THE MINISTRY OF AGRICULTURE

THE REPUBLIC OF THE GAMBIA

CONSULTING SERVICES FOR GAMBIA AGRICULTURE TRANSFORMATION PROGRAMME (2020-2030)

FINAL REPORT

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GAMBIA AGRICULTURE TRANSFORMATION PROGRAM (PPF)

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EXECUTIVE SUMMARY

The overall strategic objective of the Gambia's Agricultural Transformation Program (ATP) is to enhance economic growth through increased contribution of the agriculture sector to the national economy. This process is anchored to the strategy for Agricultural Transformation in Africa (2016-2025), emphasizing linkages between the AfDB High-5's and also to scaled up the Bank's 10-Year Strategy (2013 -2022). The specific objective of the ATP is to define a sector investment plan which supports agriculture production enhancement to achieve sustainable food security, reduce malnutrition, and cereal import balance. The program formulation was within the remit of viable and bankable sound proposals in line with the Feed Africa initiative and ensure good and sound quality program. The ATP is structured around four strategic program components: Support on Production and Productivity, Promotion of Value Chains and market competitiveness, Employment of Youth in Agriculture ans ATP Coordination, Management, Monitoring and Evaluation. The studies identified critical commodities value chains and suited program target areas capable of mobilizing into action the enablers of the agricultural transformation.

Millet and Maize play critical roles in traditional household food and nutrition security among Gambian families, with huge potentials for food import substitution. Both commodities are drought resistant with great potentials to increase, on a sustainable basis, the income of rural producers, and value chain entrepreneurs (actors). Maize production has reduced from 28,932 tons 2012 to 18.070 tons in 2018 as result of poor quality if seeds, weak agronomic practices, poor technology adoption and lack of access to market information, as well as standards and quality assurance protocols. There is little attention on quality checks (grain quality, stored pests or moisture levels). National average yield is 1.4 tons/ha[1] far below the potential yields of 3-4.5 tons/ha usually obtained at on station research fields and 8-12tons/ha using hybrid seeds. Similarly, Millet production has declined from 88,663 Mt in 2013 to 30,590 Mt in 2018 attributable to climate variations, poor soil fertility (soils are generally poor in the required nutrients) and low application rates of inorganic fertilizers (high costs of fertilizers to supplement lost fertility)

Groundnuts is the main source of foreign exchange for The Gambia, accounting for 30 per cent, and 50 per cent of the national food requirement (CCA 2015). It is widely spread in major production areas and serve as traditional prevalent cash crop. It employs over 150,000 farmers realizing a total production of 109,780 MT in 2017[2]. Gambia commercial groundnut dropped from 90,000 tonnes per annum in 1990s to less than 40% of these quantities (FAO VCA 2019). Presently the yield of HPS per tonne of groundnuts on kernel basis is less than 20% compared to the industry norm that range from 40% to 60%. Groundnuts varieties being grown in the country are purely old stocks, (decades old) and have lost their genetic vigor resulting in low productivity and small kernel sizes. Export has also dropped 30,000 tons in 2001 to 18,000 in 2018 as result of high aflatoxin levels.

Horticulture (fruits and vegetables) especially mango, orange, banana, and paw-paw production and marketing has been a growing economic activity in The Gambia since 1999. It's an important source of food and cash income for producers and marketing agents. A study in 2001[3] estimated a total of 325 private orchards in the country, employing 34percent of the adult population in both production and marketing. Mango is the largest economic fruit in The Gambia, with estimated production levels steadily growing from 25,000 Mt in 1998 to over 60,000 Mt in 2018[4]; and 40percent of the produce being currently commercialized[5]. Actors in the vegetable value chain have limited access to market information, limited skills to investigate market opportunities and limited access to financial services. The quality of available inputs is not properly monitored affecting quality and effectiveness. Village based agro-dealers offer poor selection of pesticides and seeds that are often outdated, low skills and technologies.

Livestock contributes 7percent of national GDP and 25-30 percent of agricultural GDP with majority of farmers being smallholders[6]. The general demand of meat increased from 34,751 metric tons to 54,931 metric tons. In 2017,

[1] Source of Data: NASS reports, DoP 2012 – 2018.
[2] FAOSAT, 2019
[3] Horticultural Production and Marketing in The Gambia, United Purpose, 2001
[4] FAO Value Chain Study, 2019.
[5] World Bank, 2019
[6] DLS.GBOS 2016/2017 Livestock Census

the total annual local meat production/ output was estimated 11,995 Metric tons. There are 34 slaughter facilities distributed throughout the country but only one of them is classified as an abattoir. The predominant production system in The Gambia is the low input subsistence system characterized by high disease incidence, low quality feed, high infestation of gastrointestinal worms, and poor selection and poor mating practices which results to in breeding. Access to veterinary drugs and vaccines at district level is poor. Most of the private veterinary drug outlets are based in urban areas. There is Insufficient numbers of veterinarians in the public service, with only 2 currently in service and there is lack of policy on private veterinarians

Poultry: In 2016, the number of feed mills was estimated to be four. In 2019, none of these feed mills is operational. In 2019, there is only one feed mill (GamHolland Enterprise) currently operating in The Gambia. There are 3 hatcheries in the country with capacity to produce 995,400-Day-old Chicks. However, they producing only 3% of at capacity. The low utilization of hatcheries is caused by unavailability of parent stock in the Gambia

Alignment: The development of GATP takes into consideration and aligns with The Gambia National Agricultural Investment Plan 2019-2026 which aims to increase food and nutrition security at household level including vulnerable households through increased ANR productivity based on sustainable use and management of natural resources. Similarly, the National Trade Policy (2018-2022) aims to establish and maintain a competitive and liberal trading environment that is supportive to private sector development for export-led growth, an aim consistent with output 1 (Private sector enabling environment) of GATP. Other strategic policies that align with GATP include the Gender and Women Empowerment Policy (2010-2020) which provides a blueprint for gender equality and women empowerment; the National Nutrition Policy (2010-2020) aimed at mainstreaming nutrition into national development, Agriculture and Natural Resources Policy (ANRP, 2017-2026) focusing on improving nutrition, commercialization of value chains and strengthening of public-private sector institutions.

Critical analysis of the commodity value chains at the macro level show commonalities of challenges; Poor rural infrastructure (Feeder Roads, Electricity and Water), Lack of appropriate incentives to stimulate private sector investment, High interest rate (>20%), Uncompetitive domestic market environment, Weak policy implementation and institutional framework. High Technical barriers to trade and Limited mechanization, irrigation, transport, storage and market infrastructure remain fundamental challenges to value chain actors. At meso level, Weak capacity of producer organizations, under-performing support institutions that deliver essential services of extension and finance (credit), Weak Extension and veterinary services, Weak Business Development support and value chain facilitation are key constraints. At the value chain actors' level, limited access to market information, Weak product innovation and value addition, Weak productivity enhancing skills and technologies, Low applications of food safety management systems and Limited access as well as low utilization of quality input were the key constraints.

Despite the numerous challenges outlined, field analysis by experts of this report shows positive **gross margins** for all the commodities selected under an ideal condition. On per hectare basis, Maize provides a gross margin of GMD15,000 (62.3%), 1,700 (6.1%) and 2,500 (7.8%) for producers, trader and processor respectively. Millet presents a gross margin of GMD8,750 (46%), GMD1,275 (6.1%) and GMD2,375 (9.69%) respectively for producers, traders and processors. In a similar analysis, groundnut gross margins are recorded as GMD4,850 (16%), GMD650 (3.9%) and GMD1,480 (7.0%) for producer, trader and processor respectively. A 400 chicks for four production cycle per annum yields a gross margin of GMD1,320 (14%); 425 layers yield GMD1,729 (33%) per annum and Fattening of 100 Ram yields over GMD9,000 (30%)

The scale of agricultural financing especially from the private sector domain is very low as compared to demand for such financing. The share of agriculture in the overall loan portfolio of commercial banks for the five year period ending 2017/18 stood at only 4%. The low value chain financing is attributable to limited risk mitigation schemes, very large amounts of capital which is mostly recovered after a long period of time against short duration of moratorium by banks. Collateral requirements for the loans are usually difficult to meet and the high interest rates make cost of capital more expensive and un-profitable. There are also weak value chain services to support financial facility for private sector. The contribution of the Micro-Finance Institutions in providing agricultural credit, on the other hand, is limited, due to the tinstitutions' limited internal resources generation capacity. Portfolio of Village Savings (VISACA) which are grassroots in nature has dropped from 23.9 Million to 13.1 in 2016/17 indicating a decline of 45%. The poor performanc of the majority of the VISACAs in the recent years could be attributed to their

dependence on project financing, which over the years has not been forthcoming. Most of VISACAs loan portfolio went to the agricultural sector due to close proximity of the services to the farmers and their direct involvement in the management of loan facility. However, most of the VISACAs as at now have very little resources to provide credit to their members. Other value chain financing schemes that have direct impact on agriculture are Cooperative Credit Unions, Social Development Fund (SDF), Matching Grants all of which appear to be not-functioning effectively due to weak resource mobilization pool.

Youth constitute about 72% of Gambian population and over the years the country has witnessed the proliferation of various organisations ranging from Non-Governmental Organisations (NGOs) to government institutions and government supported programs, private sector initiatives, training, and research institutions providing services to youths in agro-related projects. There are only a few of these institutions implementing youth agro-related projects.. The scope and level of specialisation especially in relation to the various agricultural value-chains are limited. Students do not have access to relevant and practical training opportunities and learning materials to enable them to acquire adequate skills and knowledge for self employment. The Gambia youth are further constrained by Inadequate access to finance and investment resources, Limited capacities of incubation centers, Weak training curricula for youth in agriculture (poor practical facilities), Inadequate oversight and coordination mechanisms (FSQA, NSS & NAQAA) and Inappropriate land administration procedures and tenure system

There are over 10 public-private-partnership models on-going in The Gambia. However, PPP has been constrained by Inability of local private sector partners to raise large amount of capital required to build the necessary infrastructure; limited sources of accessing large funds for investment, high interest rates; making the cost of capital expensive. Political interference by Government and Bureaucratic process, Inadequate Policy and Regulatory measures to enhance coordination, monitoring, and supervision, Poor institutional framework at all levels of the value chain, Weak incentives for partnership and limited Matching funds for PPP constraint PPP formation.

The Gambia Agricultural Transformation Programme (GATP) is designed with a vision to use inclusive agriculture and agribusiness transformational for economic growth. Key objectives are to Make Gambia self-sufficient in the key value chains, create employment for youth and women, stimulate private sector investment, promote value addition, accelerate wealth creation and position Gambia agriculture to be climate resilient. These objectives will be achieved through implementation of upgrading value chain strategies anchored on 5 pillars -

i. Upgrading Strategies for Crops: In implementing the GATP will focus on increased production and productivity pathway that will sustainably promote and develop agriculture. Rice yields are expected to increase from 1.2 tons/ha to 3-4 tons/ha; maize, millet and groundnut yields increase by 100% each. GATP will embark on intensive Extension Program and Training of Extension/Frontline Agents, Training of Trainers (TOT) on technology transfer for commodity value chain crops and Training of Women on Lowland Cereal/Vegetable growing. Other crop upgrading plans include strategies for Land Consolidation and Controlling Soil Degradation. It will promote Commercialization of the Seed Industry and Refurbishment of Village Seed Stores to guarantee regular and reliable supply of quality seeds for the groundnut and maize value chains, providing seeds of the right varieties in the country at all times on regular and reliable basis. ,Revitalization of Farmer Cooperatives for improve Market Access and Institutionalization of Structured market System.

ii. Upgrading Strategies for Poultry and Livestock: GATP will focus on enhancing the sustainable production and productivity of local chicken, sheep and goats for increased income generation, commercialization, household food, and nutrition security. It will improve Production and Productivity of Local Breeds, Enhancing Commercial poultry production (Broilers and Layers) by supplying One thousand (1000) farmers per agricultural region with (500 broiler and 500layer schemes); 500 day-old-chicks per scheme with materials and inputs. It will also Support Medium Scale Commercial Broiler and Layer Production with the provision of 5,000 birds for 50 people whiles 2 Commercial producers be supported with 10,000 birds. It will further address the underutilization (3%) of processing facilities. GATP will rehabilitate 10 weekly livestock market and provide with shed, watering facilities for both people and the animals and fencing where necessary. It will Strengthen Public and Private Sector Veterinary Service Delivery, and enhance efficient Management of

Shared Resources. GATP will strengthen Disease Surveillance, Prevention, and Control in Small Ruminants with Nationwide mass vaccination campaign against Newcastle Disease.

iii. Improving Mechanization and Machinery Services: GATP in pursuance of the commercialization agenda will promote mechanized land preparation within the upland and lowlands by supplying land preparation, seeding, and weeding machines. Since harvesting is among the least mechanized production activity of the target commodity value-chain crops investment will be made to mechanize harvesting of cereals to stimulate upscaling of mechanical threshing to reduce the workload on women who are normally responsible for threshing. It will upgrade and upscale rice processing within the irrigated rice production hub of the country by introducing an integrated rice parboiling and milling machine through Public-Private-Partnership. GATP will promote Small-scale Processing at farmer level into dried/dehydrated products, sauces, pickles, and jams. To ensure product safety and quality small-scale processors would be trained and exposed to Good Processing Practices (GPP). Investment will be made to expand Irrigation Facilities and Equipment for selected commodities.

iv. Enhancing Youth Engagement schemes: GATP will develop a sector specific entrepreneurship and mentoring programme with relevant stakeholders to ensure maximum impact, relevance and coverage. Efforts would be made to strengthen institutional capacities of the existing programmes with support from NAQAA to facilitate the standardization of their training content, quality and relevance to industry demands and requirements. GATP will support and strengthen Youth Empowerment, Training, and Incubation Centres; Develop youth-specific financing mechanisms. It will upgrade existing entrepreneurship education in TVET and university programmes, ensure that training is conducted on structured curricular that is approved and certified by NAQAA. Training infrastructure including labs, practical facilities, and equipment would be provided to ensure that students acquire relevant and appropriate industry required skills and competencies. It will transform the mix farming centres into model youth and women production centres. The Ministry of Agriculture will collaborate with the Ministry of Land to address challenges associated with access to land by the youth. Policies and regulatory environment will be improved to better serve the needs of youth.

v. Value Chain Financing: To improve access to inclusive financing, the programme will expand matching grant funds to MFIs which are closer to grassroots using their structures such as SDF, Credit Unions, and VISACAs. Similarly, the use ICT for internet banking as well as mobile phones, combined with the CFF (Central Finance Facility) approach would be promoted to facilitate access to credit more cheaply and timely at grassroots level. GATP will further establish a Credit Reference Bureaus (CRB) to ensure that granting of multiple loans from different sources and clients are minimized if not avoided completely and enable lending institutions get a profile of borrowers from the Bureau to determine their eligibility or otherwise. At least 5 Agricultural insurance schemes will be instituted to de-risk agricultural lending. Through PPP, the programme will provide seed money for these schemes, whilst the Partner private sector insurance will be entrusted with the management. It will facilitate the establishment of Agricultural Development Bank that focus on providing development financing for agricultural value chains.

GATP will require a total funding of USD 322,328,313 Million. Supporting Access to Farm Machinery and Equipment amount to USD 142,212,000. Upgrading poultry and livestock value chains will require an amount of USD 37,714,913. Value chain financing mediation and agribusiness related activities amount to USD 46,020,000 whiles Crop and Extension investment amount to USD 62,211,400. Youth engagement activities amounted to USD 17,666,000; Coordination and M&E and social safeguard audit amounted to USD 16,504,000.

The impact of The Gambia Agricultural Transformation Programme will be reflected in increased yields, productivity and efficiency in agricultural value chains. Both volumes and values of agriculture will increase, youth employment in agribusiness will soar, export will increase, import will reduce and food security will be guaranteed.

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The GATP process involved extensive consultations at all levels including field, community, and regional levels. The team of Consultants held Technical Advisory Committee (TAC) consultations in all the Regions as well as also individual key informant interviews at community, farmer and regional levels. They all provided relevant and treasured feedback and insights, which together enhanced the report content and quality. The untiring efforts of the various farmer groups, key informants and producer associations consulted must be singularly mentioned here. They were truly a source of inspiration and hope for the future of agricultural transformation in this country!

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ABBREVIATIONS AND ACRONYMS

AEZ	Agricultural Ecological Zone
AfDB	African Development Bank
AGRA	Africa Green Revolution
ANR	Agriculture and Natural Resources
ANRP	Agriculture and Natural Resources Program
ATP	Agricultural Transformation Program
BDS	Business Development Service
CAADP	Comprehensive Africa Agricultural Development Program
CBA	Cost Benefit Analysis
CBG	Central Bank of The Gambia
CCA	Climate Change Adaptation
CET	Common External Tariff
CFSVA	Comprehensive Food Security and Vulnerability Assessment
CIF	Cost Insurance and Freight
CRR/N	Central River Region – North
CRR/S	Central River Region South
CSOs	Civil Society Organizations
DFIs	Development Financial Institutions
DLS	Department of Livestock Services
DOA	Department of Agriculture
EbA	Ecosystem-based Adaptation
ECOWAS	Economic Community of West Africa States
ENABLE	The Empowering Novel Agribusiness-Led Employment for Youth in African Agriculture
EU	European Union
FAO	Food and Agriculture Organization
FARA	Forum for Agricultural Research in Africa
FDI	Foreign Direct Investment
FGD	Focus Group Discussions
FSQA	Food Safety Quality Agency
GATP-PPF	Gambia Agriculture Transformation Program Project Preparation Facility
GBoS	Gambia Bureau of Statistics
GCAV	Gambia Commercialization Agricultural Value-Chain
GDP	Gross Domestic Product
GEAP	Gambia Environmental Action Plan
GIS	Global Information System

GMD	Gambian Dalasi
GNAIP	Gambia National Agricultural Investment Program
GoTG	Government of The Gambia
Ha.	Hactare
HDI	Human Development Index
HHSMP	National Horticulture Sector Master Plan
HIHO	High Input High Output
HPS	Hand Pick Selected
HVM	High Value Markets
ICRAF	World Agroforestry Centre
ICT	Information Communication Technology
IHS	Integrated Household Survey
IITA	International Institute for Tropical Agriculture
KAP	Knowledge Attitude Practice
KG	Kilo Gram
LILO	Low Input Low Output
LRR	Lower River Region
M&E	Monitoring and Evlaution
MDG	Millennium Development Goals
MFI	Micro Finance Istitution
MT	Metric Ton
NACOFAG	National Coordinating Organization of Farmer Associations Gambia
NaNA	National Nutrition Agency
NARI	National Agricultural Research Institute
NBR	North Bank Region
NDP	National Development Plan
NEMA	National Environment Management Act
NFSC	National Food Seciruty Processing and Marketing Corporation
NGO	Non-Government Organization
NSS	National Seeds Secretariat
PAGE	Program for Accelerated Growth and Employment
PPF	Project Preparative Facility
PPP	Public Private Partnership
PRSP	Poverty Reduction Strategy Paper
R&D	Research and Development
RCN	Raw Cashew Nuts
SAP	Self Employed Assitance Program

SDF	Social Development Fund
SDG	Sustainable Development Goals
SFVC	Sustainable Food Value Chain
SMEs	Small Medium Enterprises
SNC	Second National Communication
SPS	Sanitary-Phytosanitary Standards
TBT	Technical Barriers to Trade
TOR	Terms of Reference
ToT	Training of Trainers
TVET	Technical and Vocational Education Training
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
URR	Upper River Regional
USD	United States Dollar
V-APEX	VISACA APEX
VCA	Value Chain Analysis
VISACAs	Village Savings and Credit Associations
WCR	West Coast Region

1. INTRODUCTION

1.1 BACKGROUND AND CONTEXT

The Republic of The Gambia, located on the West African coast, stretches some 480 km inland from west to east on either side of the River Gambia, varies in width from 48 km in the estuary of the river to 24 km inland. It lies between latitude 13^{0}28'N and longitude 16^{0}34'W, and the ecology is predominantly drought Sahelian shrub-land. The country is surrounded to the north, south, and east by the Republic of Senegal and to the west with a short Atlantic Ocean coastline. The River Gambia runs the entire length of the country from the Fouta Djallon highlands in Guinea Conakry to the Atlantic Ocean, dividing the country's land area of about 10,689 km^2 into two halves: North and South Banks.

The economy is predominantly based on rain-fed subsistence agriculture, which is the main source of livelihood for the majority of the population[7], and government's Agriculture and Natural Resources Policy (ANRP, 2017-2026) is premised on the creation of a market-led, commercialized dynamic agriculture sector that is efficient, competitive and consistent with the National Development Plan (NDP, 2018-2021). The prognoses of production, employment, factor productivities, utilization rate of local raw materials, value-added activities and sources of growth of output embody the objectives of the policy to deliver a market driven economy. The draft policy expected value addition in agriculture to grow at 6.14 percent per annum in the period 2017-2026 and this will be largely compelled by crops (including vegetables and fruits), livestock and fisheries sub-sectors. Total employment in the sector is predicted to grow at a rate of 12.67percent per annum through expansion of agro-based industrial development and appropriate mechanization of crop production. This will enable industrial development to absorb larger portion of available youthful labour force.

The population of The Gambia is estimated at 1.9 million, with an annual growth rate of 3.3 percent (GBoS, 2013). About 40 percent of the population live in rural areas, and women constitute 51 percent. The high fertility level of 5.4 births per woman has resulted in a very youthful population structure. Forty-two percent of the country's residents are below age 15, and about 22 percent are between age 15 and age 24. Over 70 percent of the population is below 30 years of age[8] and about 59.6percent of the population lived in urban areas in 2015, which was a substantial increase from the 28.4 percent recorded in 1980[9].

In 2017, the Human Development Index (HDI) of the Gambia was estimated at 0.460, the country was ranked at 174 position out of 183 countries (UNDP, HDI 2017). The country is highly vulnerable to recurrent droughts and floods, and about one in three Gambians is vulnerable to food insecurity. Smallholder farmers in The Gambia comprise about 43.1 percent of the population, and they make up 22.6percent of the economy[10]. However, majority of them lacks suitable access to local markets, and are vulnerable to recurring shocks especially during lean seasons.

1.2 ECONOMIC CONTEXT

During the Autocratic Rule of the Second Republic (1994 to 2016), The Gambia's macroeconomic situation had been challenging and erratic largely characterized by an unpredictable governance structure with sudden policy shifts and slippages, weak institutional management, excessive borrowing (rising debt to the GDP ratio) aggravated by excessive budgetary spending. Consequently, the country became susceptible to economic and exogenous shocks that seriously affected economic growth. The debt-to-Gross Domestic Product (GDP) ratio grew up to 130 percent of the GDP in 2017, and hence the country classified as a debt distress nation.

