

MINISTRY OF AGRICULTURE, LIVESTOCK, FISHERIES AND COOPERATIVES AND COUNTY GOVERNMENTS



AGRICULTURAL SECTOR DEVELOPMENT SUPPORT PROGRAMME II (ASDSP II)

# **NATIONAL BASELINE SURVEY REPORT**

**November 2019** 



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# ABBREVIATIONS/ACRONYMS

| AgGDP   | Agricultural Gross Domestic Product                          |
|---------|--|
| ASDSP   | Agricultural Sector Development Support Programme            |
| ASGTS   | Agricultural Sector Growth and Transformation Strategy       |
| ASALs   | Arid and Semi-Arid Lands                                     |
| Bps     | Business Plans   |
| CASSCOM | County Agriculture Sector Steering Committee                 |
| CBT     | County Baseline Team   |
| CPSC    | County Programme Steering Committee                          |
| CPS     | County Programme Secretariat                                 |
| CSA     | Climate Smart Agriculture                                    |
| EU      | European Union   |
| FCS     | Food Consumption Score                                       |
| FGD     | Focus Group Discussion                                       |
| GDP     | Gross Domestic Product                                       |
| Gms     | Gross Margins  |
| GoK     | Government of Kenya GoS : Government of Sweden               |
| HDDS    | Household Diet Diversity Scale                               |
| JASSCOM | Joint Agricultural Sector Steering Committee                 |
| KES     | Kenya Shillings  |
| KIHBS   | Kenya Integrated Household Budget Survey                     |
| KII     | Key Informant Interview                                      |
| KNBS    | Kenya National Bureau of Statistics                          |
| MoALF&I | Ministry of Agriculture, Livestock, Fisheries and Irrigation |
| MOALF   | Ministry of Agriculture, Livestock and Fisheries             |
| NBT     | National Baseline Team                                       |
| NPS     | National Programme Secretariat                               |
| PIF     | Project Implementation Framework                             |
| PVC     | Priority Value Chain   |
| PVCA    | Priority Value Chain Actor                                   |
| SFR     | Strategic Food Reserve                                       |
| SSQ     | Semi-Structured Questionnaire                                |
| USD     | United States of America Dollar                              |
| VCA     | Value Chain Actor  |

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## **DEFINATION OF TERMS**

Agricultural Sector: Encompasses Crops, Livestock and Fishery Subsectors

**Agricultural Sector GDP:** Is the contribution of the agricultural sector to the Gross Domestic Product (National or County)

**Agricultural Value Chain:** The series of agriculture related activities that bring product from input supply to the final consumer

**Business Plan:** Refers to a document that summarizes the operational and financial objectives of a business and contains the detailed plans and budgets showing how the objectives are to be realized. It is a written description of a business's future, a document that tells what you plan to do and how you plan to do it

**Chronically Food Insecure:** It is the long-term and persistent lack of adequate food to meet the food requirements for all the household members

**Climate Smart Agriculture:** Refers to Agricultural practices that sustainably increase productivity and system resilience while reducing greenhouse gas emissions. It is Agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes greenhouse gases (mitigation), and enhances the achievement of national food security and development goals.

**Entrepreneurship :** Refers to the process of creating and running an enterprise and bearing any of its risks, with the view of making profits

**Financial services:** Refers to a broad range of financial products such as banking, investing, insurance Food availability: The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).

**Food and nutrition security:** A situation when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. This exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

**Gender:** A social and cultural construct, which distinguishes differences in the attributes of men and women, girls and boys, and accordingly refers to the roles and responsibilities of men and women. For this survey, four gender categories were used: Adult male (men age 36 years and above), adult female (women aged 36 years and above), male youth (men age 18–35 years), female youth (women age 18–35 years).

**Gross Domestic Product:** Gross domestic product is a monetary measure of the market value of all the final goods and services produced in a specific time period, often annually. It represents the total value of all goods and services produced over a specific time period, often referred to as the size of the economy

**Gross margin:** This is the gross profit/loss divided by the total sales. It is also defined as a percentage resulting from dividing the amount of a company's gross profit by the amount of its net sales. (The gross margin ratio is also known as the gross profit margin or the gross profit percentage or simply the gross margin.)

Household: A household consists of people who live in the same dwelling and share meals.

**Household food consumption score:** Is a proxy indicator for household food security across time specifically, caloric sufficiency

**Household income:** Is a measure of the combined incomes of all people, sharing a particular household .It includes every form of income, e.g., salaries and wages, retirement income and investment income among other sources.

**Market access linkage:** Refers to processes that support connection between the producers of goods or services and their consumers

Market information: Refers to information on prices and quantities of widely traded products/Commodities

**Market instrument tool:** Mechanism that permits one to buy or sell the commodity at a future time, at a price tentatively fixed today e.g., forward contracts, future contracts and franchises,

**Market segment:** Refers to an identifiable group of individuals, families, businesses or organizations sharing ,one or more characteristics or needs in an otherwise homogeneous market. Market segments generally respond in a predictable manner to a marketing or promotion offer

**Normal season:** Refers to period within the production cycle when the supply of a commodity meets expectations.

**Off-farm Income:** Earnings derived from farming activities undertaken outside the household farm setting. The activities could be farming or non-farming in nature. Examples include farm wage labour, marketing of produce that is not of the household

On-farm Income: Earning derived from farming activities at the farm setting.

Peak season: Refers to period within the production cycle when the supply of a commodity is highest.

**Post-production losses:** Refers to degradation in both quantity and quality of product at each node of the chain

**Prioritized Value Chain:** Refers to specific agricultural value chains selected by stakeholders for programme support in each of the 47 counties

**Productivity:** Refers to production returns per unit of resource where resource refers to input (land, labour, capital).

**Service providers:** Refers to individuals or group of individuals who provide specialized service(s) including extension, resource mobilization, processing

**Structures for consultation and coordination:** Programme institutional arrangements established for enhanced programme implementation and efficiency of the sector

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**Value Chain:** Is a set of linked activities that work to add value to a product; it consists of actors and actions that improve a product while linking commodity producers to processors and markets

**Value Chain Actors:** Individuals or groups that which are actually directly involved in value chain activities. In ASDSP this refers to individuals, groups or organizations along the value chain

**Value Chain Organization:** Refers to category of value chain actors undertaking similar activities come together for a common purpose. In ASDSP this could be common interest group, value chain groups, marketing federations, producer association, association of input suppliers etc.

**Value Chain Platform:** Multi stakeholder assembly that is value chain specific with representation from the three levels of a value chain i.e. Micro, Meso and Macro actors

Warehouse: A commercial building generally used for storage of goods or commodities



## FOREWORD

Kenya like many other developing countries relies on agriculture for its economic and rural development. The sector contributes 34% to the country's GDP, employs over 40% of the total labour force, is a source of food and nutrition security, household incomes and provides raw materials for agro-based industries. Food and nutrition security for all is a key priority for the government. The Bill of Rights in the Constitution of Kenya 2010, Article 43 (c), provides for the "right to food of adequate quality and quantity at all times for all. Kenya's economic blueprint, the Kenya Vision 2030 and the government "Big Four" agenda 2017-2022 recognizes agriculture sector as a key player and driver in the country's socio-economic development. The agriculture sector is currently being guided by Agriculture Sector Transformation Growth Strategy (ASTGS) 2019-2029 which is anchored to the Global and regional aspirations of, Sustainable Development Goals (SDGs); Agenda 2063; Comprehensive African Agriculture Development Programme (CAADP) of the African Union (AU) among others.

In line with the sector's vision of "a vibrant, commercial and modern agricultural sector that sustainably supports Kenya's development, both levels of government and stakeholders are committed to initiatives that facilitate rapid agricultural growth and transformation, increase on investment opportunities and employment creation. These initiatives include development of appropriate policies, legal frameworks, and regulations that are in line with global, regional and national goals.

The Agriculture Sector Development Support Program Phase two (ASDSP II) 2017-2022 is one of such programs and initiatives formulated in collaboration with the two levels of Government. The program is funded by the two levels of Governments together with the Government of Sweden through its development agency SIDA and the European Union (EU). Establishment of baseline data upon which progress of implementation is measured is of paramount importance in any project or program. It is on this premise that this baseline survey was undertaken. The data collected will not only be beneficial to the program but to the country at large to inform policy and other strategic directions in the sector. We wish to recognize the key role played by SIDA and EU towards this exercise and their continuous valuable technical support. We commend the Council of Governors, Principal Secretaries, value chain actors, staff and other stakeholders who contributed toward making this baseline survey report for ASDSP II a success.

We are privileged and deeply committed to the realization of the program objectives and baseline recommendations. We urge all stakeholders to work together and support the program towards its development objective of transforming the sector.

**Professor Hamadi Boga** Principal Secretary, State Department for Crop Development and Agricultural Research

### PREFACE

Kenya's agriculture as a mainstay to livelihood for rural economy is predominantly small-scale with small holder farmers contributing about 80% of agricultural production. This production is mainly subsistence and rain-fed with inadequate mechanization. In order to achieve agricultural and rural inclusive growth the Ministry continues to focus on the following critical areas: raising agricultural productivity; linking farmers to markets; reducing risk, vulnerability and gender inequality; improving non-farm rural employment; and making agriculture more environmentally sustainable. These critical areas are well spelt out in the ASTGS 2019-2029 and are envisioned in the Big 4 Agenda as well as Vision 2030.

The Ministry's strategic plan 2018-2023 provides the main strategic thrusts and objectives that are meant to steer the country towards food and nutrition security and make the sector the engine of economic growth. To achieve this as well as address challenges facing the sector the ministry together with County Governments and its stakeholders formulate and develops a range of projects and programmes aimed at objectively focusing and addressing particular issues to fast track quick wins. These projects and programmes often address issues that cut across Counties thereby necessitating coordination by the national government even though they are implemented by the county governments. Agricultural Sector Development Support Programme II 2017-2022, (ASDSP II) is one of such projects and programs implemented in all the Counties.

The project design envisions the need to have baseline data sets developed for ease of tracking implementation of its key indicators as well as other project issues. It was on this basis that the two levels of Government in consultation with its Development partners, SIDA and EU commissioned the baseline survey to be carried out by teams from both levels of Government. The involvement of teams from the two levels of Government has not only added to their capacities to handle such activities in future but has greatly built confidence, ownership and sustainability. The baseline survey was successfully conducted, and its findings are as spelt out in this document. It is my hope and belief that the findings will not just be useful and insightful to the program but to the entire agriculture sector, academia and researchers within and beyond our boundaries.

**Josphat Gathiru Muhunyu** National Programme Coordinator Agriculture Sector Development Support Programme (ASDSP) II The National Programme Secretariat expresses its gratitude to all institutions, partners, officers and stakeholders at large that made this exercise a success. Special thanks to the Policy makers at the Ministry Headquarters and our development partners, SIDA and EU for recognizing the potential of its officers to undertake the baseline survey and for logistical support.

I also wish to take this opportunity to thank the Swedish Government and European Union (EU) for their continued technical and financial support to development of the sector.

I am indebted to the Head of various Departments in the Ministry and other agricultural organizations as well as the ASDSP II Subject Matter who participated in Key Information Interviews for their valuable inputs to enrich the survey report. Special commendation to the County Coordination secretariat for Agriculture Sector Development Support Programme II (ASDSP II) and other County officers who participated in the coordination of the quantitative and qualitative data collection and data quality assurance in their respective Counties. Gratitude also goes to the enumerators for their commitment in data collection from the identified respondents.

Special thanks to the National Baseline Team (NBT) members for working tirelessly to ensure completion of the baseline survey in time. The team composed of officers from ASDSP II namely: Rosemary Magambo, R.Ndunge Mwanza, Bernard Mwangangi, Aggrey Adul and John Ayere; Ministry of Agriculture, Livestock, Fisheries and Irrigation officers namely: Boniface Mutua, Maurice Mungai, Joseph Komu, Susan Muywoywo, Maurice Opondo, Grace Kimaru, Alex Njeru, Dr. Charles Ochodo and KALRO team namely: Dr. Stella Makhoha and Titus Kibet. Special thanks to the team from NIRAS namely: Donnelly Mwachi, Mikael Segerros, Japheth Kiara and Stephen Mungula for providing strategic technical assistance and quality assurance throughout the exercise whose support enabled the Baseline Team to meet the survey objectives.

Finally, many thanks to the respondents for their contribution, transparency and free provision of required data and information in various targeted parameters.

#### **Rosemary Magambo**,

Monitoring, Evalaution and Communication Specialist, gricultural Sector Development Support Programme (ASDSP II)

## **EXECUTIVE SUMMARY**

This report presents baseline data for the Agricultural Sector Development Support Programme II (ASDSP II) goal and impact and outcome indicators against which its progress will be assessed during its routine monitoring and at its mid and End – Term Evaluations.

ASDSP II is a five-year Programme (2017-2022) financed by the Government of Kenya (National and County Governments), the Government of Sweden and the European Union (EU). The programme overall objective is to develop sustainable Priority Value Chains (PVCs) so as to contribute to the sector goal of transforming of crop, livestock and fisheries production into commercially oriented enterprises that ensure sustainable food and nutrition security. ASDSPII is implemented by the National and 47 county governments with strong participation of the private sector as direct beneficiaries or service providers.

The overall objective of the baseline survey was to provide data for the Programme impact, outcome and output indicators against which its progress will be assessed during its routine monitoring and at its Mid and End – Term Evaluations. The process, approach and findings of the survey are outlined in the four chapters of this report.

Chapter one provides background information in relation to role of the agriculture sector, challenges being experienced, past and ongoing initiatives namely policies, strategies and aspirations of ASDSP II.

Chapter two describes the baseline survey approach and methodology adopted. It indicates that the survey was carried out between August and October 2019, covering the 47 counties in Kenya where ASDSP II is implemented. The survey was conducted by National and County Baseline Teams drawn from the ASDSPII, MoALF and Kenya Agricultural and livestock Research Organization (KALRO). Based on the Raosoft sample size calculator overall sample size of 19,753 out of the 500,000 PVCAs targeted by the programme was derived across the 47 counties.

The third chapter presents *findings* of the survey along the respondent's household demographics and the programme goal, purpose and the four outcome indicators

#### (i) Household Demographics

Most of the value chain actors (71%) were aged between (36-65) years. Youth were 18%. Over 80% of the PVCAs had attained primary and secondary education. The average household size was 6.0 persons per household with equal household members by sex. The mean monthly income per VCA household was KES 18,633:KES 104 per capita per day with male adults actors households reporting the highest per capita (KES117) than the youth (KES 105) and the female (KES 89). Out of the 47 counties, only 11% of the counties had actors report per capita income above (Ksh 200) the poverty line. Majority (63%) of producers owned private land.

A significant proportion of respondents (26%) were producing on communal land.

#### (ii) Goal and Impact indicators

**Agricultural sector contribution:** In 2018, the direct and indirect contribution of the Agricultural Sector to the GDP was 34% and 25% respectively. On average Agriculture contributed about 46% of the Counties' Gross Product. In Nairobi and Mombasa counties, Agriculture contributed less than 1%. While in Nyandarua and Elgeyo Marakwet counties, the sector contributed about 85% and 80% respectively compared to other



counties. During the year 2018, the Agricultural Sector grew by 6.6% which reflected an improvement from 1.6% in 2017.

*Rural poverty:* The overall poverty rate and the rural poverty rate was 40.1% (male 30.2, female 26%) and 35.8% (31.7% male, 34% female) in 2015/016 respectively. At the county level, Samburu (90.0%), Wajir (84.0), Turkana (79.4%), Tana River (76.9) were reported to have the highest rural poverty while Nairobi (16.7%), Siaya (22.6%), Narok (22.6%), Meru (23.1) reported the least.

**Food and Nutrition Security:** Most respondents (66%) were within the acceptable Dietary Diversity Scale (66%) and Food Consumption Score range (88%). Majority of the households consumed at least three meals during peak season and two meals during low season.

**on-farm and off-farm employment**: An average of 4 employees were under production node( on Farm employment) and 5 employees working under the Agro Input supply, trade, transport and processing nodes(Off- farm employment ). . Male and youth actors were reported to have more on-farm employees (4) than female actors. Male and female actors are reported to have more off-farm employees (5) than the youth actors.

#### (iv) Programme purpose indicators

**Gross margin**: The average Gross Margin (GM) across the priotized agricultural value chains was 36 with the highest at the transport node (58%) and lowest at the agro input supply (26%) node. Majority (72%) of the PVCAs were not satisfied with their share of revenue generated from the PVCs. Across gender and age, adult females were reported to be least satisfied (78%)

#### (v) Productivity of Priority Value Chains

**Utilization of Service Providers** :about half of the priotized value chain actors utilized Service providers with Private service providers (45%) mostly utilized across the value chain compared to public (36%). Across gender, adult males reported the highest (52%) while the youths reported the least (44%).

**Post-Production losses:** Majority (71%) of the producers experienced post-production losses. Across gender and age, adult female actors were the most (42%) affected while the youths were the least (18%) affected. Over 50% of the PVCAs cited spoilage, pests and diseases and poor road conditions as main causes of the post-production losses among other reasons

#### (vi) Entrepreneurial Skills

*Implementing Viable Business*: few actors (23%) had business plans of which Agro Input suppliers (35.1%) were the majority. Across gender and age, male adults were reported to have the highest (39%) number of actors with business plans compared to the adult female actors (31%) and youths (24%) actors. Despite having a business plan only 12% of the actors were using the business plans.

#### (vii) Access to Markets

**Accessing markets**: Of the 74% of actors who reported to be accessing markets, only 39% found it easy to access those markets. More Adult males (42%) found it easier to access market compared to youth (40%) and adult females (36%).

*Market segments*: Individual market (77%) segment was the most accessible by the actors across the value chain. Public institutions were the least accessible.

*Access to financial services:* Over half of the PVCAs had access to financial services, with adult males being the highest (39%) and youth actors reporting the least (23%).

#### (viii) Structures and Coordination structures

Only half of the PVCs related policies, strategies, regulations and plans formulated were being implemented. Over 60% PVCAs accessed services from the structures out of which 70% were satisfied. Across gender and age, adult male actors reported above 80.0% satisfaction level. At the node level, satisfaction with structures was highest among processors (88%) and lowest among agro-input suppliers (61%).

Chapter four of the baseline survey report provides the conclusion and recommendations. From the findings it can be concluded that there is a lot that need to be done to realize the programme of food security and commercialization of the priotized value chains. More effort is required to increase productivity, enhance entrepreneurship, facilitate market access, strengthening of the sector coordination and consultation structures with more capacity building needed on the development and rolling out of policy, regulations and standards related to the priotized value chains



## CHAPTER ONE: INTRODUCTION AND BACKGROUND INFORMATION

This chapter outlines basic information about Kenya with respect to the Agricultural Sector. It provides information the: Agriculture Sector profile, Sector Coordination Framework, Brief history of Agriculture strategies, Challenges in the sector, About the Agriculture Sector Development Support Programme (ASDSP) II, Baseline rationale and objectives and finally the study strengths and weaknesses.

#### 1.1. Agricultural Sector Profile

Kenya is located along the equator and occupies 582,646 km<sub>2</sub>of which 571,466 km<sub>2</sub> is the landmass. However, 80% of the landmass is Arid and Semi-Arid Lands (ASAL) while the remaining 20% is the only land suitable for rain fed agriculture. According to the National Population census of 2019, Kenya's population was 47,564,296 comprising of 23,548,056 males, 24,014,716 Females and 1,524 inter-sex with an overall population growth rate of 2.9%. The most populated Counties include Nairobi, (4,397,073), Kakamega (1,867,579) and Kiambu (2,417,735) while less populated counties are Lamu (142,920), Isiolo (268,002) and Samburu (310,327). Agewise the population under the age of 15 constituted 40 percent of the total population. The country poverty rate stands at 42% (UNICEF Report 2018).

In the recent past, Kenya has taken big strides to build its macro-economic foundations for agricultural transformation. According to the Kenya Economic Survey 2017, (*Kenya National Bureau of Statistics*), the sector contributes about 34% of total Gross Domestic Product (GDP). The sector contributes an additional 27% to GDP through linkages to other sectors such as manufacturing, distribution and services. It also employs more than 40% of the total population and about 70% of the rural population. 60% of the exports come from the agriculture sector, with the largest contribution coming from crops production.

The Sector average growth rate is recorded to be 5.1% (MTP II). Kenya's agriculture is predominantly smallscale, mainly in the medium and high-potential areas which constitute 16% of the total land mass. The remaining 84% of the land is mainly under extensive livestock production and marginal crop production (*MoALF, 2018*). In lieu of this, the sector is divided into three sub-sectors: crops, livestock and fisheries.

According to the Kenya Economic Survey report (2019), the crops sub-sector contributes over 42% of the Agricultural GDP (AgGDP) and comprises of food, horticultural and industrial crops among others. Maize production increased by 26.0 per cent from 35.4 million bags in 2017 to 44.6 million bags in 2018. The quantity of horticulture produces exported increased by 6.1 per cent from 2017 to 322.6 thousand tonnes in 2018 (*KNBS, 2019*). In addition, the livestock sub-sector contributes about 18% of the AgGDP and about 4.9% of National Agricultural Gross Domestic Product (GDP). The sub-sector employs 50% of the agricultural labour force. Over 10 million Kenyans living in the Arid and Semi-Arid Lands (ASALs) derive their livelihood mainly from livestock. About 60% of the countries' livestock herd is found in the ASALs. The value of marketed livestock and livestock products increased by 8.3 per cent from 535.7 million litres in 2017 to 634.3 million litres in 2018 mainly supported by sufficiency in fodder and pastures owing to adequate and well spread long rains throughout the country (*KNBS, 2019*). Finally, the Kenya's fisheries sub-sector is mainly composed of freshwater (lakes, rivers and dams) and marine (Indian Ocean) sources with the rest coming from aquaculture. Fish production is estimated at 150,000 MT annually, the sub-sector contributes about 0.8% of the country's National GDP and 5% of AgGDP.

#### 1.2. Brief History of Agriculture Strategies

Over the years, development of the Agricultural sector has been guided by different initiatives. The Swinnerton Plan of 1954 discouraged traditional land tenure and introduced title deeds that created security of tenure and ability to obtain credit. The Sessional Paper No. 10 of 1965 on African Socialism and its application to planning in Kenya envisaged concentration of agricultural investment in high rainfall areas.

In 1983, the District Focus for Rural Development was introduced as a measure towards providing proximate administrative services to the people. This enhanced participation in decision making and improved identification of local priorities. The Structural Adjustment Programmes of 1990s led to restructuring of agricultural institutions, liberalization of product prices and privatization of services.

In 2000, the Poverty Reduction Strategy Paper (PRSP) was developed to address the twin objectives of driving economic growth and reducing poverty. In 2003, the PRSP gave rise to the Economic Recovery Strategy for Wealth and Employment Creation that focused on growth and macroeconomic stability; improved governance; social equity, poverty reduction and rehabilitation of infrastructure. Later, in 2004, the Strategy for Revitalizing Agriculture was launched and its growth target of 3.1% was surpassed in 2007 to reach 6.1%. It was succeeded by the Agricultural Sector Development Strategy (ASDS) of 2010 whose aim was to transform agriculture into a modern and commercially viable sector contributing to an annual economic growth rate of 10% as envisioned in the Vision 2030.

The review of ASDS to respond to aspirations of the constitution of Kenya 2010 yielded to the Agricultural Sector Transformation and Growth Strategy (ASTGS, 2019-2029). ASTGS has a set of three anchors and three enablers out of which are nine flagship projects proposed for implementation. The three anchors are: increasing small scale farmer incomes through inputs support using an e voucher system and facilitating creation of 1000 Small and Medium Enterprises; increasing agricultural output and value addition by setting up six agro-processing hubs through public private partnerships and increasing area under production by engaging private farm owners and supporting with required infrastructure and thirdly, boosting household food resilience by restructuring Strategic Food Reserve (SFR) and supporting community driven design interventions. The enablers for these are: creating knowledge and skills management systems; strengthening research and innovations and sustainability and crisis management through monitoring of two key food system risks namely: climate smart and natural resource management and rapid response to crisis such as emergency of pests and diseases.

