriculture and agro-processing can be achieved by increasing youth access to; land and full land property ownership rights, credit, technology, advisory information and by involving youth in policy processes taking into account youth differences in age, education, gender, aspirations and community of origin.
7. County Governments should apply increased, timely budget allocation in prioritized programme and service areas and in a consistent and regular manner to enhance sustainable local employment opportunities in agriculture and agro-processing.
8. Review Policy, legal and institutional framework as necessary and negotiate for trade policies including value addition to commodities, consumer requirements and geographic indications to promote foreign trade and regional economic integration.
9. AFA, MoALF, KEPHIS, the private sector and other key stakeholders to conduct gap analysis for the new policies, legislations and institutional framework to assess; their relevance for wage employment creation in the agriculture sector, extent to which they are achieving economies of scale, improved efficiency, quality and synergy and

minimizing overlapping and duplication and to review Plant Protection Act Cap 324, KEPHIS Act 2012, AFFA Act 2013, Crops Act No. 16 of 2013, Agricultural Produce for Export Act CAP 319. This should give insights on the extent to which the ASDS policy goal of a productive, commercially viable agriculture and equitable participation for youth and women especially in the sector has been attained.

10. Initiate a strong mechanism such as in the form of a permanent advisory council or committee in which the MoALF or line ministries of agriculture act as rotational coordination nodes for stakeholder collaboration in agriculture and agro-processing sub-sectors.
11. Provide both domestic and foreign investors with incentives for access to land, income taxes, taxes on agricultural machinery and equipment and simple and one stop shop for processing business transactions related to investment, taxes, licenses and other procedures among others.
12. To address manipulation of cartels as well as political and business elites in certain commodities, there is need to put in place industry specific policies and strategies which address the issues and coordinate the industry.
13. To commercialize agriculture and agro-processing and make them productive and competitive, technologies agro-processing, soil and water management, new crop and livestock varieties, and post-harvest treatment need to be enhanced or introduced.
14. Institutionalize public-private partnership framework to facilitate private sector participation in policy engagement and privatization implementation efforts.
15. The timely introduction of affordable existing homegrown innovations covering the spectrum of production and processing of agricultural produce that meet small scale farmers' needs will contribute to agricultural productivity, agribusiness and competitiveness of agriculture and agro-processing.
16. Investments are needed in: agro-processing as a strategy for increasing smallholder productivity, agribusiness, commercialization and competitiveness through value addition; marketing, storage and post-harvest treatment facilities; electrical installations to provide energy for agro-processing; vocational and technical skills for agriculture and agro-processing value chains and technologies for soil and water management through PPPs, FDIs, public investments and lease out of facilities and incentives to the private sector and farmers' organizations.

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## APPENDIX 1: Names of stakeholder organizations whose representatives were interviewed

1. Ministry of Agriculture, Livestock and Fisheries
2. Ministry of Water and Irrigation



## APPENDIX 2: Related Agriculture Policies in Kenya

1. Vision 2030
2. Agricultural Sector Development Strategy
3. National Food and Nutrition Policy
4. National Seed Policy
5. National Agriculture Sector Extension Policy
6. Soil Fertility Policy
7. National Horticultural Development Policy
8. National Potato Industry Policy
9. Oil Seeds Crops Development Policy
10. Root and Tuber Crops Policy
11. National Emerging Crops Policy
12. National Urban and Peri-urban Agriculture
13. National Livestock Policy
14. Fisheries Policy
15. Kenya Veterinary Policy
16. The National Irrigation Policy Draft 2015
17. Farm Forestry Rules 2009