The Gambia's GDP at current prices using the new 2013 base year, stands at GMD 49.2 billion[11] equivalent to slightly above USD1 billion (exchange rate at GMD 48.50 per USD) in 2018. Between the period 1999 and 2018, the real GDP growth fluctuated substantially and reached 5.4 percent in 2018 from 3.5 percent in 2017. Largely attributed to this GDP growth trend was associated with services (including tourism, trade, financial and insurance) that expanded

[7] 2016 Comprehensive Food Security and Vulnerability Analysis.
[8] Ibid 11
[9] Economic Commission for Africa (2017)
[10] Vision 2016, GoTG
[11] Rebasing and compilation of Gross Domestic Product – 2013 base year, GBoS, June 2018.

by 10 percent in 2018[12]. In addition, the robust growth in transport, construction, and telecommunications also supported the GDP growth. Regardless of the positive GDP growth, only USD 483[13] was the GDP per capita of the country in 2017 which was just one-third of the Sub-Saharan average of USD 1,553 and far less than 4 percent of the world's average. Inflation decreased to an estimated 6.2 percent in 2018 from 8 percent in 2017. The local currency the Gambian Dalasi (GMD) remained stable with increasing gross international reserves slightly reaching 3.1 months in 2018 from 2.9 months in 2017[14]. These successes were underpinned by the emerging fiscal discipline embarked upon by the new government and sustained by increased financial assistance from development partners.

Services, Agriculture and Industrial Sectors are the main drivers of the Gambian economic growth. The services sector contributed 58 and 61 percent of the GDP in 2013 and 2017 respectively. This was followed by the agriculture sector which contributed 26 percent (2013), 23 percent (2014), 22 percent (2015 and 2016 each) and 21 percent (2017). Agriculture is predominantly subsistence with groundnuts being the main cash crop. The Industrial Sector, in the same period, contributed 12 to 17 percent to the nation's economy[15]. In addition, the Fisheries and Aquaculture Sector contributes about 5 percent to GDP signifying its importance for food security and export earnings while wholesale and retail trade also contributes an average of 25 percent of GDP[16] during the same period, reflecting the importance of re-exports trade to The Gambian economy. The tourism sector has contributed approximately 20 percent of GDP in 2016 and has been the largest foreign exchange earner. However, over the years remittances and international aid have played an important role in sustaining the economy. The Gambian economy's main features are its small size, narrow market and limited diversification depending mainly on services (tourism and re-export trade) and agriculture. It also has a small export base, with groundnuts, cashew, mangoes, and fish as the main agricultural and natural resources export commodities.

The Gambia is highly vulnerable to recurrent droughts, floods, and other climate change related risks, thus the agriculture sector, though had been contributing up to 30 per cent of GDP in the past, this has declined to 27 per cent in 2017 (GBoS 2017). Average agricultural production growth rate per annum was 2.5 per cent from 2007-2016 (below the population growth rate of 3.1 per cent), with relatively wide yield gap across major crops.

1.2.1 Poverty and Food Security

The national poverty rate was recorded at 48.65 percent[17] using the less than USD 1.25 per person per day, and 8 percent of them are considered food insecure[18]. There was a rising rural poverty (from 64 percent in 2010 to 70 percent in 2015), and a growing gap between rural and urban areas with regards to access to markets. The country was rated 35.9 on the Gini Index in 2015[19], indicating a high prevalence of income inequality[20]. While the proportion of households living below the poverty line is 31.6 percent in urban areas, rural poverty was on the increase, as 60 percent of rural households considered living in poverty in 2003 have increased to 62.1 percent in 2010[21] and to 69 percent in 2016 (IHS report 2017). The rural areas accounts for about 42.2 per cent of the country's population, but they hold 60 per cent of its poor[22].

Food insecurity disproportionately distresses households, affecting mainly those residing in rural areas. The last Comprehensive Food Security and Vulnerability Analysis (CFSVA)[23] revealed that food insecurity has increased to about 5.6 percent since 2011. Rural regions were found to have the highest number of food-insecure households in the country, ranging 12 to 18 percent of households. With declining productivity over the years[24], the country's rural

[12] World Data Atlas – Gambia – Economy, Knoema, 2018
[13] World Bank Estimate, 2017
[14] African Economic Outlook (AEO) 2019
[15] Rebasing and compilation of Gross Domestic Product – 2013 base year, GBoS, June 2018.
[16] Gambia Trade Policy Reform Report (WTO, March 2018)
[17] 2015 integrated household survey
[18] 2015 Comprehensive Food Security and Vulnerability Analysis
[19] Development Indicators, World Bank, 2015
[20] 2015 Budget Speech by the Minister of Finance and Economic Affairs of the Gambia
[21] MDG Accelerated Framework MAF, 2010
[22] National Development Plan: 2018 - 2021
[23] Comprehensive Food Security and Vulnerability Analysis (CFSVA), 2016
[24] GNAIP, 2010-2015 (pp 21)

population faces higher prevalence of food insecurity. Nonetheless, agriculture has a key role in helping achieve Government's objectives for economic growth and development. Promoting growth and employment in The Gambia must reflect development of the agriculture sector.

1.2.2 Socio-economics

i. Profile of the Local Economy: The local economy is primarily depending on agricultural and farm commodities produced by small farmers, largely through traditional methods with very limited modern technology and inputs. Communities are predominantly depending on rain fed subsistence agriculture, which is the main source of livelihood for majority of the population. General farmers' perception cited that crop agriculture is no longer profitable with the declining trends in production and precarious market conditions. This gave rise to youth rural-urban exodus, while others travelled to overseas for greener pastures leaving farm work for women and the elderly.

Many households heavily rely on overseas remittances for the upkeep on family expenses. Inequality is a prominent feature in their poverty profile due to noticeable income inequality, which can be attributed to varying levels of education, employment, and overseas remittances.

The majority of Gambian communities are patriarchal comprising several clans with family ties that sustain the existing social and economic safety-nets for households. They value extended family systems, although the traditional family structures and values are no longer the same as in the past. People strive to improve their earnings by diversifying income sources to change their way of life.

Livestock is generally categorised as the second most important measure of household wealth. They are commonly use as draught animals for crop production and transportation as well as for potential sale should the family need additional income. Livestock rearing is practiced alongside crop farming, with the husbandry of cattle and small ruminants such as sheep and goats. The livestock sub-sector contributes significantly to the economy and livelihood of Gambian. The production system is predominantly traditional and the species reared consists of cattle, small ruminants, pigs, equines, poultry, rabbits and other short cycle species. The various species are raised to provide meat, milk, income, socio-cultural reasons, draught power and manure for crop cultivation.

The importance of the different livestock species as a source of food and income is enhancing household food security for the rural population is evident. The erratic nature of the rainfall has often manifested in poor crop yields and increasing reliance of farmers on livestock for sustenance during the lean periods when cereal stocks are near depletion.

Rangeland resources, which are consistently under pressure is the main source of livestock feed for livestock owners. About 40 percent (or 371,200 ha) of Gambia's total arable land area is regarded as rangeland, of which only 5,000 ha was classified as improved pasture as at 2010 (DLS 2011). Furthermore, the DLS 2011 report showed a livestock density of over 42 heads/ha of rangeland. Unimproved pastures and crop residues constitute the main sources of feed for livestock. Feed sufficiency for livestock in The Gambia is seasonal. The carrying capacity of rangelands in the rainy season is adequate to meet the feed requirements but quality and quantity of grasses on the rangelands deteriorates and becomes nutritionally poor during the dry season. The scarcity of feed is more pronounced during peak periods of the dry season when animals depend on crop residues and swamp grazing. The current stocking density puts lot of pressure on the natural rangeland affecting soil structure as well as crop production and growth of forest trees, and this is exacerbated by the internal and cross border transhumance of livestock. Indeed, livestock movement in the Gambia-Senegal border is part of the transhumance pastoral system in the sub-region, the principal motivation being access to pasture, water, and livestock market.

ii. Gender and Youth Employment: Women constitute about 50.5 percent of the population and 52 percent of them live in rural areas (GBoS 2013). They constitute 60 percent of the unemployed population; mainly engaged in the informal sector[25]. They are found to constitute more than half of the agricultural workforce,

[25] Gambia National Gender Policy 2010 - 2020

contributing 60 percent of food production during field level consultations. They have access to clan or family lands, but cannot own plots for agriculture. Despite their involvement in cash crop production in communities where men focus more on non-farming activities, women are also responsible for all post-harvest tasks of the cereal crops. The prevailing tradition generally allows women to control their earnings from horticultural activities, which is largely spent on family needs. Data from the field consultations reveal 55 percent of women are engaged in vegetable production and marketing; while 40 percent undertake petty trading such as hawking, fruits and vegetable marketing, etc. In addition, information from women's focus group discussions showed that proceeds from the sale of their cash crops are largely spent on household needs, especially health, education and other welfare needs (clothing). Recently, however, in some communities where women's horticultural activities have grown into larger scale activities, men are increasingly participating in the vegetable value chain.

Literature[26]estimated that unemployment among youth is currently at 38percent[27], and irregular migration to Europe is an undesirable phenomenon that The Gambia is grappling with. The increasing lack of skills and under-employment among the youth expose them to desperation and helplessness leading to illegal migration to Europe for greener pastures. The country faces a huge "back-way" migration challenge, particularly to Europe, which is found costly to families left behind, especially the elderly. Migration has also resulted in increased loss of life on the way to Europe. According to the European Union, at least 14,735[28] Gambians sought asylum in EU member countries, with 75percent classified as economic migrants.

Youth focus group discussions cited the many challenges in accessing education that enable them the skills and knowledge to become productive in the competitive labor market. For some of them, the transition from school to work has not been successful, and they end up either unemployed or underemployed in the productive sectors. This situation led to youth exodus to the growing urban centres (in West Coast Region and Greater Banjul Area). With an increasing urban population and with many unemployed youths, the government faces serious challenges of providing services to the population while generating the growth necessary to absorb the unemployed. However, information gathered from stakeholder consultations found 20percent of youth were involved in orchard development, petty trading, and cashew plantations. Another 15percent of them are venturing into vocational apprentices and related trades.

iii. Women and Youth Organizations: The Gambia has a youthful population with 72.7 percent of its population under the age of 30 years[29]. The women constitute about 50.8percent of the population (GBoS, 2013). Youth and women constitute the two demographic groups whose full potential have not been fully exploited. They are key drivers of change in the economic growth of the country (including agriculture). They constitute a significant portion of the population and can be potential enablers of economic and agricultural transformation, food production and security. Individual associations comprise women, men, youth or mixed groups with each having unique roles and responsibilities. Their activities are diverse ranging from social and economic activities to cooperative farming operating period contributions/savings and loan schemes, etc. Lack of access to financial resources, weak management structures, and governance, and inadequate institutional support are some of the key constraints identified with these village-based associations. There are associations that are engaged in horticultural production and marketing with support from government, development partners and NGOs. The involvement of the youth folk in such agriculture and related activities is yet to be fully exploited.

1.3 OBJECTIVES OF THE ASSIGNMENT

As per the ToR, the objectives of the assignment are to study four key areas to identify specific actions to be undertaken in the value chain component of the strategic crops and livestock of the country. These actions constitute the four identified key areas which will be included in the investment plan of the commodity value chains. Therefore, these actions should be quantified and costed. The five strategic crops identified for the study are groundnuts, maize, millet,

[26] Gambia National Development Plan, 2017 - 202
[27] The Gambia Labour Force Survey, GoTG 2012
[28] Eurostat: http://ec.europa.eu/eurostat/news/themes-in-the-spotlight/asylum2016
[29] Population Census, GBoS, 2013

fruits and vegetables, and the strategic livestock species are small ruminants and poultry. The four identified key areas and expected outputs are described below.

i. Enabling environment for private sector engagement in agriculture and market competitiveness: Assess barriers to private sector investment in key value chains and provide a framework for policy, institutional and regulatory reforms, as well as investment options to generate public goods necessary for building an adequate incentive system for private sector engagement.

ii. Agriculture Value Chain Financing: Describe and analyze the current flows of funds to and among the various links within the agriculture value chains in terms of financial services, products, and support services. Recommend appropriate, comprehensive and sustainable agriculture financing strategies and options for the agriculture sector in general and specifically for each of the strategic crops and livestock.

iii. Defining Strategic Crops and Livestock Value Chains: Describe, analyze and compare current and potential value chains for the five major crops (groundnuts, maize, millet, fruits & vegetables) and livestock (small ruminants and poultry) relative to the sector's goal of ensuring food and nutrition security, improving livelihoods particularly for poorer households, women and youths and enhancing climate change resilience of farming communities. Recommend optimal intervention strategies for the sector to promote the cultivation and trade of five major crops as a strategy and the optimal exploitation of the two livestock species for enhancing food and nutrition security, reducing poverty amongst poor households and improving their competitiveness.

iv. Study on Engaging Youth in Agriculture: The objective of this study is therefore to establish the extent of the problem in line with the Bank's ENABLE Youth program principles and how entrepreneurship and partnership with the private sector can be instituted in agricultural value chains, trade, vocational skills, and agribusiness management. The study will focus on employment of young people in the agricultural sector and agribusiness by fostering the integration of young people in the different segments of the value chains promoted under the Agricultural Transformation Program (ATP) in Gambia.

The study will propose specific approach for young people in the agricultural sector to facilitate their integration into the different segments of the value chains that will lead to the emergence of modern agricultural, agro-industrial and service enterprises fostered by improved access to financing and equipment, the development of productive, processing and marketing infrastructure to be established. The results of the study and reflections will contribute to the design and preparation of projects that could be financed from AfDB resources while specifying the implementation conditions.

1.4 THE APPROACH

This section outlines key approaches and methodology that will be adopted under each of the four key areas:

i. Enabling Environment for Private Sector Engagement in Agriculture and Market Competitiveness: Under this key area, economic analysis would be carried out with particular focus on economic viability of agribusiness agents through cost-benefit analysis of prevailing market price revenues vis-à-vis costs and profit margins. In addition, the market and demand associated with each commodity value chain would be assessed and responsive agribusiness financing options analyzed. Special attention would be paid to the development of public private partnership (PPP) through requirements and constraint reviews with particular focus on collaborative agreements, management contracts, service provision agreements that share risks and returns. Suitable models would be developed for public and private collaboration along the selected commodity value chains.

ii. Agriculture Value Chain Financing: Key activities in this area will focus on detailed analysis of the state of agricultural financing in the country. It will also assess the existing barriers to optimal financing of the agriculture sector including matching grant window, innovative agricultural financing products, and schemes and the possibilities of establishing a viable agricultural development bank with particular focus on crops and livestock. In addition, the possibility of refocusing 5 percent of commercial banks' annual turnover into financing agriculture endeavors especially from women and youths with bankable proposals will also be

assessed. Policy and regulatory frameworks and the roles of relevant institutions and stakeholders will be reviewed for effective and efficient financing of the sector. Similarly, the sector's financing risk management and mitigation measures and the potential role of ICT in leveraging financing for the sector will also be examined.

iii. Defining Strategic Crops and Livestock Value Chains: Conduct a value chain analysis for the 5 selected strategic agricultural crops namely: groundnuts, maize, millet, fruits & vegetables; and livestock species (small ruminants and poultry).

- Varieties, crop combinations, yields and storage options: this subsection will present distribution of each crops in the six regions, the actual status (cultivated area, yield, production and irrigated or rainfed), the potential water resources for irrigation and detailed information on the potential range of yields per hectare per growing season. It will also analyze and identify the production and productivity gaps and or challenges hindering crops value chain development, the conditions necessary for high/medium/and low range of yield for each crop, and suggest recommendations for the optimal combinations of improved seed varieties and inputs appropriate for the different agro-ecologies. Critically review and analyze factors associated with pre- and post-harvest losses and recommend appropriate technologies. This subsection will also identify and analyze the marketing constraints affecting access to both local and international markets as well as greater substitution of labour for capital through mechanization, automated systems and recommend appropriate methods of smart agriculture.

- Livestock policy, current status, and appropriate intervention strategies: this subsection will assist in the development and implementation of the new appropriate livestock policy and strategic framework through identifying intervention gaps, priority areas and elaborate the issues and challenges for small ruminant and poultry. It will also conduct risk factor analysis and identify farmer's best practices.

- Value Chain Analysis: this subsection will analyze the overall value chain, identify/highlight the missing links/gaps, demonstrate how it impacts on the actors and recommend the mechanisms address the gaps. The subsection will also partake in the following activities: mapping current and potential value chains for the crops and livestock species including an analysis of the pros and cons of the different value chain options in terms of costs, prices, profitability, sustainability, replicability, and technical, economic and governance related considerations. The analysis also will include information on production costs (costs of inputs, labour, transport, processing, and storage). It will also describe current markets including data on prices along the value chain, volumes and market requirements including product quality as well as packaging requirements and the necessary reliability and volumes of supply. In conformity with the value chain approach, include information on end users/markets. This will include information on prices for livestock and each crop at the farm gate; local market e.g. *'lumo',* or any other main market.

  Provide observations and insights regarding accessibility of the markets for crop and livestock farmers as well as the potential profit range for each crop and livestock. Provide the potential profitability of each crop per hectare per growing season and each livestock specie based on its management cycle presented as a range with an explanation of the conditions most strongly influencing their profitability. Consider the timescale over which farmers can expect to receive a profit i.e. those that are profitable in the short (1 year), medium (2 – 5 years) and longer term (6 + years).

Analyze and recommend segment (s) of the value chain with potential to create employment and income generation. Linked to the latter, analyze and demonstrate which of the value chain segments can be further developed to enhance the commercialization of agriculture as described in the NDP. Assess the number of value chain actors disaggregated by gender that has been employed and possibly, indicate the amount of money generated.

- Quality and Standard Assurance: To identify gaps in the national quality infrastructure (standards, inspection, testing, certification, metrology, and accreditation) and provide recommendations on strategic interventions.

Finally, map out the key stakeholders along the identified value chains including:

- Producers: This shall include a description of current agricultural practices including specific details on the crops grown, cultivation practices, inputs used and the prices and volumes of crops that are being sold from in and around that particular region or district;
- Input/agro-input Dealers: Analyze and identify the key players in the agro-input market for crops and livestock;
- Transportation: Identify and describe suitable channels for transporting crops and livestock from farms to market and map out the actors in the agricultural product transportation industry;
- Processing: Identity and describe agricultural value addition facilities and map out the actors;
- Traders, Wholesalers, and Retailers: A description of traders, wholesalers, and retailers locally and internationally who are or could be involved in the sale of each crop from the area;
- Exporters (to various destinations): Analysis of the gross margins, markets for crops, particularly the spices taking into consideration potential for future developments.

Gender aspects - The study will consider factors affecting the relevance of the findings from a gender perspective.

iv. Study on Engaging Youth in Agriculture: This section will support the development of a youth agribusiness empowerment Project - The Empowering Novel Agribusiness Led Employment for Youth in African Agriculture (ENABLE YOUTH) and will ultimately inform the design of Gambia ENABLE Youth Program. Specific component would include:

- Assessment of Existing Youth Agro-related Projects - The sub section will analyze the capacity of the existing in-country youth organizations, college and university-educated youths' involvement in agriculture (Agri-preneurs). It will include an institutional assessment of facilities for implementation of Youth Agro-related Projects; good practice and lessons learned from developing agri-prenuership networks and incubation centers at both country and continental levels in line with knowledge from IITA, AGRA, FARA, DFIs, and other technical experts. It will also review the demographic profile of youth employment in the country and in various agricultural commodity value chain activities and inventories on existing incubation/learning centers vis-à-vis their proximity to strategic value chain development activities including their current status. Identify challenges for achieving parity in proposed youth employment programs – in particular issues related to gender, disability, cultural bias and recommendation for Youth in Agribusiness Project specific to local content in the Gambia.

- Enabling Environment for Beneficiaries: Special attention will be paid to conducting analysis on skills/capacity gaps and employment demographics which will be precursor to catalyzing private sector investment in the sector. It will also identify financing gaps and propose innovative financing instrument to support young agri-preneurs SMEs startups through collaboration with micro-finance institutions (MFIs) and commercial banks. In addition, it will analyze existing policies that promote youth's access to financial services, land, inputs, and other productive assets within the identified value chain a well as assess barriers to entry for private sector investment in agri-business and also filling of the investment gaps by the private sector. Furthermore, review relevant diagnostic work, including studies and reports that have been undertaken pertaining to youth participation and any barriers, challenges, and opportunities for increased youth engagement in agriculture. Policy, regulation and overall institutional enabling environment for effective youth participation in agriculture commodity value chain will be proposed. Other policy prescription will include: evaluation of agribusiness activities that hold highest potential for profitability and more likely to attract finance; assess market size of the prioritized agricultural output within the ATP; review and recommend for fast profit rewarding agricultural enterprises that would attract youth into the agriculture sector; identify and explore the potentials of youth involvement in eco-tourism in the rural areas with focus on agro-industry; and identify the employment potentials within the market segments of crops and livestock were youth can be engaged to provide services in terms of providing fresh agriculture products to hospitality industry.

- Knowledge, Attitude and Practice (KAP) Status/Inventory of Youth Employment in Agribusiness: This sub section will assess key macroeconomic indicators, demographic, climate, and geographical data related to youth employment in agribusiness. It will profile youth and agri-preneurs by gender, education level, technical/vocational skills, understanding and use of new technologies, agriculture production, and processing technologies as well as level of experience with various employers and actors in the Agricultural Value Chain. Conduct a situational analysis of youth in agriculture in the country making reference to international and regional obligations and links with other policies and programs pertinent to emerging issues. It will also provide recommendations on strategic directions for maximum youth participation in Agriculture. Similarly, the level of involvement and engagement of male and female youth producers in high value markets (HVMs) will be determined. The barriers and challenges of male and female youth producers and agri-preneurs face (production, access to extension support, access to input, postharvest practices, financial and credit needs for agro-processing will be highlighted.

2. GAMBIA AGRICULTURE SECTOR

2.1 AGRO-ECOLOGICAL CONDITIONS

The country has an agrarian economy with more than half of the total arable land area (558,000 ha) put under some form of annual agricultural production. There are three distinct Agro-Ecological Zones (AEZs) in the country namely: AEZ1, AEZ2, and AEZ3 which are subjected to widespread land degradation associated with deforestation, desertification, and loss of biodiversity. They run along River Gambia, cutting across the administrative regions. Agricultural crop and livestock production take place in these agro-ecological zones. The table below presents the AEZs of the country.

Figure 1: Woodland in CRR (S) floodplains

Table 1: Broad characteristics of the three agro-ecological zones in The Gambia

AEZ	Name	Average Rainfall (mm}	Length of growing period (days)	Vegetation
1.	Sahelian	< 600	< 79	Open savannah
2.	Sudano-Sahelian	600-1100	70-139	Savannah Woodlands
3.	Sudano-Guinean	< 1200	140-150	Woodlands

Source: Adapted from the Report on Environment, Agriculture and Natural Sector Review, 1997

AEZ 1 is the smallest of the three AEZs and it is located in the extreme North of Central River Region (CRR North) that lies within latitudes 13.41° to 13.50°N and longitudes 15.00° to 15.23° W. The zone comprises the following districts: Upper Saloum, Lower Saloum and Nianija with a total land area of about 568 km² and sparse human population of 43,995 persons (2013 Population and Housing Census) living in few large settlements. The zone's population density was estimated at 77 persons/km². The zone's topography is generally flat with characteristic soil types ranging from non-saline colluvial, alluvial (in the wetlands-swamps) to sandy loam soils in the uplands. Its climate

is Sahelian Woodland Savannah with a short rainy season from July to October followed by a long dry season from November to June.

Across the zone, there is a mean annual temperature of 29^{0}C and a mean annual rainfall of less than 600mm with an effective cropping season of less than 79 days. This makes the zone susceptible to drought and water stress. Its vegetation is commonly open savannah with shrubs and grasses predominating. The forest resources of the zone provide domestic energy (fuel wood), timber (poles, posts, and other building materials), utility needs as well as resources for local medicinal treatments and wild fruits. The non-wood forest products also provide the local population with honey, which serves as source of income and food reserve that contributes to food security, especially during the hungry season.