#### 1.3. Agricultural Sector Coordination Framework

The Ministry of Agriculture, Livestock and Fisheries is mandated to create an enabling environment for sustainable development and management of crops, livestock and fisheries resources to ensure food and nutrition security in the Country. To realize this, it is structured into three State Departments. The State Department for Crop development and Agricultural Research is responsible for sustainable development of crop resources and agricultural research. It is guided by several policies including the National Agricultural Policy, the Food and Nutrition Security Policy, the National Agriculture Research Policy and the National Agricultural Sector Extension Policy among others. The State Department of Livestock takes charge of animal resources including animal production, animal health and trade in animal products; its main policies include



the Veterinary Policy, National Livestock Policy and the National Dairy Development Policy. The mandate of the State Department of Fisheries Aquaculture and Blue Economy includes licensing of fishery export facilities; development and marketing fishery resources; fish quality assurance and development of policy framework for Kenya's maritime blue economy and is largely guided by the Fisheries Policy,

Intergovernmental institutions that link the national and county components of the Agricultural Sector are the Intergovernmental Forum for Agriculture (IGF-A); Joint Agricultural Sector Steering Committee (JASSCOM) and the Joint Agricultural Sector – Technical/Sectoral Working Groups (JAS-TWGs/SWAGs). The Joint Agricultural Sector Intergovernmental Secretariat (JAS-IGS) is the operational centre of the cooperation and consultation mechanism. The main purpose of Agricultural Sector consultation and cooperation is to ensure that agriculture contributes to equitable national growth and increased food security through effective coordination and implementation of the Agricultural Policy, other Sector policies, strategies, projects and programs.

#### 1.4. Challenges in the Agricultural Sector

Despite the importance of the Agriculture Sector to Kenya's economy, the sector faces many challenges many that are complex and requiring systematic approaches to address. Some of these challenges include: low productivity of its major value chains as a result of complex issues of inadequate application of agro husbandry aspects, technology and innovations; little value addition to most of the produce hence high levels of post-harvest losses; land sub-division and fragmentation due to competing land uses; climate change and weather variability resulting into other issues such as drought, floods, emergency of new pests and diseases; inadequate quality control systems due to inadequate traceability systems and uncoordinated regulatory systems; low level of commercialization and poorly organized marketing and distribution systems and other infrastructure support including access to timely market information. All this is coupled by challenge of an aging population that is actively involved in agriculture.

As a result of these challenges food and nutrition security continues to be a challenge in the country. According to USAID survey of 2019, 25% of the population that is equivalent to 11.5million persons was food insecure. The USAID survey reported that counties in the Central Kenya, South and Central Rift and Western Kenya were relatively more food secure compared those in the North Rift, Upper Eastern and North Eastern regions. To address these challenges, the Government, its stakeholders and development partners continue to formulate and implement various initiatives namely policies, strategies, regulations, projects and programs over time.

#### 1.5. Agricultural Sector Development Support Programme II

Agricultural Sector Development Support Programme II (ASDSP II) is one of the initiatives formulated and implemented by the two levels of Government in all the 47 counties for a period of five years (2017-2022). However due to unforeseen circumstances the project delayed commencement of its implementation by almost 15 months. It is financed by the Government of Kenya (National and County governments), the Government of Sweden and the European Union (EU). ASDSP II is a successor of the first phase of Agricultural Sector Development Support Programme (ASDSP I) and is founded on lessons learnt from ASDSP I. The Principal Secretary, State Department for Crop Development and Agricultural Research has the fiduciary function and at national level coordination is through a National Program. The 47 counties are the key

implementers with a County Program Secretariat (CPS) and a County Project Steering Committee (CPSC). At the operational level, value chain stakeholders constitute the core implementing drivers of Value Chain Development initiatives supported by the Programme. The outreach of implementation includes sub-counties and wards in each county. The Wards are the first point for generation of data and information on implementation of the Programme and reporting.

The Programme responds to the Vision 2030, "Big 4 Agenda", Agricultural Policy and ASTGS whose main objective is "Transformation of crop, livestock and fishery production into commercially oriented enterprises that ensure sustainable food and nutrition security". Its focus is mainly on sustainable development of 29 commodities, forming 143 County Priority Value Chains for improved income, food and nutrition security. It responds to Government of Sweden- Kenya cooperation strategy, strategic area 3; better opportunities and tools to enable poor people improve their living conditions and significantly to strategic area 1; better environment, limited climate impact and greater resilience to environmental impacts, climate change and natural disasters. To contribute towards its goal, the Programme aims at addressing four key challenges that hinder commercialization of agricultural value chains and; low access to markets by VCAs and weak and inadequate structures and capacities for consultation, cooperation and coordination within the Sector. By addressing these four areas, the Programme intends to attain the following outcomes: (a) Increased productivity of priority value chains; (b) Strengthened entrepreneurial skills of Priority Value Chain actors; (c) improved access to markets by Priority Value Chain actors and (d) strengthened structures and capacities for consultation in the Agricultural Sector.

#### 1.6. Rationale and Objective of the Baseline Survey

In order to increase programme effectiveness to monitor and measure the impact of the programme, there is need to establish the baseline status for key performance indicators at impact and outcome level. This being the second phase of the programme, we take note of the findings that took place during the programme evaluation in 2017 (ASDSP I End Term Evaluation report), however, due to significant changes in the programme performance indicators in Phase II, there is need to establish benchmarks for these set of new indicators. In lieu of this, the study aims at achieving three broad objectives:

- 1. To benchmark baseline data for the programme Impact and Outcome performance indicators which progress will be assessed against
- 2. Provide key recommendations that will inform Programme adjustment and strategic planning during implementation
- 3. Inform the re-designing of the Programme monitoring tools

#### 1.7. Strengths and Limitations of the Baseline Survey

The baseline survey was conducted in all the 47 ASDSP II implementing Counties by the County Baseline Team (CBT) nominated by the county leadership with guidance from NBT. This is not only added their experience, knowledge and skills but it facilitated interactions with key stakeholders, service providers and value chain actors thus strengthening the bond for future engagements. The counties and stakeholders strongly supported the baseline survey allowing for smooth coordination and timely completion of data collection.

Whereas lots of data was collected across the counties, it's worth noting that the survey only focused on the ASDSP supported 29 Priority Value Chains (PVCs) across the 47 counties – possible that actors could be implementing other agriculture value chains – however, this did not affect the findings of this study. Respondent's biasness was also experienced to some degree due to respondent's high expectations from the programme. However, this was reduced through enumerator's thorough training before data collection including during data cleaning through identification and elimination of outliers in the raw data. In some instances, as explained in the sampling procedure, we had instances where some counties had low (<3) number of Value Chain Actors (VCAs) within certain nodes in a given county (these were mostly processors and transporters) - these specific data was not factored during data analysis but were factored as KIIs in the finding presentation.

## CHAPTER TWO: SURVEY APPROACH AND METHODOLOGY

This section describes the approach and methodology adopted in the study. Specifically, this section provides information on the survey coordination and management, study sites, sampling methodology, training of the County Baseline Teams (CBTs), recruitment and training of the enumerators, data collection, data quality assurance measures and data analysis.

#### 2.1. Survey Coordination and Management



Figure 1: Structure for Coordination and Management of the ASDSP Baseline Survey

The National Baseline Team (NBT) and County Baseline Team (CBT) were responsible for coordinating and managing the baseline survey. The National Baseline Team (NBT) was appointed by the Cabinet Secretary for the Ministry Agriculture, Livestock, Fisheries and Irrigation (MOALFI). The team comprised of:

- Monitoring and Evaluation Specialist National Programme Secretariat (NPS): Served as the lead baseline survey coordinator
- Specialists and MOALF officers (NPS) with expertise in agriculture, policy and research methods, value chain development approach, entrepreneurship and agribusiness, environment and climate change, agriculture research and data analysis, gender and development, monitoring and evaluation, statistics, and mobile app data collection) responsible for the four outcomes
- Technical experts from NIRAS: Provided strategic guidance to the overall design and implementation
  of the study

The specific role of the NBT was:

- Design the actual methodology to be adopted for the baseline survey as guided by the terms of reference in the form of an inception report
- Design study tools (qualitative and quantitative)
- Develop a training guide for CBTs and enumerators
- Upload the data collection tools on the mobile application to be used in the survey

- Provide criteria for selection of the CBTs and enumerators
- Train CBTs on the baseline process
- Pre-test data collection tools on the first cluster of counties to be trained and adjust the tools where relevant
- Provide oversight implementation of the baseline survey by providing quality assurance for the data collected and the survey process
- Coordinate development of county baseline reports
- Conduct national level data analysis collate and synthesize county baseline reports to generate one national baseline report
- · Coordinate validation of county baseline reports; and
- Carry out validation of the national baseline report.

On the other hand, the CBT was responsible for the overall management and coordination of the baseline survey at the county level in collaboration with the NBT, National Programme Secretariat (NPS), and the Technical Assurance Team from NIRAS and County Programme Secretariat (CPS).

The CBT was appointed by the County Executive Member (CEC) agriculture/livestock in each county. The CBT comprised of the County Programme Secretariat (CPS) Coordinator, Monitoring and Evaluation Officer (M&E), 4 CPS Subject Matter Experts (SMEs). As guided by the CBT Terms of Reference (annex 2), the role of the CBT included:

- Selecting of the baseline survey enumerators
- Training of the baseline survey enumerators
- Supervising the baseline survey enumerators during data collection
- Collecting qualitative data and information
- Conducting qualitative data analysis
- Preparing and validating draft baseline reports with ASDSP II stakeholders and
- Preparing the final county baseline reports

#### 2.2. Survey Sites

Data collection took place at both national and across the 47 counties. At the national level, key informant interviews were conducted targeting key informants from various departments aligned to the programme. At the county level, a semi-structured questionnaire was administered, targeting the VCAs across the 47 counties. Key Informant Interviews (KIIs) and Focus Group Discussion (FGDs) were also conducted. Figure 3 below provides information on the spread of respondents across the 47 counties targeted with the semi-structured questionnaire.



Figure 2: Location of survey respondents

#### 2.3. Sampling Methodology and Procedure

This section describes the survey sampling methodology and procedure. It describes the sampling frame and sample size determination and sampling procedure in detail.

#### 2.3.1 Sampling Frame and Sample Size Determination

For quantitative data, the five nodes within prioritised value chains (PVCs) – Agro-Input Supply, Production, Trader, Transport and Processing) formed the primary sampling units, while the VCAs disaggregated by PVC and gender formed the secondary sampling units. Different sampling techniques were adopted at different stages to derive the final sampling framework as highlighted below:

- Multi-stage sampling (MSS)<sup>1</sup>: The VCAs were clustered into the five nodes across the three PVCs in each county, namely the agro-input, production, trade, transport and processing nodes.
- **Probability Proportion to Size (PPS)**<sup>2</sup>: The PPS was adopted because the total number of VCAs across each node was known and the probability of selecting one VCA was proportional to the total number of VCAs in that node.
- **Purposive Sampling (PS)**<sup>3</sup>: The PS was considered to ensure that across each node and PVC, when disaggregated by gender and age, the low samples (< 30) in a node was adjusted to be part of the final sample size. This was mostly applied to the agro input supply, processing and transport nodes where the total population in the county was less than 30.
- Simple Random Sampling (SRS)<sup>4</sup>: Was adopted to ensure each VCA, within particular PVC, had an equal chance of being selected across the wards. Beginning from the VCA numbered 1, every ninth (9th) VCA in the lists of men, women and youth in the respective PVCs were selected.

<sup>&</sup>lt;sup>1</sup>Multi-stage sampling: https://research-methodology.net/sampling-in-primary-data-collection/multi-stage-sampling/ <sup>2</sup>PPS: https://onlinelibrary:wiley.com/doi/abs/10.1002/9781118445112.stat03346.pub2 <sup>3</sup>Heterogeneous Purposive sampling: https://www.thoughtco.com/purposive-sampling-3026727

Simple Random Sampling: https://research-methodology.net/sampling-in-primary-data-collection/random-sampling/

#### 2.3.2 Sampling Procedure

The steps shown in 4 were adopted to determine the final sample size.



Figure 3: Survey sampling procedure

- **Step1:** This step was aimed at ensuring that each county VCA data sets were grouped into five clusters (Input Supply, Processor, Producers, Traders and Transporters) across the three PVCs and the information disaggregate by gender and age.
- **Step2:** The second step was to determine the total number of VCAs (N) disaggregated by PVC, nodes and gender
- **Step3:** The overall county sample size was determined using the Raosoft<sup>5</sup> sample size calculator based on the formula below. The Raosoft formula was adopted because the target population was known.

$$x = Z(^{c}/_{100})^{2}r(100-r)$$

$$n = {^{Nx}}/_{((N-1)E^{2} + x)}$$

$$E = Sqrt \left[ {^{(N-n)x}}/_{n(N-1)} \right]$$

Where:

- N = Total number of VCAs in county
- r = the fraction of responses of interest = 50%
- Z(c/100) = the critical value for the confidence level c = 95%
- E = the margin of error = 5%

Based on the above formula, the targeted overall sample was 19,753 VCA (derived by summing the total sample sizes derived across the 47 counties). The sample sizes per county have been provided in **Error! Reference source not found.** of this report.

- **Step 4:** Probability Proportion to Size (PPS) sampling technique was adopted to apportion the calculated sample size in step 3 across each PVC and gender.
- Step 5: Purposive sampling was adopted to select VCAs that had low population (<30) to be part of the study. Based on this, the derived sample size across the PVCs and gender in step 4 was adjusted upwards to accommodate adjustments from the purposive selection.

<sup>5</sup>http://www.raosoft.com/samplesize.html

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• **Step 6:** Simple Random Sampling (SRS): was used to select specific VCAs to participate in the study across each PVC and gender in the county.

#### 2.4. Training of the CBT

The 282 CBT members (six per county) underwent five (5) day training in three regions (Mombasa, Naivasha and Kisumu) from 15th-29th July 2019. The CBT members were taken through the SSQ and Kobo collect mobile data application tools, quantitative data collection and analysis and report writing. The Kobo Collect application tool was pre-tested in the field with two VCAs per node closer to the training venues and the SSQ tool adjusted accordingly based on the feedback from the field.

#### 2.5. Recruitment and Training of the Enumerators

A total of 1,284 enumerators were recruited across the 47 counties to administer the Semi-structured questionnaire (SSQ). The recruitment of enumerators was guided by a set of criteria (annex 3) set up out by the CBT and agreed by the NBT. The number of enumerators required per county was based on the number of respondents to be interviewed in each county. The recruitment process was coordinated by the CBT in consultation with the County Executive Committee Member (CECM) and county chief officers. The enumerators were trained in workshops organized by CBTs. The 3-day training was guided by a programme developed by the NBT for harmonization of the trainings across all the counties. Specifically, the enumerators were trained on the programme objectives, survey objectives, survey tool (SSQ), data collection using mobile data collection application (Kobo Collect), potential data quality issues to reduce respondent's biasness and interviewing skills.

#### 2.6. Data Collection

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Data was collected from both secondary and primary sources. A combination of approaches, and tools with inbuilt validation mechanisms was used. These included literature review of national and county relevant reports, SSQ, Focus Group Discussion (FGD) and Key Informant Interviews (KII).

- Semi Structured Questionnaire (SSQ): The design of the SSQ tool was informed by the ASDSP II Monitoring and Evaluation Framework performance indicators (annex#7) whose data was collected in five (5) days. The SSQ tool targeted VCAs across the 29 ASDSP II prioritized value chains (Annex 4) and five nodes (Agro Input Supply, Production, Trade, Transport and Processing). The SSQ tool entailed:
  - Household Characteristics: Gender of respondent, age, level of education, other main occupation of the respondent, sources of income, average monthly income (Ksh), land size (acres) and type of land owned, household food and nutrition security and Agricultural Value Chains.
  - Value Chain Node Actors Information: For all the actors, information was collected on the following: Quantities handles, buying and selling prices, inputs used, actors' level of satisfaction on returns from their business, utilization of service providers, post production loses, value chain opportunities, value chain innovations with prospects for women and youth empowerment,

climate smart agriculture interventions, entrepreneurship, access to markets, access to financial services, coordination, cooperation and coordination structures

- Literature Review: Key documents that were reviewed include: The ASDSP II programme document and Programme Implementation Framework (PIF), ASDSP II Baseline Terms of Reference and the ASDSP II Inception Report, The Third Medium Term Plan MTP III (2018-2022 and The Second *Medium Term Plan* MTP II (2013 – 2017); Economic Survey Report 2019; Economic Review of Agriculture (ERA) reports; National and county Statistical Abstracts, County Integrated Development Plans (CIDPs), Kenya Democratic and Health Survey (KDHS) reports among other documents at both National and County level.
- Key Informant Interviews (KIIs): in this survey, a key informant was a respondent who had vast knowledge of the subject matter. The checklists for KIIs (annex 5) were used to collect area and project specific information on gross margins, Post-production management, value chain opportunities and innovations, provision of service, market access and sector consultation, cooperation and coordination structures. The KIIs were mainly done with the national and county leadership, service providers, and officers of similar programmes in the sector.
- Focus Group Discussions (FGD): The FGDs were done at the national and county levels with
  participants selected from the 5 nodes and mainstreaming gender and age. Each FGD in the counties
  comprised of nine value chain actors (representative from each of the five nodes and three
  participants to mainstream gender and age. The FGD checklists (Annex #6) were used to collect
  information from value chain platforms; value chain organizations; ministerial committee on policy
  and legislative matters; public and private service providers.

Both primary and secondary data collection at the county level took place in the months of September and October 2019. At the national level, data collection was conducted in the month of November 2019. Triangulation of both National and County data was key in informing the findings in this report.

#### 2.7. Prioritised Value Chain (PVC)

Worth noting that the findings of this report is based on the 29 Prioritised Value Chains by the ASDP II spread across the 47 counties. Table 1 below illustrates this in detail:

| County  | Priory Value Chains                                     | County   | Priory Value Chains                              |
|---------|---|----------|--|
| Baringo | Cow (Diary), Honey, Goat Meat                           | Marsabit | Camel Milk, Goat Meat, Kales                     |
| Bomet   | Cow (Dairy), Indigenous Chicken,<br>Irish Potato, Maize | Meru     | Cow (Dairy), Indigenous<br>Chicken, Maize        |
| Bungoma | Cow (Diary), Indigenous Chicken,<br>Tomato              | Migori   | Cow (Dairy), Indigenous<br>Chicken, Irish Potato |
| Busia   | Fish, Groundnut, Indigenous Chicken                     | Mombasa  | Fish, Indigenous Chicken, Local<br>Vegetables    |

Table 1: Prioritised Value Chain Actors per County

| County      | Priory Value Chains                              | County        | Priory Value Chains                               |
|-------------|--|---------------|---|
| E. Marakwet | Cow (Dairy), Indigenous Chicken,<br>Irish Potato | Murang'a      | Banana, Cow (Dairy), French<br>Beans              |
| Embu        | Banana, Cow (Dairy), Indigenous<br>Chicken       | Nairobi       | Broiler, Kales, Cow (Dairy)                       |
| Garissa     | Beef, Tomato, Camel Milk                         | Nakuru        | Cow (Dairy), Fish, Pyrethrum                      |
| Homa Bay    | Fish, Indigenous Chicken, Sorghum                | Nandi         | Cow (Dairy), Fish, Indigenous<br>Chicken, Maize   |
| Isiolo      | Beef, Camel Milk, Tomato                         | Narok         | Beef, Cow (Dairy), Maize                          |
| Kajiado     | Beef, Cow (Diary), Tomato                        | Nyamira       | Banana, Cow (Dairy), Local<br>Vegetables          |
| Kakamega    | Cow (Dairy), Indigenous Chicken,<br>Maize        | Nyandarua     | Cow (Dairy), Fish, Irish Potato                   |
| Kericho     | Cow (Dairy), Indigenous Chicken,<br>Tomato       | Nyeri         | Cow (Dairy), Indigenous<br>Chicken, Irish Potato  |
| Kiambu      | Banana, Cow (Diary), Indigenous<br>Chicken       | Samburu       | Beef, Honey, Maize                                |
| Kilifi      | ABEC, Cassava, Indigenous Chicken                | Siaya         | Fish, Indigenous Chicken, Mango                   |
| Kirinyaga   | Banana, Cow (Dairy), Rice                        | Taita Taveta  | Banana, Cow (Dairy), Indigenous<br>Chicken        |
| Kisii       | Banana, Cow (Dairy), Indigenous<br>Chicken       | Tana River    | Beef, Fish, Mango                                 |
| Kisumu      | Cotton, Fish, Indigenous Chicken                 | Tharaka Nithi | Banana, Cow Milk, Indigenous<br>Chicken           |
| Kitui       | Green gram, Indigenous Chicken,<br>Sorghum       | Trans Nzoia   | Cow (Dairy), Indigenous<br>Chicken, Maize         |
| Kwale       | ABEC, Indigenous Chicken, Passion<br>Fruit       | Turkana       | Fish, Meat Goat, Sorghum                          |
| Laikipia    | Cow (Dairy), Maize, Shoats (Sheep<br>and Goat)   | Uasin Gishu   | Cow (Dairy), Indigenous<br>Chicken, Passion Fruit |
| Lamu        | Cashew Nut, Fish, Indigenous<br>Chicken          | Vihiga        | Banana, Cow (Dairy), Indigenous<br>Chicken        |
| Machakos    | Cow (Dairy), Indigenous Chicken,<br>Mango        | Wajir         | Camel Milk, Indigenous Chicken,<br>Watermelon     |
| Makueni     | Green grams, Indigenous Chicken,<br>Mango        | West Pokot    | Honey, Indigenous Chicken, Goat<br>Meat           |
| Mandera     | Camel Milk, Goat Meat, Tomato                    |               |   |

Table 1: Prioritised Value Chain Actors per County cont'd

#### 2.8. Data Quality Assurance

Data quality assurance was maintained at various levels.

- Literature review facilitated in tailoring the approach and methodology to the programme M&E framework. This ensured that the study remained as focused on the programme needs.
- Review of the tools by the National Baseline Team (NBT). This review ensured that all indicators of the • ASDSP II M&E Framework were well addressed in both quantitative and qualitative data collection tools. This therefore dealt with omission errors.



- Training of the CBT ensured harmonisation of the baseline study expectations between the NBT and the CBT.
- Pre-testing of data collection tools addressed omission and accuracy errors.
- Mobile data collection as opposed to manual data collection omitted data entry errors and increased efficiency in data collection

#### 2.9. Data Analysis

By use of SPSS Version 23.0.0 quantitative data analysis results were presented as descriptive statistics (frequencies, mean and range) and summarized in tables, bar-graphs, pie-charts or line graphs. The output of the quantitative analysis established current status of each of the programme indicators. Percentages were computed for categorical variables while means and ranges were used for continuous variables. Data from KII and FGD was analysed through narratives. Data analyses were guided by a detailed Data Analysis Plan (DAP) (annex 8) developed by the National Baseline Team (NBT) was adopted across the 47 counties and national level to harmonize data analysis across. Triangulation of both National and County data was key in informing the findings in the national report.





# CHAPTER THREE: \_\_\_\_\_\_ STUDY FINDINGS AND DISCUSSION OF RESULTS

This chapter outlines the main findings and discussion based on the findings. In line with the programme performance indicators, the findings in this section include: survey response rate, prioritised VCA demographics data, agriculture sector GDP, rural poverty rate, food security, on-farm and off-farm employment, prioritised VCA Gross Margins (GMs), utilization of service providers by VCAs, post production losses, climate smart technologies, innovation uptake by women and youth, diversity and implementation of business plans, VCA access to markets, policies and regulations, and coordination consultation structures.