The presence of large stocks of cattle in the zone could also significantly contribute to overgrazing of the available natural vegetation cover. Most of the remaining forests of the zone are characterized as open forest types, growing on shallow soils with underlying hardpans. The forests that existed on the deep soils have been lost through encroachment by farming activities leaving only a few economically important tree species, such as the bush mango (*Cordyla Africana*, as source of food), and nitrogen-fixing tree species.

The farming system commonly practice in this zone is traditional mixed farming where both crops and livestock productions are carried out side by side by smallholder resource poor farmers. Crop production is mainly carried out on arable land characterized by soils that have inherently low water-holding capacity and hence susceptible to erosion. Most farm activities are limited to rain-fed agriculture (some farmers use animal traction) and the major food crops grown are cereals (maize, early and late millets, sorghum and rice); cash crops are groundnut and sesame. Early millet and groundnuts are the most important crops grown in the zone with low production and productivity largely attributed to the minimal use of chemical fertilizers and their high cost, low rainfall less than 600 mm received and short length of growing period of less than 79 days. Therefore, crop varieties with longer growing period than 79 days will not do well in this agro-ecological zone.

Livestock in the zone consists of cattle, small ruminants (sheep and goats), draught animals (horses, donkeys, and oxen) and poultry with indigenous breeds predominating. The livestock production system is also largely traditional, nomadic pastoralism for cattle and small ruminants (although small ruminants are on free range but tethered in the inner fields during the rainy season). Small ruminants are also being increasingly fattened for commercial purposes. Poultry production in the zone is traditionally widespread characterized by a free-range system where the birds scavenge for feed and water. With increased government interventions in the livestock sub-sector, more traditional grazing areas are being improved to provide the required livestock feed, watering facilities; and vaccines and drugs in ensuring proper livestock healthcare.

AEZ 2: As shown in Table 1 above, the zone belongs to the Sudano-Sahelian vegetation within the 600-1100 mm rainfall isohyets with a 70-139-days growing season. The total land area of the zone is 418,742 ha with a population density of 156/km^2 in 2012. Its landscape is generally a rolling plateau interspersed with basins of gallery forest or swampland. The AEZ 2 covers all the agricultural regions of the country except the extreme north of CRR, the easternmost part of URR South, and the westernmost part of NBR and WCR. Notably, the Central River Region (CRR) and LRR which have extensive areas of swampland, mangroves, rice fields, barren flats, and water surface constitute approximately 79 percent of the lowland ecologies of the zone. The rice ecologies are threatened by salinization caused by shortfalls in rain, resulting in salt-water intrusion upstream into the river and its tributaries, as well as by the emergence of potential acid sulphate soils.

In contrast, the uplands have sandy-loam to silt-clay-loam and poor in nutrients (because of exhaustion due to over-cultivation). Upland soils especially in the NBR, LRR and CRR are typically not more than one meter deep comprising a layer of lateritic hardpans. Furthermore, such soils have a high sand content coupled with their shallowness make them highly susceptible to erosion and leaching. Although soils in WCR are usually deeper than those in other parts of the zones, they are equally fragile and susceptible to erosion and nutrient depletion. Its vegetation is relatively open forest, scattered with trees (generally less than 15m in height), grass and farm lands. Common trees comprise the *combretaceae* family existing in this zone which indicates the presence of impoverished soils due to destruction of the original valuable vegetation cover or from the shallowness of the soils. Parts of AEZ 2 within the West Coast Region (WCR) and Lower River Region (LRR) are characterized by the frequent presence of tall *Andropogon* grass, while the

rest have mainly *Meriscus* grass cover. The abundance of grass in the zone makes it prone to frequent severe fires that have deleterious effects on the soils and the woody vegetation cover. The tree species of economic importance in this zone are *Khaya senegalensis, Pterocarpus erinaceus, Cordyla pinnata, Eliaeise guineensis Daniella olivera,* and various species of the *Combretaceae* family. Most of these species are to be found on the uplands. The lowland tree vegetation is mainly composed of the low and high mangroves. The latter is found almost exclusively in this zone.

Small-scale family farms operate in this zone and they produce crops mainly for subsistence (household consumption). These crops include early millet, groundnuts, sorghum, maize, cotton, irrigated rice, and vegetables. However, there has been a shift from cultivation of long-duration to short-duration crops due to reduced rainfall, especially in NBR. In this regard, these farmers (not all) earn limited cash income and their links with the market economy leave much to be desired. Owing to the teeming population, pressure on land is high leading to shortening of the fallow periods which ultimately results in the cultivation of barren lands which is one of the root causes of low production.

AEZ 3: This zone belongs to the Sudano-Guinean Zone with an agricultural population of 163,727 (out of a total population of 587,393), and less agrarian than AEZ 2. It lies within the 900 to 1200 mm rainfall isohyets with a length of growing period of 140-150 days and receives about 80 percent of its total rainfall between late July and early to mid-September. The maximum daily temperatures range from 28^{0}C to 29^{0}C. It occupies all of the West Coast Region, covering much of the western third of the country and the southeastern part of Upper River Region. Its topography is characterized by relatively rich and dense vegetation (now less densely vegetated) of over 50 tree species. The soil texture of this zone ranges from clay to clay-loam, loam and sandy-loam. Whereas along the riverbanks the soils become hardpan, friable and tillable in the moist lowland ecologies, and sandy and poorly structured in the upper plateau areas. Notwithstanding, some lowland ecologies that experience extreme weather conditions of the long dry season result in increased salinization of the River Gambia in its lower reaches, west of Carrol's Wharf and beyond, up to Tankular in the Kiang district. Consequently, this affects soil stability and salinity conditions in the tidal mangrove swamp areas and shifts the research emphasis towards salt-tolerance rice cultivars. The vegetation is savannah woodland, gradually becoming woodland in certain areas, with *Acacia* spp., *Cordia* spp. and oil palm dotting the lowland ecologies, where rice cultivation predominates. It has a semblance of humid tropical forest vegetation in parts of Lower Nuimi and Kombo South Districts.

Horticulture production (fruits and vegetables) is widely practiced in this zone due to its climate suitability. Horticultural production holds the greatest potential for provision of additional sources of food, on-farm income and export earnings in the zone.

The main upland crops cultivated in this agro-ecology are early millet, groundnut, rain-fed upland, and lowland rice, maize, vegetables, cowpea, cassava, sesame and fruit trees (mango, citrus, etc.). This zone is most important for horticultural production, including small-scale backyard and private gardens; medium to large commercial farms; and the communal village-garden schemes. These crops are produced in smallholder plots on an individual basis. Women growing mixed vegetables in small plots where underground water sources can be tapped for vegetable irrigation. Production of perennial fruit crops (mango, citrus, cashew, and oil palm) are very popular among male Gambians.

Several individuals and commercial farms are engaged in the cultivation of these crops for both local consumption and export mainly to European markets. Late millet continues to gain momentum in this zone due to the relatively high total rainfall than other zones and the low risk of bird damage because of its bristly awns. Most of the maize is grown in this zone, particularly in the western half. The crop matures relatively earlier than rice and early millet, and contributes to ameliorating the acute food shortages during the 'hungry season'. Given its popularity as a widely grown crop and its marketability, maize has become a high priority crop for research and supplementary animal feed particularly poultry. In the AEZ3, upland rice production is predominant in the virgin upland ecology, where soils are free draining and subject to moisture stress. In general, yields are usually low, ranging from 1-1.5 mt/ha, but in areas with adequate rainfall, higher yields have been recorded. Planting of rice in this ecology is usually by broadcasting and use of the traditional hoe with limited weeding and fertilizer application.

The Livestock sector in this zone is divided into modern and traditional livestock production system. However, because of the close proximity to Banjul and the associated urban and peri-urban areas, commercial livestock production is more prevalent in the zone.

The modern production system concentrates on small ruminant rearing and poultry, while livestock kept in the traditional production system include cattle, small ruminants, equines, swine, and poultry. A low percentage of the national sheep (13percent), goats (19percent) and cattle (17percent) populations are found in this zone. The major constraint in livestock production is the high incidence of pest and disease, which can be attributed to the relatively high rainfall experienced in the zone. The expansion of the settlements within the zone has reduced the amount of communal grazing area available.

2.2 EFFECTS OF CLIMATE CHANGE VARIABILITY ON AGRICULTURE IN THE GAMBIA

The Gambia with its Sahelian climate has been experiencing increasingly erratic rainfall patterns, higher intensity storms, intra-seasonal drought and increasing temperatures, ushered by periodic cold spells and heat waves. The Second National Communication (SNC) to the United Nations Framework Convention on Climate Change (UNFCCC); GoTG, 2012 projected average annual rainfall of 800 mm and above by 2020. However, by 2100 same records projects average rainfall of less than 500 mm per year, meaning successive drought years by 2100. This will no doubt have adverse consequences on agricultural production potential of the country. Variability in the amount and distribution of rainfall in some parts of the country is also projected to increase, which might result in more frequent extreme events of floods (including flash floods), exacerbated by inadequate planning and water management infrastructure in the country.

Climate change and variability have had and will continue to have significant economic ramifications in the Gambia. More than 98 percent of agricultural lands are rain-fed, making the agriculture sector highly vulnerable to rainfall variability[30]. The yields of major crops fluctuate as much as 100percent annually. The productivity of these crops has decreased tremendously attributed to low use of improved technology, declining soil fertility and climate variability (GoTG, 2003). A further decline in the amount and distribution of rainfall with increased temperature is expected to constrain productivity of crops such as maize, groundnut, and millet.

The low-lying topography combined with over reliance on subsistence rain fed agriculture, inadequate drainage, and storm management systems in the context of high demand on rural urban migration has placed the Gambia among the countries most vulnerable to climate change. This vulnerability is as a result of widespread poverty and limited adaptive capacity to build resistance to the effects of such changes. Limited access to resources to cope with changing lifestyles, especially during food supplies, and low access to risk spreading mechanisms, subject many households to be highly susceptible to the vagaries of the current and future climate changes.

2.3 AGRICULTURAL LAND-USE AND ASSOCIATED SOILS

On average an estimated 320,000ha (57percent of the total arable land of 558,000 ha) was cultivated annually from 2000 to 2010 of which cereals constitute about 51.6percent with the remaining 48.4 percent under cash crop oil seeds (namely groundnut and sesame). However, the cultivated land reduced significantly in 2018 farming season with an estimated 232,270 ha constituting about 41.6percent of the total arable land cultivated in the entire country[31] with more attention on cereal cultivation (about 75percent) while the remaining 25percent under the cash crop oil seeds. Stakeholder consultations estimate that nearly 70percent of these agricultural lands are degraded, and desertification has become the major environmental threat, particularly in the North Bank Region (NBR) and Central River Region North (CRR/N). The transect walks in some communities generally found varying composition of land cover with extended dry lands, particularly communities in NBR, CRRN and Upper River Region (URR), of which land consists of arid, semiarid and dry sub-humid areas.

The upland landscape is of foot-slopes and upper slope of interfluves which are the main cultivated areas with scattered trees. Upland crops that are mainly grown are groundnuts, cowpea, millet, maize, sorghum, vegetables and horticultural trees such as mango and citrus.

[30] National Climate Change Policy of the Gambia, 2017

[31] Department of Planning Unit, 2019

It was observed that these agricultural lands are degrading at an alarming rate, and large parts of the agro-ecology are being threatened by unsustainable land-use practices such as slash-and-burn agriculture, overstocking of livestock and overgrazing particularly in CRR. Other causes of degradation observed are nutrient mining, over-extraction of woodland trees, uncontrolled bushfires, illegal logging and production of charcoal resulting to considerable loss of land cover leading to widespread soil erosion and sedimentation in the swamps. Wind and water erosion are commonly observed in the agro-ecologies, and these have wider implications on food security, human health and poverty eradication efforts.

Figure 2: Desertification taking over remaining ecosystem

Soils found in this landscape are mostly ferritin and ferruginous tropical soils, which are very deep, well-drained and low chemical fertility. Literature[32] showed that the soils are slightly acidic (pH 5.5 - 6.5), moderately well-structured but with moderate and declining fertility. Organic carbon is generally not more than 0.3-0.4percent in the surface horizon. Base saturation is usually fairly high, often between 40 and 100percent in which calcium generally predominates. Available phosphorus is extremely low, usually 3-6 ppm (Dunsmore, 1976, Jatta, 2013). Surface horizons are sand and loamy sands. The severe impacts of climate change are felt in no small measure in the utilization of upland soils. Short duration rains coupled with poor water retention capacity and low inherent fertility have drastically reduced the productivity of these soils.

The lowlands comprise river terraces and levees of prior floodplains characterized by woodlands and herbaceous species at the fringes of fresh water swamps and levee woodlands. Beyond the levees of prior floodplains, there are two other landforms such as the river floodplains and low-lying river floodplains characterized by few woody species, some herbaceous vegetation and mangrove ecologies that are associated with poorly drained saline soils. Major crops grown on the lowlands or hydromorphic 'bantafaro' are vegetables and early maturing rain-fed rice; while the river's floodplain of fresh water shallow/deep flooded 'bafaro' are used for swamp rice or tidal irrigated rice production. The saline water flooded plains (sourced by River Gambia) with its associated tributaries and mangrove vegetation are used for deep-flooded swamp rice cultivation under tidal conditions. The mangrove zone is largely unsuitable for any farming but commonly used for oyster collection.

Soils associated with lowland agricultural areas are loose, unconsolidated and often highly stratified. These are alluvial soils that are characterized as hydromorphic soils due to the temporary or permanent waterlogging. They are inundated by saline water, which are covered by mangrove vegetation or, where accretion has raised the soil level above the limit of tidal flooding barren flats. Rice is predominately grown in alluvial soils which are fine textured usually with more than 80percent silt clay content (Jatta, 2013). Despite being well drained; the soil is of low chemical fertility with hard to very hard consistency when dry. The organic carbon of such soils is not more than 0.3-0.4percent in the surface horizon. Available phosphorus is extremely low, and a high bulk density which can severely impede root growth.

[32] Dunsmore, 1976, Jatta, 2013

2.3.1 State of Agricultural Lands

Most agricultural lands have signs of degradation indicating very poor plant growth. Nutrient mining, intensive land use, deforestation, siltation and salt intrusion are major factors contributing to extensive degradation, with clear signs of gulley erosions. The upland watershed ecosystems are destroyed by numerous gullies caused by high water runoffs; while tidal wetlands are degraded largely due to siltation and salt intrusion. Erosion was among the most common signs of degradation observed in all the regions. The ongoing deforestation is changing local microclimatic conditions, aggravating community vulnerability to climate change events.

Figure 3: Gulley erosion in CRR (S)

It is estimated that an average 45percent of land degradation in the communities is caused by activities related to crop production; 25percent caused by annual forest fires; 15percent caused by overgrazing; and 10percent by vegetation removal for expanding settlements, and another 5percent by over-exploitation of the land (fuel-wood collection).

Baseline survey results conducted by the World Agroforestry Center (ICRAF) in 2018 for the Large-scale Ecosystem-based Adaptation (EbA) Project in The Gambia confirmed that degradations of farmlands in rural Gambia are mainly caused by intensive use of land (94.3percent), erosion and flooding (67.54percent), salt intrusion (4.8percent). The driving factors of land degradation were found complex, among which are biophysical causes (including topography that determines soil erosion hazard and climatic conditions, such as rainfall and temperature) and land use change. Land degradation has become a critical issue in the project communities, especially in NBR, which is seriously threatened by desertification.

Generally, land is acquired through inheritance in the communities. ICRAF, 2018 baseline survey concluded that land holding by rural households are relatively large compared to other African countries with high population density. URR is found with the largest median land area per household of 5.27 ha followed by CRR-N with 4.86 ha. Household landholdings in CRR-S and LRR are relatively lower – 3.65 and 2.45 ha respectively.

2.4 REVIEW OF GAMBIA AGRICULTURE SECTOR

Agriculture is one of the main drivers of Gambia's GDP growth and source of livelihood for 72 per cent of the population. The sector is characterized by low commercialization as 62 percent of farm households produce for only self-consumption, 34 percent produce for both self-consumption and commercial sale, leaving only 4 percent of households producing purely for commercial sale[33]. There is very limited value addition and there exist few formal private sector enterprises in agribusiness. Local agricultural products are largely marketed through informal channels, in contrast to organized large-scale imported products (rice).

Value chain development of key agro-commodities is a national priority, underscoring promotion of agri-business and agro processing; rebuilding and revitalizing the agricultural market infrastructure through cooperatives and commodity exchanges; quality assurance mechanism to strengthen access to export markets; increased production and productivity

33 Source: World Bank Databank

using sustainable land and water management practices to address hunger and food security needs; and promotion of climate smart agriculture to build rural resilience[34].

i. The Performance of the Sector: Gambia's agriculture is relatively undiversified, mainly smallholder-based and characterized by rain-fed subsistence crop production. The main crops are groundnuts, rice, millet, maize sorghum, and cashew; as well as more intensive cultivation of fruits and vegetables. Fruits and vegetable production predominate in the Western Region of the Country and the western fringes of NBR, while groundnuts and early millet are the basis of the local economy in the rest of the country. Even though groundnuts are produced, and livestock reared in all the regions, rice production takes center-stage in the Central Regions ~ Lower River and Central River Regions. Groundnuts, rice, maize, late millet, sorghum, cowpeas, and some early millet constitute the source of local livelihoods in Eastern Region of The Gambia.

   There are numerous limitations in the agriculture sector including low productivity and marketing constraints that are worsening household purchasing powers. Some of these challenges include use of traditional low input low output (LILO) production practices. This leads to inadequate incomes of smallholder producers, low competitiveness of locally produced agro-commodities against cheaper imports.

   The sector is indeed constrained by a host of factors such as poor institutional support services, adverse climatic conditions, high dependence on foreign aids (food, capital and production inputs, etc.), inadequate labor, declining soil fertility, poor land and water resource management, increasing global commodity prices, inadequate implementation of domestic policies to promote the value chain functions: production, aggregation, processing and marketing. A fertilizer subsidy program exists but appears ineffective in reaching majority of farmers.

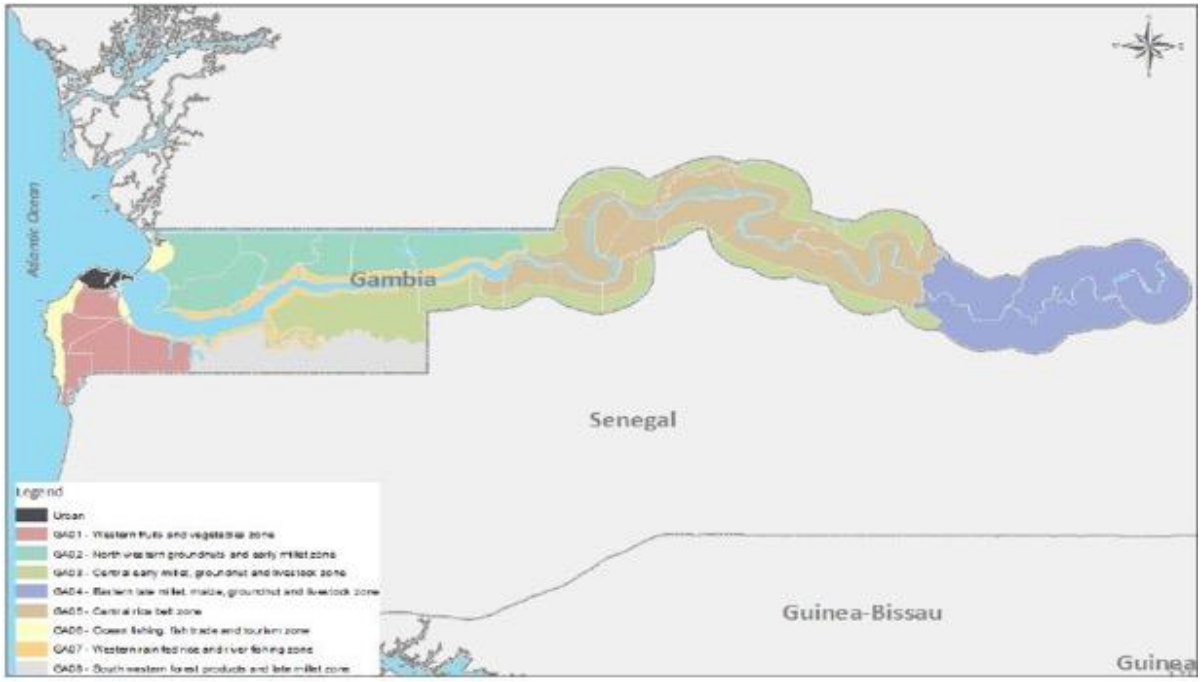


Figure 4: Livelihood Zone Map for the Gambia

ii. Performance of the value chains: Weak capacity of producer organizations, under-performing support institutions that deliver essential services of extension and finance (credit), and limited access to market information; poor rural infrastructure (feeder roads) limiting access to markets are key barriers to agricultural development. Generally, Gambia's agriculture sector is of limited economies of scale to encourage and attract investment in the various functions in commodities value chains, especially in mechanized farming that would

[34] National Development Plan: 2018 - 2021

increase productivity and expand production areas. Other causes of low performance of the value chains are unfavorable macro-fiscal stance in recent years, weak policy implementation and institutional framework, rainfall variability and climate shocks, lack of transport and market infrastructure, inappropriate storage facilities for major agro-commodities, high levels of aflatoxin contamination in groundnuts, low levels of application of food safety management systems along the value chains, as well as poor adherence to Sanitary and Phyto–Sanitary (SPS) conditions and Technical Barriers to Trade (TBT).

The transformation from a predominantly subsistence (LILO) to a commercial and diversified (High Input High Output - HIHO) agriculture sector will significantly contribute to Gambia's economic growth. However, low and unpredictable level of agricultural output induces price volatility that negatively affects the agricultural markets and creates production and price risks, which are unfavorable to increased investment. Value chains of crops and livestock are supply-based with limited market orientation. To commercialize agro-commodities will require improvement in post-harvest practices, processing with value additions and meeting quality standards; improving and expanding market chain linkages and trade opportunities; as well as strengthening and promoting linkages among key institutions and actors along the value chains of the selected agro-commodities.

There are limited industrial processing facilities for major crops in The Gambia, except the groundnut mill at Saaro, which attracts some private investment in oil extraction. NGOs and some international development partners provided local communities with cereal (rice, millet, and maize) milling facilities through their mainstreamed gender programs. The two industrial rice-milling facilities at Kuntaur and Jahally Madina are no longer operating. A tomato processing plant has been established at Banjulinding but currently using imported tomato pulp as their primary raw material. There is one abattoir in Abuko, and there are several milk-processing facilities across the country although the majority are dysfunctional.

The growing cashew exports has the potentials to overtake groundnut exports in The Gambia. Literature showed that 10,000 MT of Raw Cashew Nut (RCN) are produced annually in recent years, and more than 100,000 MT of RCN are produced in Guinea Bissau and Senegal, but exported from Banjul's port[35]. The total export value of cashew in 2013 was estimated at USD 5.3 Million. However, export values have been fluctuating between 2012 and 2015, showing a declining trend down to USD 2.3 million in 2016 due to falling world market prices[36]. Generally, cashew kernels are largely exported in the form of raw product due to lack of finance for processing, undeveloped export markets, and weak local demand. Only 0.2percent of Gambia's cashew is processed annually, and this is estimated between 5 - 10 MT. The industry has only one processing unit, with a capacity of above 1,000 MT per year, and a few other small-scale factories[37]. Combined local processing capacity is estimated at 3,000 MT per year.

Transportation of agricultural goods is an essential function of the agriculture value chain. Generally, the major roads in The Gambia are in good condition, albeit feeder roads are in poor shapes adversely affecting farmers' access to inputs and markets. The main trunk road network about 800 km of which 80 percent is paved and the secondary/feeder road network of approximately 2,500km is under-funded, poorly managed and in "poor condition"[38]. Inadequate capital investment in agriculture constrained commercialization of the sector. Availability and cost of finance are extremely high due to high interest rates. Such high interest rates accompanied by high collateral requirements have been limiting availability of finance for private investment in the productive sectors. Also, financial institutions claimed lack of understanding of needs and risks associated with agriculture financing. There are no organized non-banking finance companies with network and capacity to undertake agriculture lending. Trade in The Gambia has been facing challenges relating to market size, effective local demand, fluctuating commodity prices, and undiversified product and export base.

[35] Gambia National Export Strategy
[36] Youth and Trade Roadmap for Nuts and Agro-processing Sector: - 2018-2022 (GoTG, 2018).
[37] There exist three main cashew kernels microprocessors: Gambia Horticultural Enterprises, Group Juboo and Jawneh & Family Cashew Processing Enterprise. Two larger plants became operational in 2013 with a processing capacity of 2,500 tons per year and 7,000 tons per year.
[38] Agribusiness sector analysis (World Bank, 2019)

However, there are huge potentials for agricultural trade growth with the country's unique geographical location at the mouth of the main navigable river in West Africa, which accorded it a vibrant entrepôt trade. Banjul port is small compared to larger peers (particularly Dakar) but perceived to be more efficient. While liberal trade policies and duty arbitrage attracted neighboring countries to patronize Gambia's re-export trade, but the Economic Community West African States (ECOWAS) Common External Tariff (CET) eliminated that opportunity. Nonetheless, The Gambia's location, good trunk road infrastructure, and inland waterways is still providing natural advantages for trade with neighboring countries in the sub-region which are not optimally exploited.

2.5 JUSTIFICATION FOR VALUE CHAIN SELECTION

Agro-industries constitute 15 per cent of GDP, which is a significant component of Gambia's industries and another growth driver. Groundnuts is the main source of foreign exchange for The Gambia, accounting for 30 per cent, and 50 per cent of the national food requirement (CCA 2015). Based on the conclusions of the above agriculture sector assessment, some essential commodities were selected for further value chain analysis, including:

Groundnut is selected given its widespread and traditional prevalence as a cash crop and the potential to regain waning competitiveness. The Gambia offers the ideal environment for groundnut production in terms of arable land and climate. Groundnuts in The Gambia contributes 7 percent of the GDP[39] employing over 150,000 farmers realizing a total production of 109,780 MT in 2017[40]. However, higher revenues from groundnuts could be possible through quality aflatoxin-free nut production and appropriate post-harvest technologies.

It is possible to derive 63 derivative products from raw groundnut[41] hence an opportunity not only to export raw nuts but also to consider processing activities that would enable value added products to be developed and sold at a premium. However, increasing private investment will suggest a major structural reform to improve incentives and enable price differentiation in the groundnuts industry.

Exports of Gambian groundnuts to European markets are grossly limited by the high contamination of aflatoxin and inadequate Sanitary and Phytosanitary Standards. The majority of the groundnuts are exported at much lower prices to China for processing into oil or to India for bird feed, missing the higher-value opportunity offered by the EU and US markets. The competitiveness of local processing for oil remains challenging, given high financing, input costs and lack of market-based pricing. Government control of farm-gate prices for groundnuts (being a political commodity) can be misconstrued by the private sector, and this undermines their participation and investment in the sector.

Horticulture (fruits and vegetables) selected for analysis as potential export crops, considering their performances in the export markets and benefits accrued. Fruits (mango, orange, banana, and paw-paw) production and marketing has been a growing economic activity in The Gambia since 1999. It's an important source of food and cash income for producers and marketing agents. A study in 2001[42] estimated a total of three hundred and twenty-five private orchards in the country, employing 34percent of the adult population in both production and marketing. Mango is the largest economic fruit in The Gambia, with estimated production levels steadily growing from 25,000 Mt in 1998 to over 60,000 Mt in 2018[43]; and 40percent of the produce being currently commercialized[44].

The horticulture sub-sector contributes 4.2percent of the National GDP. Vegetable production is mainly dominated by women, who traditionally produce the crop on smallholder plots within communal gardens. These gardens are established in lowlands with high groundwater tables for irrigation through shallow hand-dug wells. Exotic and/or improved vegetable varieties are mainly grown during the dry season (October—March) while local varieties can do well during the rains. With public sector and NGO support, some communal schemes are expanded up to 5ha gardens for women and youth farmers. The Gambia has a favourable climatic condition for vegetable farming especially in the Western regions (WCR and NBR). With available arable land and quality water resources (underground and surface

[39] National Export Strategy, 2017
[40] FAOSAT, 2019
[41] USDA Foreign Agricultural Service report: Revitalization of the Groundnut Sector in West Africa, March 2010
[42] Horticultural Production and Marketing in The Gambia, United Purpose, 2001
[43] FAO Value Chain Study, 2019.
[44] World Bank, 2019

water) coupled with the growing demand and market opportunities (giving the booming tourist industry and growing urban population), the sub-sector could be modernized for sustained economic growth. However, with the existence of appropriate policy instruments ~ the National Horticulture Sector Master Plan (NHSMP), NDP and ANRP, Tourism, Trade, Youth and Women policies complimented by an expanding tourist market and the operationalization of the Food Safety Quality Authority (FSQA) certified tomato processing plant (120mt input capacity per day and output capacity of 5mt paste), the tomato crop will soon be a major commercial commodity.

Millet and Maize selected because of their critical roles in traditional household food and nutrition security among Gambian families, with huge potentials for food import substitution. Both commodities are drought resistant with great potentials to increase, on a sustainable basis, the income of rural producers, entrepreneurs (actors) that are engaged in the production, processing, storage, and marketing.

Livestock (ruminants and chicken) selected for wealth and employment creation. Activities of the various livestock value chains - production (of ruminants and poultry), processing, marketing, and services - provide diversified livelihood opportunities to rural, peri-urban and urban inhabitants. Livestock contributes 7percent of national GDP and 25-30percent of agricultural GDP with majority of farmers being smallholder farmers[45]. The milk value chain is dominated by small-scale farmers practicing integrated crop/livestock production. The present domestic production of beef, milk, lamb, meat, and chicken is far short of national demand. The deficit in supply is supplemented with imports. The demand for livestock products throughout the year offers an opportunity to generate income by increasing the quantity marketed.

[45] DLS.GBOS 2016/2017 Livestock Census

3. POLICY, PLANS, AND REGULATORY FRAMEWORKS

The Government of the Gambia over the past two decades had put in place policies, plans and regulatory frameworks for achieving increased food, nutrition, and income security through agricultural diversification without damage to the environment. In recent years, there has been more emphasis on the development of the entire value chains across the sector. Notwithstanding these condescending policy frameworks, the low rate of performance of the agricultural sector vis-à-vis population growth has resulted in significant deterioration of the desired policies.

The food sub-sector has in particular, experienced persistent decline in yields and the country now depends on imports for approximately 50 percent of its requirements, at a huge cost ranging from GMD 84 million in 1994 to about GMD 1.923 Billion in 2014 for only rice imports (CIF value) whereas other non-rice imports of locally produced food commodities ranged from about GMD 115 Million in 1995 to GMD 1.716 Billion in 2015 (ANR Policy, 2017-26). At the macro level, the overriding objectives of the agriculture sector policies were aimed at a more favorable environment for producers, which will encourage increased production, productivity, employment, and incomes. In the Gambia, where small-holder farming operations are predominant, this means creating conditions in which small scale farmers/operators particularly women and youth who are key in most farming and agro-business activities, will be stimulated to produce more efficiently and generate surplus for the market. This is a cardinal pathway towards the realization of the overarching agricultural transformation program.

At the micro level, policy measures have not created adequate opportunities for increased production of food and cash crops, and livestock products by small-scale farmers/operators to support a viable value chain. This was due to the fact that knowledge of these opportunities was inadequate, as the relevant information or data were not available or readily accessible, and were not linked to options for improvement in specific farming/production systems or other local initiatives. As a result, traditional farming methods continue to be used by the majority of farmers and operators at the detriment of environmental integrity. These methods, as has been demonstrated, are no longer adequate to cope with the increased pressure of population on the sector, and thus, the expectations for improved living conditions for the majority of the population have not yet been realized.

The current Agricultural Policy is premised on the creation of a market-led, commercialized, efficient, competitive and dynamic agricultural sector consistent with sustainable development and maintaining the integrity of the environment for posterity. The structural transformation and rationalization of interventions in the sector will be the main instruments for change. It is this change process, which will allow the sector to contribute to and benefit from the growth and development of the economy as it moves along the trajectory of industrialization. The over-arching objective of the Policy is the intensification of poverty reduction and boosting of food, income and nutrition securities through the optimal utilization of the resources of the sector consistent with preserving the veracity of the environment (ANR Policy 2017 -2026).

The prognoses of value-added activities (production, employment, factor productivities, local raw materials utilization rate and sources of growth of output) underpins the objectives of the policy. Value addition in agriculture is expected to grow at 6.14percent per annum in the period 2017-2026 which will be largely propelled by crops (vegetables and fruits), livestock (small ruminants and poultry) and fisheries sub-sectors[46]. Total employment in the sector is predicted to grow at a rate of 12.67 percent per annum by measured and cognizant structural adjustment in the sector. This could be attained through expansion of agro-based industrial development and appropriate mechanization of crop production to enable industrial development to absorb a larger portion of the available labour force.

3.1 KEY RELEVANT NATIONAL POLICIES

The key national policies relevant to the agricultural sector development are highlighted below:

3.1.1 Vision 2020

Referred to, as the "The Gambia Incorporated Vision 2020" is a long-term development policy framework (1996-2020) aims at transforming The Gambia into a middle-income country by 2020. The mission statement is "To

[46] ANR Policy 2017- 2026

transform The Gambia into a financial center, a tourist paradise, a trading, export-oriented agricultural and manufacturing nation, thriving on free market policies and a vibrant private sector, sustained by a well-educated, trained, skilled, healthy, self-reliant and enterprising population and guaranteeing a well-balanced eco-system and a decent standard of living for one and all under a system of government based on the consent of the citizenry."

For this vision statement to be realized, the Government of the Gambia implemented a number of interventions anchored on medium-term macroeconomic development frameworks. These include: the Strategy for Poverty Alleviation (SPA-1995-1999), The Poverty Reduction Strategy Papers I and II (PRSP I 2003-2006 and PRSP II 2007-2011), The Program for Accelerated Growth and Employment (PAGE 2012-2015) linked with the UN Millennium Development Goals (MDGs) and the sectoral policies comprising the Agriculture and Natural Resources Policies (ANRP, 2009-2015 and 2017-2026), the Trade policy (2018-2022), the National Nutrition Policy (2018-2025), the National Youth Policy (2009-2018), the GEAP (Phase I 1992-2001 and Phase II 2009-2018) and the Gender and Women's Empowerment Policy (2010-2020), National Health Policy (2012-2020) and Education Policy (2016-2030). Notwithstanding the achievements of these interventions, the agricultural sector performance continuous to decline. For example, the performance of the private sector[47], which is expected to be the engine of economic growth, is largely poor. The ATP is key pathway in transforming the sector from subsistence to commercially-oriented venture.

3.1.2 Program for Accelerated Growth and Employment (PAGE, 2012-2015)

The Program for Accelerated Growth and Employment (PAGE 2012-2015) was the national strategy which emphasized fiscal adjustment, together with infrastructure investment and structural reforms to support inclusive growth. It was based on five pillars:

- Accelerating and sustaining economic growth;
- Improving and modernizing infrastructure;
- Strengthening human capital stock and enhancing access to social services;
- Improving governance and increasing economic competitiveness; and
- Reinforcing social cohesion and mainstreaming cross-cutting issues.

A review[48] of the PAGE conducted in 2014 revealed that its objectives have not been attained and were not achieved by 2015. The three objectives included:

- Substantial reduction of poverty levels,
- Increasing employment, and
- Raising per capita income of Gambians.

The double-digit rate of annual economic growth which underpins performance in the three goals was not achieved. The growth rate shortfall was attributed to three reasons:

- Drought in 2011 that held back better performance during the PAGE period;
- Macroeconomic mismanagement and
- Over-optimistic projections of annual rates under PAGE that set such high growth without having game changers in the growth drivers to make significant shifts in the baseline level.

While the agriculture sector as the main employer and key sector in the fight against poverty registered fluctuations in output and productivity, tourism, as the main foreign exchange earner, showed steady progress in the number of visitors prior to the advent of the Ebola crisis in the sub-region in 2014. Given the shortfalls in the achievement of PAGE goals, the NDP was designed with the shortcomings in mind.

3.1.3 National Development Plan (NDP, 2018-2021)

It is a successor to PAGE and a short-term national plan geared towards modernizing agriculture and promoting national food, nutrition and income security, and poverty reduction through inclusive and culture-centred tourism,

[47] Private sector includes the small-scale resource poor farmers on one side and profit oriented commercial entrepreneurs on the other
[48] PAGE mid-term review 2014

women and youth empowerment for sustainable economic growth. The NDP, therefore, provides the foundation for the smooth take off of the ATP. Furthermore, the timing of the NDP is in line with the five priority areas of the AfDB High-5's and the Bank's 10-Year Strategy (2013-2022) as well as the strategy for agricultural transformation in Africa (2016-2025).

3.1.4 Agriculture and Natural Resources Policy (ANRP, 2017-2026)

The Agriculture and Natural Resources (ANR) Policy framework (2017-2026) charts the nature and scope of interventions in poverty reduction and achievement of Vision 2020 and the Sustainable Development Goals (SDGs) for the sector. It has the following key strategic objectives:

- Improved sustainable levels of food, nutrition and income security in the country with emphasis on vulnerable groups (women, children, and youth);
- Commercialized ANR sector with measurable, competitive, efficient, and sustainable food and agricultural value chains;
- Institutions (public and private) in the sector strengthened to provide needed services in an enabling environment that reduces vulnerability in food and nutrition security; and
- Sustainable effective management of the natural resource base of the sector.

The ANR Policy will be a framework for the realization of the ATP strategic objectives with special emphasis on the sustainable value chain approach.

3.1.5 Gambia National Agricultural Investment Plan 1 (GNAIP)

The First-Generation Gambia National Agricultural Investment Program (GNAIP I, 2011-2015) was the national strategic framework to guide the planning and implementation of programs for the agricultural sector. The GNAIP aimed at achieving an increased agricultural sector contribution to the national economy by improving productivity through commercialization and active private sector participation predicated on a sound macroeconomic framework with the goal of enhanced growth and poverty reduction. In order to meet this goal, the development objective of GNAIP I was increased food, nutritional security, and household income, through increased production, productivity and stabilized marketed output, based on sustainable use and management of natural resources.

GNAIP I define the parameters of partnership in the agricultural sector, specific commitments to the Government and partners for investment and aid alignment. The Plan has six pillars, which form the basis for the investment programs, namely:

- Improved Agricultural Land and Water Management;
- Improved Management of the Other Shared Resources (Forestry, Parks and Wildlife, Fisheries, livestock);
- Development of Agricultural Chains and Market Promotion;
- National Food and Nutritional Security;
- Sustainable Farm Development; and
- GNAIP Coordination, Monitoring, and Evaluation

It emanated from The Gambia's ECOWAP/CAADP Partnership Compact with the primary goal of assisting the country to reach a higher level of economic growth through agriculturally-led development that ensures the elimination of hunger and malnutrition, reduces poverty, food, nutrition, and income insecurity as well as enables the expansion of exports.

The GNAIP I was fully aligned and consistent with all the macro-level, agriculture and natural resources sub-sector policies of the country. In addition to its consistency with the macro-policies and ANR sector strategies, the GNAIP I was modeled on measurable parameters and milestones that were identified at design and approved after completion along the value chain approach.

3.1.6 Gambia National Agriculture Investment Plan II FNS (GNAIP, 2019-2026)

The Gambia Agriculture Investment Plan (GNAIP) II-FNS is a successor plan to GNAIP I. The Plan is set out to concretize the achievements of GNAIP I and constitutes the main investment framework for agricultural development in The Gambia in the medium term (2019-2026). It reflects sector priorities such as modernization and transformation with the private sector as the major catalyst for growth and development in the sector. "The GNAIP aims to increase food and nutrition security at household level including vulnerable households through increased ANR productivity based on sustainable use and management of natural resources in support of national goals of poverty reduction and improved livelihood". The following constitute the six priority axes of GNAIP II:

- Production and value chain promotion on food crops and vegetables sub-sector;
- Production and value chain promotion on livestock husbandry and pastoralist sub-sector;
- Production and value chain promotion on fishery and aquaculture sub-sector;
- Production and value chain promotion on forestry and environment sub- sector;
- Food and nutrition security, resilience, social protection; and
- Promote good governance of the whole agriculture and natural resources sector.

It should be noted that all first four priority axes include capacity building, youth employment, and women empowerment, climate change adaptation, regional trade promotion, whilst the 6th includes Institutional capacity, steering, and coordination, monitoring and evaluation and communication. GNAIP II will run concurrently with ATP and will provide invaluable support to the implementation of the program.

3.1.7 Trade Policy (2011-2016)

The National Trade Policy (2011-2016) provides the framework for trade in commodities, particularly those related to agriculture. The policy's strategies and measures relevant to agriculture include the following: pursuance of policies to improve the agribusiness environment to attract in subsectors with potential for export (horticulture, cashew, groundnuts) and commercial investment in rice and horticulture; promotion of the processing of agricultural produce for value addition; and ensuring that national products meet international standards to improve market access. In this regard, it proposed a number of supportive measures comprising investment and export promotion incentives, access to land, skills development for productivity improvement and investment finance (exchange rate stability).

3.1.8 Trade Policy (2018-2022)

The National Trade Policy (2018-2022) is a successor policy of the first-generation trade policy (2011-2016). This policy aims to establish and maintain a competitive and liberal trading environment that is supportive to private sector development for export-led growth. The policy also has the following specific objectives linked to the policy goal:

- To stimulate the public and private sectors to invest and develop competitive and sustainable supply and productive capacities including technology upgrading, agro-processing, efficient manufacturing and skills development with particular attention to women and youth, to accelerate exports and economic development;
- To facilitate the fuller participation of exporters, especially Medium to Small-scale Micro-Enterprises (MSMEs) in regional and international trade in order to take advantage of trade opportunities as means to reduce poverty and improve economic growth well-being;
- To create an enabling environment for investment, including foreign direct investment, in order to produce increasingly competitive goods and services for domestic and exports markets, including value addition and diversification as well as product quality development to meet international standards; and
- To facilitate and stimulate the establishment of coherent and well-coordinated trade and trade related capacity building, including human resources development and addressing industry specific supply side constraints and export promotion activities.

This trade policy will support the strategic objectives of the ATP by enhancing access to both regional and international markets for agricultural produce and products. This will improve the agribusiness environment to

support subsectors with potential for export particularly horticulture and groundnuts and commercial investment in rice and horticulture; promotion of the processing of agricultural produce for value addition; and ensuring that national products meet international standards to improve market access.

3.2 OTHER RELATED POLICIES

These policies will provide immeasurable/condescending support to the implementation of ATP along the value chain approach. They are discerned below:

- Vision 2016: The overall objective of the vision was to increase rice production to achieve self-sufficiency by 2016. This was to be achieved through a combination of several strategic interventions including expanding areas under cultivation and simultaneously increasing yields from an average of 0.63 Mt/ha to at least 4 Mt/ha, with two harvests per year for all irrigated areas. This was to be facilitated by active extension support, availability of mechanization services complemented by tidal and pump irrigation facilities, an active private sector in the rice value chain with youth and women playing pivotal roles.
- The Gambia Environmental Action Plan (GEAP, 2009-2018) provided the overall policy framework for sound environmental management in the country;
- The Biodiversity and Wildlife Policy (2015-2020) defines a coherent biodiversity/wildlife policy framework as the basis of biodiversity conservation, management, and sustainable use;
- The Fisheries Policy (2018) charted the goals for a rational and long-term utilization of the fisheries resources, the use of fish as a means of improving, the nutritional standards of the population and increasing employment opportunities in the sector as well as increasing foreign exchange earnings through exports and aquaculture development;
- The Forestry Policy (2010 – 2020) promotes the rational management of the forest resources through the active participation of the rural population who are the direct stakeholders;
- The Gender and Women Empowerment Policy (2010-2020) provides a blueprint for gender equality and women empowerment;
- National Youth Policy (2016-2018) focused on mainstreaming youth into the productive sectors including agriculture; and
- National Nutrition Policy (2010-2020) aimed at mainstreaming nutrition into national development.

These policies have been complemented by legislative and regulatory frameworks to facilitate their implementation. Similarly, the sector attracts multiple stakeholders with varying and complementary roles as presented in Table 2.