#### 3.1 Response Rate (RR)

Out of the 500,000 Value Chain Actors targeted by the programme across the 47 counties, 19,753 VCA was the planned sample size (refer to chapter two). After data collection and cleaning, 19,017 VCA datasets were deemed valid for data analysis; this represents 96.3% response rate (RR). Across the node, production, Agriculture Input Supply and Trader achieved > 70.0 % response rate respectively while Transport and Processing had < 70.0 % response but above > 50.0% enough for generalization of the findings against the total population across each node. Across gender and age, female transporters had a low response rate (29.5%). On the other hand, male processors also reported low response rate (47.3%). Based on the low response rate across gender and age in some of the nodes, generalization has been limited across nodes and to specific nodes where the response rate was > 50%.

|            | Plann  | ed Samp | ole Size (P | SZ)    | Response Rate (RR) – n, % |        |         |               |  |
|------------|--------|---------|-------------|--------|---------------------------|--------|---------|---------------|--|
| Node       | Female | Male    | Youth       | Total  | Female                    | Male   | Youth   | Total         |  |
|            | 381    |         | 167         |        | 234                       | 326    | 206     | 766           |  |
|            | 501    | 507     | 107         | 1,055  | (61.4)                    | (64.3) | (123.6) | (72.6)        |  |
| Processing | 168    |         | 1/12        |        | 287                       | 213    | 125     | 625           |  |
| Frocessing | 400    | 450     | 142         | 1,061  | (61.3)                    | (47.3) | (87.9)  | (58.9)        |  |
| Production | 7,477  |         | 9 1,222     |        | 6,554                     | 6,203  | 2,506   | 15,263        |  |
| FIOUUCION  |        | 6,329   |             | 15,028 | (87.7)                    | (98.0) | (205.1) | (101.6)       |  |
| Trado      | 025    |         | 340         |        | 805                       | 736    | 441     | 1,982         |  |
| Haue       | 000    | 840     | 542         | 2,017  | (96.4)                    | (87.6) | (128.9) | (98.3)        |  |
| Transport  | 220    | 220 121 |             |        | 07 (20 5)                 | 166    | 118     | 381           |  |
| Transport  | 529    | 244     | 121         | 694    | 97 (29.3)                 | (68.1) | (97.5)  | (54.9)        |  |
| Total      | 0 / 97 | 0 2 2 2 | 1 0/12      | 10 752 | 7 077 (84 1)              | 7,644  | 3,396   | 10 017 (06 3) |  |
| iulai      | 7,40/  | 0,323   | 1,943       | 19,700 | /,3//(04.1)               | (91.8) | (174.8) | 12,017 (90.3) |  |

 Table 2:
 Survey Response Rate (RR)

#### 3.2. VCAs household demographics

#### 3.2.1 Age of VCAs

The findings indicate that majority (71.6%) of the VCAs range between 36 years and 65 years old, with VCAs between the ages of 46-65 years being the majority. The youths (18-35) only constitutes 17.9% of the total targeted VCAs. This was quite evident based on the county information where most counties reported not have youth VCAs. Such counties include Kisumu, Laikipia, Murang'a and Nyandarua. Counties with the highest number of youths VCAs include Samburu, Nandi, Turkana, Wajir, West Pokot, Elgeyo Marakwet and Nairobi respectively.

Table 3: Table 2: ASDSP VCA Age Groups

| Age Group      | n      | Percent (%) |
|----------------|--------|-------------|
| a) 18-35 Years | 3,395  | 17.85       |
| b) 36-45 Years | 6,030  | 31.71       |
| c) 46-65 Years | 7,576  | 39.84       |
| d) > 65 Years  | 2,016  | 10.6        |
| Total          | 19,017 | 100         |

#### 3.2.2 Education Level of ASDSPVCAs

The study also sought to understand the education level of the targeted value chain actors. From the findings, > 60.0% were reported to have either primary (33.6%) or secondary (30.6%) education. 19.6% reported to have informal education while only 16.2% were reported to have attained either tertiary (11.8%) or university (4.4%) education. Across gender and age, 65.1% adult male were reported to have either primary (30.9%) or secondary (34.2%) education which insignificantly different from adult female actors (65.3%) who reported have attained primary or secondary education; despite this, majority of the adult female actors (24.5%) were reported to have informal education as compared to the other groups. More youths (23.3%) than adult male (19.3%) and female (10.3%) were reported to have tertiary or university education which provides an entry point for the programme towards enhancing technology and innovations targeting the youths and beyond. Table 4 below illustrates this in detail.

|                    | Statistics (Frequency (n), %) |       |       |       |        |       |       |       |
|--------------------|-------------------------------|-------|-------|-------|--------|-------|-------|-------|
|                    | Overall                       |       | Male  |       | Female |       | Youth |       |
|                    | n                             | %     | n     | %     | n      | %     | n     | %     |
| Informal Education | 3,734                         | 19.6  | 1,191 | 15.6  | 1,953  | 24.5  | 590   | 17.4  |
| Primary            | 6,381                         | 33.6  | 2,363 | 30.9  | 2,992  | 37.5  | 1,026 | 30.2  |
| Secondary          | 5,820                         | 30.6  | 2,617 | 34.2  | 2,214  | 27.8  | 989   | 29.1  |
| Tertiary           | 2,243                         | 11.8  | 1,079 | 14.1  | 646    | 8.1   | 518   | 15.3  |
| University         | 839                           | 4.4   | 394   | 5.2   | 173    | 2.2   | 272   | 8.0   |
| Total              | 19,017                        | 100.0 | 7,644 | 100.0 | 7,978  | 100.0 | 3,395 | 100.0 |

#### Table 4: Education level of ASDSPVCAs

Across counties, Wajir (86.8%), Turkana (80.3), Garissa (79.5%), Mandera (75.5%), Samburu (67.6%), Kilifi (67.6) and Marsabit has the highest number (>50%) of actors with informal education. Counties with the least number of actors with informal education were Nairobi (0.3%), Uasin Gishu (1.6%), Nandi (2.1%), Vihiga (2.4%), Kirinyaga (2.6%) and Murang'a (2.9%). On the other hand, Trans Nzoia (12.4%), Kericho (10.8%), Kakamega (9.7%), Nandi (9.2%) and Nairobi (8.7%) were reported as counties with the highest number of actors who have attained university education.

#### 3.2.3 Household size

Most actors' households were reported to have an average of six household members (3 male and 3 female) with a minimum of one household member and as high as 15 household members. County wise, Mandera, Kilifi, Marsabit, Garissa, Turkana, Wajir, West Pokot, Samburu, Busia, Isiolo, Narok, Tana River, Baringo and Homa

Bay, actors' households were reported to have between seven (7) and nine (9) household members. Counties with < 6 household members were Nairobi, Laikipia, Nyeri, Kiambu, Embu, Muranga, Kirinyaga, Tharaka Nithi, Meru, Nyandarua, Machakos, Taita Taveta, Nakuru and Nyamira.

#### 3.2.4 VCA Average Monthly Income (Ksh)

The study sought to understand the actor's average monthly income. Average monthly income was analysed by factoring both on-farm and off-farm income (ASDSP value chains, employment, remittances etc) sources. Household income per capita was derived by dividing the average household income by the average total number of household members (six). Based on this, ASDSP VCAs were reported to be generating an average monthly income of Ksh 18,189 (Ksh 101 per capita). Passion fruit, fish and broiler were reported to generate the highest average monthly income (> Ksh 30,000 / > Ksh 170 per capita), while ABEC, pyrethrum, sorghum, shoats, groundnuts and cotton actors were reported to have the least average monthly income (< Ksh 10,000/ <45 per capita).

|                     | Monthly    | Average Inc<br>Source | ome (Ksh) l | Ву  | Monthly Average Income (Ksh) By Node |           |        |           |           |
|---------------------|------------|-----------------------|-------------|-----|--------------------------------------|-----------|--------|-----------|-----------|
| PVC                 | On<br>Farm | Off<br>Farm           | Average     |     | AIS                                  | Producers | Trader | Processor | Transport |
| Passion fruit       | 16,728     | 43,848                | 38,184      | 212 | 25,400                               | 7,957     | 24,533 | 11,325    | -         |
| Fish                | 32,833     | 21,696                | 32,421      | 180 | 14,467                               | 20,448    | 20,943 | 14,661    | 17,800    |
| Broiler             | 35,663     | 21,753                | 32,148      | 179 | 82,500                               | 35,138    | 6,171  | 70,000    | -         |
| Meat goat           | 31,998     | 13,592                | 29,134      | 162 | 49,171                               | 18,380    | 46,287 | 49,265    | 17,000    |
| Rice                | 11,250     | 32,500                | 28,250      | 157 | 7,000                                | 24,285    | _      | 6,000     | 19,250    |
| Local<br>vegetables | 24,954     | 18,896                | 28,222      | 157 | 12,506                               | 9,521     | 15,991 | 18,738    | 11,000    |
| French beans        | 23,429     | 23,583                | 25,136      | 140 | 36,800                               | 12,115    | 10,000 | -         | 10,000    |
| Cow (Dairy)         | 19,083     | 24,329                | 24,456      | 136 | 44,906                               | 13,885    | 47,947 | 53,337    | 90,257    |
| Mango               | 18,393     | 18,132                | 22,488      | 125 | 39,811                               | 13,405    | 14,149 | 14,841    | 7,825     |
| Tomato              | 21,855     | 18,486                | 21,405      | 119 | 24,587                               | 21,202    | 14,739 | 8,625     | 10,042    |
| Beef                | 19,009     | 15,875                | 19,015      | 106 | 17,286                               | 17,870    | 16,228 | 17,376    | 39,000    |
| Honey               | 16,061     | 16,638                | 18,706      | 104 | 23,462                               | 10,270    | 26,642 | 35,557    | 5,000     |
| Maize               | 13,574     | 19,076                | 17,988      | 100 | 54,612                               | 9,394     | 21,071 | 42,676    | 18,614    |

Table 5: VCA Average Monthly Income

|                   | Monthly    | Average Inc<br>Source | ome (Ksh) | Ву  | Monthly Average Income (Ksh) By Node |           |        |           |           |  |
|-------------------|------------|-----------------------|-----------|-----|--------------------------------------|-----------|--------|-----------|-----------|--|
| PVC               | On<br>Farm | Off<br>Farm           | Average   |     | AIS                                  | Producers | Trader | Processor | Transport |  |
| Irish potato      | 14,635     | 21,675                | 17,221    | 96  | 19,825                               | 13,928    | 18,130 | 9,000     | 50,000    |  |
| Banana            | 11,694     | 19,143                | 16,612    | 92  | 48,138                               | 8,967     | 19,329 | 10,020    | 14,300    |  |
| Green grams       | 12,512     | 13,460                | 16,169    | 90  | 14,833                               | 11,943    | 19,900 | 10,000    | -         |  |
| Cassava           | 9,880      | 19,253                | 16,078    | 89  | 7,918                                | 9,489     | _      | 6,400     | -         |  |
| Kales             | 1,000      | 15,572                | 15,402    | 86  | 22,500                               | 8,554     | 7,800  | 5,167     | 22,750    |  |
| I. chicken        | 9,943      | 16,688                | 14,691    | 82  | 27,317                               | 8,659     | 14,357 | 18,049    | 20,337    |  |
| Sweet potato      | 13,654     | 9,269                 | 13,452    | 75  | 3,260                                | 12,829    | 29,273 | 13,000    | 15,611    |  |
| Cashew nuts       | 9,477      | 18,932                | 12,992    | 72  | _                                    | 9,175     | 9,200  | 50,000    | 8,600     |  |
| Camel milk        | 9,492      | 14,328                | 11,685    | 65  | 17,733                               | 13,415    | 11,839 | 8,420     | 8,255     |  |
| Watermelon        | 8,363      | 15,223                | 10117     | 56  | -                                    | 8,544     | 8,053  | 5,000     | 8,900     |  |
| Cotton            | 6,301      | 8,113                 | 8,113     | 45  | -                                    | 5,315     | -      | 28,000    | -         |  |
| Groundnut         | 6,037      | 8,738                 | 8,052     | 45  | 6,046                                | 5,580     | 4,375  | 21,667    | 7,667     |  |
| Sheep and<br>goat | 7,683      | 15,000                | 7,861     | 44  | -                                    | 7,050     | 12,460 | 7,250     | 4,500     |  |
| Sorghum           | 6,386      | 6,435                 | 7,665     | 43  | 3,500                                | 5,392     | 3,683  | 3,278     | -         |  |
| Pyrethrum         | 3,489      | 10,826                | 7,351     | 41  | -                                    | 3,489     | _      | -         | -         |  |
| ABEC              | 4,763      | 7,418                 | 7,315     | 41  | 17,833                               | 4,296     | 4,700  | 26,000    | 6,000     |  |
| Average           | 14,488     | 17,534                | 18,189    | 101 | 25,892                               | 12,086    | 17,112 | 20,876    | 18,759    |  |

Table 5: VCA Average Monthly Income cont'd

Across nodes, agro- inputs suppliers (Ksh 25, 892 / Ksh 144 per capita) generated the highest monthly income on average across the value chain. Producers were reported to generate the least (Ksh 12,086 / Ksh 67 per capita) monthly income. Table 5 above illustrates this in detail. Figure 5 below illustrates average monthly income across the 47 counties.



Figure 4: Monthly Average Income by County

Mombasa, Nairobi, Kiambu, Tharaka Nithi and Murang'a reported the highest average monthly income of Ksh 30,652 with an average per capita income of Ksh 170. Wajir, Marsabit, Kwale, Vihiga and Homa Bay reported the lowest average monthly income of Ksh 10,365 (Ksh 58 Per Capita). In the first 25th percentile (1st quartile) were actors from counties who reported less than or equal monthly income of Ksh 13,459 (Ksh 75 Per Capita). These were actors from Wajir, Marsabit, Mandera, Kilifi, Homa Bay, Kwale, Busia, Vihiga, Kitui, Samburu, Migori, Kisii, West Pokot and Nyamira respectively. The 50th percentile (2nd quartile) were actors from the counties who reported a monthly income less than or more than Ksh 17,556 (Ksh 98 Per Capita) -i.e. 50% of the actors reported to be earning less or more than this. Lastly, the 75th percentile (3rd quartile) were actors from the counties reported to be earning more than Ksh 21,583 (Ksh 120 Per Capita) - i.e. only 25% of the actors from the counties reported to be earning more than Ksh 21,583 – Nairobi, Kiambu, Murang'a, Tharaka Nithi, Embu, Mombasa, Kirinyaga, Kericho, Nyeri, Bungoma, Nyandarua, Meru, Machakos, Trans Nzoia, Laikipia and Nakuru.





Kenyan agriculture continues not to be sufficiently commercialized to meet the aspirations of all the value chain actors. This contributes to worsening conditions of the small holder farmers as well as other value chain players in rural areas. The ASDSP II baseline established that the average daily on and off farm per capita income among value chain actors across the counties was about 110 Ksh per day. This is well below the poverty line of Ksh 200 per capita a day. Out of the 47 counties, only 11% of the counties had actors report per capita income above (Ksh 200 the poverty line. These were Nairobi, Kiambu, Muranga, Tharaka Nithi and Embu. Figure 6 below illustrates this in detail.



Figure 6: Actors per capita income against the poverty line

#### 3.2.5 Land Tenure (Producers)

Majority (62.8%) of producers owned private land. Few producers were operating on squatter (1.7%) and donated land (1.5%). A significant proportion of respondents (26%) were producing on communal land. According to the focus group discussants, it was deduced that producers operating in privately owned land are at an advantage as the land is usually used as collateral. Private ownership allows the actors to make independent decisions unlike in other forms of land ownership, and this has somehow led to uptake of new technologies and innovations. In addition, there is likely to be greater incentive to engage in sustainable agricultural practices in privately owned land through investment in soil, water and nutrient conservation practices leading to higher productivity of land.

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Figure 6: Type of land ownership by ASDSP Producers

The study also sought to understand the size of land owned by the ASDSP producers. From the findings, it can be deduced that majority of the producers reporting to be owning private land is at a small scale (7.7 acres). The largest size of land owned by the producers was reported to be communal (187 acres). This may be explained by the large tracts of land communally owned in ASALs which account for over 80% of the country but are home to only about 30% of the population. Table 6 illustrates this in detail.

#### Table 6: Size of land owned by producers

|                        | Private | Communal | Leased | Donated | Squatter |
|------------------------|---------|----------|--------|---------|----------|
| Mean                   | 7.7     | 187.7    | 3.3    | 3.3     | 2.8      |
| Standard Error of Mean | 2.6     | 76.0     | 0.60   | 0.3     | 0.6      |
| Standard Deviation     | 278.1   | 3750.0   | 18.8   | 5.9     | 7.9      |

As illustrated in Table 7 there is greater availability of land under both private and communal land ownership systems for most of the value chains as opposed to the other forms land ownership. Producers own larger communal land for value chains that require more land such as beef cattle (4889.42 acres), Camel Milk (17.16 acres), and sheep and goats (55.59 acres) compared to private ownership under the same value chains. This implies prioritization of value chains is sensitive to agro ecological zones as ASALs, where beef and sheep and goats value chains are prevalent and have more land which is communally owned. The survey showed that the amount of land squatter arrangement is negligible as far as ASDSP supported value chains concerned.

| Table 7: Size of land (acres | ) owned across the | e prioritised value | chains |
|------------------------------|--------------------|---------------------|--------|
|------------------------------|--------------------|---------------------|--------|

|             | Private | Communal | Leased | Donated | Squatter |
|-------------|---------|----------|--------|---------|----------|
| ABEC        | 148.92  | 11.55    | 3.83   | 2.84    | .53      |
| Banana      | 2.28    | 1.39     | 1.19   | 3.08    | 1.45     |
| Beef        | 33.01   | 4989.42  | 24.17  | .75     | -        |
| Broiler     | .80     | -        | .25    | -       | .25      |
| Camel milk  | 6.04    | 17.16    | 55.10  | -       | -        |
| Cashew nuts | 7.62    | 10.00    | -      | -       | 7.00     |
| Cassava     | 5.35    | 6.51     | 2.42   | -       | -        |
| Cotton      | 2.26    | 2.15     | 1.45   | -       | -        |
| Cow (Dairy) | 5.99    | 36.61    | 3.63   | 4.03    | 6.00     |
| Fish        | 2.47    | 3.41     | 1.28   | 1.67    | 2.15     |

|                    | Private | Communal | Leased | Donated | Squatter |
|--------------------|---------|----------|--------|---------|----------|
| French beans       | 1.55    | -        | .81    | .50     | 1.00     |
| Green grams        | 5.56    | 6.48     | 4.83   | 6.43    | -        |
| Groundnut          | 2.45    | -        | 1.86   | 1.25    | -        |
| Honey              | 14.34   | 147.03   | .75    | 2.00    | 17.83    |
| Indigenous chicken | 3.48    | 3.85     | 5.97   | 3.02    | 2.06     |
| Irish potato       | 2.50    | 1.17     | 1.80   | 2.23    | 2.00     |
| Kales              | 1.38    | 1.69     | .54    | .86     | -        |
| Local vegetables   | 1.52    | 1.72     | 1.18   | .29     | 3.48     |
| Maize              | 5.58    | 163.28   | 2.12   | 1.35    | -        |
| Mango              | 4.25    | 3.91     | 1.31   | 8.25    | 1.50     |
| Meat goat          | 6.89    | 20.51    | 1.00   | 2.00    | 1.50     |
| Passion fruit      | 16.15   | 31.31    | 22.60  | 4.75    | 3.00     |
| Pyrethrum          | 3.80    | -        | 1.63   | 1.85    | -        |
| Rice               | 2.32    | 3.75     | 1.97   | 2.60    | 1.74     |
| Sheep and goat     | 3.88    | 55.59    | -      | -       | -        |
| Sorghum            | 3.52    | 18.52    | 2.87   | 1.25    | -        |
| Sweet potato       | 3.97    | 2.81     | 2.44   | -       | -        |
| Tomato             | 2.94    | 14.74    | 2.21   | 2.50    | .25      |
| Watermelon         | -       | 3.71     | -      | -       | -        |

 Table 7: Size of land (acres) owned across the prioritised value chains cont'd...

#### 3.3 ASDSP II Goal and Impact

The ASDSP II goal is to transform crop, livestock and fisheries production into commercially oriented enterprises that ensure sustainable food and nutrition security. The programme intends to contribute towards the goal by monitoring and measuring four indicators: (1) percentage increase in agricultural sector GDP, (2) percentage reduction in rural poverty of male and female population, (3) percentage reduction in chronically food insecure households (disaggregated by female or male headed households) and (4) percentage increase in on-farm and off-farm employment disaggregated by female or male headed households. The findings of this report took into consideration these four indicators.

#### 3.3.1. Agricultural Sector GDP

Agricultural Sector GDP has been defined as the total value of Crops, Livestock, Fisheries and associated services. This indicator provides an estimate of the relative importance of agriculture in the country's economy with regard to generating national income. Data for this indicator was collected through a review of available literature in the sector and key informant interviews with key informants in the sector. The findings provide details on the sector growth since 2014 to 2018, national agriculture GDP (Ksh Million) and the sector contribution to the national GDP.

In 2018, the direct and indirect contribution of the Agricultural Sector to the GDP was 34% and 25% respectively (Economic Survey Report, 2019). The Total value of Agricultural GDP in 2018 was 2929.4 billion with Crops contributing 2,476.0 billion, Livestock 362.7, fisheries 44.1 and support services in agriculture 46.0 billion.
Agricultural Sector growth has been defined as the increase in the value of agricultural produce and associated services over a period of time. During the year 2018, the Agricultural Sector grew by 6.6% which reflected an improvement from 1.6% in 2017. Figure 7 shows the trend in Agricultural Sector growth for the last five years (Economic Survey Report, 2019). The decline in the Agricultural Sector Growth in 2017 could be attributed to drought, pest and disease incidences (Economic Survey Report, 2018).

| Year | Agric GDP (%) | Agric GDP (Ksh<br>Million) | Agric Sector Growth<br>(%) |
|------|---------------|----------------------------|----------------------------|
| 2014 | 27.5          | 1,410,929                  | 4.5                        |
| 2015 | 30.2          | 1,817,649                  | 6.0                        |
| 2016 | 31.1          | 2,090,374                  | 5.1                        |
| 2017 | 34.8          | 2,735,707                  | 1.6                        |
| 2018 | 34.2          | 2,929,361                  | 6.6                        |

Source: Economic Survey Report, 2019

On average Agriculture contributes about 46% of the Counties' Gross Product. In Nairobi and Mombasa counties, Agriculture contributes the lowest 0.3% and 0.4% respectively. While in Nyandarua and Elgeyo Marakwet counties, the sector contributes about 85% and 80% respectively. This can be attributed to minimal farming activities in Nairobi and Mombasa counties as a result of industrial activities and high human population leading to change of land use from Agriculture to housing. Figure 6 and table 9 shows the percentage contribution of Agriculture Gross County Product to the Gross County Product.



Figure 7: Agriculture GDP contribution

# Table 9: Agricultural Gross County Product

| Level           | GDP (000,000) | AgrGDP Contribution (%) | AgrGDP (000,000) |
|-----------------|---------------|-------------------------|------------------|
| National        | 2,929,361     | 34.2                    | 1,001,841        |
| Nairobi         | 1,492,323     | 0.3                     | 4,102            |
| Nakuru          | 517,462       | 58.2                    | 301,349          |
| Kiambu          | 421,918       | 31.4                    | 132,421          |
| Mombasa         | 332,122       | 0.4                     | 1,459            |
| Nyandarua       | 245,203       | 85.4                    | 209,519          |
| Machakos        | 232,860       | 24.1                    | 56,112           |
| Meru            | 229,646       | 54.2                    | 124,381          |
| Kisumu          | 194,489       | 26.5                    | 51,445           |
| Bungoma         | 183,509       | 58.8                    | 107,829          |
| Kakamega        | 182,563       | 52.1                    | 95,193           |
| Narok           | 179,226       | 67.2                    | 120,355          |
| Nyeri           | 174,961       | 53.1                    | 92,859           |
| Murang'a        | 173,018       | 51.4                    | 89,003           |
| Kisii           | 163,546       | 52.3                    | 85,550           |
| Uasin Gishu     | 162,273       | 38.8                    | 63,017           |
| Bomet           | 159,569       | 71.5                    | 114,076          |
| Elgeyo Marakwet | 159,531       | 80.2                    | 127,967          |
| Kericho         | 136,799       | 45.9                    | 62,765           |
| Nandi           | 119,691       | 59.5                    | 71,213           |
| Kilifi          | 119,295       | 32.1                    | 38,319           |
| Trans Nzoia     | 116,683       | 43.4                    | 50,628           |
| Homa Bay        | 114,198       | 59.8                    | 68,247           |
| Kajiado         | 107,805       | 14.8                    | 15,954           |
| Embu            | 103,734       | 38.4                    | 39,794           |
| Nyamira         | 103,239       | 54.9                    | 56,634           |
| Kitui           | 101,560       | 41.2                    | 41,799           |
| Makueni         | 100,924       | 47.2                    | 47,606           |
| Kirinyaga       | 100,836       | 40.9                    | 41,208           |
| Migori          | 96,337        | 42.4                    | 40,861           |
| Siaya           | 95,265        | 53.2                    | 50,685           |
| Baringo         | 92,866        | 57.8                    | 53,633           |
| Busia           | 86,712        | 57.7                    | 50,020           |
| Kwale           | 86,278        | 45.9                    | 39,610           |
|                 | 81,095        | 43.8                    | 35,489           |
| Turkana         | /8,301        | 53.0                    | 41,493           |
| Tharaka Nithi   | 67,692        | 57.2                    | 38,/40           |
| Vihiga          | 59,050        | 34.1                    | 20,160           |
| Taita Taveta    | 51,381        | 38.6                    | 19,858           |
| West Pokot      | 46,785        | 41.3                    | 19,311           |
|                 | 39,394        | 42.8                    | 16,845           |
| vvajir          | 37,159        | 53.9                    | 20,032           |
| Iviandera       | 35,101        | 40.4                    | 14,169           |
| IVIARSADIT      | 34,0/3        | 4/.2                    | 16,078           |
| Tana Kiver      | 33,498        | 54./                    | 18,333           |
| Lamu            | 32,386        | 5/./                    | 18,699           |
| Samburu         | 26,503        | 40.9                    | 10,84/           |
| ISIOIO          | 15,850        | 21.0                    | 3,325            |

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#### 3.3.2. Rural Poverty

Poverty has been defined as a measure of deprivation of the basic needs that a person, household or community requires in order having a basic standard of living. Income poverty measurements generally use the physiological deprivation model to assess lack of access to economic resources (income) to satisfy basic material needs. A person (or household) is considered poor if the person's (or household's) income cannot acquire the basket of goods and services used to define a threshold for poverty. Rural poverty therefore in this regard refers to poverty in rural areas in the country. A family is considered poor if its annual before-tax money income is less than its poverty threshold (Weber *et.al*, 2005). The poverty threshold in Kenya is measured by an expenditure of less than 2 USD per day per person. While the poverty gap index measures the depth of poverty, it provides information on how much poorer the poor people are relative to the poverty line. This measure captures the average expenditure shortfall, or gap, for the poor (ignoring the non-poor) relative to the poverty line and dividing this total by the population. The monetary value of the basket is the poverty line and the population of people and households whose incomes are below this line, is then derived through a head count.

Data for this indicator was collected through a review of available literature in the sector and key informant interviews with key informants in the sector. To analyse this indicator, two sub-indicators were considered: (a) percentage of rural population living below the poverty line and (b) poverty line (Purchasing Power Parity).

In 2015/2016, the overall poverty rate was 40.1 percent, a decline from 2005/2006 where the poverty rate was reported to be 49.7 percent (KIHBS, 2016) while in 2015/2016 the rural poverty rate was 35.8 a decline of about 11.4% from 47.7% in 2005/2006. Table 11 illustrates this in detail.

| Indicators               | 2005/2006 | 2015/2016 | 10 Year Δ |
|--------------------------|-----------|-----------|-----------|
| Overall Poverty Rate (%) | 49.7      | 40.1      | -9.6      |
| > Male                   | -         | 30.2      | -         |
| > Female                 | -         | 26.0      | -         |
| Rural Poverty Rate %     | 47.2      | 35.8      | -11.4     |
| > Male                   | _         | 31.7      | -         |
| > Female                 | -         | 34.0      | -         |

Table 10: Comparison of poverty incidence between 2005/06 and 2015/16

Source: KIHBS 2016, ES 2019

At the county level, Samburu (90.0%), Wajir (84.0), Turkana (79.4%), Tana River (76.9), Marsabit (76.6%), Kilifi (70.8) and Isiolo (69.0%) were reported to have the highest rural poverty level in the country respectively while Nairobi (16.7%), Siaya (22.6%), Narok (22.6%), Meru (23.1) and Kiambu (23.0%), were reported to be the least figure 8.





Figure 8: County Rural Poverty Level

# 3.3.3. Household Food and Nutrition Security

According to FAO, Food and Nutrition Security is defined as a situation when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. This exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. The Programmes envisages a reduction in chronically food insecure households. In assessment of food security four pillars were considered including food availability, food utilization, and food access and food stability. To analyse and understand food insecurity/security within the targeted households, the Household Diet Diversity Scale (HDDS), Food Consumption Score (FCS), Daily Meal Frequency and food availability in a season year, were used as proxy indicators.

From the findings, majority of the VCA households were found to be food secure based on the above indicators. It is worth noting that the data collection took place during a normal food availability season in most of the counties (refer to the food seasonality calendar section).

## Dietary Diversity Scale (HDDS)

Household Diet Diversity Scale (HDDS) represents the number of different foods or food groups consumed over a given reference period. Ten (10) food groups were adopted in the study - (1) cereals, (2) roots and tubers, (3) vegetables and fruits, (4) meat and poultry, (5) fish and sea food, (6) pulses/legumes/nuts, (7) milk and milk products, (8) oil and fat, (9) sugar and honey and (10) eggs. Based on a seven (7) days recall period, respondents were asked to report whether they had consumed any of the above food groups. A scale of 1 and 2; (Yes =1 and No=2) was used to classify whether a particular food group was reported to have been consumed or not. Households who reported to have consumed more than six (6) food groups were reported to be above /acceptable range while those who consumed between 4.5 -5.9 were reported to be within the borderline range. Those who consumed less than 4.5 food groups were classified as below/poor. Table 11 below provides a summary of the findings.

| Household Dietary Diversity Scale (HDDS)  | Percent (%) |         |         |         |  |  |
|---|-------------|---------|---------|---------|--|--|
| Thousehold Dietary Diversity State (TDDS) | Overall     | Male    | Female  | Youth   |  |  |
|   | n=17,425    | n=7,048 | n=7,276 | n=3,101 |  |  |
| Below 4.5 HDDS (Poor)                     | 1.8         | 1.5     | 2.0     | 2.0     |  |  |
| 4.5 -5.9 HDDS (Borderline)                | 32.1        | 31.1    | 33.2    | 31.7    |  |  |
| Above 6.0 HDDS (Acceptable)               | 66.1        | 67.4    | 64.9    | 66.3    |  |  |

Table 11: Household Dietary Diversity Scale (HDDS)

From the findings, 66.1 % of the households reported to have consumed more the six (6) food groups which fall within the acceptable HDDS range, out of the targeted 10 food groups. 33.9 % of the actors reported to have consumed less than six good groups out of the targeted 10 food groups (i.e. borderline and poor). Data from the county level indicated that Kisii, Turkana, Nyamira, West Pokot, Mandera and Wajir had the highest number of actors (> 50.0%) who reported to have consumed less than six food groups, while Migori, Bungoma, Busia, Garissa, Kajiado, Homa Bay, Kisumu, Kakamega and Lamu had the least (< 30.0%). Figure 9 below illustrates this in detail.



Figure 9: Household Dietary Diversity Score (Borderline and Below) by County

## Food Consumption Score (FCS)

FCS is defined as the frequency weighted diet diversity score which is a score calculated using the frequency of consumption of different food groups by a household during the last 7 days before the survey. It is regarded as an acceptable proxy indicator to measure caloric intake and diet quality at household level, giving an indication of food security status of the household if combined with other household food access indicators. A score of between 0 and 21 indicate poor consumption, 21.5 and 35 indicates borderline consumption and >35 indicates acceptable food consumption. Analysis of the data showed that majority of the actors (88%) were within the acceptable FCS of above 35 with only 12% being within borderline and poor Food Consumption Score categories respectively. The results indicated no statistical significance (P>0.05) with regards to gender. Table 12 below illustrates this in detail.

| Food Consumption Score (FCS) |          | Perce   | nt (%)  |         |
|------------------------------|----------|---------|---------|---------|
|                              | Overall  | Male    | Female  | Youth   |
|                              | n=18,948 | n=7,609 | n=7,952 | n=3,387 |
| > 0-21 FCS (Poor)            | 4.17     | 3.23    | 4.93    | 4.52    |
| 21.5 – 35 FCS (Borderline)   | 7.85     | 6.83    | 8.22    | 9.24    |
| Above 35 FCS (Acceptable)    | 87.98    | 89.93   | 86.85   | 86.24   |

Table 12: Respondents in Different Food Consumption Score Categories (FCS) by Gender and Age

At the county level, Kilifi, Turkana, Kwale, Mombasa and Garissa actors reported the highest (>25.0%) number of actors within the borderline or poor FCS range, while Elgeyo Marakwet, Nakuru, Baringo, Nyandarua, Nandi, Bomet, Kiambu and Narok reported the least (<3.0%). Figure 10 illustrates this in detail. This could be as a result of various issues that need to be explored further.



Figure 10: Food Consumption Score (Borderline and Below) by County

The study also sought to understand whether there existed any correlation between HDDS and FCS. The relationship was found to be statistically insignificant (P>0.05), which means actors access to different food groups, in the last seven days, at the time of the study, had no relationship with its consumption, i.e. caloric intake and diet quality. This could be as a result of different factors which needs to be explored further.

#### **Daily Meal Frequency**

Daily Meal Frequency was used as one of the proxy indicators in analysing the food and nutrition security status of the respondents. The respondents reported the number of meals taken by different gender groups that included adult males, adult females, youth (18-35 years) and children below 18 years in day during both peak and low food availability seasons. Overly, analysis of data indicated that all the gender groups including

children took an average of three meals in a day during the peak food availability season. During the low food availability season, all the household members took two meals in a day except children who took three meals. Table 14 show the frequency of meals taken by different gender groups within a household during the peak and low food availability seasons.

| Household Members         | Mean Meal Frequency | Mean Meal Frequency |
|---------------------------|---------------------|---------------------|
| nousenoid members         | (Peak Season)/Day   | (Low Season)/Day    |
| Adult Male                | 2.8                 | 2.2                 |
| Adult Female              | 2.6                 | 2.2                 |
| Youth (18-35 Years)       | 2.7                 | 2.3                 |
| Children (Below 18 Years) | 2.9                 | 2.5                 |
| Overall Meal Frequency    | 2.7                 | 2.3                 |

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#### Food Availability in a Seasonal Year

The study sought data on seasonal food availability where respondents were asked to provide information on availability of food in the last one year (July 2018 – June 2019) based on a scale of 1-4 (1=Excess; 2= Adequate; 3=Scarce; 4= Very scarce). The data was analysed and for each month, the most predominant scale was selected. The results of data analayis showed that the baseline data was collected during a normal food availability period in 40 counties, low food availability period in five counties (Marsabit, Turkana, Makueni, Meru and Isiolo) and peak food availability period in two counties (Bungoma and Trans Nzoia). Meru county was shown as a food scarce county (between July 2018 – June 2019) except for the month of October when there was excess.



**County/month** Baringo Bomet Bungoma Busia Elgeyo Marakwet Embu Garissa Homa Bay Isiolo Kajiado Kakamega Kericho Kiambu Kilifi Kirinyaga Kisii Kisumu Kitui Kwale Laikipia Lamu Machakos Makueni Mandera Marsabit Meru Migori Mombasa Murang'a Nairobi Nakuru Nandi Narok Nyamira Nyandarua Nyeri Samburu Siaya Taita Taveta Tana River Tharaka Nithi Trans Nzoia Turkana Uasin Gishu Vihiga Wajir West Pokot

Key: Excess

*Figure 11:* Food availability pattern between July 2018 to June 2019

adequate Scarce Very scarce

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# 3.3.4. On-farm and Off-farm Employment

On farm employment was defined as the total number of employees under the production node of the value chain while Off farm employment was defined as the total number of employees working under the Agro Input supply, trade, transport and processing nodes. Findings indicate an average of 4 employees On Farm and 5 employees Off farm. Male and youth actors were reported to have more on-farm employees (4) than female actors. Male and female actors are reported to have more off-farm employees (5) than the youth actors. Further, the results showed that processing node had the highest number of off-farm employees compared to Trade, Transport and Agro Input Supply nodes. Table 15 shows the number of employees both on-farm and off Farm and across different nodes of the value chains.

|  | 0\   | verall | Male | Female | Youth |
|--|------|--------|------|--------|-------|
|  | n    | Mean   | Mean | Mean   | Mean  |
| On Farm (Average Number of Employees)  |      | 3.5    | 3.6  | 3.4    | 3.6   |
| - Production                           | 7102 | 3.5    | 3.6  | 3.4    | 3.6   |
|  |      |        |      |        |       |
| Off Farm (Average Number of Employees) |      | 5.2    | 5.0  | 5.1    | 4.1   |
| - Agro Input Supply                    | 494  | 5.0    | 6.8  | 3.3    | 3.7   |
| - Trader                               | 1159 | 4.1    | 4.5  | 3.9    | 3.8   |
| - Transport                            | 245  | 4.1    | 4.5  | 3.9    | 3.8   |
| - Processing                           | 380  | 7.8    | 6.2  | 9.9    | 6.4   |

Table 14: Number of On-farm and Off-farm employment

## 3.4 Programme Purpose Level

The programme purpose is to develop sustainable priority value chains for improved income, food and nutrition. The programme intends to contribute towards the goal by monitoring and measuring two indicators: (1) percentage change in gross margins (GM) of VCAs disaggregated by gender and age and (2) VCAs level of satisfaction with share of revenue.

# 3.4.1. Gross Margins of Prioritized Value Chain

Prioritized Value Chain refers to specific agricultural value chains selected by stakeholders for programme support in each of the 47 counties. Gross Margin (GM) is defined as a measure of the percentage of the comparison of a product cost (costs of goods sold) to its sales price (or revenue). From the findings, the average Gross Margin of the PVC was highest at the transport node (58%) and lowest at the agro input supply (26%) node, with sweet potatoes having the highest Margins across the nodes.



| Prioritised Value | Overall | A. Input Supply | Production | Trader | Transport | Processing |
|-------------------|---------|-----------------|------------|--------|-----------|------------|
| ABEC              | 31.9    | 26.5            | 27.3       | 22.77  | 20        | 63         |
| Banana            | 45.9    | 23.5            | 42.9       | 29.29  | 87.6      | 46         |
| Beef              | 32.8    | 19.2            | 27.83      | 23.16  | 61.6      | 32.36      |
| Broiler           | 15.3    | 10.5            | 29         | 23.96  | 0         | 13.03      |
| Camel milk        | 28.3    | 25              | 17         | 16.73  | 56.5      | 26.05      |
| Cashew nut        | 56.6    | -               | 53.3       | 26.28  | 87        | 60         |
| Cassava           | 14.5    | 49.7            | - 42.2     | -      | -         | 35.96      |
| Cotton            | 22.1    | -               | -30.85     | -      | _         | 75         |
| Cow (Dairy)       | 31.5    | 23.7            | 12.9       | 22.72  | 57.1      | 41.1       |
| Fish              | 48.1    | 31.8            | 55.1       | 29.76  | 78.5      | 45.1       |
| French beans      | 46.6    | 14.3            | 45.9       | 76     | 50        |            |
| Green grams       | 30.8    | 13.4            | 46.3       | 20.44  |           | 42.86      |
| Ground nuts       | 40.4    | 33.3            | 50         | 26.67  | 58.8      | 33.33      |
| Honey             | 28.9    | 30.9            | -15.2      | 26.67  |           | 73.1703    |
| I. chicken        | 29.3    | 27.3            | 38         | 28.1   | 12.4      | 40.5       |
| Irish potatoes    | 31.5    | 15.5            | 13.2       | 24.31  | 64.8      | 39.67      |
| Kales             | 32.0    | 25.1            | 22         | 12.61  | 49.8      | 50.45      |
| Local vegetables  | 51.9    | 29.4            | 49.5       | 38.63  | 95        | 46.8       |
| Maize             | 34.9    | 11.4            | 28.5       | 16.5   | 86.5      | 31.7       |
| Mango             | 37.9    | 29.8            | 36.7       | 39.13  | 37.6      | 46.04      |
| Meat Goat         | 25.3    | 20.1            | 35.5       | 7.55   | 37.8      | 25.54      |
| Passion fruit     | 32.0    | 44.7            | 27.5       | 30.23  | 33.3      | 24.4       |
| Pyrethrum         | 49.1    | -               | 49.1       | -      | -         | -          |
| Rice              | 51.4    | 15.3            | 27.44      | 46.15  | 96.6      | 71.64      |
| Sorghum           | 26.3    | 28.8            | 21.9       | 24.39  |           | 29.91      |
| Sweet potato      | 58.0    | 47              | 40         | 51.85  | 90.7      | 60.56      |
| Tomato            | 37.6    | 17.1            | 22.7       | 34.75  | 70        | 43.56      |
| Watermelon        | 31.3    | 29.6            | 46.22      | 37.75  | 32.9      | 10         |
| Average           | 36.6    | 25.7            | 27.8       | 29.5   | 57.5      | 42.6       |

Table 15: ASDP VCA Gross Margins by Node

At the county, Nandi county priotized agricultural value chains had the highest average GM (52.4%, followed by west pokot (49.4%), Migori (46.5%).Nyeri (9.7%) Elgeyo Marakwet (16.8%) and Homabay (18.1%) were reported to be the least (Table 17).

| Indicator     | Gross<br>Margin | AIS  | Production | Trader | Transport | Processing |
|---------------|-----------------|------|------------|--------|-----------|------------|
| Nandi         | 52.4            | 58   | 51.4       | 34.1   | -         | 65.9       |
| West Pokot    | 49.4            | 36   | 73         | 29     | 60        | 49         |
| Migori        | 46.5            | 35.7 | 26         | 44.4   | 63.9      | 62.5       |
| Murang'a      | 45.9            | 20.9 | 46.5       | 47.5   | 64.6      | 49.9       |
| Machakos      | 45.4            | 29.2 | 46.3       | 42.1   | -         | 64.1       |
| Kisumu        | 41.1            | 22.3 | 37.3       | 30.3   | 46.8      | 68.6       |
| Bomet         | 40.2            | _    | 45.9       | 24.4   | 50        | 40.5       |
| Kilifi        | 39.7            | 13.3 | 43.9       | 38.9   | -         | 62.8       |
| Embu          | 39.5            | 22.6 | 34.7       | 27.3   | 57.1      | 56         |
| Uasin-Gishu   | 39.5            | 23.1 | 53         | 55     | 45.3      | 21.1       |
| Nyandarua     | 38.2            | 39.3 | 34.7       | 33     | 45.7      |            |
| Kiambu        | 38              | 43   | 61         | 19     | 25        | 42         |
| Mombasa       | 36.7            | 30.1 | 50.9       | 31.7   | -         | 34.2       |
| Nakuru        | 36.7            | -    | 46.2       | 23.6   | 40.2      | _          |
| National      | 36.6            | 25.7 | 27.8       | 29.5   | 57.5      | 42.6       |
| Makueni       | 34.2            | 20   | 45         | 32     | 47        | 27         |
| Tana River    | 33.5            | 18   | 58.7       | 36.5   | 9.7       | 44.7       |
| Siaya         | 33.5            | 18   | 58.7       | 36.5   | 9.7       | 44.7       |
| Wajir         | 32              | 10   | 38         | 33     | 46        | 33         |
| Kericho       | 31.5            | 27.7 | 37.6       | 37.7   | 25.8      | 28.7       |
| Tharaka Nithi | 31.3            | 28.1 | 38.4       | 39     | -         | 19.5       |
| Garissa       | 31.2            | 22   | 31         | 29     | 38        | 36         |
| Meru          | 31.1            | 29   | 28.8       | 15.6   | 35.8      | 46.3       |
| Vihiga        | 30.8            | 17   | 24         | 38     | 25        | 50         |
| Kajiado       | 30.3            | 22   | 35         | 34     | -         | -          |
| Nyamira       | 29.8            | 14.7 | 41         | 44.3   | 16.7      | 32.3       |
| Busia         | 29.5            | 32   | 25         | 24     | 33.3      | 33.3       |
| Kakamega      | 29.2            | 30.9 | 23.2       | 32.7   | 39        | 20         |
| Marsabit      | 28.8            | 33   | 42         | 23     | 8         | 38         |
| Samburu       | 28.7            | -    | 34.7       | 30.7   | 18.3      | 31.2       |
| Kitui         | 28.6            | 20   | 51.1       | 14.6   | -         | -          |
| Baringo       | 28.6            | 18.8 | 31.6       | 22.9   | 33.3      | 36.2       |
| Trans-Nzoia   | 27.5            | 33.8 | 24.2       | 24.5   |           |            |
| Nairobi       | 27.5            | -    | 28.7       | 21.9   | -         | 31.8       |
| Narok         | 26.7            | 11.3 | 30.6       | 25.5   | 25        | 41.3       |
| Taita Taveta  | 26.1            | 20   | 34.4       | 34.6   | 23.9      | 17.5       |

Table 16: Overall Gross Margins across the Prioritised Value Chains by County



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| Mandera            | 26   | 20   | 32   | 30   | 30   | 18   |
|--------------------|------|------|------|------|------|------|
| Turkana            | 25.5 | 13.2 | 27.7 | 25.3 | 37   | 24.3 |
| Kwale              | 24.7 | 22.4 | 38.5 | 41.7 | 8.1  | 12.7 |
| Isiolo             | 24.6 | 13.9 | 34.5 | 25.1 | -    | 25.1 |
| Bungoma            | 24.4 | 15   | 30.7 | 25.8 | 38.7 | 12   |
| Kisii              | 24.3 | 20   | 40   | 26   | -    | 11.3 |
| Laikipia           | 23.3 | 17.7 | 28.8 | 21.3 | 20.4 | 28.1 |
| Lamu               | 22.3 | 17   | 33   | 31   | 7    | 23.7 |
| Kirinyaga          | 22.1 | 11   | 44.3 | 21.5 | 13.3 | 20.2 |
| Homa Bay           | 18.1 | 34.3 | 31.5 | 15.5 | -    | 9.3  |
| Elgeyo<br>Marakwet | 16.8 | 9    | 33   | 12   | 30   | -    |
| Nyeri              | 9.7  | 7.9  | 10.9 | 10.3 | -    | _    |

 Table 16: Overall Gross Margins across the Prioritised Value Chains by County cont'd....