Table 2: Polices, Plans, Regulatory Frameworks and Stakeholders Relevant to the Agricultural Sector

National Plans and Policies	• National Development Plan (2018-2021) • Second Generation Gambia National Agricultural Investment Plan II Food and Nutrition Security (2019-26) • Economic Community of West Africa Agricultural Policy (ECOWAP, 2016-2025) • Agriculture and Natural Resource Policy (2017-26) • Vision 2020 • Comprehensive Africa Agricultural Development Program (CAADP, 2015-2025) • National Nutrition Policy and Action Plan (2010-20) • The revised National Youth Policy, 2016-18 • Gender and Women Policy (2010-2020) • National Horticulture Sector Masterplan (2015) • The Gambia Trade Policy (2018-2022) • Gambia Extension Policy (2018) • National Agricultural Sector Strategy (2015-2020)

	• Forestry Policy (2010-2020) • Fisheries and Aquaculture Policy (February 2018) • Draft Cooperative Policy (2019)
Recent Initiatives	• Agriculture Transform Program (ATP, 2020-2030) • National Agricultural Land and Water Management Development project, (NEMA, 2013-2019) • Program for building resilience against food and nutritional insecurity in the Sahel (P2RS, 2014-2019) • Building Resilience to Recurring Food Insecurity in The Gambia (BRRFI, 2014-2019) • The Gambia Commercial Agriculture and Value Chain Management Project (GCAV, 2014-2019) • The Agricultural Value Chain Development Project (2016-2020) • Community-Based Sustainable Dry Land Forest Management (2016-2020) • Adapting Agriculture to Climate Change (CCA, 2016-2020) • Post-Crisis Response to Food and Nutrition Insecurity in The Gambia - EU EDF 11 Envelope B (2018-2021) • Agriculture for Economic Growth (2018-2021) • Building Resilience through Social Transfer for Nutrition Security in the Gambia (BReST, 2016-2019) • Action Against Desertification (AAD-GGW, 2016-2019) • Strengthening climate services and early warning systems in The Gambia for climate resilient development and adaptation to climate change – 2nd Phase of the Early Warning Project (07/15 - 06/19) • Large-scale Ecosystem-based Adaptation in The Gambia: developing a climate-resilient, natural resource-based economy (01/2017 -12/2022) • Sustainable Land Management Project, 2010 • Food Security and Commercialization Project 2009 • Livestock and Horticulture Development Project, 2009 • Food & Agriculture Sector Development Project, • Improving food security through crop production intensification and school feeding program, 2013 • Building the Resilience of Smallholder Farmers through Cassava Production
Relevant National Laws and Acts	• The Local Government Act (2000) • The Wildlife and Biodiversity Act, 2003 • The National Water Management Act (2007) • The Forestry Act (1997) • Labour Act (2007) • Seed Act (2008 • Seed Quality Control and Marketing Act (2014) • Seed Quality Control and Marketing Regulation (2016) • Information Communication Technology Act (2019) • Central Bank Act (2005)

Key Stakeholders	• Ministry of Agriculture, • Department of Agriculture (DOA), • Department of Livestock Services (DLS), • National Agricultural Research Institute (NARI), • National Seed Secretariat (NSS) • Ministry of Youth and Sports • Ministry of Trade, Regional Integration and Employment, • Ministry of Local Government and Lands, • Ministry of Finance and Economic Affairs, • Ministry of Fisheries and Water Resources • Ministry of Environment, Climate Change, and Natural Resources • Gambia Chamber of Commerce and Industry • Gambia Youth Chamber of Commerce • Gambia Women Chamber of Commerce • National Federation of Gambian Women • Gambia Horticultural Enterprises • CFAN – Commercial Farmers Agri-Business Network • TANGO – The Association of Non-Governmental Organization • Micro-Finance Institutions (NACCUG, SDF, VPC) • Farmer Organisations (NACOFAG, Farmers Platform, National Livestock Owners Association, NaLOA) • Gambia National Transport Owners Association

4. ANALYSIS OF SELECTED VALUE CHAINS

4.1 VALUE CHAIN ANALYIS OF MILLET

4.1.1 End Market Analysis for millets

Millets are consumed by all strata of households in the country. In most rural areas' millets are primarily subsistence crops grown for home consumption. On average individual consumption of millet is estimated 100 kg per year, driven by relatively low-price compared to other cereals (rice and maize). The key factor that influence changes in retail market price of millet is by and large attributed to demand and supply of the millet and value of the Dalasi (exchange rate) against major international currencies. This is because significant quantities of millets consumed in country are imported from neighboring countries; Senegal, Mali and Burkina Faso.

During the field visits (stakeholder consultation), it was revealed that domestic production meets only three months of annual consumer demand, the rest are imported.

Generally, the price of millet fluctuates between GMD 900 and GMD 1,450 per 80 kg bag during the year. At harvest time, when large quantities of produce are available in the market and household incomes of farmer are low, farmers are obliged to sell millet as low as GMD 700-800 per 80kg bag. As the season progress, more rural whole-sellers and retailers enter the market with large quantities of millets from all parts of the country, affecting price trends countrywide.

4.1.2 Consumer Markets for Millet

Consumer Markets of millets by producers themselves accounts for 65.8 percent of total volume of production in the country. Consequently, an estimated volume of 30,293 Mt of millet produced in 2018, approximately, 19,932.7 Mt was consumed at household level. There are approximately 300 regular markets, mainly located in large and medium settlements of the country and 24 *Lomo* markets in rural communities near Senegal borders around the countryside, found in almost all regions except in West Coast Region. In these markets, grains and millet flour are traded in bags, cups depending on consumer demand and the mode of transportation is through trucks, mini vans, pickups, and animal drawn carts. The packaging materials are mainly re-cycled polyethylene (nylon) bags of imported rice, flour or sugar (FAO VCA 2019).

The characteristic of millet consumer markets (regular and weekly) is both wholesaling and retailing activities takes place at the same time. Thus, the markets are mostly, overcrowded with actors retailing the same commodity with limited value addition; except de-husked millet. Millet flour or grits is sold at various locations, mostly packaged in polythene bags. The size of these local markets are generally small and individual retailers usually transact in small quantities (approximately 1 bag of 80 kg per day). A large percentage of actors (farmers and/or vendors) in the millet end markets have limited access to market information, low skills to investigate market opportunities, and limited access to financial services. The study also revealed that traders involved in marketing of millet are better organized to serve interests of members in terms of access to market information on source of supply of millet and prices than other actors.

Figure 5: Millet Field with Farmer and Family

4.1.3 Cross Border Market for Millet

Significant quantities of millet is traded across the border between The Gambia and Senegal, especially at the weekly markets. The exporters/importers procure millets from producers and aggregators in bulk to sell in neighboring countries. By and large, they use road transports and the common passenger vehicles *(GheliGheli)* in the movement of bulky consignments of millet, packed in polyester bags for specific markets. Millet consignments are transported between the neighboring countries without any formal trade agreements; thus, most trading is based on speculation with regard to quality, quantity, or price. Nonetheless, about 25 percent of millets produced in the Gambia are traded in Senegal each year this will increase in coming years due to the newly constructed bridge at Farafenni, thus cutting down on time and resources spent in ferry crossings.

4.1.4 Production

The primary actors or millet value chain are small-scale producers who cultivate millet for direct household consumption and mostly cultivate small sizes of land, 2-3 ha per season. Production systems of millet are generally rudimentary and traditional with the use of primitive tools such as hoe and cutlass and input suppliers in millet value chain mostly provide only fertilizers, because almost all farmers use own seed to cultivate each year. By and large, millet can be produced in all the regions of the country, because of the topographic features of most arable lands. However, production is largely predominant in the North Bank, West Coast, and Upper River Regions. The optimum rainfall requirement of millet ranges between 350 to 500 mm. Although millet can respond to good moisture supplies during the growth stages, it is nevertheless one of the toughest, drought tolerant crops. Thus, millet is popular in the regions where the weather is very unpredictable and it is mostly grown in upland ecologies with medium textured sandy soils, under low inputs production practices.

Nonetheless, millet production has been declining since 2015, attributable to climate variations, poor soil fertility (soils are generally poor in the required nutrients), low application rates of inorganic fertilizers (high costs of fertilizers to supplement lost fertility). For instance, total national production of millet has declined from 88,663 Mt in 2013 to 30,590 Mt in 2018. There are four varieties of millet grown in the country, excluding newly introduced varieties of pearl millet to promote consumption of nutritious food among malnourished children, pregnant and lactating mothers. The potential yield of commonly grown varieties range between 1-1.4 Mt/hectare. Higher yields are attainable when good agricultural practices are practiced; recommended rate of inorganic fertilizer rate of 200 kg of NPK and 100 kg of Urea per hectare, seeding rate of 4kg, and timely weeding good, etc.

4.1.5 Aggregation

Product aggregation is done at a small scale levels mainly in weekly markets and *syndica* markets for unhusked millet grains. Conversely, aggregators in urban areas (Serrekunda and Brikama markets) trade in dehusked millet. All the storage facilities are basic, with little or no fuminagtion to prevent post harvest insect pest infestation. Most storage facilitaties visited at the regular and week markets are owned or hired by actors and storage capacity of these facilities ranges from 150 -1000 bags. Aggregators perform a fundamental role of ensuring year-round availability of millet in Gambian markets. Qualitative data from the consultations shows that surplus of locally produced millet sold in markets can only meet 25 percent of the annual market demand, while the rest is imported from Senegal, Mali and Burkina Faso. The traders' organization Greater Banjul Area (GBA) has established strong horizontal linkages with other members who operate in four key weekly markets along the Senegalese board (namely Sare Bojo and Sare Ngai (URR), Bureng (LRR) and Kerr Pateh (NBR), where most imported millets are transacted.

However, the fundamental flaw observed in the system is that transactions are largely supply driven, instead of demand driven. The latter is a measure of market conduct and efficiency of a commodity, and the right direction to a more commercial oriented nature of the market for increased household incomes and wealth creation.

4.1.6 Processing

The second direct actor in the millet value chain are aggregators of millet who collect millet from different farmers, package, and transport in polyester bags. Processors are individuals who change the form of millet grains; de-husk and flour. Millet grains, before consumption are usually processed by commonly used traditional processing

techniques: de-husking and grinding to improve on nutritional properties. Millet grains are usually dehulled and subjected to different treatments before consumption, mostly through traditional hand-pounding. However, over years government projects and development partners have introduced motorized grain milling machine in rural areas for household uses. Consequently, there are two common motorized processing categories in the country; a) small-scale individual operated processing and b) medium scale community level operated milling machines. However, there are emerging industrial processors (GHE and Jal Healthy Foods), both for the domestic and export markets. However, the current quantities exported are relatively small and do not have the competitive muscle to penetrate or capture a niche in the European market. Notwithstanding, there are great opportunities to expand this category of processors to competitive economic levels and can thus be a leverage point of entry for potential investment in the millet value chain.

4.1.7 Distribution

The system of millet distribution in the country is both public and private operations, mainly transported through roads (both paved and unpaved). Millet is transported in bags using trucks, small taxi, and mini-buses on daily basis, during and after harvest season. Millet consignments are transported to either regular or weekly markets, and (*sandika*) markets; or transported directly to larger regional markets (Basse, Farafenni, Serrekunda, Soma). The road conditions between farms and markets are generally poor and impassable during the rainy season, while conditions of road networks between markets are most paved (graveled or tared).

However, horizontal distribution channel of millet is fairly organized since traders are organized in associations that share regular and reliable market information on various issues of interest. Thus, main distribution channel of millet is farmers-traders-consumers, through regular and weekly markets. On a small scale though, millet is distribution from farmer to farmer but it is not well developed and unreliable for efficient produce distribution.

4.1.8 Millet Value Chain Governance

The existing policy environment on agriculture value chain governance encapsulates the entire agriculture sector, and to some extent covers the coarse grains sub-sector: rice, maize, millet, sorghum, and *findi*. The emphasis in this sub-sector is more on rice, which is the staple food for most (95 percent) Gambian households. The policies and strategic documents on agricultural development are GNAIP II-FNS, ANRP and NDP are directed at enhanced production and productivity. However, there are no clear-cut policies specifically on segments of the millet value chain, while rigorous system of collection of taxes by Municipalities and Area councils continues for all commodities/merchandise including millet grains and products, with no parallel investments to develop market environments.

The Ministry of Agriculture (MOA) provides the overall supervisory, regulatory, policy guidance, coordination and monitoring and evaluation role for the public sector in agriculture. The Minister has ultimate responsibility and is assisted by the Permanent Secretary I, on policy and administrative matters and Permanent Secretary II, on project implementation and programs. There are three deputies in charge of Programs/Projects, Administration and Finance and the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS) who coordinate the overall strategic management of MoA and coordinates operational activities. The ministry comprises of the Department of Agriculture (DOA) with nine service agencies, National Agricultural Research Institute (NARI) and Department of Livestock Services (DLS).

The Department of Agriculture is responsible of extension services for small-scale farmers in crop production, including millet. Government provides the enabling environment for its development partners (UN Agencies, NGOs and private sector) to support farmer capacity building and provide technical training on Good Agricultural Practices. Due to wide gap of extension worker-to-farmer ratio, some development partners are supporting crop production through the Farmer Field School approach, to complement Government efforts.

4.2 VALUE CHAIN ANALYSIS FOR MAIZE

4.2.1 Maize End Markets

The end markets in the maize value chain are less complex compared to in particular the rice commodity. Domestic maize trade relies largely on a network of traders linked with markets to village assemblers/aggregators. The markets

are mainly populated by processors, traders/retailers, and consumers. The structure of the market and the relative importance of its various actors change significantly depending on production levels: The study found domestic production from small- scale farmers form the major source of domestic supply (FAO Value Chain Analysis 2019). Smallholder maize sales largely pass through travelling traders (or intermediary traders), who collect from village assemblers in bulk for onward sale to large retailers at either lumo or major markets in regional towns. Retailers in regular markets are the next major link in the chain, buying grains primarily from the wholesalers, or from intermediary traders/middlemen.

4.2.2 Maize Consumer and Domestic Market

Data from the stakeholder consultations indicate that about 28% of rural households consume maize in their weekly menus, while 18% of rural consumers consume maize once in a fortnight. The majority of the rural households (55%) in the poorer income quintile prefer *'Nyeleng'*, *'Cherrie' and porridge* diets. Urban consumers obtain maize products from retail outlets in the weekly lumos, regional markets (Sandikas) and regular markets. Only the top income quintile obtains their food stuff including maize products from supermarkets.

The performance of the village maize assemblers in the value chain is highly dependent on the functioning of downstream actors, particularly the wholesalers. The primary markets for the village maize assemblers are either the itinerant traders or wholesalers. About 68% of the assembler traders do not store any of the grain they purchase from farmers. They quickly sell to wholesalers bulking up grain in the major and weekly lumo markets (FAO Value Chain Analysis 2019).

Itinerant traders in weekly *'lumos'* and major markets 'Sandikas' indicate that smallholder farmers have a variety of potential markets through which to sell maize. These include aggregator/assembly traders operating in villages, which are known to be the most important marketing channel utilized by 64% of smallholder farmers selling surplus maize. Stakeholder consultations cited that smallholders do sell only 18% of their maize produce, realizing average annual household incomes estimated at GMD4500. 00 per production season.

It was also found that 21% of smallholder maize growers occasionally travel to weekly *lumo* markets to sell their surplus grains. This actually shows the extent to which the first stage in the maize marketing system (farmer-village assembly trader/first buyer) has developed to become competitive with traveling traders who are capturing only 15% of maize sales at farm-gate level. The growing number of maize assemblers also reflects an increase in the participation of the private sector in maize marketing. The weekly *lumos* and major markets are populated by intermediary traders (middlemen/wholesalers), but some retailers also operate in these markets to sell grains to consumers. The packaging materials for maize are mainly re-cycled polyethylene (nylon) bags of rice or sugar. Demand for various forms of the maize commodities are sold at the domestic markets: unprocessed maize grains, processed as milled and in floor form.

The maize crop usually matures at the same time causing surpluses at selling points, and prices offered to farmers show a high degree of variability. This variation suggests a *marketing shrewdness* – the ability of farmers to negotiate prices– plays a significant role in their ability to obtain remunerative producer prices. This concentration of surplus production on the market is one of the most important points to be considered when leveraging on the effects of policy instruments designed to getting prices right for both consumers and producers.

Access to market information, as well as standards and quality assurance in the domestic market present a major challenge in the maize value chain. Although the informal information systems are relied on, market actors still have little or no information of current prices or indication of standards. There is little attention on quality checks (grain quality, stored pests or moisture levels) and traceability of origin is not an issue in the maize market.

4.2.3 Maize Regional Market

The cross-border sub-regional market for maize is developing. Stakeholders interviewed cited that the magnitude of informal trade in maize is unaccounted for, and estimated that 70-80% of maize that is bought and sold in The Gambia pass through untaxed or regulated channels, thus, making it difficult to estimate market size. Markets along the Senegalese border have sufficient grounds for cross-border trade (imports and exports) of maize. Informal cross-border trade with Senegal takes place; however, this has not been sufficiently studied and quantified. Maize is also exported, but often through informal channels, and hence not captured by official data.

The lumo markets are the export channels of maize, while the major markets in Farafenni, Brikama, Serrekunda, and Banjul are the final destinations of cross border imports from neighboring countries. Processors either supplying domestic consumers or niche markets (hotels, restaurants and super markets) source produce from these domestic markets. Factors that influence changes in market prices in the cross-border market largely hinge on demand and supply of the commodity, other transactions such as exchange rates of the CFA, where the produce is imported from neighboring countries; and other costs such as transportation (fuel costs). Generally, the mode of transportation of produce to the end markets is through trucks, mini vans, pickups, and animal drawn carts.

4.2.4 Production

Although maize has been grown for a long time in The Gambia, it is not a cash crop nor does it form a major part of the population's principal diets. It is grown primarily for food security and less for income generation. Maize can be grown in several locations throughout the country, with current production concentrated in the Upper River Region and North Bank Region.

This study found households in maize production committing an average family land area of 0.86 ha to the crop. Total area put under cultivation for maize production in 2017 was 29,808.5 hectares in the Gambia[49].

Although maize is mainly treated as a backyard crop, it is a versatile plant that can grow in many Gambian ecologies of various altitudes and fertility conditions, which explains its global adaptability and its many types of varieties (Dr. Lamin B. Sonko, 2017).

In the Gambia, farmer-saved seeds remain the principal source of seeds for most crops, especially the field crops such as maize. In the face of the low seed output from the formal seed sector, the informal sector remains the main source of seeds for all crops. The informal sector is made up of farmer to farmer seed exchanges, seed saving, seed barters, and market purchases. These make up more than 90 percent of total seeds used in The Gambia. Therefore, it is clear that any intervention in the national seed program should give emphasis to the informal sector in a way that would enhance integration with the formal sector and contribute to crop production in a sustainable manner.

Successful cultivation of maize largely depends on the right choice of varieties so that the length of growing period of the crop matches the length of the growing season and the purpose for which the crop is being grown. The maize varieties currently cultivated by farmers include Jeka, DMR, SWAN-2, TZE-Y, NCB and OBA Super 2. However, the seed industry in The Gambia for all crops not only maize is facing a series of challenges that inhibit growth in the crop sub-sector. Private sector participation in the seed industry is negligible, and there are a range of disincentives that limits the expansion of the industry. There is, therefore, the need to develop and support commercially based bulking and release of improved appropriate maize varieties as a matter of priority. While a certain level of regulation and oversight is necessary and prudent, the private sector has a crucial role to play in the seed industry. Critical policy issues to support the seed industry is to encourage greater private sector participation in the production, management, and release of foundation seed; creation and enforcement of protocols for the commercial release of certified and improved seed varieties including associated accreditation processes. The recently established National Seed Secretariat (NSS) is now aggressively working towards this direction.

The national extension services recommend the following fertilizer rates for maize production: 200 kg N/ha, 50 to 80 kg P/ha and 60 to 100 kg K/ha. However, during the focus group discussions, respondents intimated negligible quantities of agrochemicals are used for maize production. Also, over 90% of the respondents do not use any form of chemical fertilizer, and which severely affect yields (FAO VCA 2019). Lack of fertilizer (especially nitrogenous fertilizer) is the main limiting factor to maize production. This highlights the need for agroforestry practices as well as mixed cropping with nitrogen-fixing legumes in maize-based farming systems. The second option for crop fertilization is tethering for the animal refuse.

Maize farming largely depends on poor production techniques with low-input and rudimentary tools: farm- recycled seeds, simple hand hoes and little use of agrochemicals (including chemical fertilizers). The stakeholder consultations study found that 89% of respondents among smallholder farmers do not use any form of chemical fertilizer, and

[49] The Gambia National Agriculture Sample Survey, DoP (2017)

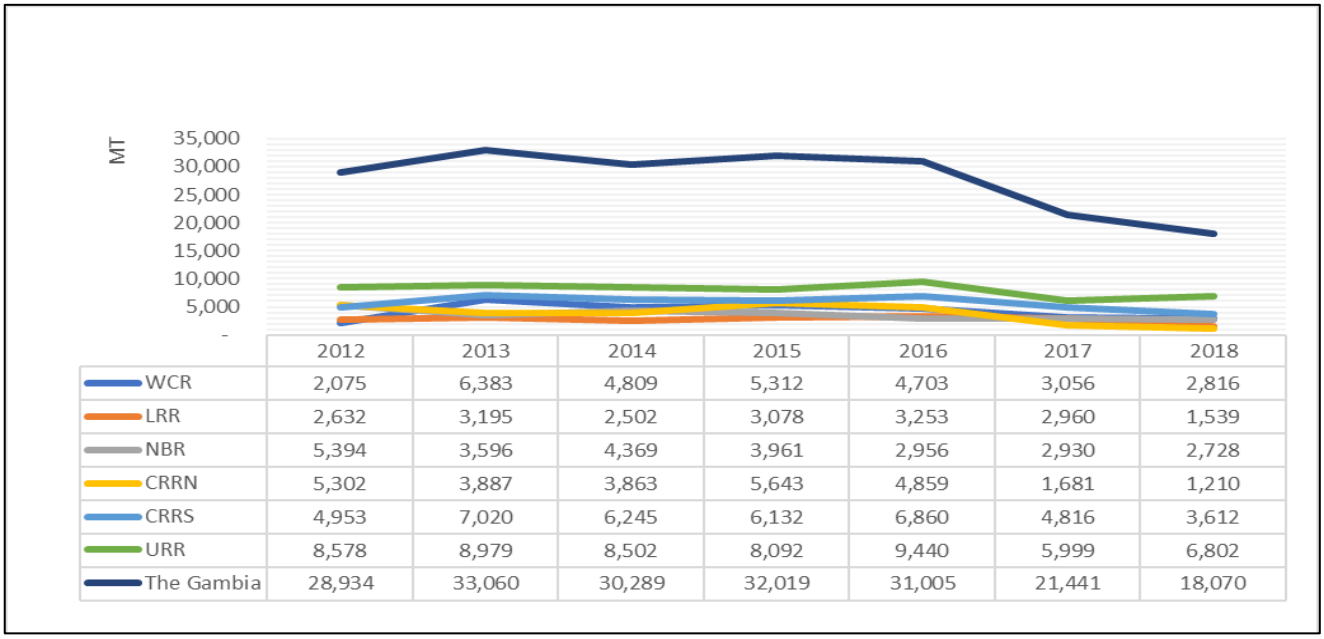
households with marginal lands are less likely to use fertilizer than those in higher potential areas. Lack of nitrogen is the principal limiting factor to maize production, but other nutrient deficits, especially phosphorus and potassium, are also important chemicals for consideration. Maize irrigation and on-farm water harvesting techniques are not practiced by smallholder farmers. Improved farming techniques are possible, but farmers use limited modern inputs as they are generally reluctant to take on additional risks. Uncertainties in the market and experience of repeated poor harvests over the years are some barriers against moving into a more productive, higher-risk farming system.

The maize recommended seed rate is 30 kg/ha with a recommended planting distance of 25cm x 75cm, in between stands and rows (Dr. Lamin B. Sonko, NARI, 2019). Farmers mainly find it difficult to follow this planting distance because they normally use animal drawn seeders for sowing. The seeding plates used are of 18 holes, but it is recommended that farmers plug some holes to reduce to 12 for best spacing. Fertilizer should be applied in two splits, one at 2 weeks after planting as basal and top dressing at 28-35 days after planting.

Two weeding are recommended and should be done during fertilizer application for efficient incorporation. The gestation period for most of the common varieties in the Gambia is 90 days after planting. Harvesting is normally done at 105-110 days after planting at which time crops normally reach field maturity.

4.2.5 Maize Yields and Production Levels

Average yield at regional levels ranges from 0.8 to 2 tons/ha, with a national average of 1.4 tons/ha[50]. This is below yields recorded in most of the sub-Saharan African countries, where the yields average approximately 1.5 tons/ha; and is far below the potential yields of 3-4.5 tons/ha usually obtained at on station research fields.