Figure 12: Overall Gross Margins across the Prioritised Value Chains by County

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#### 3.4.2 Level of satisfaction with revenue

This indicator measures the extent which the ASDSP VCAs deem their satisfaction level with regards to their share of revenue. A Likert scale (satisfied, fairly satisfied and dissatisfied) was used to assess VCAs level of satisfaction. Overall, 28.4% of all the actors reported to be satisfied with their share of revenue. Transporters actors reported the highest satisfaction level (32.2%). Producers were the least satisfied (22.3%) across the value chain. From the findings, there is need for the programme to increase the gross margins across the value chain in order to increase the satisfaction level of the actors. Across gender and age, the youths were reported to be highly satisfied (30.8%) with most youth transporters recording a high satisfaction level (36.0%) than the rest. Satisfaction level among adult women ranged from 22.0% - 28.3% with adult female traders reporting an insignificant high level of satisfaction (29.8%) across the value chain. Among the adult male actors, the satisfaction level ranged from 25.0% - 32.7%, with adult male transporters reporting an insignificant high satisfaction level (32.7%).

|                      | Revenue          |                     |                         | Satisfaction Level (%) |        |      |       |
|----------------------|------------------|---------------------|-------------------------|------------------------|--------|------|-------|
| Node                 | Monthly<br>(Ksh) | Per Capita<br>(Ksh) | Gross<br>Margins<br>(%) | Overall                | Female | Male | Youth |
| Agro Input<br>Supply | 25,892           | 144                 | 25.7                    | 29.8                   | 28.3   | 30.1 | 31.4  |
| Producer             | 12,086           | 67                  | 27.8                    | 22.3                   | 22.5   | 20.6 | 26.6  |
| Trader               | 17,112           | 95                  | 29.5                    | 31.1                   | 29.8   | 30.6 | 34.2  |
| Processor            | 20,876           | 116                 | 57.5                    | 26.5                   | 27.5   | 25.0 | 25.8  |
| Transporter          | 18,759           | 104                 | 42.6                    | 32.2                   | 27.8   | 32.7 | 36.0  |
| Average              | 18,945           | 3,158               | 36.6                    | 28.4                   | 27.2   | 27.8 | 30.8  |

Table 17: VCAs level of satisfaction from their returns

The low satisfaction level reported by the producers can be attributed to the reported high production costs (57.0%), price fluctuations (53.0%) and unfavorable weather conditions (28.0%). Capacity building for producers should be optimized to minimize production costs, increase bargaining power and climate smart agriculture. In addition, despite reporting high monthly income (Ksh 25,892/ Ksh 144 Per capita), agro input suppliers reported lack of customers (44.5) as their main reason of dissatisfaction. There is need to increase market access to this cohort by the programme. Price fluctuations (54.0%) were a major concern among the traders, poor infrastructure (66.0%) among the transporters and high cost of raw materials (34.5%) among the processors. All these reasons underscore uncertainty and lack of information among VCAs as well as inefficiencies in the value chains, thus necessitating interventions especially capacity building and infrastructure development at every node to address the constraints.

At the county, West Pokot, Siaya and Marsabit reported the highest satisfaction level (> 40%) while Makueni, Nandi, Muranga, Laikipia, Bomet, Baringo, Kajiado, Kirinyaga and Tana River reported the least (< 15%).





Figure 13: VCA satisfaction level with their revenue by county

#### 3.5 ASDSP Outcome One: Productivity of Priority Value Chains

Despite the skewed targeting of producers, productivity of most commodities in Kenya is generally very low compared to global averages or similar economies in other regions. A comparative analysis of yield data of major agricultural commodities in Kenya and other countries by ASDSP facilitated Swedish International Agricultural Network Initiative (SIANI) indicates that although Kenyan productivity is slightly better in the EA region, it is doing poorly compared to other countries in Asia, Europe and America. For example, average milk yield in Kenya is about 1.8 t/lactation compared with Israel's 12 t/lactation; maize production is 1.6 t/ha compared to Kuwait's 25t/ha; and banana production is 23 t/ ha while that of Indonesia is 55 t/ha. The low productivity is due to a variety of reasons, including climatic, topographical, technological and innovations, marketing, financial, insecurity, legal and regulatory frameworks and regional and international conventions. The programme aims at achieving this outcome through enhancing capacity of existing service providers on identified opportunities, supporting value chain innovations with high prospects for empowering women and youth and using service providers for increased productivity and strengthening environmental resilience for increased productivity among prioritized value chains. Progress at outcome level will be monitored and measured using two sets of performance indicators: (1) percentage increase of VCAs utilizing service providers and (2) percentage reduction in VCAs post - production losses. The main findings take into consideration the two indicators.

#### 3.5.1 Utilization of Service Providers by VCAs

Support to agricultural development in Kenya has been mainly for production. Until recently, there has been limited consideration of the other aspects of the value chain development such as inputs, transportation, marketing, trading and processing. Investments have been skewed towards public extension and research services and other agricultural services such as mechanization and input supplies that are supportive of



producers only; different from what the baseline study found out. This study sought to understand the extent which the VCAs access and utilize service providers across the value chain. Overall, 51.4% of the actors reported to be accessing and utilizing service providers. Across the value chain, the agro-input suppliers (58.7%) reported the highest utilization while the traders reported the least (41.0%). Across gender, adult male actors reported the highest (51.9%) while the youths reported the least (44.3%). Table 11 below illustrates this in detail.

|                   | Overall, n (%) | Male, n (%)   | Female, n (%) | Youth, n (%) |
|-------------------|----------------|---------------|---------------|--------------|
| Agro Input Supply | 541 (58.7)     | 203 (62.5)    | 128 (55.4)    | 120 (58.3)   |
| Production        | 7,276 (46.7)   | 3,208 (51.8)  | 3,018 (46.2)  | 1,050 (42)   |
| Processing        | 328 (53.6)     | 124 (59.2)    | 136 (47.2)    | 68 (54.4)    |
| Trader            | 807 (41.0)     | 3,34 (45.4)   | 291 (36.1)    | 182 (41.5)   |
| Transport         | 220 (57.1)     | 95 (57.2)     | 44 (45.4)     | 81(68.6)     |
| Overall           | 18,983 (51.4)  | 7,634 (51.94) | 7,962 (45.44) | 3,387 (44.3) |

The findings suggest a statistically significant linear relationship (P< 0.05) between VCA use of service providers and their Gross Margins. I.e. the use of services providers tends to have a positive impact to the VCAs reported Gross Margins. Despite the relationship being significant, generally it was found to be weak (Pearson 0.303) in some of the counties as illustrated in figure 11 below. Counties that reported high engagement with the services providers (> 50.0%), reported an average of 35.0 Gross Margin. On the other hand, counties that reported minimal engagement (< 50.0%) recorded an average of 29.8 Gross margin.



Figure 14: VCA utilization of service providers by GM and County

Private service providers (45.0%) were the mostly utilized across the value chain compared to public (35.9%); this cuts across the value chain expect for traders whose service utilization were reported to be from the public services providers (41.4%). This is contrary to the previous findings (*ASDSP PIF*) where it was perceived that investments were skewed towards public extension and research services and other agricultural services such as mechanization and input supplies that are supportive of producers only. In addition, 19.1% of the actors reported to be utilizing both services from public and private.

| Node/Service Providers | Overall | Male   | Female | Youth  |
|------------------------|---------|--------|--------|--------|
| Agro Input Supply      | n=450   | n=202  | n=128  | n=120  |
| Public                 | 30.7    | 30.7   | 35.9   | 25     |
| Private                | 48.2    | 46.0   | 45.3   | 55     |
| Both                   | 21.1    | 23.3   | 18.8   | 20     |
| Production             | n=7273  | n=3206 | n=3017 | n=1050 |
| Public                 | 38.6    | 36.9   | 39.9   | 39.8   |
| Private                | 43.0    | 44.4   | 42.6   | 39.6   |
| Both                   | 18.5    | 18.7   | 17.5   | 20.6   |
| Processing             | n=220   | n=95   | n=44   | n=81   |
| Public                 | 26.8    | 22.1   | 20.5   | 35.8   |
| Private                | 56.4    | 63.2   | 61.4   | 45.7   |
| Both                   | 16.8    | 14.7   | 18.2   | 18.5   |
| Trade                  | n=806   | n=334  | n=290  | n=182  |
| Public                 | 41.4    | 36.8   | 45.2   | 44.0   |
| Private                | 39.9    | 40.7   | 38.6   | 40.1   |
| Both                   | 18.7    | 22.5   | 16.2   | 15.9   |
| Transport              | n=329   | n=125  | n=136  | n=68   |
| Public                 | 41.9    | 38.4   | 42.6   | 47.1   |
| Private                | 37.7    | 41.6   | 33.1   | 39.7   |
| Both                   | 20.4    | 20.0   | 24.3   | 13.2   |

Various reasons were cited by those not engaging with service providers. Lack of awareness about service provision was reported by the VCAs as the main reason for not engaging service providers across all value chain nodes. Therefore, there is need for the programme to sensitize VCAs on available services in each county. Further, unreliability of the services was also reported as a key reason among the agro-input suppliers (26.0%), producers (30.0%), traders (18.0%) and processors (20%). Transporters other concern was the costly services (22.0%) rendered by the services providers. Across the value chain, financial services (63.3%) were reported as the main need by all the actors. Other needs include inputs services (41.0%) by the agro input suppliers, market information (38.0%), transport (39.0%) by the traders and record keeping (50.0%) by transporters and processors.

# 3.5.2 Post-Production losses among VCAs

The study also sought to understand the extent which actors across the value chain experience losses. Overall, 20.0% across the value chain reported to have experienced post-production losses. Producers were the most (71.1%) affected and Transporters the least (2.9%) affected. Across gender and age, adult female actors were the most (41.8%) affected while the youths were the least (18.4%) affected (table 21).

| Value Chain Node  | Proportion (%) of VCAs who experienced post-production<br>losses |      |       |         |  |
|-------------------|--|------|-------|---------|--|
|                   | Female   | Male | Youth | Overall |  |
| Agro Input Supply | 29.1   | 43.5 | 27.4  | 5.7     |  |
| Producers         | 42.8   | 40.3 | 16.9  | 71.1    |  |
| Traders           | 39.9   | 37.9 | 22.3  | 15.2    |  |
| Transporters      | 25.9   | 41.2 | 32.9  | 2.9     |  |
| Processors        | 47.5   | 31.3 | 21.2  | 5.1     |  |
| Overall           | 41.8   | 39.8 | 18.4  | 20.0    |  |

Table 20: Proportion of VCAs who experienced post-production losses

On average, across the value chain, 32.5% of the actors reported to be experiencing between 5-10% postproduction losses; apart from traders (82.8%) who reported to be experiencing less than 5%. The trend was found to be the same across gender and age along the value chain. Across the agro in-put supply node, the adult women (38.0%) and youths (30.4%) experienced more losses between 5-10%; the same was the trend across producers (31.5% and 29.4% respectively) and transporters (34.2% and 44.7% respectively).

|             |             | Percentage (%) of VCAs |              |               |                 |  |
|-------------|-------------|------------------------|--------------|---------------|-----------------|--|
| Node        | Loss (%)    | Female (n=184)         | Male (n=274) | Youth (n=171) | Overall (n=629) |  |
|             | > 30%       | 8.7                    | 6.6          | 2.3           | 6.0             |  |
|             | 20 - 30%    | 8.2                    | 8.0          | 6.4           | 7.6             |  |
| Agro In-put | 15 - 20%    | 9.2                    | 5.5          | 6.4           | 6.8             |  |
| Supply      | 10 -15%,    | 10.9                   | 10.2         | 14.0          | 11.4            |  |
|             | 5 - 10 %,   | 38                     | 31.1         | 30.4          | 32.9            |  |
|             | > 5%,       | 23.4                   | 36.5         | 38.1          | 33              |  |
|             | Inestimable | 1.6                    | 1.8          | 1.8           | 1.7             |  |
| Producers   | Loss (%)    | Female                 | Male (n=     | Youth         | Overall ( n=    |  |
|             |             | (n=5387)               | 5071)        | (n=2124)      | 12582)          |  |
|             | > 30%       | 11.6                   | 12.4         | 11.2          | 11.9            |  |
|             | 20 & 30%    | 7.7                    | 8.1          | 7.9           | 7.9             |  |
|             | 15 & 20%    | 9.5                    | 9.3          | 9.6           | 9.4             |  |
|             | 10 &15%,    | 12.5                   | 13.4         | 12.9          | 13.0            |  |
|             | 5 & 10 %,   | 31.5                   | 28.6         | 29.4          | 30              |  |
|             | > 5%,       | 23.9                   | 24.9         | 26            | 24.7            |  |

Table 21: Priority Value chain post-production losses

|            |             | Percentage (%) of VCAs |              |               |                 |
|------------|-------------|------------------------|--------------|---------------|-----------------|
| Node       | Loss (%)    | Female (n=184)         | Male (n=274) | Youth (n=171) | Overall (n=629) |
|            | Inestimable | 3.4                    | 3.2          | 3.0           | 3.2             |
| Traders    | Loss (%)    |                        |              |               | Overall         |
|            |             | Female (n=695)         | Male (n=661) | Youth (n=391) | (n=1747)        |
|            | > 30%       | 7.1                    | 5.1          | 7.7           | 6.5             |
|            | 20 & 30%    | 8.5                    | 7.4          | 7.9           | 8.0             |
|            | 15 & 20%    | 0.0                    | .2           | 0.0           | .1              |
|            | 10 &15%,    | .1                     | 0.0          | 0.0           | .1              |
|            | 5 & 10 %,   | .6                     | .8           | .3            | .6              |
|            | > 5%,       | 80.9                   | 85.3         | 82.2          | 82.8            |
|            | Inestimable | 2.9                    | 1.2          | 2.0           | 2.1             |
| Transport  | Loss (%)    | (Female n=79)          | Male (n=128) | Youth (n=103) | Overall (n=310) |
|            | > 30%       | 3.8                    | 4.7          | 3.9           | 4.2             |
|            | 20 & 30%    | 15.2                   | 17.2         | 10.7          | 14.5            |
|            | 15 & 20%    | 26.6                   | 19.5         | 15.5          | 20.0            |
|            | 10 &15%,    | 34.2                   | 28.9         | 44.7          | 35.5            |
|            | 5 & 10 %,   | 19.0                   | 26.6         | 25.2          | 24.2            |
|            | > 5%,       | 1.3                    | 3.1          | 0.0           | 1.6             |
| Processors | Loss (%)    | Female (n=267)         | Male (n=178) | Youth (n=120) | Overall (n=565) |
|            | > 30%       | 11.6                   | 10.7         | 5.0           | 9.9             |
|            | 20 & 30%    | 3.7                    | 7.3          | 7.5           | 5.7             |
|            | 15 & 20%    | 10.5                   | 7.9          | 5.8           | 8.7             |
|            | 10 &15%,    | 16.1                   | 14.6         | 13.3          | 15.0            |
|            | 5 & 10 %,   | 30.7                   | 30.9         | 35.0          | 31.7            |
|            | > 5%,       | 23.6                   | 28.1         | 30            | 26.4            |
|            | Inestimable | 3.7                    | .6           | 3.3           | 2.7             |

 Table 22:
 Priority Value chain post-production losses cont'd

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Figure 15: VCAs Post-Production Losses (PPL) by County

The main causes of the post-production losses varied across the value chain. For transporters, delays in reaching the market due to poor road conditions (63.4%) were cited as the main reasons. Other reasons reported by the transporters include spoilage due to inadequate refrigeration facilities (34.6%), spillage (29.2), unfavorable transport business environment (TLB, market fees, loading/parking fees) – 28.1%, cartels (loaders, drivers) – 21.0% and corruption (10.2%). For traders, spoilage (59.0%) was cited as the main reason. Other reasons include pests and diseases (29.7%), livestock death (23.5%), theft (21.3%), spillage (14.4%) among others. For Agro Input suppliers, spoilage (40.9%) was also cited as the main reason. Other reasons include expiry (38.8%), pest and diseases (33.5%), spillage (26.9%) among others. For processors, spoilage (55.2%) was also cited as the main reason. Other reasons include so cited as the main reason. Other reasons include so (18.7%) among others. Last for producers, pests and diseases (66.6%) were cited as the main reason. Other reasons include spoilage (38.1%), theft (22.5%), in- adequate knowledge on post-harvesting handling (17.8%) among others.

Key measures adopted by VCAs to reduce post-production losses were also reported. Across the value chain, half (54.6%) of the actors reported appropriate handling storage as a key practice towards reducing losses. Table 22 illustrates this in detail.



| Value chain<br>node  | Measures to reduce<br>post-production losses   | Female<br>(n=168)   | Male<br>(n=241)  | Youth (n=156)     | Overall<br>(N=565)   |
|----------------------|--|---------------------|------------------|-------------------|----------------------|
| Agro Input<br>Supply | Keep appropriate<br>Quantities of Stock  | 49.4                | 47.7             | 39.7              | 46.0                 |
|                      | Appropriate handling and storage   | 42.3                | 52.7             | 55.8              | 50.4                 |
|                      | Improved security measures   | 25.0                | 29.0             | 25.6              | 26.9                 |
|                      | Appropriate record<br>keeping  | 14.9                | 20.3             | 22.4              | 19.3                 |
|                      | Appropriate harvesting technologies  | 11.3                | 8.7              | 5.8               | 8.7                  |
|                      | Appropriate<br>transportation  | 14.9                | 19.1             | 17.9              | 17.5                 |
|                      | Value addition (sorting, grading)  | 7.1                 | 6.2              | 5.1               | 6.2                  |
|                      | Appropriate packaging  | 7.1                 | 11.6             | 10.3              | 9.9                  |
| Producers            |  | Female<br>(n=4470)  | Male<br>(n=4211) | Youth<br>(n=1799) | Overall<br>(N=10480) |
|                      | Appropriate harvesting technologies  | 18.8                | 19.1             | 16.6              | 18.5                 |
|                      | Appropriate<br>transportation  | 20.7                | 22.1             | 22.3              | 21.5                 |
|                      | Appropriate packaging  | 9.4                 | 10.1             | 9.5               | 9.7                  |
|                      | Appropriate handling<br>and storage (e.g.<br>Drying, preservation,<br>salting, chilling,<br>freezing, pest control-<br>fumigation) | 55.1                | 56.0             | 53.5              | 55.2                 |
|                      | Improved security<br>measures  | 27.2                | 24.9             | 31.0              | 26.9                 |
|                      | Value addition (sorting,<br>grading, primary<br>processing)  | 7.8                 | 8.5              | 8.7               | 8.2                  |
|                      | Value addition (sorting, grading)  | 11.4                | 12.8             | 11.0              | 11.9                 |
| Traders              |  | Female (n=<br>(622) | Male(n=591)      | Youth (n=349)     | Overall<br>(N=1562)  |
|                      | Appropriate Machinery<br>and Transport   | 12.1                | 16.2             | 12.6              | 13.8                 |
|                      | Appropriate handling<br>and storage  | 60.3                | 50.3             | 57.9              | 56.0                 |
|                      | Engagement of trained<br>personnel (e.g. livestock<br>handlers)  | 15.0                | 25.9             | 15.2              | 19.1                 |

Table 22: Measures taken up by VCAs to reduce post-production losses

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|              | have a set of the set of the set  | 107   | 11.0  | 10.0   | 12.0   |
|--------------|---|---|---|--|--|
|              | Improved packaging  | 13.7  | 11.0  | 10.9   | 12.0   |
|              | Improved security   | 18.0  | 23.2  | 18.9   | 20.2   |
|              | measures  |   |   |  |  |
|              | Keep appropriate  | 34.4  | 32.5  | 34.7   | 33.7   |
|              | Quantities of Stock   |   |   | _  |  |
| Transporters |   | Female<br>(n=78)  | Male<br>(n=125)   | Youth n=91   | Overall<br>(N=294)   |
|              | Adherence to  | 24.4  | 19.2  | 25.3   | 22.4   |
|              | commodity transport   |   |   |  |  |
|              | rules and regulations   |   |   |  |  |
|              | Appropriate handling  | 48.7  | 51.2  | 50.5   | 50.3   |
|              | and loading   |   |   |  |  |
|              | Improved security   | 17.9  | 11.2  | 13.2   | 13.6   |
|              | measures (armed escort)   |   |   |  |  |
|              | Motivation of drivers   | 20.5  | 18.4  | 12.1   | 17.0   |
|              | and Loaders   |   |   |  |  |
|              | Proper Maintenance of   | 33.3  | 40.0  | 39.6   | 38.1   |
|              | the Vehicle(s)  |   |   |  |  |
|              | Training of animal  | 23.1  | 16.0  | 13.2   | 17.0   |
|              | handlers during   |   |   |  |  |
|              | transportation  |   |   |  |  |
|              | Use of recommended  | 35.9  | 24.0  | 20.9   | 26.2   |
|              | transport facilities  |   |   |  |  |
|              | (refrigerated trucks,   |   |   |  |  |
|              | L canos chambered   |   |   |  |  |
|              | cages, chambered  |   |   |  |  |
|              | trucks)   |   |   |  |  |
| Processors   | trucks)   | Female  | Male  | Youth (n=156)  | Overall (n=565)  |
| Processors   | trucks)   | Female<br>(n=168)   | Male<br>(n=241)   | Youth (n=156)  | Overall (n=565)  |
| Processors   | Appropriate handling  | Female<br>(n=168)<br>62.1   | Male<br>(n=241)<br>62.7   | <b>Youth (n=156)</b><br>56.4   | <b>Overall (n=565)</b><br>61.1   |
| Processors   | Appropriate handling<br>and storage   | Female           (n=168)           62.1   | Male<br>(n=241)<br>62.7   | Youth (n=156)           56.4   | <b>Overall (n=565)</b><br>61.1   |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging  | Female<br>(n=168)<br>62.1<br>13.8   | Male<br>(n=241)<br>62.7<br>13.3   | Youth (n=156)           56.4           9.9   | Overall (n=565)<br>61.1<br>12.8  |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing  | Female<br>(n=168)<br>62.1<br>13.8<br>23.8   | Male<br>(n=241)<br>62.7<br>13.3<br>28.9   | Youth (n=156)           56.4           9.9           33.7  | Overall (n=565)<br>61.1<br>12.8<br>27.4  |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies  | Female<br>(n=168)           62.1           13.8           23.8  | Male<br>(n=241)           62.7           13.3           28.9  | Youth (n=156)           56.4           9.9           33.7  | Overall (n=565)           61.1           12.8           27.4   |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate   | Female         (n=168)       62.1         13.8       23.8         17.9       17.9   | Male<br>(n=241)           62.7           13.3           28.9           15.7   | Youth (n=156)           56.4           9.9           33.7           11.9   | Overall (n=565)           61.1           12.8           27.4           16.0  |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw  | Female<br>(n=168)         62.1         13.8         23.8         17.9   | Male<br>(n=241)         62.7         13.3         28.9         15.7   | Youth (n=156)           56.4           9.9           33.7           11.9   | Overall (n=565)           61.1           12.8           27.4           16.0  |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials   | Female<br>(n=168)         62.1         13.8         23.8         17.9   | Male<br>(n=241)         62.7         13.3         28.9         15.7   | Youth (n=156)         56.4         9.9         33.7         11.9   | Overall (n=565)           61.1           12.8           27.4           16.0  |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials   | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8   | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5  | Youth (n=156)         56.4         9.9         33.7         11.9         5.0   | Overall (n=565)           61.1           12.8           27.4           16.0  |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials<br>Improved security<br>measures  | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8   | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5  | Youth (n=156)         56.4         9.9         33.7         11.9         5.0   | Overall (n=565)           61.1           12.8           27.4           16.0           9.9  |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials<br>Improved security<br>measures<br>Product promotion   | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         8.8                                       | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8   | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9  | Overall (n=565)           61.1           12.8           27.4           16.0           9.9           9.9  |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials<br>Improved security<br>measures<br>Product promotion   | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         8.8         13.0                          | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5  | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         0.0  | Overall (n=565)         61.1         12.8         27.4         16.0         9.9         9.9         14.2                                       |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials<br>Improved security<br>measures<br>Product promotion<br>Reliable energy/power  | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         13.8                                      | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5  | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         9.9  | Overall (n=565)         61.1         12.8         27.4         16.0         9.9         9.9         14.2                                       |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials<br>Improved security<br>measures<br>Product promotion<br>Reliable energy/power<br>supply   | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         13.8                                      | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5  | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         9.9  | Overall (n=565)         61.1         12.8         27.4         16.0         9.9         9.9         14.2                                       |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials<br>Improved security<br>measures<br>Product promotion<br>Reliable energy/power<br>supply<br>Reliable water supply   | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         13.8         7.1                          | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5         10.8                           | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         9.9         6.9                                      | Overall (n=565)         61.1         12.8         27.4         16.0         9.9         9.9         14.2         8.3                           |
| Processors   | Cages, chamberedtrucks)Appropriate handlingand storageAppropriate packagingAppropriate processingtechnologiesAppropriatetransportation of rawmaterialsImproved securitymeasuresProduct promotionReliable energy/powersupplyReliable water supplyTrained and motivated   | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         13.8         7.1         9.6              | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5         10.8         13.9              | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         9.9         6.9         6.9                          | Overall (n=565)         61.1         12.8         27.4         16.0         9.9         9.9         14.2         8.3         10.5              |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials<br>Improved security<br>measures<br>Product promotion<br>Reliable energy/power<br>supply<br>Reliable water supply<br>Trained and motivated<br>workers  | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         13.8         7.1         9.6              | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5         10.8         13.9              | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         9.9         6.9         6.9         6.9              | Overall (n=565)         61.1         12.8         27.4         16.0         9.9         9.9         14.2         8.3         10.5              |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials<br>Improved security<br>measures<br>Product promotion<br>Reliable energy/power<br>supply<br>Reliable water supply<br>Trained and motivated<br>workers<br>Value addition (sorting,  | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         13.8         7.1         9.6         18.8 | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5         10.8         13.9         22.9 | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         9.9         6.9         6.9         6.9         20.8 | Overall (n=565)         61.1         12.8         27.4         16.0         9.9         9.9         14.2         8.3         10.5         20.5 |
| Processors   | Cages, chambered         trucks)         Appropriate handling         and storage         Appropriate packaging         Appropriate processing         technologies         Appropriate         transportation of raw         materials         Improved security         measures         Product promotion         Reliable energy/power         supply         Reliable water supply         Trained and motivated         workers         Value addition (sorting, grading) | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         13.8         7.1         9.6         18.8 | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5         10.8         13.9         22.9 | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         9.9         6.9         6.9         20.8             | Overall (n=565)         61.1         12.8         27.4         16.0         9.9         9.9         14.2         8.3         10.5         20.5 |
| Processors   | Appropriate handling<br>and storage<br>Appropriate packaging<br>Appropriate processing<br>technologies<br>Appropriate<br>transportation of raw<br>materials<br>Improved security<br>measures<br>Product promotion<br>Reliable energy/power  | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         13.8                                      | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5  | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         9.9  | Overall (n=565)         61.1         12.8         27.4         16.0         9.9         9.9         14.2                                       |
| Processors   | Cages, chambered         trucks)         Appropriate handling         and storage         Appropriate packaging         Appropriate processing         technologies         Appropriate         transportation of raw         materials         Improved security         measures         Product promotion         Reliable energy/power         supply         Reliable water supply         Trained and motivated         workers         Value addition (sorting, grading) | Female<br>(n=168)         62.1         13.8         23.8         17.9         8.8         13.8         7.1         9.6         18.8 | Male<br>(n=241)         62.7         13.3         28.9         15.7         14.5         10.8         17.5         10.8         13.9         22.9 | Youth (n=156)         56.4         9.9         33.7         11.9         5.0         10.9         9.9         6.9         6.9         20.8             |  |

 Table 21: Measures taken up by VCAs to reduce post-production losses cont'd....



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#### 3.5.3 Adoption of climate smart technologies

Climate smart agriculture is an approach for transforming and reorienting agricultural development under the realities of climate change. There have been tremendous efforts within the Livestock sector in spearheading the adoption of climate smart technologies that the ASDSP may borrow or ride on. For example, KALRO has identified and profiled available technologies and innovations within the Livestock Sub-sector – including documentation of best management practices, the East Africa Agriculture Productivity Programme (EAAPP) that came to an end in 2015 documented all technologies on diary and the Kenya Climate Smart Agriculture Project, KCSAP (2017-2022) is currently supporting research and development in all livestock areas for climate smart agriculture. In the Crop sector, ICRISAT is supporting development and research on cereals and pulses while Plant wise CABI is supporting on Integrated Pest Management.

Findings from the semi-structured interviews indicated that the use of organic fertilizers (39 %) and agroforestry (33 %) were the most adopted technologies among the producers, while at processing level, use of waste management (36%) and energy generating innovations (30%) were the most adopted technologies. At the agro input supply node, energy saving (39%), soil conservation (33%) and water conservation (29 %) technologies were the highly adopted technologies. Table 22 illustrates this in detail.

| VC Node    | Type of CSA Technologies                    | Percent Adoption of CSA<br>Technologies by Gender |      |       |         |
|------------|---|---|------|-------|---------|
|            |   |   |      |       |         |
|            |   | Female  | Male | Youth | Overall |
| Agro input | Energy saving (Fireless cooker, Solar       | 35.3  | 41.5 | 39.9  | 39.3    |
| supply     | energy, lighting equipment)                 |   |      |       |         |
|            | Green Energy (renewable)                    | 13.2  | 13.8 | 12.8  | 13.4    |
|            | Conservation Agriculture                    | 24.6  | 32.0 | 28.4  | 28.9    |
|            | E-Marketing                                 | 9.0   | 15.0 | 16.2  | 13.6    |
|            | Soil Conservation                           | 36.5  | 30.8 | 31.1  | 32.6    |
|            | Water Conservation                          | 31.1  | 26.9 | 29.7  | 28.9    |
|            | Adaptable livestock breed / drought         | 11.4  | 16.6 | 17.6  | 15.3    |
|            | tolerant-early maturing crop varieties      |   |      |       |         |
|            | Pasture and fodder conservation             | 19.2  | 28.1 | 22.3  | 23.9    |
|            | Waste Management (Re-use, recycle,          | 26.3  | 26.9 | 25.0  | 26.2    |
|            | dumping, composting, burying)               |   |      |       |         |
| Production | Energy saving                               | 28.5  | 27.5 | 28.5  | 28.1    |
|            | Green Energy                                | 13.6  | 15.4 | 15.2  | 14.6    |
|            | Conservation Agriculture                    | 26.2  | 29.4 | 23.0  | 27.0    |
|            | Agroforestry                                | 32.4  | 34.9 | 30.4  | 33.1    |
|            | Range reseeding                             | 1.1   | 1.2  | .8    | 1.1     |
|            | Irrigation (drip irrigation)                | 10.8  | 11.5 | 11.9  | 11.3    |
|            | Hydroponics                                 | .4  | .7   | .8    | .6      |
|            | Organic farming (use of organic fertilizer) | 39.1  | 39.9 | 35.0  | 38.8    |
|            | Kitchen gardens (Multi-Storey gardens)      | 18.3  | 15.4 | 15.5  | 16.7    |

Table 23: Adoption of CSA Technologies by VCAs Disaggregated by Gender and Node

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| VC Node        | Type of CSA Technologies                         | Percent A<br>Technolog | doption<br>gies by G | of CSA<br>iender |         |
|----------------|--|------------------------|----------------------|------------------|---------|
|                |  | Female                 | Male                 | Youth            | Overall |
|                | Adaptable livestock breed / drought              | 9.7                    | 12.8                 | 9.5              | 10.9    |
|                | tolerant-early maturing crop varieties           |                        |                      |                  |         |
|                | Pasture and fodder conservation (hay             | 13.0                   | 17.0                 | 11.8             | 14.5    |
|                | bailing, silage making, standing hay)            |                        |                      |                  |         |
|                | Cage Farming                                     | 2.9                    | 2.5                  | 3.3              | 2.8     |
|                | Fish Ponds                                       | 3.2                    | 5.6                  | 4.1              | 4.3     |
|                | Aquaponics                                       | .2                     | .2                   | .1               | .2      |
| Trading        | Energy saving (e.g. Fireless cooker)             | 23.1                   | 28.2                 | 31.1             | 26.9    |
|                | Green Energy (renewable e.g. solar, biogas)      | 33.6                   | 37.3                 | 33.1             | 34.9    |
|                | Agroforestry                                     | 28.5                   | 28.4                 | 31.7             | 29.2    |
|                | Waste Management (Re-use, recycle,               | 24.9                   | 26.3                 | 29.7             | 26.5    |
|                | dumping, burning, composting, burying)           |                        |                      |                  |         |
|                | Water Conservation Water Conservation            | 20.4                   | 20.8                 | 21.5             | 20.8    |
|                | equipment  |                        |                      |                  |         |
|                | Recycled packaging                               | 10.9                   | 9.5                  | 14.3             | 11.2    |
|                | Pasture and Fodder                               | 21.7                   | 27.2                 | 21.2             | 23.6    |
|                | Farm Machinery & amp; Equipment                  | 7.5                    | 9.1                  | 8.5              | 8.3     |
|                | Conservation Agriculture                         | 14.4                   | 15.4                 | 14.7             | 14.8    |
|                | Farm Machinery & amp; Equipment                  | 7.5                    | 9.1                  | 8.5              | 8.3     |
|                | Conservation Agriculture                         | 14.4                   | 15.4                 | 14.7             | 14.8    |
| Transportation | Use of Hybrid Vehicles                           | 3.8                    | 6.1                  | 7.0              | 5.9     |
|                | Regular maintenance/servicing of vehicles        | 32.7                   | 38.3                 | 29.1             | 34.0    |
|                | Maintenance of roads                             | 48.1                   | 51.3                 | 50.0             | 50.2    |
|                | Green Energy                                     | 17.3                   | 7.8                  | 10.5             | 10.7    |
|                | Water Conservation                               | 34.6                   | 27.8                 | 22.1             | 27.3    |
|                | Safe disposal of waste products                  | 32.7                   | 25.2                 | 14.0             | 22.9    |
|                | Use of customized vehicles                       | 5.8                    | 3.5                  | 10.5             | 6.3     |
| Processing     | Energy generating innovations (e.g. Solar, wind) | 32.8                   | 25.2                 | 30.9             | 29.7    |
|                | Energy saving innovations (Efficient             | 15.4                   | 21.4                 | 18.1             | 18.1    |
|                | processing technologies and lighting)            |                        |                      |                  |         |
|                | Water Conservation e.g. recycling                | 16.9                   | 23.9                 | 20.2             | 20.0    |
|                | Waste Management                                 | 33.8                   | 36.5                 | 40.4             | 36.1    |
|                | Storage (e.g. go-down, warehouses)               | 15.4                   | 11.3                 | 12.8             | 13.4    |
|                | Less labour-intensive innovations (use of        | 19.9                   | 20.1                 | 20.2             | 20.0    |
|                | equipment and machines)                          |                        |                      |                  |         |
|                | Packaging Equipment (Potato bags, Milk           | 17.4                   | 18.9                 | 23.4             | 19.2    |
|                | cans)  |                        |                      |                  |         |
|                | ICT/mobile phone-based innovations e.g. e-       | 10.4                   | 8.8                  | 7.4              | 9.3     |
|                | marketing, e-extension                           |                        |                      |                  |         |
|                | Modern Machinery e.g. Conveyer belts)            | 4.5                    | 3.8                  | 6.4              | 4.6     |

 Table 22:
 Adoption of CSA Technologies by VCAs Disaggregated by Gender and Node cont'd....

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#### Innovation uptake by Women and Youth

For Agro Input supply, more adult women (68.0%) than youths (65.3%) were reported to have adopted innovation, although the difference was found to be insignificant. Storage (e.g. preservation, improved storage bags/containers, warehouse) – 76.1% and packaging (e.g. various Quantities) – 77.5% were reported to be the predominant innovations taken up by women. Contractual supplies (76.6%) and Marketing channels (e.g. ICT, Promotions, Mobile based, Electronic & Print adverts) - 73.2% were predominant among the youths. The high adoption of ICT based marketing innovations by youth was attributed to the youths' higher exposure and access to ICT related tools and compared to women. The results show insignificant difference between the adoption of bulk supplies innovation between women (63%) and Youth (62%).

| Type of Innovations taken up by Agro Input Suppliers                               | Percent (%) |       |  |
|--|-------------|-------|--|
|  | Women       | Youth |  |
| Packaging (e.g. Various Quantities)  | 77.5        | 54.3  |  |
| Marketing channels (e.g. ICT, Promotions, Mobile based, Electronic & Printadverts) | 55.1        | 73.2  |  |
| Storage (e.g. preservation, improved storage bags/containers, warehouse)           | 76.1        | 60.6  |  |
| Bulk supplies  | 63.3        | 62    |  |
| Contractual supplies   | 68.1        | 76.6  |  |
| Average (%)  | 68.02       | 65.34 |  |

Table 24: Innovations adopted by Women and Youth at the Agro-Input Supply Node

For producers, more adult women (75.8%) than youths (61.2%) were reported to have adopted innovation. The most predominant innovation adopted by women were organic farming (89.4%), storage (86.2%) and gender friendly technologies (82.5%). ICT/mobile phone-based innovations (86.6%) and farm mechanisation (64.0%) were reported to be predominant among the youths.

Table 25: Adoption of Innovations by Women and Youth at Producer node

| Type of Innovations Taken up by Producers  | Perce | ent (%) |
|--|-------|---------|
|  | Women | Youth   |
| Gender friendly technologies (e.g. Langstroth beehives, Green house              |       |         |
| technology, cage fish etc)   | 82.5  | 59.5    |
| Feeds formulation  | 77.0  | 56.6    |
| Pasture and fodder conservation (e.g. silage bags, hay barns)                    | 74.9  | 60.2    |
| Organic farming innovations  | 89.4  | 47.9    |
| Farm mechanization (Planting, weeding, ploughing, harvesting)                    | 71.7  | 64.0    |
| Packaging Equipment (Potato bags, Milk cans)                                     | 79.3  | 62.8    |
| Efficient water use technologies (e.g. drip irrigation, minimum tillage,mulching | 79.8  | 59.4    |
| Storage (hermetic bags)  | 86.2  | 54.2    |
| ICT/mobile phone-based innovations (e.g. e-extension service delivery, e-        |       |         |
| marketing)   | 41.4  | 86.6    |
| Average (%)  | 75.8  | 61.2    |

For traders, more adult women (77.6%) than youths (55.9%) were reported have adopted innovation. Storage (88.3%) and Packaging (81.5%) were the most predominant areas of innovations among the women traders as compared to marketing channels (63.7%) and contractual suppliers (61.0%) reported by the youth traders.

| Types of Innovations Taken Up by Traders   | Percent | (%)   |
|--|---------|-------|
|  | Women   | Youth |
| Packaging (e.g. Various Quantities)  | 81.5    | 53    |
| Marketing channels (e.g. ICT, Promotions, Mobile based, Electronic & Printadverts) | 67.4    | 63.7  |
| Storage (e.g. preservation, improved storage bags/containers, warehouse)           | 88.3    | 54.5  |
| Bulk supplies  | 75.7    | 52.6  |
| Contractual supplies   | 75.3    | 61.0  |
| Average (%)  | 77.6    | 55.9  |

Table 26: Adoption of Innovations by Women and Youth at Traders node

For transporters, more youths (77.5%) than adult women were reported to have adopted innovation. The most predominant innovation amount the youth transporters were speed governors (100%) and weigh bridges (100%). While, good conduct certification (77.3%) and Contractual supplies (68.8%) were the most predominant among the women transporters. The high adoption of transport related innovations by youth can be attributed to the Youth dominance in this node and more so the Boda-boda means of transportation.

Table 27: Adoption of Innovations by Women and Youth at Transporters node

| Types of Innovations take up by transporters                                       | Percent | : (%) |
|--|---------|-------|
|  | Women   | Youth |
| Packaging (e.g. Various Quantities)  | 65.0    | 50.0  |
| Marketing channels (e.g. ICT, Promotions, Mobile based, Electronic & Printadverts) | 55.9    | 76.5  |
| Storage (e.g. preservation, improved storage bags/containers, warehouse)           | 57.8    | 62.2  |
| Transportation   | 28.6    | 92.9  |
| Use of loading and off-loading equipment   | 41.2    | 82.4  |
| Bulk supplies  | 50.0    | 76.9  |
| Contractual supplies   | 68.8    | 56.3  |
| Use Electronic Driver's License  | 37.5    | 87.5  |
| Good Conduct Certification   | 77.3    | 68.2  |
| Speed Governors  | 56.3    | 100   |
| Weigh bridges  | 20.0    | 100   |
| Vehicle Tracking Devices and CCTV  | 55.6    | 88.9  |
| Average (%)  | 51.2    | 77.5  |

For processors, more adult women (78.1%) were reported to have adopted different processing related innovations as compared to youths (57.4%t). The most predominant type of innovation taken up by women processors was waste management (88.8%) as compared to less labor intensive innovations (use of equipment and machines) as reported by youth processors (65.2%).



| Types of Innovations Taken Up by Processors                                | Perc  | ent (%) |
|--|-------|---------|
|  | Women | Youth   |
| Energy generating innovations (e.g. Solar, wind)                           | 76.4  | 56.2    |
| Energy saving innovations (Efficient processing technologies and lighting) | 74.6  | 59.7    |
| Water Conservation e.g. recycling  | 83.3  | 57.4    |
| Waste Management   | 88.8  | 48.3    |
| Less labor-intensive innovations (use of equipment and machines)           | 63.0  | 65.2    |
| Packaging Equipment (Potato bags, Milk cans)                               | 82.4  | 50.0    |
| Average (%)  | 78.1  | 57.4    |

Table 28: Adoption of Innovations by Women and Youth at Processors node

Notable challenges in the development and adoption of innovations and technologies were reported as:

- 1. Availability of seeds still remains a challenge due to poor pasture and fodder seeds production and marketing system in the country
- 2. Weak Government and institutional support and coordination structures especially in relation to marketing, inputs and seeds; including poor surveillance on quality control and standards. For example, it was cited that there is increased willingness by farmers to adopt technology but promotion of the same remains a challenge including market access.
- 3. Inadequate funding to research and development in the agriculture sector
- 4. Inadequate capacity to process and add value to agricultural products and produce. For example, the amount of milk processed in Kenya, only 20.0% is processed hence 80.0% is sold in raw forms despite having various milk processors
- 5. Inadequate resources to equip agricultural laboratories to conduct research analysis
- 6. Weak technology, innovations dissemination systems resulting into inadequate capacity of farmers to take up the technologies
- 7. Farmers willingness to be trained but have no resources or capital to adopt some of the technologies

#### 3.6 ASDSP Outcome Two: Entrepreneurial Skills of the Priority Value Chain Actors

The Government of Kenya and development partners have spent considerable resources building the productive capacity of VCAs through skills development, research and technology transfers but these efforts have not always translated to significant commercialization of the sector (*ASDSP Programme Document, 2017*). The government recognizes this problem as being partly caused by absence of "business mind-set' among the VCAs. It has been found that this particularly affects the producers at the lower end of the value chains of which the baseline findings also support with evidence. Entrepreneurship skills amongst VCAs are critical for commercialization of agriculture. VCAs need to acquire new entrepreneurial skills to enable them to develop and operate enterprises along the 29 priority value chains. To monitor and measure progress, the programme has adopted two indicators at outcome level: (1) Increase in the number of value chain actors implemented.

## 3.6.1 Implementation of viable Business Plans by VCAs

A business plan was defined as a document that summarizes the operational and financial objectives of a business and contains the detailed plans and budgets showing how the objectives are to be realized. It was also interpreted as a written description of a business's vision that defines a business roadmap (what they plan to do and how they plan to do it). Unfortunately, the study did not assess whether the business plans were viable, something that needs to be explored during programme implementation. From the findings, 23.5% of the actors reported to be implementing business plans of which Agro Input suppliers (35.1%) were the majority. Producers (11.6%) reported the least numbers in terms of implementing business plans. Across gender and age, male adults were reported to have the highest (39.2%) number of actors implementing business plans compared to the adult female actors (30.5%) and youths (24.3%) actors. Table 30 below illustrates this in detail.

| Node              | VCAs implementing viable business plans (%) |      |       |         |  |  |  |
|-------------------|---|------|-------|---------|--|--|--|
|                   | Female                                      | Male | Youth | Overall |  |  |  |
| Agro Input Supply | 24.3  | 43.3 | 32.5  | 35.1    |  |  |  |
| Production        | 34.1  | 44.8 | 21.0  | 11.6    |  |  |  |
| Trade             | 30.6  | 41.0 | 28.4  | 16.5    |  |  |  |
| Transport         | 19.4  | 31.9 | 19.1  | 22.2    |  |  |  |
| Processing        | 44.2  | 35.2 | 20.6  | 31.9    |  |  |  |
| Average           | 30.5  | 39.2 | 24.3  | 23.5    |  |  |  |

Table 29: VCAs implementing viable business plans

Main reasons cited by the actors for not having a business plan include lack of technical know-how to develop one. The proportion of women VCAs who did not have technical know-how to develop BPs was higher (43.3%) than that of men (31.3%) and youth (28.9%) actors. A section (18.4%) of the actors reported that they did not see the importance of a business plan. Other reasons cited were fear of disclosure to authorities and competitors, fear to quantify losses/shortcomings, and that business plans were costly.

It was also established that majority of the VCAs (> 50.0%) at the county level do not have a business plan. Narok had the majority of the actors with business plans (53.1%) while Marsabit County had the least (3.5%). Figure 17 below illustrates this in detail.