	2012	2013	2014	2015	2016	2017	2018
WCR	2,075	6,383	4,809	5,312	4,703	3,056	2,816
LRR	2,632	3,195	2,502	3,078	3,253	2,960	1,539
NBR	5,394	3,596	4,369	3,961	2,956	2,930	2,728
CRRN	5,302	3,887	3,863	5,643	4,859	1,681	1,210
CRRS	4,953	7,020	6,245	6,132	6,860	4,816	3,612
URR	8,578	8,979	8,502	8,092	9,440	5,999	6,802
The Gambia	28,934	33,060	30,289	32,019	31,005	21,441	18,070

Figure 6: Trends of Maize production across regions

Source: FAO Value Chain Analysis 2019

Maize is produced in all regions of The Gambia. Upper River Region is the highest maize producing region in the country. The rest of the regions follow closely. Maize production is hampered by several constraints, including a range of abiotic and biotic factors notably poor soil fertility, lack of access to production inputs (improved seeds and fertilizers), low levels of mechanization, and poor post-harvest management. According to the National Agricultural

[50] Source of Data: NASS reports, DoP 2012 – 2018.

Research Institute (NARI), the most notable abiotic factors affecting maize production include low soil fertility in most upland soils, erratic rainfall, inadequate availability of quality seeds and insufficient postharvest technologies. Maize production is heavily reliant on rain-fed agriculture and thereby sensitive to weather fluctuations. The Gambia is experiencing declining rainfall and erratic rainfall patterns, which are threatening the agricultural sector of the country[51].

Problems linked to biotic factors include deterioration in variety potentials due to uncontrolled cross fertilization at the field level and pest attacks. *Lepidopterous* maize stem borers are a major threat to maize production, with yield losses ranging from 10 – 70%. In addition, the recent outbreak of the fall armyworm (FAW) possesses a new source of uncertainty in maize production. The insect has a strong preference for maize, although it can feed on other cereals, including rice, sorghum, and millet. The common control methods of these insects at farmer level are crushing eggs and hand picking. Over the past years, maize growers suffered staggering losses, which could undermine food security in the country if not properly managed. The Plant Protection Services (PPS) of the Department of Agriculture has established partnership with the National Agricultural Research Institute (NARI) with support from The Food and Agriculture Organization of the United Nations (FAO) in stepping up efforts aimed at combating the threat of the FAW in The Gambia.

Farm inputs are crucial in crop production and maize is no different. Apart from land, the most important inputs in maize production are fertilizers, improved seeds, pesticides, (herbicides and fungicides), water for irrigation and farm equipment. The farm inputs market in The Gambia is poorly developed, thus leading to low productivity of the crop sub-sector, which includes maize. Most input suppliers are private enterprises operating on a small or medium scale. In the seed sector, farmer-saved seeds remain the principal source of seeds for most crops, especially the field crops such as legumes and cereals. The informal seed sector, which constitutes more than 90 percent of total seeds used by farmers remains strong and is the main source of seeds for all crops[52]. This sector is made up of farmer to farmer seed exchanges, seed saving, seed barters, and market purchases.

4.2.6 Aggregation

In the maize sub-sector, the major aggregators are the individual producers, small- and medium-sized traders. Aggregation in the informal maize value chain occurs through multiple layers of middlemen and/or small traders, who supply the small-scale processors. In both formal and informal chains, some level of aggregation occurs to achieve economies of scale. Village assemblers, who are normally agents of maize traders, are generally working closely with farmers in the maize trade. Further, up the chain, maize passes through traders, often several traders. Some maize will move to millers in nearby urban centres, other will be purchased by traders and go to an accumulation point or on to domestic markets.

The aggregation process does help farmers to negotiate for competitive prices, which should be in-tandem with sufficient volumes of supply. This platform provides an opportunity for farmers to form a lobby and access loans from village assemblers to meet their immediate needs and repay loan after selling their produce.

Other aggregators in the maize value chain are mainly regional level actors (intermediary traders and retailers) that are located in all the regions of the country. They are private dealers delivering grains to weekly 'lumos' and agricultural markets, although farmers also mill part of their maize to sell floor directly to consumers at regular markets. It was also evident that a number of intermediary traders (middlemen) buyg maize grain from both producers and 'lumo' vendors and transport the produce to retailers at major regular markets in the cities.

4.2.7 Storage

Poor and inadequate grain storage facilities are some of the key constraints in maize marketing. There are no public warehouses designated for use by cereals traders in any of the markets. It was further cited that farmers can lose up to 30% of their crop in on-farm stores, and during marketing due to lack appropriate storage facilities (FAO VCA 2019). An advantage of such warehouses is to minimise transportation and storage losses at accumulation points and

[51] Jaiteh and Baboucarr (2011)

[52] Gambia National Seed Policy (2018 – 2028)

enables farmers and aggregators to get some cash immediately after harvest and to retain most of their grain until prices rise later in the season. If linked properly to the domestic market, the warehouses could significantly improve the cereals marketing system in the country.

4.2.8 Processing

Dried maize grains are processed into a range of end products. The initial process includes drying the grain and milling into flour production. At village level, milling is carried out either through manual labour using mortar and pestle or motorized small-scale mills. Most communities have small milling machines to process grains. There are costs and benefits associated with the use of such simple processing techniques.

Small local milling operations produce over 80% of the country has milled maize. These small mills are not licensed or registered and do not pay tax. If these operators had to enter the formal systems, many would not be viable as their small volumes and meagre margins could not sustain any additional costs. Millers at this level complain of insufficient cash returns. Dry milling, which involves the grinding of the entire kernel rolling mills, is less capital intensive in the production of flour. The actors involved in maize processing include local or household actors, small and medium-sized enterprises. Now, industrial level maize processing does not exist in the country. There is an opportunity for private sector participation in this domain. The skills and technologies incorporated in these stages can differ considerably according to the scale of operations and access to capital of key actors[53].

4.2.9 Distribution

Maize grain distribution within the country is through the road transportation system. Horse and donkey carts are used to transport produce in and around communities where weekly (*Lumos*) and regular markets are located. Transportation costs are generally low.

Road transport, including urban transports for freight, is fully liberalized in The Gambia. The private sector is the sole services provider for transportation of maize. Commercial trucks are commonly used for transportation of large consignments of maize from weekly lumos to regular markets in regional towns and Greater Banjul Area. Road connection between major markets in the country are either tarred or laterite (paved), thus movement of consignments of maize from one market to another is not a major constraint.

Some of the roads are in poor conditions, and not accessible during the rainy season, thus compelling farmer to use animals. In addition, some communities have very bad road networks connecting to major highways. Road transports are also used for cross-border maize trade on routes between The Gambia and Senegal.

At consumer market level, products, especially flour are distributed locally through supermarkets, kiosks, regular markets and in the 'Lumos'. The supply of maize products in supermarkets typically requires adherence to quality and safety standards in order to be an approved supplier, while smaller chains or informal markets operate within lower standards on products supplied to end markets. The food service operators such as hotels and restaurants also play an important role in the distribution of maize products. Marketing channels differ according to geographic locations of the markets: domestic and regional in scope and exhibit differing patterns of market control.

4.2.10 Maize Value Chain Governance

The Maize value chain governance involves the participation of the various line departments in the crop sub-sector, under the auspices of the Ministry of Agriculture (MoA). These include the Department of Agriculture and its subsidiary units: a) Plant Protection Services providing pest and disease control services in crop production; b) Agribusiness Department building capacities of producers and SMEs in agricultural businesses and marketing; and c) Food Technology Services providing training in processing, preservation and value additions in the crop sub-sector. Furthermore, the directorate of DoA plays a key role in coordinating the activities of units within the department to help facilitate implementation of the National Development Plan (NDP).

[53] UNIDO (2004, 2009)

Extension Services of the Department of Agriculture (DoA) are making significant efforts in building capacities of farmers in crop agriculture on improved technologies. The main approach in the delivery of extension services is Transfer of Technology (TOT), which is basically sourcing and delivery of improved technology for the adoption of small-scale farmers to help improve production and productivity in the agricultural sector. Under the TOT approach, service delivery is supply driven, organized and implemented within government's departmental structure. This approach can lead to increased awareness of new technologies by farmers but lacks the contextual relevance that leads to low adoption of the technologies.

The DoA Frontline Extension Worker to Farmer ratio is 1: 2,313, and this coverage is grossly inadequate. Most of the farmers interacted with complained about the inability to access or meet with extension officers. However, there are CSOs ~ farmer organisations and NGO community providing similar extension services to small farmers. The Farmer Field School has been a popular extension approach in the country and is complimenting government's extension system. These services have reduced the gap of extension worker –to- farmer ratio of 1: 622 farmers.

The National Seed Secretariat (NSS) to guide and provide quality seeds to farmers to improve their production and productivity. According to NSS, initiatives have begun to improve the national seed program in the Gambia. The quality assurance structures, such as the seed-testing laboratory, seed legislation, certification manuals, and other features are now in place. However, the Secretariat have not yet coped with the high demand for quality seeds.

The Gambia Chamber of Commerce and Industry (GCCI) in partnership with Gambia government organize annual Trade Fair. The trade fair is meant to facilitate business development, promote trade, expand markets and advance the interests of Gambia business nationally, regionally and internationally. In the fair, maize products such as grains, flour, and other processed goods are marketed by various entrepreneurs across the country and the sub-region. The International Trade Centre through the European Union (EU) funded Youth Empowerment Project (YEP) to support youth entrepreneurs through a Youth Pavilion at the Trade Fair. The Youth Pavilion offers discounted stalls to youth-owned businesses to exhibit and sell their products and services. The Standard Bureau and Food Safety Quality Agency are in-charge of regulating the commodity market performance and competition.

All these policies, strategies and institutions were created to reinforce each other along the agro-commodity value chains including maize. However, it was found that coordination among the relevant institutions is weak, thus needing comprehensive and robust policy/strategy directions to harmonize their efforts. The research systems are also weak to support the production and other important segments of the value chain. These areas need to be strengthened to ensure a vibrant cereals value chain anchored on solid and sustainable footing.

4.3 VALUE CHAIN ANALYSIS OF GROUNDNUT

4.3.1 Groundnuts End Markets

Groundnuts has been the main and single leading cash crop of the Gambia for almost half a century. The crops accounts for nearly a third of agriculture's contribution to the national GDP, and at the same time constitutes about 32% of the value of the total merchandise exports (including re-exports) in the last two decades (GBOS, 2016). However, a greater proportion of the crop is consumed in-country. After harvest, the crop is decorticated as nuts ready for consumption, as confectionary, or further processed into crude groundnut oil that requires refining and groundnut cake for livestock feed.

The country's groundnuts have great potentials to contribute significantly to the national GDP through exports, play a central role in poverty reduction and food security. The local value addition through processing into refined oil, food products, and animal feeds are more essential for the development of the national industrial fabric and to increase national exports. The demand for groundnuts has been driven by multiple factors such as population, lifestyles, and product substitution. Groundnut oil directly competes with other types of oils in the international market, which affects the competitiveness of the country's groundnuts products in the world market. Thus, Gambian groundnuts must be competitive in the world market in order to stimulate local production, since it is a demand driven commodity. Therefore, developing appropriate strategies towards the development of the groundnut value chain will contribute to achieving better competitiveness in both domestic and international markets. In the 1980's-1990's, the Gambia used to produce in excess of 140,000 metric tons of groundnuts with a commercial groundnut crop of above 90,000 tonnes

per annum. However, in the recent past, the commercial crop has dropped drastically to less than 40% of these quantities (FAO VCA 2019).

The fluctuating volumes can be attributed to the fact that groundnut losing its competitiveness to other oilseeds in the international market, due to reduced production and productivity of groundnuts; an offshoot of low soil fertility. This has created a disorganized marketing of groundnuts in the Gambia in the past decades. However, there still exists high demand of groundnut products at the end markets especially when the issue of aflatoxin and unproductive soil conditions are addressed. The current volumes purchased by the industrialists, particularly NFSC/GGC (hereafter called cooperation), are very low to guarantee long term viability and sustainability. Thus, there is a great potential for investors in the groundnut value chain to invest in production and organized marketing with the view to enhance production and ensure quality groundnuts

Currently, the main emphasis of the groundnut sector is the quality of Gambian groundnuts, which need serious improvements. Because of the low production volumes, the country's comparative advantages lay in the maximization of hand pick selected (HPS) exports to the international market. Presently the yield of HPS per tonne of groundnuts on kernel basis is less than 20% compared to the industry norm that range from 40% to 60%. The main reason for this is the fact that the groundnuts varieties being grown in the country are purely oil stocks, which have been in the farming system for decades and have lost their genetic vigor resulting in low productivity and small kernel sizes.

Groundnut handling and processing infrastructure is very weak with low capacity. The GGC had ten depots equipped with screens, warehouse bins weigh bridges and other ancillary equipment strategically located along the River Gambia or its tributaries. There are reception facilities where the primary buying agents such as CPMS and private traders deliver groundnut stocks. They serve as temporary storage facilities prior to the stocks being evacuated through the River Gambia using barges and tugboats to the main processing plant in Saaro. This means of transportation are inadequate and their conditions are also not satisfactory resulting in low availability. Currently, only two plants are operational: a shelling plant for edible groundnuts called hand pick selected (HPS) for direct sale and fair average quality (FAQ); and a crushing plant for processing the FAQ into oil and cake. Both plants are old and not performing to optimum levels in terms of output and maintenance quality due to old age and obsoleteness.

4.3.2 Groundnuts Export Market

The Gambia has been continuously exporting groundnuts and by-products over time. The data from Foreign Agricultural Service of the United States Department of Agriculture (USDA) shows an average estimated amount of 18,000 metric tons of groundnuts export in recent years, a drastic drop in comparison to 30,000 metric tons in 2001.

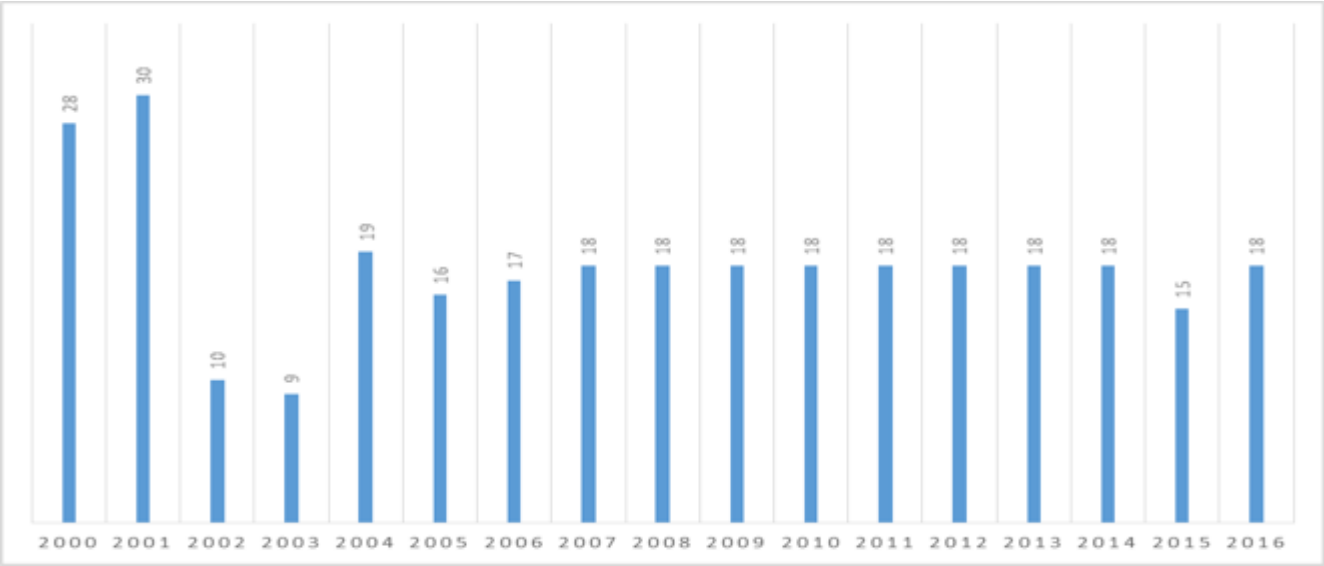


Figure 7: Yearly exports of groundnut in thousand USD

Source: USDA

Shifting on Gambia's bi-lateral export partners over the years, United Kingdom has been importing shelled groundnuts, while France imported groundnut oil from the Gambia until 2010. Within Africa, Senegal and Mauritania have been importing groundnuts and its by-products from the Gambia.

Table 3: Top 4 export destinations of groundnuts from the Gambia (2001-2014) in thousand USD

	France	Mauritania	Senegal			UK		
Year	Oil, groundnut	Cake, groundnuts	Cake, groundnuts	Groundnuts, shelled	Oil, groundnut	Cake, groundnuts	Groundnuts, shelled	Oil, groundnut
2001						534	171	
2002	5215	253				238	1724	
2003	3	0	1		1817		225	
2007	1402	1023	2	597			562	
2008	54	360		317	222		389	
2009	4752	477	628	448			2207	
2010	5388	1	1226	191		8	5255	1302
2011							1881	3094
2012	6						957	
2013							599	
2014			45				372	
	16820	2114	1902	1553	2039	780	14342	4396

Source: FAOSTAT

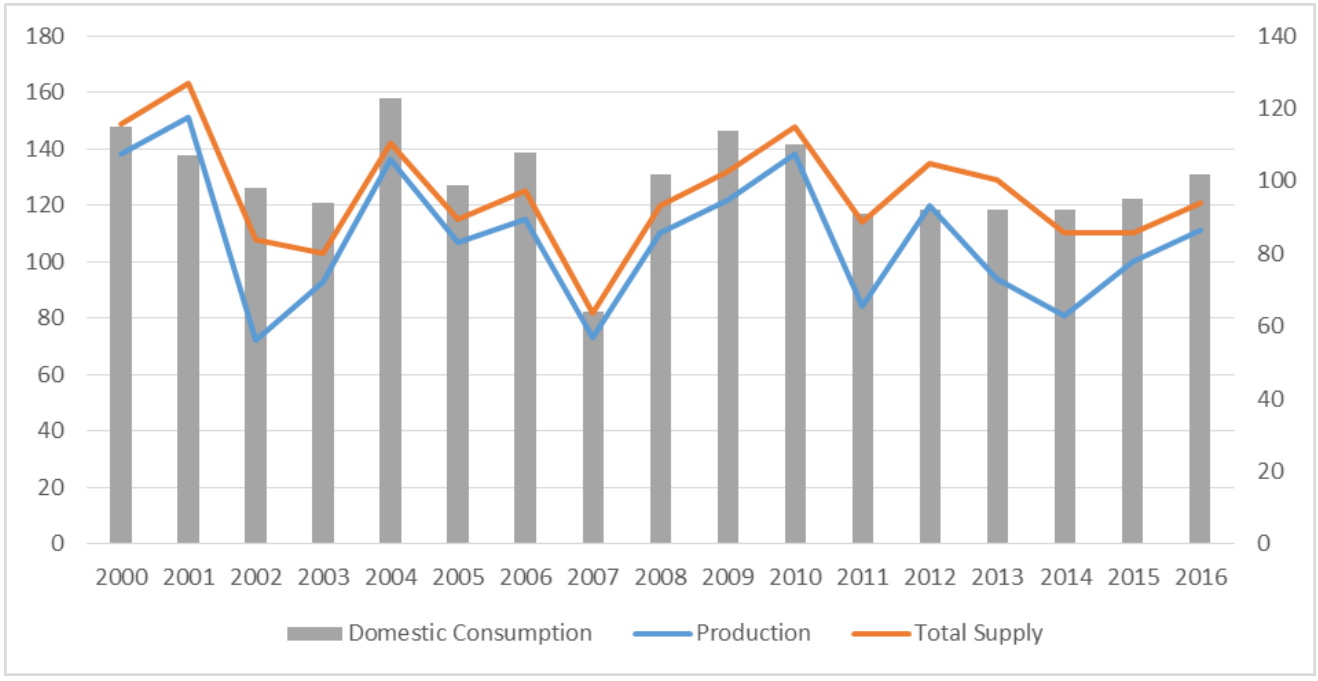


Figure 8: Domestic consumption of groundnut in thousand ton

Source: USDA

4.3.3 Groundnuts Core Value Chain Functions

The core value chain functions of groundnuts start with seeds and other inputs such as fertilizers, farm machinery and agrochemicals, which are fundamental for production. Producers combine these factors of production to enable them produce groundnuts. After harvesting, the activity that follows is trading which involves post-harvest handling, transportation, and storage. Aggregation is the other critical activity done by producers and traders to ensure economies of scale for efficient resource use. Transportation of groundnuts stocks are usually through river transportation or use of trucks to processing facilities. Initial processing entails shelling and crushing followed by further processing into confectionary, oil or paste and finally retailing. Exportation of groundnut is the other function that is done either formally or informal across various border points.

The main actors in the groundnut value chain are input suppliers (seeds and agrochemical suppliers), producers (small-scale farmers), and traders (aggregators, CPMS and wholesalers), processors and consumers. Each of these actors adds value in the process of changing the product form. Actors sometimes perform one or more functions.

The indirect actors along groundnut value chain are government institutions such as research institutions, extension services providers, non-governmental organizations, transport operators and NAWEC, which provide support services such as technical advice on crop production and value addition activities, and energy services to different actors along groundnut value chain. The role of each actor along the value chain actors is further discussed.

4.3.4 Groundnuts Input Suppliers

The agro-inputs used by farmers are primarily seeds and these are mainly sourced from the farmer's previous produce. However, the National Seed Secretariat through support from development partners such as FAO has begun certified seed production in the Gambia to supply a network of groundnut contract growers A baseline study executed by ISRAD for FAO revealed that about 60.1% of farmers use seeds from their previous produce as their seed stocks[54]. Very few farmers purchase seed from domestic markets and others receive seed from Government institutions, NGOs, friends or relatives.

The Department of Agriculture, the FAO, Government funded agricultural projects also provide inputs, such as seeds, agro-chemicals, including fertilizers, either as target beneficiary input supply (grant) or sold at subsidized prices. However, the use of fertilizers is minimal in traditional groundnut production due to untimely access and affordability.

4.3.5 Production

Groundnuts is both a staple food crop for domestic consumption and as a cash crop. Despite being an important crop, its production has been fluctuating over the past 3 decades. There has been a declining trend over the years both in terms of yields and quantity produced. Groundnuts is mainly grown by smallholder farmers on individual plots usually on farm size less than 5 hectares; virtually with no commercial groundnut farms in the Gambia. The production is usually labour intensive and requires farm inputs mainly fertilizers since soils in the Gambia are unfertile and unproductive.

[54] ISRAD (2018).FAO Baseline study for "Agriculture for Economic Growth Project in the Gambia".