Figure 16: VCAs with Business Plan per County

# 3.6.2 Diversity of Business Plans

Diversity of business plans was measured in terms of the different uses of the business plans by VCAs. Actors were asked to report on how they implement their business plans based on three categories: business operations, resource mobilization and resource utilization. Across the value chain, majority of the actors reported to be using their business plans for business operations (65.8%), resource mobilization (35.7%) and resources utilization (31.3%). Despite having a business plan only 12.0% of the actors reported to be using the business plans.

|            |                       | Female |      | Male |      | Youth |      | Overall |      |
|------------|-----------------------|--------|------|------|------|-------|------|---------|------|
| Node       | Business Plan Use     | n      | %    | n    | %    | n     | %    | n       | %    |
| Agro-      | Business Operations   | 44     | 67.7 | 87   | 75.7 | 66    | 77.6 | 197     | 74.3 |
| input      | Resource Mobilization | 25     | 38.5 | 49   | 42.6 | 22    | 25.9 | 96      | 36.2 |
| Supply     | Resource Utilization  | 24     | 36.9 | 37   | 32.2 | 25    | 29.4 | 86      | 32.5 |
|            | Not Used the business | 8      | 12.3 | 10   | 8.7  | 8     | 9.4  | 26      | 9.8  |
|            | plan                  |        |      |      |      |       |      |         |      |
|            | Total                 | 101    |      | 183  |      | 121   |      | 405     |      |
| Production | Farm Operations       | 316    | 53.7 | 435  | 56.8 | 211   | 58.6 | 962     | 56.1 |
|            | Resource Utilization  | 214    | 36.4 | 293  | 38.3 | 131   | 36.4 | 638     | 37.2 |
|            | Resource Mobilization | 198    | 33.7 | 288  | 37.6 | 128   | 35.6 | 614     | 35.8 |
|            | Not Used the business | 83     | 14.1 | 122  | 15.9 | 56    | 15.6 | 261     | 15.2 |
|            | plan                  |        |      |      |      |       |      |         |      |
|            | Total                 | 811    |      | 1138 |      | 526   |      | 2475    |      |

| Table 30. | Diversit | vofRusine     | cc Planch     | VVCA      |
|-----------|----------|---------------|---------------|-----------|
| iuble 50. | Diversit | y oi busille: | 55 F IUI IS U | y V C A S |

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| Trade      | Business Operations   | 59  | 60.2 | 85  | 64.4 | 56 | 61.5 | 200 | 62.3 |
|------------|-----------------------|-----|------|-----|------|----|------|-----|------|
|            | Resource Mobilization | 35  | 35.7 | 47  | 35.6 | 33 | 36.3 | 115 | 35.8 |
|            | Resource Utilization  | 33  | 33.7 | 45  | 34.1 | 22 | 24.2 | 100 | 31.2 |
|            | Not Used the business | 12  | 12.2 | 19  | 14.4 | 10 | 11.0 | 41  | 12.8 |
|            | plan                  |     |      |     |      |    |      |     |      |
|            | Total                 | 98  |      | 132 |      | 91 |      | 321 |      |
| Transport  | Business Operations   | 10  | 62.5 | 27  | 64.3 | 9  | 69.2 | 46  | 64.8 |
|            | Resource Mobilization | 3   | 18.8 | 16  | 38.1 | 4  | 30.8 | 23  | 32.4 |
|            | Resource Utilization  | 5   | 31.3 | 9   | 21.4 | 3  | 23.1 | 17  | 23.9 |
|            | Not Used the business | 3   | 18.8 | 4   | 9.5  | 0  | 0.0  | 7   | 9.9  |
|            | Total                 | 21  |      | 56  |      | 16 |      | 93  |      |
| Processing | Rusiness Operations   | 53  | 61.6 | 53  | 74.6 | 35 | 87.5 | 141 | 71.6 |
| Trocessing | Resource Mobilization | 33  | 38.4 | 28  | 39.4 | 12 | 30.0 | 73  | 37.1 |
|            | Resource Utilization  | 23  | 26.7 | 27  | 38.0 | 15 | 37.5 | 65  | 33.0 |
|            | Not Used the business | 16  | 18.6 | 5   | 7.0  | 3  | 7.5  | 24  | 12.2 |
|            | plan                  |     |      |     |      |    |      |     |      |
|            | Total                 | 125 |      | 113 |      | 65 |      | 303 |      |

Table 29: Diversity of Business Plans by VCAs cont'd...

The study also sought to understand whether the actors have been trained on business plan development and use. Across the node, 46.0% of the Agro In-put supply was predominant to have been trained. Processors (32.0%), traders (28.0%), producers (25.0%) and transporters (20.0%) also reported to have been trained on business plan development and use. Based on the findings, there is need for the programme to reinforce the training and mentoring the actors on business development and use which may contribute towards commercialization of the agriculture sector.

# 3.7 ASDSP Outcome Three: Access to Markets by Prioritised Value Chain Actors

Agricultural products in Kenya face stiff competition in the local, regional and global markets due to high cost of production, inefficient infrastructural services, noncompliance with local and international standards and trade barriers. Inadequate value addition and use of obsolete equipment and machinery in bulking, milling and processing of agricultural produce make the price of the final products uncompetitive in the market. The programme seeks, through partnerships, promote adoption of modern processing and value addition technologies as one way to increase demand for agricultural produce. In achieving this, the programme hope that it will improve market access linkages to PVCs, improve access to market information and financial services targeted VCAs. Three indicators will be used to monitor and measure progress: 1) increase in number of VCAs accessing markets by gender, 2) % increase in number of market segments, and 3) % increase in handling capacity of the market segments.



# 3.7.1 VCA access to Markets

Market plays a very critical role in sustaining businesses among agricultural value chains. Agricultural markets are largely erratic as there are times of glut and other times the commodities are scarce resulting to price fluctuation. The programme seeks to promote linkages to market by VCAs in order to increase commercial viability of VCs by facilitating trade at each node of the commodity chains. The study sought to find whether VCAs have access to markets across the value chain. Based on the findings, 74.0% of the VCAs reported to have access to the markets. Across node, agro input suppliers' actors to have more access to their markets across the chain. Across gender, although insignificant, male actors reported to have high access to markets as compared to youth actors (75.7%) and female actors.

| Node (%)    | Overall       | Female       | Male         | Youth       |
|-------------|---------------|--------------|--------------|-------------|
| Agro Supply | 86.3 (761)    | 82.8 (233)   | 86.6 (324)   | 89.7 (204)  |
| Production  | 81.3 (15,210) | 80.9 (6,520) | 82.5 (6,194) | 81.3(2,496) |
| Trade       | 65.4 (1,980)  | 64.6 (805)   | 66.1 (735)   | 65.5 (440)  |
| Transport   | 72.1 (377)    | 61.5 (96)    | 74.7 (166)   | 77.4 (115)  |
| Processing  | 64.8 (627)    | 60.4 (288)   | 73.2 (213)   | 64.8 (126)  |
| Overall     | 73.98         | 70.0         | 76.6         | 75.7        |

 Table 31:
 VCAs accessing markets by gender and node

At the county level, >50.0 of the VCAs reported to have access to markets across 44 counties apart from Mandera (40.5%), Kitui (44.0%) and Migori (45.5%). On the other hand, while market access had positive relationship (Pearson 0.072) with the reported Gross Margins, the relationship was found to be insignificant (P > 0.05) and weak. Based on the findings, we can deduce that majority of the VCAs have access to markets however, in order to increase commercialisation of agriculture across the value chains, there is need for the programme to improve market efficiencies (improved targeted market linkages and information), increase productivity of products to achieve reasonable volumes of acceptable standards that would generate economies of scale among others.





Figure 17: VCA market access by County

The study also sought to understand how easy it was for the actors to access markets across the value chain. Actors were asked whether they found it difficult, easy, or fairly easy to access markets. Of the 74% actors who reported to be accessing markets, only 39.7% find it easy to access those markets. Majority (56.3%) find it fairly easy to access markets, while the rest (3.9%) find it difficult to access them. Across the value chain, processors find it easy (45.5%) as compared to the other value chain actors, with agro input suppliers being the least (31.0%) – with majority (6.8%) who find it difficult to access the markets. Across gender and age, adult male actors (input suppliers - 33.1%, producers – 41.0%, transporters -41.9% and processors – 51.3%) find it easy to access markets as compared to the actors across the value chain, except for traders where youth actors (47.6%) were dominant.



| Node        | Variable      |                 | Gender       |               | Average |
|-------------|---------------|-----------------|--------------|---------------|---------|
|             | Accessibility | Female (n=192)  | Male (n=281) | Youth (n=183) |         |
| Agro-Input  | Difficult     | 7.3             | 6            | 7.1           | 6.8     |
| Supply      | Fairly Easy   | 64.6            | 60.8         | 61.2          | 62.2    |
|             | Easy          | 28.1            | 33.1         | 31.7          | 31.0    |
| Production  | Accessibility | Female (n=5277) | Male         | Youth         |         |
|             |               |                 | (n=5105)     | (n=1982)      |         |
|             | Difficult     |                 | 8.6          | 8.9           | 8.8     |
|             | Fairly Easy   | 52.5            | 50.4         | 54.7          | 52.5    |
|             | Easy          | 38.3            | 41.0         | 36.3          | 38.5    |
|             | Accessibility | Female (n=518   | Male (n=485) | Youth (n=288) |         |
| Trader      | Difficult     | 1.4             | 2.9          | 1             | 1.8     |
|             | Fairly Easy   | 56.2            | 52.6         | 51.4          | 53.4    |
|             | Easy          | 42.5            | 44.5         | 47.6          | 44.9    |
|             | Accessibility | Female (n=59)   | Male (n=124) | Youth (n=89)  |         |
| Transporter | Difficult     | -               | -            | -             | -       |
|             | Fairly Easy   | 66.1            | 58.1         | 59.6          | 61.3    |
|             | Easy          | 33.9            | 41.9         | 40.4          | 38.7    |
|             | Accessibility | Female (n=174)  | Male (n=156) | Youth (n=76)  |         |
| Processors  | Difficult     | 2.9             | 1.3          | 2.6           | 2.3     |
|             | Fairly Easy   | 58              | 47.4         | 51.3          | 52.2    |
|             | Easy          | 39.1            | 51.3         | 46.1          | 45.5    |

Table 32: Market accessibility by VCAs

#### 3.7.2 Market Segments

In regard to markets segments, the study sought to understand the type of market segments accessible to the PVCAs. Market segments in this regard referred to individuals, Value Chain Organisation (VCOs), Government/public institutions, private institutions, retailers, distributors/wholesalers among others.



Figure 18: Accessible market segments by VCAs

- National Baseline Survey Report | November 2019

Based on the findings, individual market (76.7%) segment is most accessible by the actors across the value chain. Government/public institutions were the least accessible by the actors. Figure 18 above illustrates this in detail. The same was the trend across gender and age. Table 34 below illustrates market segments access by gender and age across the value chain.

|             |                                    | Gender and Age (n, %) |        |      |      |       |      |      |      |
|-------------|------------------------------------|-----------------------|--------|------|------|-------|------|------|------|
| Node        | Market Segments                    | Fem                   | Female |      | le   | Youth |      | Tot  | a    |
|             |                                    | n                     | %      | n    | %    | n     | %    | n    | %    |
|             | Distributors/wholesalers           | 20                    | 10.4   | 28   | 10   | 6     | 3.3  | 54   | 7.9  |
| Agro-Input  | Government/Public Institutions     | 13                    | 6.7    | 29   | 10.3 | 9     | 4.9  | 51   | 7.3  |
|             | Individuals                        | 168                   | 87.0   | 246  | 87.5 | 172   | 94   | 586  | 89.5 |
| Supply      | Value Chain Organization (VCO)     | 36                    | 18.7   | 54   | 19.2 | 23    | 12.6 | 113  | 16.8 |
|             | Private Institutions               | 23                    | 11.9   | 35   | 12.5 | 17    | 9.3  | 75   | 11.2 |
|             | Retailers                          | 35                    | 18.1   | 64   | 22.8 | 26    | 14.2 | 125  | 18.4 |
|             | Others (Specify)                   | 0                     | 0.0    | 0    | 0.0  | 1     | 0.5  | 1    | 0.2  |
|             | Distributors/wholesalers           | 518                   | 8.7    | 498  | 8.7  | 185   | 8.2  | 1201 | 8.5  |
|             | Government/Public Institutions     | 216                   | 3.6    | 201  | 3.5  | 62    | 2.7  | 479  | 3.3  |
|             | Individuals                        | 3860                  | 64.6   | 3614 | 62.9 | 1590  | 70.4 | 9064 | 66.0 |
| Producer    | Value Chain Organization (VCO)     | 1443                  | 24.2   | 1543 | 26.9 | 420   | 18.6 | 3406 | 23.2 |
|             | Private Institutions               | 423                   | 7.1    | 396  | 6.9  | 143   | 6.3  | 962  | 6.8  |
|             | Retailers                          | 1143                  | 19.1   | 1132 | 19.7 | 477   | 21.1 | 2752 | 20.0 |
|             | Others (Specify)                   | 104                   | 1.7    | 97   | 1.7  | 37    | 1.6  | 238  | 1.7  |
|             | Distributors/wholesalers           | 22                    | 12.6   | 29   | 18.6 | 11    | 14.5 | 62   | 15.2 |
|             | Government/ Public Institutions    | 13                    | 7.5    | 28   | 17.9 | 6     | 7.9  | 47   | 11.1 |
|             | Individuals                        | 134                   | 77.0   | 119  | 76.3 | 54    | 71.1 | 307  | 74.8 |
| Processor   | VCO(s) (Cooperative, associations) | 21                    | 12.1   | 26   | 16.7 | 6     | 7.9  | 53   | 12.2 |
|             | Private Institutions               | 15                    | 8.6    | 27   | 17.3 | 8     | 10.5 | 50   | 12.1 |
|             | Retailers                          | 55                    | 31.6   | 42   | 26.9 | 33    | 43.4 | 130  | 34.0 |
|             | Other(s) (Specify)                 | 2                     | 0.1    | 1    | 0.6  | 1     | 0.3  | 4    | 0.3  |
|             | Distributors/wholesalers           | 31                    | 6      | 48   | 9.9  | 23    | 8    | 102  | 8.0  |
|             | Government/Public Institutions     | 30                    | 5.8    | 38   | 7.8  | 14    | 4.9  | 82   | 6.2  |
|             | Individuals                        | 417                   | 80.3   | 354  | 73   | 218   | 75.7 | 989  | 76.3 |
| Trader      | Value Chain Organization (VCO)     | 62                    | 11.9   | 81   | 16.7 | 49    | 17   | 192  | 15.2 |
|             | Private Institutions               | 36                    | 6.9    | 63   | 13   | 34    | 11.8 | 133  | 10.6 |
|             | Retailers                          | 84                    | 16.2   | 121  | 24.9 | 63    | 21.9 | 268  | 21.0 |
|             | Others (Specify)                   | 6                     | 0.2    | 7    | 0.4  | 1     | 0.3  | 14   | 0.3  |
|             | Distributors/wholesalers           | 4                     | 6.8    | 10   | 8.1  | 6     | 6.7  | 20   | 7.2  |
|             | Government/ Public Institutions    | 3                     | 5.1    | 6    | 4.8  | 3     | 3.4  | 12   | 4.4  |
|             | Individuals                        | 46                    | 78     | 91   | 73.4 | 70    | 78.7 | 207  | 76.7 |
| Transporter | VCO(s) (Cooperative, associations) | 14                    | 23.7   | 30   | 24.2 | 13    | 14.6 | 57   | 20.8 |
|             | Private Institutions               | 4                     | 6.8    | 10   | 8.1  | 3     | 3.4  | 17   | 6.1  |
|             | Retailers                          | 10                    | 16.9   | 28   | 22.6 | 23    | 25.8 | 61   | 21.8 |
|             | Other(s) (Specify)                 | 0                     | 0.0    | 1    | 0.8  | 0     | 0.0  | 1    | 0.3  |

Table 33: Market segment access by gender and age



#### Challenges faced in accessing markets

Limited access to market information was reported as a main challenge by agro-input suppliers (73.0%) and producers (71.0%). This was attributed to lack of adequate channels of delivery, content, target audience and reliability of available market information. Price fluctuations, in particular low prices were cited as a main challenge by Traders (58.0%) and Producers (51.0%). Transporters cited poor road infrastructure (68.0%) and high costs of fuel (46.0%) as the main challenge that they face.

#### 3.7.3 Access to Financial Services

Financial services are required by all actors in a value chain to enable them to perform their respective activities effectively. The programme seeks to facilitate access to and availability of financial and insurance services to enable Value Chain Development. To do so, it will advocate with financial and insurance services providers and policy makers to expand or strengthen existing facilities and build capacity and support the development of new services. In this regard, the study sought to understand whether VCAs have access to financial services. Based on the findings, 53.1% of the actors reported to have access to financial services, with adult male actors being the highest (38.9%) and youth actors reporting the least (23.2%). Across the value chain, Agro-Input Suppliers actors (60.3%) reported to have high access to financial services, as compared to the rest, while traders had the least (48.3%).





Among the 29 prioritised value chain, 15 had50.0% or more of actors reporting to have access to financial services. These include Irish potato, rice, French beans, broiler, Banana, Cow (Diary), sweet potato, indigenous chicken, green grams, maize, passion fruit, local vegetables, ABEC, sheep and goats and groundnuts. Irish Potato PVC (85.4%) reported the highest number of actors who has access to financial services while watermelon PVC (2.5%) had the least. Across the five nodes, Agro-input suppliers (60.2%) reported high access to financial services as compared to the other nodes; transporters (53.0%), producers (53.0%), processors (52.0%) and traders (48.0%)



Figure 20: VCA financial access by PVC

The study also sought to understand whether access to financial services had any relationship with the reported gross margins by the VCAs. From the findings, there exist a statistically significant (P<0, 05) positive relationship between access to financial services and gross margins, although the relationship was found to be weak (Pearson 0.302).

At the county, only eight counties (Nandi, Murang'a, Bungoma, Kiambu, Embu, Mombasa, Nyandarua and Samburu), had >50.0% of the VCAs who reported to have access to financial services; these counties had an average of 38.0% gross margin as compared to the rest of the counties (<50.0%) who had an average of 28.2% gross margin. Figure 21 illustrates this in detail



Figure 21: VCA Financial Access by Gross Margin and County

VCAs face a myriad of challenges while accessing finance in the formal banks mainly due to high interest rates, lack of collaterals, and lack of viable/bankable business ideas. Financing agriculture is more effective when it is part of a broader package that combines both financial and non-financial services and ensuring access to markets for selling their produce. The key issue is addressing the variety of risks in agriculture lending while keeping transaction costs contained. In-depth knowledge and analysis of these can lead to the most added values for the financing of VCAs.

Across Counties, over 60.0% of the counties had over 50.0% of the actor's report that they have access to financial services. Muranga, Nyeri and Meru had >80% of the actor's report to have access while Marsabit and Wajir had < 20% reporting to have access to financial services.



Figure 22: Financial services access by County

# 3.8 ASDSP Outcome Four: Structures and Coordination

Agriculture is multi-sectorial and complex and VC development needs to be tackled through collaborative efforts and coherent actions among all relevant sector actors. Strong, inclusive and integrated partnerships at all levels are necessary (ASDSP II PIF 2017). The programme seeks to strengthen coordination and consultation structures through pushing for the implementation of sector policies and strategies, regulations among others. To monitor and measure progress under this outcome, two indicators have been adopted at outcome level: (1) number of gender sensitive policies, regulations formulated/reviewed and implemented and (2) percentage of VCAs satisfied with coordination structures by gender.

## 3.8.1 Policies and Regulations

Monitoring and measuring this indicator will aim at assessing the extent which the programme will create a conducive policy, planning and institutional environment that will effectively support value chain development, including boosting policies and strategies, which are inclusive and which will strengthen
environmental and climate change resilience of VCD initiatives. Data for this indicator was collected through literature review and key informant interviews with the technical directors for crops, livestock, fisheries and irrigation and Focused Group Discussion with policy and legislative affairs Committee of the Ministry of Agriculture, Livestock, Fisheries and Irrigation. The findings established that there were completed and ongoing (draft) policies, regulations and strategies in the sector at national level. Specifically, there are 10 policies, 20 laws/regulations, 17 plans and 9 strategies formulated across the four sub sectors of crops/agriculture, livestock, fisheries and irrigations.

| Sub-sector | Policies<br>formulated<br>/ reviewed  | Laws/regulations enacted<br>/ amended   | Plans formulated /<br>reviewed  | Strategies<br>formulated /<br>reviewed   |
|------------|---|---|---|--|
| Crops      | Agricultura<br>IPolicy<br>2019  | Crops act 2013<br>KALRO Act 2013<br>Potato regulations 2019,<br>warehousing receipt<br>system, AFA Crops regulations,<br>KALRO regulations  | МТР3, 2018-23   | ASTGS 2019-<br>2029  |
| livestock  | Revised national<br>livestock policy<br>2019; Draft<br>poultry policy;<br>draft livestock<br>insurance policy;<br>Veterinary policy<br>at cabinet to<br>anchor laws;<br>health policy | animal feed staff bill; animal<br>breeding bill; draft livestock<br>bill; draft bee keeping<br>regulations; dairy regulations;<br>Hatcheries; running of<br>slaughter- houses, lab<br>functions; hides/ skins; food<br>safety; MR | DLP strategic plan2018-22;<br>dairy master plan; DVS<br>Strategic Plan  | draft range<br>management and<br>pastoralism strategy;<br>animal breeding<br>strategy; Disease<br>control; animal<br>welfare; eradication of<br>CPBR; Vet<br>strategy; |
| Fisheries  | National<br>Oceansand<br>Fisheries Policy<br>(Revised 2019),<br>National<br>Aquaculture<br>Policy, National<br>Agricultural<br>policy   | Fisheries Management and<br>Development Act (FMDA) No.<br>35, 2016, Fisheries<br>Regulations 1991 (Revised<br>2012), Foreign Fishing<br>Regulations, Fish Quality<br>Regulations 2007,  | Lake Victoria Fisheries<br>Management Plan, Nile<br>Perch Fishery Management<br>Plan, Mukene/ Dagaa<br>Fishery Management Plan,<br>Lobster Fishery<br>Management Plan,Prawn<br>Fishery Management Plan.<br>Ungwana Bay Co-<br>management area<br>management area<br>management Plan, Small<br>seine management Plan<br>(ring Net), Lake Turkana<br>Fishery Management Plan<br>(Draft), Lake | ASTGS, National<br>Tuna Fishery<br>Development<br>Strategy, National<br>Aquaculture Strategy,<br>Blue Economy<br>Strategy, 2017  |
| Irrigation | National<br>Irrigation policy<br>2017   | National Irrigation Act<br>2019   | Water master plan<br>2013, MTP III  | ASTGS  |



### Policies and regulations launched and implemented

The study also found out that Out of the 56 policies, strategies, regulations and plans formulated only 28 were being implemented total of 6 policies, 6 regulations, 6 plans and 10 plans (28) were reported to be rolled out in the sector. Table 34 below illustrates this in detail.

| Sub-       | Policies  | Laws and regulations   | Plans launched and   | Strategies  |
|------------|---|--|--|---|
| sector     | launched and  | enacted and rolled out   | rolled out   | launched and  |
|            | rolled out  |  |  | rolled out  |
| Crops      |   | AFA potato regulations   | MTP3   | ASGTS   |
| livestock  | National livestock<br>policy 2008;<br>Veterinarypolicy<br>at cabinetto<br>anchor laws;<br>health policy                             | dairy regulations;<br>Hatcheries; running of<br>slaughterhouses, lab<br>functions; hides/ skins;<br>food safety; MR  | dairy master plan; Nation<br>plan MBR, Recipe<br>monitoring; Evian influenza<br>contingency plan   | Animal breeding<br>strategy; SP 2018-<br>22.<br>PPR, Rabies<br>Eradication, DVS<br>SP; Global<br>strategies                 |
| Fisheries  | National Oceans<br>and Fisheries<br>Policy (Revised<br>2019), National<br>Aquaculture<br>Policy, National<br>Agricultural<br>policy | Fisheries Management<br>and Development Act<br>(FMDA) No. 35, 2016,<br>Fisheries Regulations<br>1991 (Revised 2012),<br>Foreign Fishing<br>Regulations, Fish<br>Quality Regulations<br>2007, | MTP III<br>Lake Victoria Fisheries<br>Management Plan, Nile<br>Perch Fishery Management<br>Plan, Mukene/ Dagaa<br>Fishery Management Plan,<br>LobsterFishery<br>Management Plan,Prawn<br>Fishery Management Plan.<br>Ungwana Bay Co-<br>management area<br>management Plan, Small<br>seine management Plan<br>(ring Net) | National Tuna<br>Fishery<br>Development<br>Strategy, National<br>Aquaculture<br>Strategy, Blue<br>Economy Strategy,<br>2017 |
| Irrigation | National<br>Irrigation policy<br>2017   | National Irrigation Act<br>2019  | Water master plan 2013,<br>MTP III   | ASGTS   |

Table 35: Implemented policies, legislations, plans and strategies by sub-sector

### Challenges in development, review and implementation of policies, strategies, and regulations

There exists variation across sub sectors on the number of policies, legislations, plans and strategies formulated / reviewed and rolled out. The formulated policies were more than implemented. From KII with Technical directors, the challenges cited regarding policy formulation and implementation included: cost and time taken by the process, inadequate sensitization of stakeholders leading to dissatisfaction, inadequate monitoring and evaluation of their impact after enactment or roll out for implementation. Other factors were duplication of efforts where some counties were formulating policies and regulations without consultation of other

stakeholders, multiplicity of levies and taxes by the two levels of government once rolled out for implementation, lengthy process of finalizing these documents coupled by delays for approval by parliament, senate and cabinet, inadequate capacity for some counties to develop such the documents. In this respect, it was reported and recommended that there exists an opportunity for the program to take up the lead in coordinating sensitization and training at national and county level in order to mitigate these challenges.

### 3.8.2 VCA satisfaction level with the coordination and consultation structures

The study first sought to understand the level of awareness by the actors on the existing coordination and consultation structures and of those who are aware of the structures, whether they have been engaging/accessing services from them. Generally, the level of awareness was low (<50.0%) across all the coordination and consultation structures. The VCAs reported high awareness of the ASDSP II Country Programme Secretariat (32.2%) and Value Chain Groups (30.4%). The VCAs expressed low awareness of the ASDSP II National Programme Secretariat (6.1%) and the Value Chain Platform (9.2%). Worth noting that, actors have direct interaction with the VCPs as compared to the ASDSP II National Programme



Figure 23: VCA awareness and access of services from the coordination and consultation structures

Of those VCAs who reported to be aware and have engaged with the structures, 68.3 % reported to have accessed services from the structures. Despite the low awareness, the Value Chain Group (73.7%), the Value Chain Platform (73.2%) and the Value Chain Forum (72.8%) reported high engagement by the actors. The findings indicate an expressed need by the actors to access services from these structures and therefore there is need for the programme to raise awareness of this structure including linking VCAs to the same. The ASDSP II National Programme Secretariat had the least engagement since VCAs have no direct access to this structure which is based at the national level. Despite the high awareness of the ASDSP II CPS (32.2%), actors reported low engagement (63.4%), as compared with the other structures.

Of the 68.3% who reported to have accessed services from the structures, the study sought to understand their level of satisfaction based on the type of services received. From the findings, over 70.0% of the actors reported to be satisfied with the value chain coordination structures. Across the structures, actors reported high satisfaction level with the ASDSP II National Programme Secretariat (88.8%) and somehow low satisfaction level with the Value Chain Platforms (70.1%) based at the counties. Across gender and age, adult male actors reported > 80.0% satisfaction. Insignificant difference was reported between adult female actors (78.8%) and the youths (79.5%). Adult female actors were more satisfied with the ASDSP II County Programme Secretariat (87.3%) as compared to the rest. Both the adult male actors (84.9%) and the youths (91.8%) were more satisfied with the ASDSP II National Programme Secretariat. Notable from the findings was somehow the low satisfaction level among the VCP and the VCG which are closes to the Value Chain Actors, which are intended to serve them more.

|  | Level of Satisfaction (%) |        |       |       |
|--|---------------------------|--------|-------|-------|
| Structures                             | Overall                   | Female | Male  | Youth |
| CASCCOM                                | 80.24                     | 75.98  | 80.29 | 75.93 |
| ASDSPII County Programme Secretariat   | 85.58                     | 87.34  | 80.51 | 85.77 |
| ASDSPII National Programme Secretariat | 88.81                     | 81.85  | 84.92 | 91.79 |
| Value Chain Forum                      | 77.59                     | 73.62  | 80.04 | 65.15 |
| Value Chain Platform                   | 70.14                     | 72.49  | 80.19 | 79.71 |
| Value Chain Group                      | 72.27                     | 81.51  | 82.19 | 78.88 |
| Overall                                | 79.11                     | 78.80  | 81.36 | 79.54 |

Table 36: VCA level of satisfaction with the coordination and consultation structures by gender and age

At the node level, satisfaction with structures was highest among processors (88.5%) and lowest among agroinput suppliers (61.3%). Agro-input suppliers expressed the highest satisfaction with the ASDSP II National Programme Secretariat (88.4%) and lowest satisfaction with the Value Chain Platform (15.7%). Producers e also expressed high satisfaction with the ASDSP II National Programme Secretariat (86.1%) and lowest satisfaction with the CASCCOM (79.2%) and Value Chain Groups (79.4%). Similarly, traders expressed high satisfaction with the ASDSP II National Programme Secretariat (89.3%) and lowest satisfaction with CASCCOM (74.7%) and the Value Chain Platforms (74.2%). As for the processors, they expressed high satisfaction with the Value Chain Platform (94.9%) and low satisfaction with the CASCCOM (79.2%). On the contrary, transporters expressed high satisfaction with CASCCOM (89.2%) and low satisfaction with the Value Chain Platform (81.8%).

The level of satisfaction with coordination structures may be attributed to the extent of interaction between the node and a particular structure. Producers, processors and transporters tend to meet members of various structures more owing to their demands at different times of the year. For instance, producers are likely to face many challenges with crops or animals on the farm while processors may require certification of products as transporters seek permits for transport.

|                      | Level of Satisfaction (%) |            |       |            |           |
|----------------------|---------------------------|------------|-------|------------|-----------|
| Structures/Node      | Agro Input S.             | Production | Trade | Processing | Transport |
| CASCCOM              | 78.95                     | 79.19      | 74.66 | 79.17      | 89.23     |
| ASDSPII CPS          | 81.00                     | 83.25      | 83.83 | 93.70      | 86.10     |
| ASDSPII NPS          | 88.41                     | 86.06      | 89.26 | 93.48      | 86.84     |
| Value Chain Forum    | 75.86                     | 81.49      | 63.14 | 83.64      | 83.82     |
| Value Chain Platform | 15.71                     | 84.06      | 74.18 | 94.92      | 81.82     |
| Value Chain Group    | 27.89                     | 79.37      | 85.14 | 86.32      | 82.61     |
| Overall              | 61.30                     | 82.24      | 78.37 | 88.54      | 85.07     |

Table 37: VCA level of satisfaction with the coordination and consultation structures by node



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# **CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS**

#### 4.1 Conclusion and Recommendations

The baseline survey established some interesting findings that the ASDSP II implementation should take into consideration when designing relevant programme strategies/action plans including SIVCAPS.

From the findings, we can deduce that majority (71.6%) of the ASDSP II actors' range between the ages of 35-65 years. The youth only represent 17.9% of the total actors targeted by the programme. Further, majority of the actors have either acquired primary or secondary education. This population constitutes 64.2% of the targeted actors, with those who have acquired primary education being the most (33.6%). It will also be worthy to consider the number of actors with informal education. Generally, 19.6% of the population were reported to have informal education with majority (>50%) of this population reported in Wajir (86.8%), Turkana (80.3), Garissa (79.5%), Mandera (75.5%), Samburu (67.6%), Kilifi (67.6) and Marsabit; the findings should guide the programme on the type of innovations that to be introduced/enhanced in these counties considering the low level of education, in order to maximise on the use and adoption of technology and innovations by the actors. The ASDSP II programme intends to accelerate technology and innovation among the youths and women. Majority of the youth (59.3%) were reported to have either primary or secondary education, with 23.3% having acquired either tertiary of university education. It is anticipated that this group stands a better chance of understanding most issues on technology and innovations, if the right facilitation such as financial linkages is availed, something the programme should capitalize on. In addition, 65.3% of adult women were also reported to have either primary or secondary education.

With regards to actor's average monthly income, The ASDSP II baseline established that the average daily on and off farm per capita income among value chain actors across the counties was about 110 Ksh per day. This is well below the poverty line of Ksh 200 per capita a day.

On food security, the results showed that the baseline data was collected during a normal food availability period in 40 counties, low food availability period in five counties (Marsabit, Turkana, Makueni, Meru and Isiolo) and peak food availability period in two counties (Bungoma and Trans Nzoia). Meru county was shown as a food scarce county (between July 2018 – June 2019) except for the month of October when there was excess. Further analysis showed that food availability in Turkana was scarce throughout the year.

Majority (63%) of producers owned private land few were operating on squatter and donated land as indicated by 1.73% and 1.45% of the respondents respectively. A significant proportion of respondents (26%) were producing on communal land. The producers operating in privately owned land are at an advantage as the land can be used as collateral and may have long term investments on the land. Private ownership allows the actor to make independent decisions unlike in other forms of land ownership, and this may lead to uptake of new technologies and innovations.

From the findings, the average gross Margin of the PVC was highest at the transport node (58%) and lowest at the agro input supply (26%) node, with local vegetables having the highest Margins across the nodes probably due to the short period of production and demand.

Entrepreneurship skills amongst VCAs are critical for commercialization of agriculture, this aspect was assessed through the number of VCAs having and implementing business plans. From the findings, the proportion of male VCAS with business plans was consistently higher than that of the females. With the exception of the

transport node, the proportion of youth VCAs with business plans was higher. This could be due to the fact that the youth are more oriented to making profits at whatever node they operate. In addition, youth have limited access to assets for collateral hence use the business plans to mobilise resources. The main reasons for not having business plans were cited as; no technical know-how and were not aware of their importance. Other reasons given were fear of disclosure to authorities and competitors, fear to quantify losses and the cost attached to preparing business plans. The proportion of women VCAs who did not have technical know-how to develop business plans was higher than that of men and youth VCAs.

Generally, the proportion of VCAs with business plans was low. The female VCAs especially lagged behind in the implementation of business plans and therefore increased awareness and training, especially for women on business plans is necessary. Limited information on business plans and what they can be used for across the five nodes calls for capacity building on business plans among all VCAs.

On market access, all actors generally sell to individuals with those at production node reporting an average of 65%, trading node 77% and transporters 76% as the individual market segment. Major challenges facing all actors were reported to be inadequate market information, price fluctuations, poor state of roads, and high cost of fuel and unreliable supply of raw materials. This presents an opportunity to promote aggregation services to enhance economies of scale.

It is noted that developing and transferring technology alone will not close the yield gaps, reduce post-harvest losses and wastage because transformative agriculture requires more considerations beyond technology. Thus, for impacts to be realized, agricultural transformation has to focus on innovation which is a major source of improved competitiveness, productivity and economic growth. Investment in agricultural research is therefore key to economic growth, since it generates technologies, knowledge and innovations. I.e. there is an importance of linking Research to Agriculture innovation.



# REFERENCES

Kenya Land Alliance. (n.d.). Land Use in Keya: The Case for a National Land Use Policy (Vol. Land

Reform Volume 3). (M. D. Mwagore, Ed.) Nairobi: Kenya Land Alliance.

Ministry of Lands and Settement. (2017). Sessional Paper No1. on National Land Policy. Nairobi:

Government of Kenya.

Shepherd, V. D. (2018). Understanding Poverty in Kenya: A multidimentional Analysis. London: Chronic

Poverty Advisory Network.

Wakibi, S.W. (2015). Food Security Score for Kenya. Study, Nairobi.

MoALF (2018-2022). Agriculture and Livestock Sector Plan. Government Printer, Nairobi)

KNBS (2019). Economic Survey 2019. Government Printer, Nairobi).

UNICEF, (2018), Overview of Kenya

KNBS, (2018) Poverty Rates

UNESCO, (2012), Kenya National Adult Literacy Survey Report

USAID, (2019), Food Assistance Fact Sheet, Kenya

National Programme Secretariat (NPS). April 2017. *ASDSP II Programme Document (PD)*. [ed.] AIRC. Nairobi: AIRC, APRIL 2017. Vol. 1.

National Programme Secretariat (NPS). April 2017. ASDSP II Programme Implementation Framework (PIF). Nairobi: AIRC, 2017. ISBN 1.

D'Alesandro, S. P., Caballero, J., Lichte, J., & Simpkin, S. (2015). *Kenya Agricultural Sector Risk Assessment*. *Agricultural Global Practice Technical assessment Paper*. Washington DC: World Banks Group.

Republic of Kenya. (2017). *Guidelines and Standards for Agricultural Extension and Advisory Services*. Nairobi: Ministry of Agriculture.

References: FAO, 2018. FAO's work on agricultural innovation. Sowing the seeds of transformation to achieve the SDGs accessed on 11/8/2019 via http://www.fao.org/3/CA2460EN/ca2460en.pdf

ANNEX 1

## **ASDSP11 Result Indicators Baseline**

| Result level                         | Indicator  | Baseline  |
|--------------------------------------|--|-----------|
| Programme goal:                      | 1. Agricultural sector contribution to GDP                 |           |
| Contribute To                        | Gross Domestic Product (Ksh)                               | 2,929,361 |
| transformation of                    | Agriculture Contribution Ksh (000,000)                     | 1,001,841 |
| crop, livestock and                  | Agriculture Contribution (%)                               | 34.2      |
| fisheries production                 |  |           |
| into commercially                    | 2. Rural poverty of male and female population reduced (%) | 35.8      |
| oriented enterprises                 | Male Rural Poverty Rate                                    | 31.7      |
| that ensures<br>sustainable food and | Female Rural Poverty Rate                                  | 34.0      |
| nutrition                            | 3 Mean Monthly Income (Ksh)                                |           |
|                                      | a) Mean Monthly Income                                     | 15 442    |
|                                      | Male   | 20.978    |
|                                      | Female   | 15 929    |
|                                      | Vouth  | 19,929    |
|                                      |  | 18,007    |
|                                      | b) Per Capita Income                                       | 104       |
|                                      | Male   | 234       |
|                                      | Female   | 182       |
|                                      | youth  | 100       |
|                                      | ,  |           |
|                                      | 4. Chronically food insecure households (%)                |           |
|                                      | Household Dietary Diversity (HDDS) - Border and Poor only  | 33.9      |
|                                      | Male   | 32.6      |
|                                      | Female   | 35.2      |
|                                      | Youth  | 33.7      |
|                                      |  |           |
|                                      | Food Consumption Score (FCS) - Border and Poor Only        | 12.0      |
|                                      | Male   | 10.0      |
|                                      | Female   | 13.2      |
|                                      | Youth  | 13.8      |
|                                      |  |           |
|                                      | Households Meal Frequency per day                          | 3         |
|                                      |  |           |
|                                      | (a) Peak   | 3         |
|                                      | Adult Male (>35 Years)                                     | 3         |
|                                      | Adult Female (>35 Years)                                   | 3         |
|                                      | Youth (18 - 34 Years)                                      | 3         |
|                                      | Children (< 18yrs)   | 3         |

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| Result level              | Indicator  | Baseline |
|---------------------------|--|----------|
|                           | (b) Low  | 2        |
|                           | Adult Male (>35 Years)                                       | 2        |
|                           | Adult Female (>35 Years)                                     | 2        |
|                           | Youth (18 - 34 Years)  | 2        |
|                           | Children (< 18yrs)   | 3        |
|                           |  |          |
|                           | 5. On-farm and off-farm employment by Gender and Age (#)     |          |
|                           | On farm employment   | 4.0      |
|                           | Adult Male (>36)   | 2.4      |
|                           | Youth Male (18-35)   | 2.0      |
|                           | Youth Female (18-35)   | 2.0      |
|                           |  |          |
|                           | Off farm employment  | 6.2      |
|                           | Adult Male (>36)   | 1.7      |
|                           | Adult Female (>36)   | 1.2      |
|                           | Youth Male (18-35)   | 1.9      |
|                           | Youth Female (18-35)   | 1.4      |
|                           |  |          |
| Programme purpose :       | 6. Gross Margins by Node                                     | 36.6     |
| Develop Sustainable       | Agro in-put supply   | 25.7     |
| Priority Value Chains for | Production   | 27.8     |
| Improved employment,      | Trade  | 29.5     |
| Income and Food and       | Transport  | 57.5     |
| Nutrition Security        | Processing   | 42.6     |
|                           |  |          |
|                           | 7. Satisfaction with share of revenue by Node and Gender (%) | 23.9     |
|                           |  |          |
|                           | (a) Agro in-put supply                                       | 29.8     |
|                           | Male   | 12.8     |
|                           | Female   | 8.6      |
|                           | Youth  | 8.4      |
|                           | (b) Production   | 22.3     |
|                           | Male   | 8.4      |
|                           | Female   | 9.6      |
|                           | Youth  | 4.3      |
|                           | (c ) Trade   | 31.1     |
|                           | Male   | 11.4     |
|                           | Female   | 12.1     |
|                           | Youth  | 7.6      |
|                           | (d) Transport  | 32.2     |
|                           | Male   | 14.4     |

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| Result level             | Indicator  | Baseline |
|--------------------------|--|----------|
|                          | Female   | 7.2      |
|                          | Youth  | 10.6     |
|                          | (e) Processing   | 26.5     |
|                          | Male   | 8.3      |
|                          | Female   | 12.9     |
|                          | Youth  | 5.2      |
|                          |  |          |
| Outcome1:                | 8. VCA utilization of service providers by Node and Gender (%) | 51.4     |
| Productivity of priority |  |          |
| VCs increased            | (a) Agro in-put supply   | 58.7     |
|                          | Male   | 62.5     |
|                          | Female   | 55.4     |
|                          | Youth  | 58.3     |
|                          | (b) Production   | 46.7     |
|                          | Male   | 51.8     |
|                          | Female   | 46.2     |
|                          | Youth  | 42.0     |
|                          | (c ) Trade   | 41.0     |
|                          | Male   | 45.4     |
|                          | Female   | 36.1     |
|                          | Youth  | 41.5     |
|                          | (d) Transport  | 57.1     |
|                          | Male   | 57.2     |
|                          | Female   | 45.4     |
|                          | Youth  | 68.6     |
|                          | (e) Processing   | 53.6     |
|                          | Male   | 59.2     |
|                          | Female   | 47.2     |
|                          | Youth  | 54.4     |
|                          |  |          |
|                          | 9. Post production loses (%)                                   | 20.0     |
|                          |  |          |
|                          | (a) Agro in-put supply   | 5.7      |
|                          | Male   | 43.5     |
|                          | Female   | 29.1     |
|                          | Youth  | 27.4     |
|                          | (b) Production   | 71.1     |
|                          | Male   | 40.3     |
|                          | Female   | 42.8     |
|                          | Youth  | 16.9     |
|                          | (c ) Trade   | 15.2     |

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| Result level          | Indicator  | Baseline |
|-----------------------|--|----------|
|                       | Male   | 37.9     |
|                       | Female   | 39.9     |
|                       | Youth  | 22.3     |
|                       | (d) Transport                                    | 2.9      |
|                       | Male   | 41.2     |
|                       | Female   | 25.9     |
|                       | Youth  | 32.9     |
|                       | (e) Processing                                   | 5.1      |
|                       | Male   | 31.3     |
|                       | Female   | 47.5     |
|                       | Youth  | 21.2     |
|                       |  |          |
| Outcome 2:            | 10. Business plans implemented (%)               | 23.5     |
| Entrepreneurship of   |  |          |
| priority vCAs         | (a) Agro in-put supply                           | 35.1     |
| strengthened/enhanced | Male   | 43.3     |
|                       | Female   | 24.3     |
|                       | Youth  | 32.5     |
|                       | (b) Production                                   | 11.6     |
|                       | Male   | 44.8     |
|                       | Female   | 34.1     |
|                       | Youth  | 21.0     |
|                       | (c ) Trade                                       | 16.5     |
|                       | Male   | 41.0     |
|                       | Female   | 30.6     |
|                       | Youth  | 28.4     |
|                       | (d) Transport                                    | 22.2     |
|                       | Male   | 58.3     |
|                       | Female   | 19.4     |
|                       | Youth  | 19.1     |
|                       | (e) Processing                                   | 31.9     |
|                       | Male   | 35.2     |
|                       | Female   | 44.2     |
|                       | Youth  | 20.6     |
|                       |  |          |
| Outcome 3:Access      | 11. VCA accessing markets by Gender and Node (%) | 73.9     |
| tomarkets by          |  |          |
| priority VCAs         | (a) Agro in-put supply                           | 86.3     |
| improved              | Male   | 42.8     |
|                       | Female   | 29.1     |
|                       | Youth  | 28.1     |

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| Result level | Indicator   | Baseline |
|--------------|---|----------|
|              | (b) Production  | 81.3     |
|              | Male  | 41.3     |
|              | Female  | 42.7     |
|              | Youth   | 16.0     |
|              | (c) Trade   | 65.4     |
|              | Male  | 37.6     |
|              | Female  | 40.2     |
|              | Youth   | 22.2     |
|              | (d) Transport   | 71.7     |
|              | Male  | 45.4     |
|              | Female  | 22.0     |
|              | Youth   | 32.6     |
|              | (e) Processing  | 64.7     |
|              | Male  | 38.1     |
|              | Female  | 43.1     |
|              | Youth   | 18.8     |
|              |   |          |
|              | 12. VCA using market information by Gender and Node (%) | 68.8     |
|              |   |          |
|              | (a) Agro in-put supply                                  | 76.6     |
|              | Male  | 42.6     |
|              | Female  | 29.6     |
|              | Youth   | 27.9     |
|              | (b) Production  | 68.0     |
|              | Male  | 41.0     |
|              | Female  | 42.7     |
|              | Youth   | 16.3     |
|              | (c) Trade   | 71.6     |
|              | Male  | 37.9     |
|              | Female  | 39.9     |
|              | Youth   | 22.1     |
|              | (d) Transport   | 62.6     |
|              | Male  | 43.2     |
|              | Female  | 21.4     |
|              | Youth   | 35.5     |
|              | (e) Processing  | 65.4     |
|              | Male  | 35.3     |
|              | Female  | 43.6     |
|              | Youth   | 21.1     |

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| Result level          | Indicator  | Baseline |
|-----------------------|--|----------|
|                       | 13. VCAs accessing financial services (%)                    | 53.1     |
|                       |  |          |
|                       | (a) Agro in-put supply                                       | 60.3     |
|                       | Male   | 42.1     |
|                       | Female   | 31.5     |
|                       | Youth  | 26.5     |
|                       | (b) Production   | 52.5     |
|                       | (b) Production   | 52.5     |
|                       | Male   | 39.7     |
|                       | Female   | 45.3     |
|                       | Youth  | 15.1     |
|                       | (c) Trade  | 48.3     |
|                       | Male   | 38.3     |
|                       | Female   | 40.7     |
|                       | Youth  | 21.0     |
|                       | (d) Transport  | 52.4     |
|                       | Male   | 46.7     |
|                       | Female   | 21.3     |
|                       | Youth  | 32.0     |
|                       | (e) Processing   | 52.1     |
|                       | Male   | 28.0     |
|                       | Female   | 50.8     |
|                       | Youth  | 21.2     |
|                       |  |          |
|                       | 14. Number of market segments (#)                            |          |
|                       | (a) Agro in-put supply                                       | 1.2      |
|                       | (b) Production   | 1.3      |
|                       | (c) Trade  | 1.4      |
|                       | (d) Transport  | 1.4      |
|                       | (e) Processing   | 1.6      |
|                       |  |          |
|                       |  |          |
| Outcome 4: Structures | 15. VCP related policies, strategies, regulations and sector | 0        |
| and capacities for    | management tools formulated/reviewed and implemented         |          |
| consultation and      |  |          |
| coordination in the   | 16. VCAs satisfied with structures by gender (%)             | 75.8     |
| sectorstrengthened    |  |          |
|                       | (a) Agro in-put supply                                       | 79.0     |
|                       | Male   | 27.7     |
|                       | Female   | 50.8     |
|                       | Youth  | 21.5     |

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| Result level | Indicator      | Baseline |
|--------------|----------------|----------|
|              | Youth          | 21.5     |
|              | (b) Production | 73.7     |
|              | Male           | 41.9     |
|              | Female         | 42.3     |
|              | Youth          | 15.8     |
|              | (c ) Trade     | 81.9     |
|              | Male           | 39.4     |
|              | Female         | 35.5     |
|              | Youth          | 25.1     |
|              | (d) Transport  | 85.3     |
|              | Male           | 40.4     |
|              | Female         | 41.4     |
|              | Youth          | 18.2     |
|              | (e) Processing | 89.7     |
|              | Male           | 40.0     |
|              | Female         | 32.9     |
|              | Youth          | 27.1     |



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