Figure 9: Groundnut farm in the Gambia

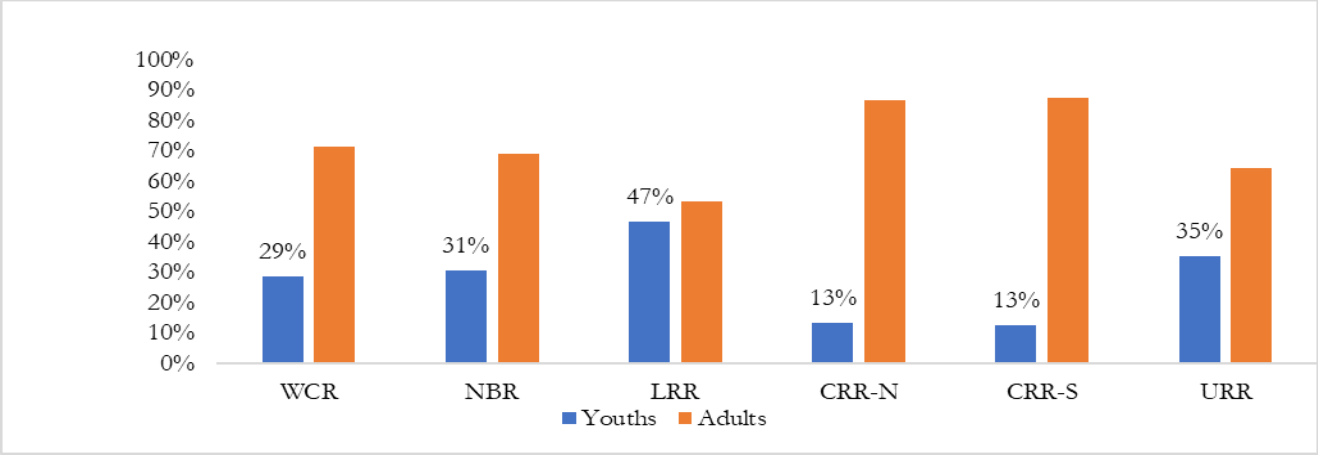


Figure 10: Youth involvement in Groundnut production

Source: FAO Value Chain Survey, 2019

Although groundnut producers are not well organized and generally the poorest segment of the population, groundnut production has an estimate number of producers of around 57,000 in 2015 (National Planning Commission, 2015).

Youth involvement in groundnut production is moderate across most regions in the Gambia ranging from 29% to 47%, above figure. However, youth engagement is found to be abysmally low in Central River Region with only 13% of youths involved in groundnut production. This is a real reflection of rural urban migration where the youthful population abandoned the production for other livelihood activities in the urban centres and outside the Gambia. In terms of gender control of groundnuts, it is commonly believed that groundnuts are man's crop in the Gambia. However, women play a significant role in providing labor in groundnut cultivation planting, weeding, and harvesting.

The survey results suggested that women involvement in groundnut production is appreciable. Most of the groundnut production is controlled by men, however, women participation in groundnut production in West Coast, Region, North Bank region, Lower River Region and Upper River Region are above 40% of the total production controlled by smallholder farmers, figure below. The level of women involvement in other crops such as rice is reported higher than groundnuts. However, during FGD discussions, characterizing the gender roles across production activities

suggested that harvesting and shelling of groundnuts is done mostly by women and children while land clearing, planting, weeding and selling of groundnuts mainly carried by men (FAO Value Chains Analysis 2019).

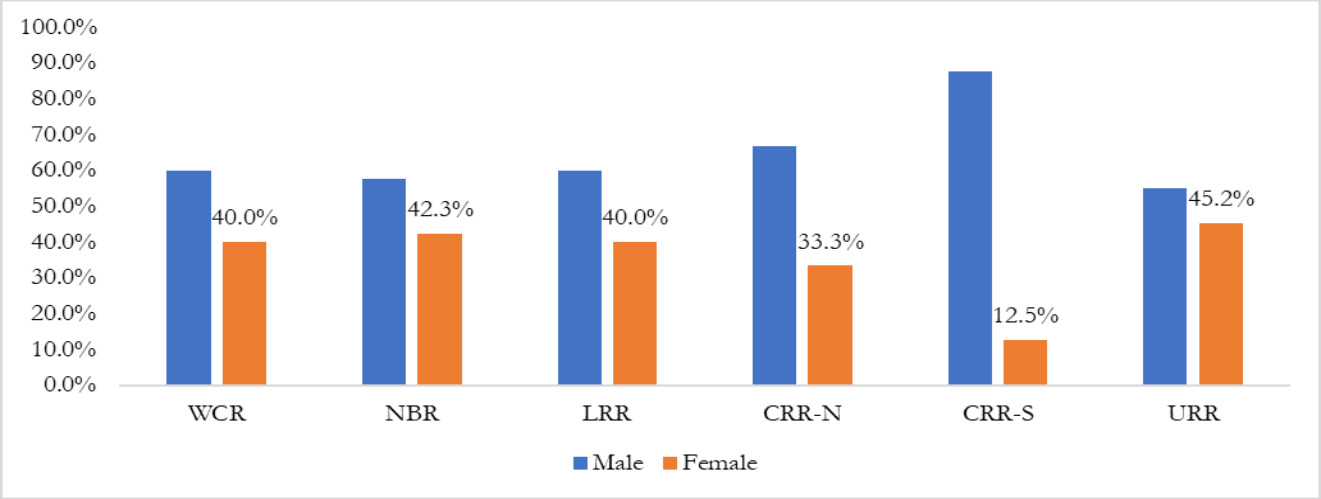


Figure 11: Gender of Groundnut producers across the region

Source: FAO Value Chain Survey, 2019

As shown in Figure 12, the production of groundnut in 2018 across all regions was found below 30,000 metric tones. After harvest, farmers do not sell their entire crop, but also keep groundnuts for household consumption and seed for the next season.

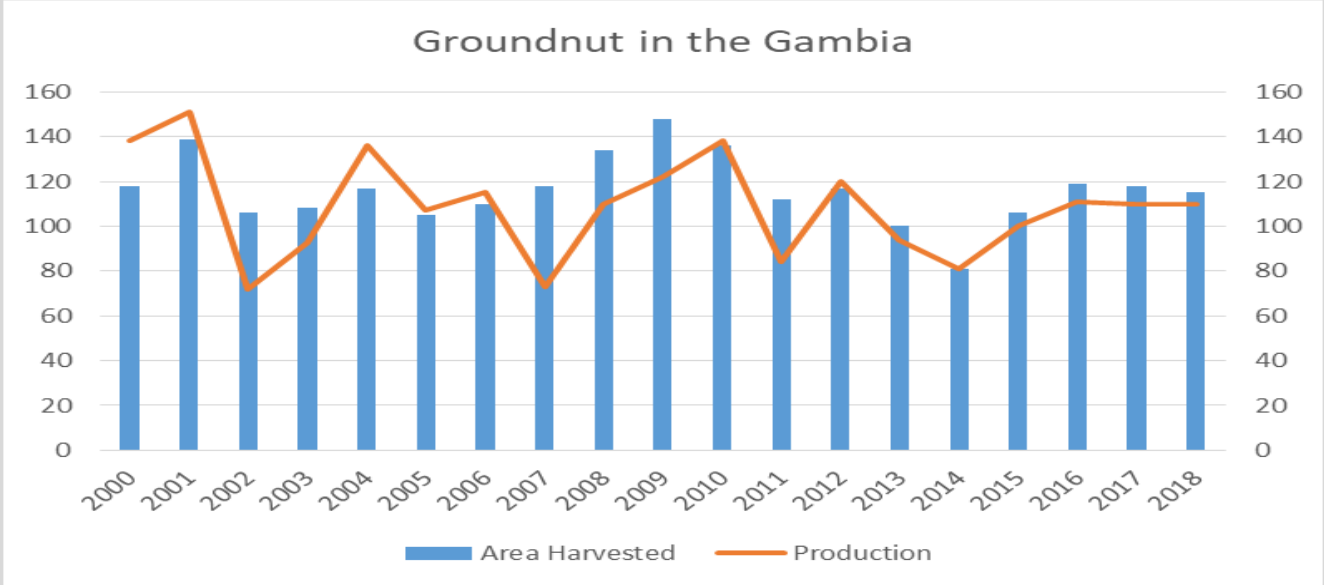


Figure 12: Area harvested (thousand ha) and production volume (thousand ton)

Source: FAOSTAT

At the national average production level, yields per ha of the groundnut are low and have even declined over the past decade, figure below. This is largely related to the use of traditional farming methods with little mechanisation, low-yielding seed varieties and lack of access to inputs. Furthermore, unreliable rain patterns, poorly managed irrigation systems, and occurrences of pest and disease make the groundnut production subject to significant fluctuations.

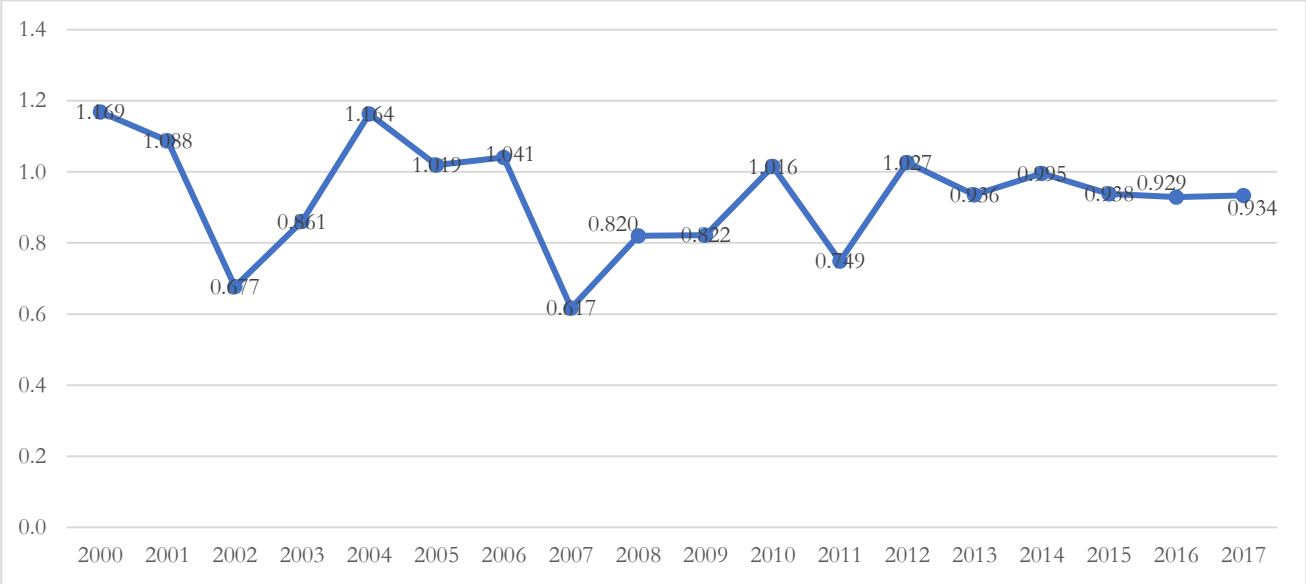


Figure 13: Yearly yields of groundnut in the Gambia

Source: FAOSTAT

Considering low productivity of the groundnuts coupled with the contemporary global aflatoxin issues affecting the export performance of the sector, it is important that groundnut value chain carefully address the menace of aflatoxin. The country needs to develop, adopt and implement sound policies on research and extension delivery, introduction of improved short cycled groundnut verities to match changing climatic and rainfall patterns, ensuring availability of other inputs at affordable cost, and to embark on resource mobilization to implement an approved Quality Assurance Framework to control aflatoxin. The sector must exploit the opportunity to reinforce the existing partnership for the aflatoxin control in Africa with ECOWAS and engage the farming communities to ensure aflatoxin control measures and good agricultural practices are implemented across the entire groundnuts value.

4.3.6 Aggregation

Assemblers, traders and wholesalers remain resolute and competitive in the groundnut value chain. The process involves community level collectors or traders buying small quantities from farmers and aggregating for temporal storage. The cooperative producer marketing societies (CPMS) work in tandem with the GGC to buy stocks from farmers. Other private traders and some agents for the neighboring countries mostly buy from the farmers. The informal export market is dominated by Senegal.

Some of the assemblers or individual buyers use their own money to finance transactions. They usually get cash advances from wholesalers, who play important roles in informal financing in rural and urban areas. Some traders do not travel to production centres to buy groundnuts themselves all the time; sometimes, they deposit money into the accounts of their agents operating at market centres. The agents, in turn, do all the purchases and send produce through transport operators to the traders.

4.3.7 Processing

The Gambia Groundnut Corporation along with small-scale processors and operators are the main actors present along this function of the groundnut value chain. At the household level, women are mostly involved in the roasting of shelled groundnut and subsequent grinding to paste for sale at regular and weekly markets. They usually decorticate or buy the shelled groundnut, roast it and later take to the operators for the processing. During processing, quality is not considered, as they do not have equipment to measure the aflatoxin content. They usually processed the groundnut into powder form and peanut butter for household consumption and marketing. Other local processors at the community level, whose scale of operations seem to be concentrated at small scale levels, represent an important sector for actors. They process groundnut into oil, groundnut cake, paste, roasted groundnuts, and other groundnut-based products. Most of the local processing takes place at the household or community level. However, in the Gambia, some NGOs do assist local processors to organize themselves into community led processors/operators. This enables them to take up large orders and maintain continuous supply to local markets, buyers and wholesalers in the Greater Banjul Area. Retailing of groundnut paste is solely undertaken by women.

Figure 14: Farmers screening and winnowing groundnuts at a Depot

Source: FAO Value Chain Analysis 2019

Retailers usually trade a combination of paste, roasted groundnuts or other forms of commodities. Depending on the relationship between retailers and processors as well as the financial standing of both parties, some retailers sometimes buy groundnut paste on credit and settle their debt after sales.

At the industrial level, The Gambia Groundnut Corporation plays the leading role in shelling and crushing groundnuts. Shelling usually starts with a throughput of the number of tonnes of groundnuts in shells. As of 2016, the quantity of products obtained from this operation translated to a shelling yield of about 64.5%, which was found to be below the expected yield of 69%.

Figure 15: Women on hand pick selection (HPS)

The other processing activity is the crushing operations with a throughput of any given

quantity of metric tons of FAQ. The crushing activity usually yields metric tonnes of Crude Groundnut Oil and Groundnut Cake. As of 2016, crushing operations registered an average oil yield of 36.41% and an average cake yield of 50 to 43%, which were below a potential of 42% oil and 57% groundnut cake respectfully for single stage crushing. Critical in the crushing activity is the low oil yield, which has a higher value than the cake by a factor of about 4. The low yields of products at both the shelling and the crushing plants were reflections of issues such as the quality of the groundnuts, long storage and the consequential insect damage, and antiquated handling and processing equipment (GGC Annual Report 2015/16).

4.3.8 Distribution

The current marketing system consists of a countrywide network of farmers' associations, known as cooperative produce and marketing societies (CPMSs), as well as private buying points operated by private traders. Farmers sell their produce through either of the two and providing contract credit for production inputs such as fertilizers. The CPMSs and private traders are responsible for the storage of groundnuts, and onward sale to industrial operators, who are involved primarily in decortication. The Corporation has nine upcountry depots that are strategically located either along the River Gambia or along its tributaries to facilitate the use of river barges for the evacuation of groundnut stocks to the processing facilities. This is a more cost-effective means of carrying this exercise compared to the use of road evacuation, which are usually three times the cost of river evacuation.

The Corporation has a fleet of eighteen barges with a payload of less than 2,000 tonnes. In a normal season, this payload is insufficient for effective and timely evacuation of stocks, which requires a minimum payload of 3,500 tonnes per barge. The inadequate carrying capacity and low barge availability always results to too long evacuation periods. For instance, in 2016, due to long waiting time for the evacuation, processing lasted up to almost end of August 2016. Stocks normally got wet up to tune of about 9 metric tonnes seasonally. The wet groundnuts are later dried up and processed. Wetting of groundnut is indeed costly and avoidable losses, which with even the best efforts; it could not be prevented because of unavailability of a slipway to carry out effective repairs on the fleet of barges. This post-harvest handling also predisposes the groundnuts to aflatoxin contamination. At the end of evacuation exercise, shrinkage in stocks of about 1.9% occurs which is within the accepted range of between 1.5% and 3.5% for most agricultural commodities, but could be reduced if the evacuation was completed earlier. Other factors that contributed to the shrinkage besides long storage of almost nine months are consequential loss of moisture and insect damage and pulverization or damage to the nuts during evacuation.

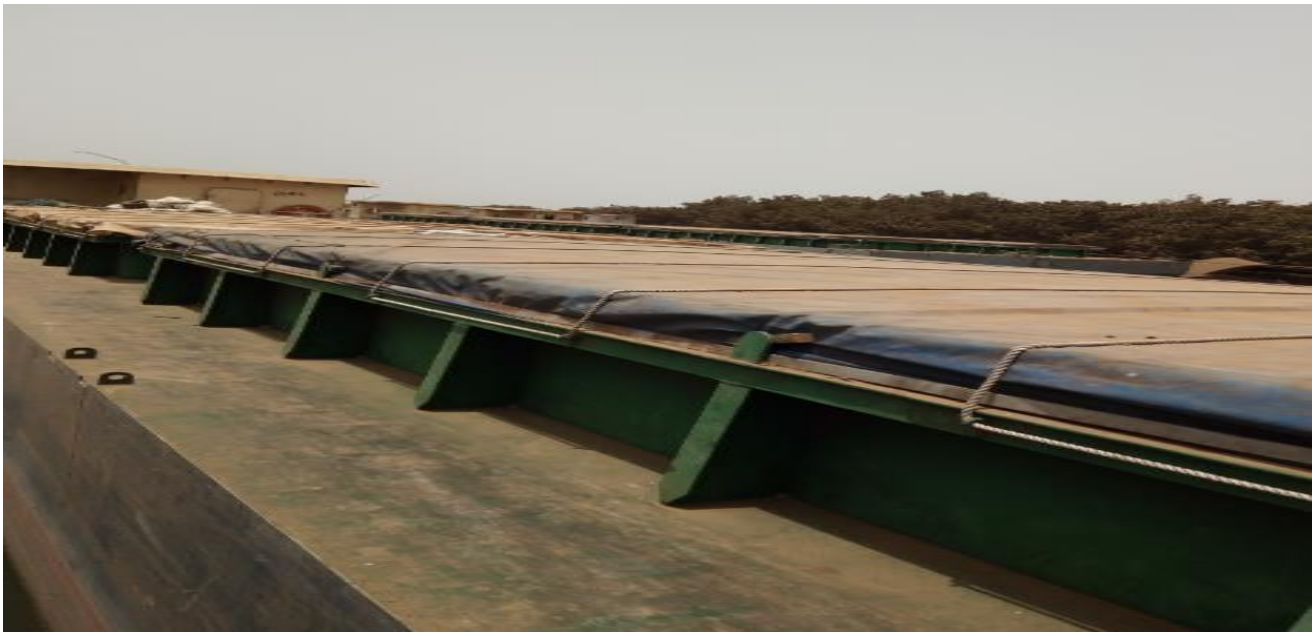


Figure 16: Long cargo for transporting Groundnuts

The groundnut assembling, wholesale as well as retail markets for both dry and processed nuts are dominated by men and women. Though traders operate as individuals, most of them are members of trader-associations. Dried groundnuts from producing regions are marketed both within and outside the regions. These are either traded at the farm gate, local market either in the community or neighbouring community/town, wholesale market within the district or region or wholesale market outside the region. Apart from acting as intermediary at the market, distributors buy groundnut directly from producers or markets located in production areas and supply to end users. Rural assemblers within the farming communities purchase from farmers and sell to wholesalers and at times retailers in the semi and urban town and cities. At certain times also, a number of distributors, particularly wholesalers, travel from one community to the other or even sometimes across the boundaries of the country to Senegal to purchase groundnuts.

4.3.9 Groundnuts Value Chain Governance

As an important commodity, the development of the groundnut value chain is streamlined in various strategic documents including Gambia National Agricultural Investment Program (GNAIP II FNS), the Vision 2020, National Export Strategy and the current National Development Plan (NDP) for agricultural development in the Gambia. The Gambia national export strategy document has ranked the groundnut subsector as the first priority sector of the country due to its significant contributions towards food security, poverty reduction, and livestock feed and a key determinant of other economic activities in the Gambia.

There are several institutions and organizations (governmental and non-governmental) that create the framework and conditions for the activities of the groundnut sector. These are not directly involved in the creation of the final output but their activities impact on the performance and efficiency of the value chain. Among these support, institutions is the Ministry of Agriculture (MoA) whose traditional function is to ensure sufficient food production at affordable prices for domestic consumption as well as increased production of raw materials to feed domestic industries and for export. This is achieved through the formulation and implementation of public policy on food production and agricultural issues. For several years now, the village extension workers (VEWs) have been offering technical advice to individual farmers and production associations.

The Gambia Standards Bureau and the food safety and Quality Authority (FSQA) are national institutions that provide guidance in line with regional and international standards, especially for export items. Responding to international food safety and quality standards, efforts are required to modernize and promote commercialization. However, the major challenges facing the country are the inherent problems of aflatoxin particularly within the groundnut value chain, which continues to be major challenges facing the country. "Aflatoxin is identified as one of the key barriers to profitable market access. The EU, for instance, as the main export destination of Gambian groundnuts, has stringent rules on aflatoxin levels (15 ppb for groundnuts intended at further processing and 4 ppb for nuts for direct consumption), which are often not met by Gambian exports. As a result, Gambian groundnuts suffer from prices discounted by between 65-70 percent on the international market (Colley, 2013)".

Figure 17: Woman applying Aflasafe CRR/N

Addressing these food safety issues, the government through USAID supported funds conducted trials in the country where the Corporation purchased 20 metric tons of Aflasafe SNO1 in the 2016 planting season and treated 2,000 hectares of groundnut farms (at application rate of 10kg/hectare)[55]. The plan was to purchase the groundnut

[55] Discussions with GGC officials

harvested from these farmers at premium prices if tests show low aflatoxin contents. The groundnut would be processed separately and exported to the EU market to start the process of gaining the confidence of that market and re-entery. The plan was to purchase at least 2,000 metric tons assuming a yield of one metric ton per hectare at the beginning of the marketing season however the implementation of this plan had some setbacks due to political impasse in 2016 and the consequent management related issues.

The business relationship between key actors (producers, aggregators, processors, traders, and consumers) in the value chain is modest. However, it is worth noting that the business relationship between Gambia Groundnut Corporation and the cooperative producer marketing societies (CPMS) within a niche of the value chain is relatively developed compared to the rest of other actors in the value chain. There are strong business relationships between aggregators, traders, and processors, which is evidenced by the fact that they established a national association in which most of them are members.

However, it must be noted that the groundnut producers in the Gambia are generally price takers. Market information on demand and supply hotspots, market prices are generally weak that affects the general business welfare of all members. Similarly, consumers are price takers and command very little decision in setting retail prices. However, in certain instances, there is some level of price negotiations at the farmer and consumer levels, but in most cases the two level of actors are disadvantaged.

There are some forms of backward and forward supply chain linkages from processors and traders. However, there are established supply chains from processors and the producers as well as consumers. Similarly, there is some semblance of market information on commodity prices from downstream retail markets to up-stream aggregators and traders in *lumo* markets.

4.4 VALUE CHAIN ANALYSIS OF VEGETABLES

Horticulture selected for analysis as potential export crops, considering their performances in the export markets and benefits accrued. Fruits (mango, orange, banana, and paw-paw) production and marketing has been a growing economic activity in The Gambia since 1999. It's an important source of food and cash income for producers and marketing agents. A study in 2001[56] estimated a total of three hundred and twenty-five private orchards in the country, employing 34percent of the adult population in both production and marketing. Mango is the largest economic fruit in The Gambia, with estimated production levels steadily growing from 25,000 Mt in 1998 to over 60,000 Mt in 2018[57]; and 40percent of the produce being currently commercialized[58].

The horticulture sub-sector contributes 4.2percent of the National GDP. Vegetable production is mainly dominated by women, who traditionally produce the crop on smallholder plots within communal gardens. These gardens are established in lowlands with high groundwater tables for irrigation through shallow hand-dug wells. Exotic and/or improved vegetable varieties are mainly grown during the dry season (October—March) while local varieties can do well during the rains. With public sector and NGO support, some communal schemes are expanded up to 5ha gardens for women and youth farmers. The Gambia has a favourable climatic condition for vegetable farming especially in the Western regions (WCR and NBR). With available arable land and quality water resources (underground and surface water) coupled with the growing demand and market opportunities (giving the booming tourist industry and growing urban population), the sub-sector could be modernized for sustained economic growth. However, with the existence of appropriate policy instruments ~ the National Horticulture Sector Master Plan (NHSMP), NDP and ANRP, Tourism, Trade, Youth and Women policies complimented by an expanding tourist market and the operationalization of the Food Safety Quality Authority (FSQA) certified tomato processing plant (120mt input capacity per day and output capacity of 5mt paste), the tomato crop will soon be a major commercial commodity.

[56] Horticultural Production and Marketing in The Gambia, United Purpose, 2001
[57] FAO Value Chain Study, 2019.
[58] World Bank, 2019

4.4.1 Vegetable End Markets

Vegetables are consumed in all households in The Gambia and are used in different forms in the preparation of a variety of dishes. Thus, the prices of vegetables are influenced by supply and demand interactions in the local markets. The end market involves several actors; producers, collectors, wholesalers, and retailers. Generally, production is widespread in rural communities, while collectors from Greater Banjul Areas (GBA) travel to the rural community vegetable gardens and buy produce from growers for resale. The collectors/wholesalers are mostly local traders, known as *banabanas*. Fresh fruit vendors in the GBA purchase vegetables in bulk at wholesale prices from collectors and retail to individual consumers, hotels, and restaurants. The retailers are either producers themselves, or local traders, doubling as retailers. Vegetables are primarily produced in the Gambia for both household income generation and consumption, thus end market analysis of vegetables in the country are:

- Household consumption: Production of vegetables for home consumption are mostly in backyard gardens and/or community vegetable gardens predominantly by women.

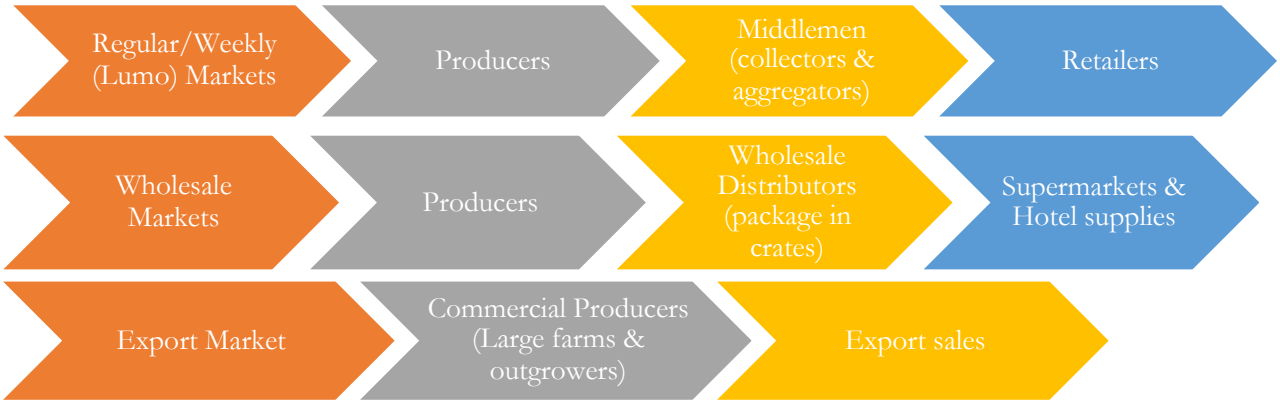


Figure 18: Fresh vegetables markets chain actors

- Regular and weekly (lumo) markets: Consumer or retail markets of vegetables in the country are mainly at regular and weekly (*Lumo)* markets, spread across the country where huge volumes are distributed by traders. There are approximately 300 regular markets, mainly in large and medium settlements of the country. They retail small quantities per day, sourced either directly from growers at the market or from traders in major markets (*sandikas*) located in towns and cities such as Brikama, and Serrekunda. Conversely, vetables is also retailed in weekly (*Lumo*) markets and there are 24 *Lumo* markets located in rural communities around the countryside, found in almost all regions except in West Coast Region.

  The characteristic of regular and weekly consumer markets is both wholesales and retailing activities taking place in the same premises. In early mornings, wholesalers obtain their supplies from producers, while for the rest of the day, retailing activities dominates the market. Thus, wholesalers, retailers, smallholder producers, and end users overcrowd the markets. Retailers are the third category of actors in the market who also bulk purchase fresh vegetables from collectors to retail at urban regular markets. Individual retailers struggle for space in urban regular markets to display their commodity on makeshift tablemats on the ground, and/or along roadsides without shade. The size of these local markets are generally small and individual retailers can sell less than 2 baskets (approximately 25-40 kg/basket) a day. Price for fresh vegetables in both regular and weekly *'Lumo'* markets change daily/weekly depending on the quantity of supply to the markets. However, as supply and demand for the commodities determine its respective daily/weekly prices, such changes in prices are influenced by cost of production, ease of storage and distribution costs, distance to and location of the markets (rural or urban), and general business conditions.

Actors in the value chain have limited access to market information, limited skills to investigate market opportunities and limited access to financial services. Thus, market services such as grading, packaging, transportation are poorly executed using local available materials (locally produced baskets), and synthetic plastics containers of different sizes.

The potential for growth of the domestic consumer markets is within the tourism industry because hotel operators are offering 'all-inclusive package' i.e. all meals are supplied by the hotels. Therefore, the hotels will need continuity and freshness of supplied vegetables. However, there is no formal direct links of vegetable producers and hotel/restaurant operators. The constraint identified by vegetable producers is that hotel/restaurant operators do not pay upon delivery; therefore growers sell to middlemen (collectors) and therefore lose the contact necessary to supply this potential and underexploited market.

Figure 19: Basket of Tomatoes in local retail market

4.4.2 Horticulture Export and Import Market

There is significant amount of cross border (regional) trade between The Gambia and neighboring countries: Senegal, Guinea Bissau, and Guinea Conakry; but the destination of Gambia's fresh vegetables is to Senegal. Conversely, fresh vegetables are imported from Senegal, Guinea Bissau, and Guinea Conakry during low production season (May and October).

There are a number of vegetable exporters to the regional markets. They procure the fresh produce from producers and aggregators in bulk for exporting to neighbouring countries. Generally, regional exporters lack an organised marketing system in the absence of appropriate storage and transport facilities, equipment, etc. They use road transports and common passenger vehicles *(GeliGeli)* in the movement of bulky shipments, packed in traditional ways. Shipments are made through the region without any forward sales agreements regarding quality, quantity, or price. With the new bridge at Farafenni, there will be improved transportation, better communications, and opportunities to increase trade between the two countries.

In general, vertical integration of market actors in the vegetable markets in the country, especially between producers and traders is characterized by mistrust, low information sharing, low level of technology, etc. However, producer organizations, on the other hand, are found at various community gardens. These community garden committees are responsible for coordination of membership of the garden, maintenance of infrastructures; fences and irrigation facilities, etc. however, they are not involved in collective marketing to spur economies of scale for its members, and improved market price.

4.4.3 Input Supply

The vegetable production sector needs improved skills and production technologies. Access to production inputs and services (improved seeds, fertilizers – organic and inorganic, pest and disease control chemicals, land preparation services and access to other laborsaving devices) are key issues in the sub-sector. The major input suppliers in the country are Gambia Horticulture Enterprise (GHE), Latrikunda Input Store, and a number of rural based sellers of agriculture inputs. The quality and prices of the available inputs are issues of concern

The quality of available inputs is not properly monitored, and thus their quality and effectiveness cannot be guaranteed. Village based agro-dealers offering poor selection of pesticides and seeds that are often outdated. Generally, seed varieties in the shelves of most input dealers are not of high quality; most are sourced from Technical, GSN, Twisem

and Green Seed, offering a very basic range of seeds, with no hybrid seeds. Most of the imported seeds, commonly sold are open pollinated varieties, and often of poor disease resistance characteristics. Therefore, vegetable production can be disadvantaged by poor vigor of varieties and potential infections during production. Some of the pest problems associated with vegetable production in are Fruit and white flies and, Red Spider Mite, and diseases are early and late blight.

Empirically, there is enough ground water available but growers (mainly women) are only able to afford rope and bucket for irrigation. This is because mechanical irrigation requires fairly advanced equipment, which are prohibitively expensive, and a major restraining factor. In addition, the increasing effects of climate change resulting to lower water tables in is a growing concern for farmers. Therefore, more research is needed to on the reliability of water supply to scale-up vegetable production in a sustainable manner.

However, Food and Agriculture Organization of the United Nations, Government and donor funded projects provide seeds and fertilizers, either as project target beneficiary (grant) or sold at subsidized prices. These organizations hardly supply pesticides and insecticides because of their residual effects. In addition, there has been a consistent campaign for use of organic fertilizers as well as biological and mechanical methods of controlling pests and diseases in vegetable production, but there is no clear price difference between organic produced vegetables and inorganic produced fruits and vegetables.

4.4.4 Farming and Production

Vegetables are predominantly produced by women in in all regions during the dry season (November-March) when production conditions are favorable. Production is higher in the West Coast and North Bank Regions, where climatic conditions more favorable with a long cold season absent in other regions. Production is mainly at small-scale and subsistence level. Although vegetable production has been increasing over the years, the farming systems are characterized by low input, small scale traditional methods on less than 0.25 ha plots.

The greatest advantage of production of vegetables is that they are in high demand locally and internationally; but inadequate production techniques, poor quality produce, and poor cooperation among value chain players remains a challenge. Indeed, producers have operated in the industry for many years, but they are mainly using traditional methods and low yielding varieties in their production systems. They are not adequately aware of the diversity of today's market demands and focus only on producing the available varieties.

Generally, vegetable gardens are established on the lowlands with shallow water tables characterized by deep, medium textured sandy loam or loamy, fertile and well-drained soils. The soil provides physical support, nutrients, and water to the crop. It is also worth noting that, the provision of support, nutrients, and water by soil depends to a larger extent on the topography, soil type, soil structure and soil, and water management practices. Some gardens are located in lowlands associated with colluvial soils that are of low chemical fertility with hard to very hard consistency when dry. According to (Jatta, 2013), the organic carbon content of such soils is not more than 0.3-0.4% in the surface horizon, and available phosphorus is extremely low, and a high bulk density which are associated with severely impeded root growth. Land preparation should involve good tillage operations to make the soil suitable for seedling or transplant establishment and to provide the best soil structure for root growth and development.

Generally, there are three types of horticultural farmers producing vegetables: individual small-scale producers, medium-scale community-based group producers, and medium to large firm operators in the production and export of fruits and vegetables, namely GHE, Radville, Busumbala farms, Kura's Garden and M.A. Kharafi and sons.

- Individual small-scale farmers are mainly women, characterized by production on less than 5 vegetable beds ~ 5 m x 1m (mainly for subsistence) in swamp land areas of not more than 0.25 ha after the rice crop is harvested. Fences are makeshift using local materials and can easily be pull-down by stray animals looking for green pasture and/or water. Source of water for irrigation is shallow hand-dug wells, which often dry up at the peak of the dry season (May), and in most cases, the wells collapses during the rainy season.
- Medium-scale community-based category of vegetable producers are mainly women's groups of 100-500 members in community gardens. Each producer is allocated an average of 10 vegetable beds of 5m x 1m. The size of these community gardens ranges 1.0 to 5.0 ha, supported by government, non-governmental

organizations and/or donor projects. Current interventions in vegetable production includes the development (fencing, watering facilities and other production and post -harvest infrastructure) of 5ha gardens schemes for women and youth farmers. The total area developed and/or being developed for year-round production accounts for over 800 ha. The community gardens are generally well fenced, equipped with concrete-lined wells of different depths, and/or boreholes fitted with reticulations that allow year-round supply of water for irrigation. Developments including boreholes are found in few donors funded vegetable gardens; therefore, commonly used irrigation practice found in these gardens is rope and bucket while some are fitted with pulley systems. There are 454 functional community vegetable gardens in the county, (approximately 1,362 ha of land area) benefiting 136,200 female farmers.

- Medium to large firm operators are farms with land area of more than 10 ha, with advance technologies in irrigation and thus produce fruits and vegetables all year round for the high value market and export, namely GHE, RADVILLE, Busumbala farm, Kura's Garden and M. Kharafi and sons. The total area under fruits and vegetable cultivation is over 100ha but mostly used for production of a range of vegetables. Busumbala farms supply GHE with most of its fruits and vegetable and sells locally, but now growing tomato, 150 kg per week, for sale to 3 local hotels. Kura's garden is currently producing Moringa, about 1 acre, with organic status (FAO VCA 2019).

The production systems of all the three categories of production is widespread use of organic manures recommended by government extension services and donor funded projects. The organic products include compost, organic pest and disease control solutions of neem tree leaves and barks of tree.

Furthermore, majority of smallholder farmers poorly plan production of vegetables, ignoring the benefits of staggering and diversification of production - all producers focusing only on producing the same type of vegetable. This means producing huge quantities of the same cultivar at the same time resulting to market gluts, uncompetitive prices and limited incomes for the market actors.

The main functions performed by producers in the vegetable value chain are land preparation, nursery preparation, transplanting, weeding, organic fertilizer application, irrigation, pest management, and harvesting. Tools and materials used for production are hand tools, such as hoe and cutlass, watering cans, buckets. Most of the producers use compost/farmyard manure to replenish soil nutrients, and source water from wells, solar pumped boreholes with and without reticulation. Generally, production is characterized by low-tech and traditional methods of production. Vegetable production constrained by a) the seasonality of production due to poor production organization and weak farmer organization resulting to gluts and high post-harvest losses; b) limited skills and knowledge on production, processing, and preservation (no value addition); c) low level of improved cultural practices enhancing crop susceptibility to pest and disease; and d) disorganized marketing arrangement and the unavailability of appropriate storage and transport facilities.

There is a demand for more labor at farm level, but this is most likely to be filled by women. Getting many young people into farming seems to be one of the major production issues. Youth are less interested in the farm work but rather prefer jobs further up the value chain. Hence, it should be explored how more jobs and livelihood opportunities can be created in higher value adding activities, such as processing, either at industrial scale or cottage industry level. The latter may be particularly relevant for female entrepreneurs who can produce from home or in smaller production cooperatives. There can be organized partnership with local technical stakeholder institutions to conduct the technical capacity building and carryout relevant feasibility studies to enhance capacity along the value chains.

Table 4: Gross Production Margin of Tomatoes

Items Description	Costs of Production Value (GMD)
Seeds	25
Labour for production	100
Organic fertilizers	135
Water for Irrigation	200
Harvesting	20

Items Description	Costs of Production Value (GMD)
Total Cost (A)	460
Returns to Actors	
Total Revenue (B)	875
Gross margin (B-A)	415

Source: FAO Value Chain Study, 2019

4.4.5 Sales and Marketing

The third level in the vegetable value chain begins with assembling of the produce for sale at farm gate and distribution to various market destinations. Smallholder producers do not have adequate access to both local and international markets. Therefore, a number of challenges remain such as poor transport/logistics, lack of long-term planning and cheap imports that often compete with local fresh and processed products. Vegetable growers in the villages lack sufficient market information, and this makes them very dependent on the traders. Traders ultimately control the prices of vegetables, ensuring that their share of the profits is intact in all events, while the risk of any losses sits solely with the farmers.

4.4.6 Traders (Aggregators, intermediaries, and wholesalers)

Traders (middlemen) from major markets (Banjul, Brikama, Serrekunda, Farafenni,), locally known as *banbanas* assemble vegetables from community vegetable gardens across the country or buy from farmers at *lumo markets*, transport to cities for resale. These traders are either farmers themselves, or vendors/retailers in regular markets. The collection/assembling of vegetable produce starts from upper regions of the country, where vegetables are harvested earlier, due to early start of the cold season, followed by the central part of the country and eventually West Coast areas.

The *banabanas* use their own financial resources and local knowledge to collect to purchase vegetables from communities, at farm-gate prices. These traders play vital roles in the vegetable value chain such as assembling, repacking, sorting, and transportation of produce. There are no functional cold storage facilities for vegetables in the country; therefore, the traders bear high risk of post-harvest losses. This is the reason why most traders travel to the farms every other day (or after exhausting available stock) to bring new consignments. The market risks are eventually transferred on to farmers with credit-purchasing, where traders '*banabanas'* will collect produce from farmers on credit with a solid promise to pay upon return. This is another factor that is negatively affecting smallholder producers, as some traders often fail to honor the transaction. Moreover, given the inadequate cold storage facilities at producer level, growers are forced to sell produce immediately after harvest to avoid losses. Such facilities could put the growers in a better bargaining position where they can hold on to their produce when market prices are low.

4.4.7 Processing

Generally, vegetables are consumed fresh or cooked in local dishes. There is practically no processing facility for vegetables at the moment in the country. In 2018, a tomato processing plant was established with a 120 Mt input capacity per day and daily output capacity of 5Mt paste. This presents a huge potential for growth in tomato production in the country. The factory currently has the machinery on site to use local tomatoes, but it has not started processing locally produced tomatoes. Now the factory is importing tomato paste into the country and package. With additional investment in tomato production, the factory will be able to employ 600 – 1000 people, either as collectors of tomatoes from the various community gardens and/or producers of tomato fruits.

4.4.8 Vegetable Value Chain Governance

Horticulture development is a priority area in the economy. The Vision 2020, GNIAP II FNS, ANRP, and the current NDP among other national blueprints attest to Government's priority objectives of the horticulture subsector. The Gambia's Sustainable Development Goals (SDGs) acceleration framework for improvement of agricultural productivity and food security has also identified horticulture as one of the subsectors that would contribute to improvement of food and nutrition security of the population.

Horticulture governed by a wide range of institutions, structures, and establishments; while Ministry of Agriculture (MoA) through the horticulture unit within the Department of Agriculture is primarily responsible for managing the subsector. The Horticulture Unit provides the needed services to the sub-sector with its blue print ~ National Horticulture Sector Master Plan (NHSMP) providing the strategy framework for programming. Other public and private institutions supporting the sector are Ministry of Trade, Regional Integration and Employment (MOTRIE), Ministry of Finance and Economic Affairs (MOFEA), Gambia Investment and Export Promotion Agency (GIEPA), Food Safety and Quality Authority (FSQA), Gambia Chamber of Commerce and Industry (GCCI), Gambia Horticulture Enterprises (GHE), donor-funded projects, and Non-governmental organisations. The supporting factors for the vegetable industry include quality assurance, infrastructure, information and data, extension and training, research, development, and coordination. There is, however, very little collaboration and coordination among supporting institutions.

a) Ministry of Agriculture (MoA) at the macro level, align vegetable production with its donor funded projects. It is engaged in training farmers to diversify production of agricultural crops, add value and supply the market. The main objective is to build capacities of farmers on value addition principles and approaches i.e. Food Technology Services of Department of Agriculture train farmers on processing and preservation. In addition, the Ministry of Agriculture, through the Department of Agricultural Services provides extension services for small scale in the vegetable subsector.

b) FAO provides support to vegetable producers in the community vegetable gardens through the Songhai Graduates and Farmer Field Schools. The major services of these community-based facilitators in the vegetable value chain is providing technical training on compost and organic pesticides making and application, other pest control services, and post-harvest handling. These services complement technical services of Government change agents, due to high extension worker-to-farmer ratio.

c) Protection and Quality Assurance Services: Food Safety and Quality Authority (FSQA) undertakes routine inspections of both imported and exported commodities. The agency looks at Hygiene procedures and provides health certification for every exported consignment; as food safety and quality is a prerequisite for market access and commercial success in the global food system. On the other hand, research and protection services are provided by the National Agriculture Research Institute and Plant Protection Services respectively. Food safety has become a major development and economic issue, as well as a major public health concern.

4.5 VALUE CHAIN ANALYSIS OF FRUITS

4.5.1 Fruits End Markets

Individual consumption levels of fruits are driven by many factors, such as affordable prices during the season, which is influenced by quantities of different types of vegetables, and consumer preferences. A classic example of mangoes (a high economic valued fruit), the price of mango fluctuate for all cultivars between GMDv24 - 50 (USD 0.5 - 1) per kg, within a very short period of time mainly due to fact that the demand for mango is price inelastic (sensitive to variations in quantities available), short duration of supply and small size of the local markets, which are easily flooded. For instance, 1 percent increase in quantity of mangoes in the market tends to lead to more than a 1 percent decrease in price. This is because most of the local mango varieties ripe at the same time, causing a glut in the local market (FAO VCA 2019).

At the beginning of the season, April/May, when demand for mangoes is high, quantities on sale are exhausted and sold at relatively remunerable prices. As the season advance, more rural whole-sellers and retailers enter the market with large quantities of mangoes from all parts of the country, affecting price trend in all Local Government Areas (LGAs) of the county (FAO Value Chain Analysis 2019) as can been seen on the table below.

Table 5: Market price per kilogram (GMD/Kg) of mango in Region markets

Markets	June	July	August
Banjul	30	35	60
Kanifing Municipal Council	20	25	60

Markets	June	July	August
Brikama	20	30	50
Mansakonko	25	25	45
Kerewan	25	25	45
Kuntaur	25	30	45
Janjanbury	25	20	45
Basse	20	30	50
Average	**24**	**28**	**50**

Source: FAO Value Chain Study, 2019

Potentials for market growth and market niche of mangoes produced in the country are found in the rapid urbanisation and growing population. Suitable agro ecological zone with favorable weather conditions, abundance of locally accessible inputs like compost/farmyard manure, plenty of labor force, fertile arable land and market are essential to expand production levels.

4.5.2 Consumer Markets

Consumer markets of fresh fruits are in regular and weekly (Lumo) markets, where huge volumes of fruits are sold by retailers. Actors in these markets are either farmers who sell their own produce and/or fruit vendors, known for purchasing fruits from local markets and sell to consumers in cities, such as Brikama and Serekunda market (*sandika*). By and large, the distribution channel of consumer market of fruits in the Gambia is found to be through farmers or aggregators retailing directly to consumers.

There is virtually none existence of cooperative marketing of fruits in the country. The situation is further exacerbated by limited access of farmers to relevant services like financial credit, and weak institutional capacity of farmer organizations. A robust organizational structure can promote efficiency, reduce marketing costs (transportation), spur beneficial competition, increase economies of scale of its members, and improve market price of fruits through negotiations with traders and/or exporters.

Figure 20: Dried Mango

4.5.3 Processing

Processing potentials of fruits in the country are being explored by private investors, such as GHE and Tropingo. The latter has invested in greater capacity to dry mangoes (see figure) and sell the bulk of its products to the Netherlands, but working on a supply to Saudi Arabia, Dubai, and the Czech Republic. It also supplies Nigerian market, where dried mango is repacked and regionally distributed under brand name 'REDFRUIT', although Tropingo has potentials to distribute dried mangoes in country and in Senegal. In addition, GHE process approximately 40Mt of mangoes into juice, while Radville partially process mangoes into pulp juice. Approximately, 7,178 Mt of locally produced mangoes are processed by these industries. There are important artisanal processors (Afritaste, Jal's Healthy Foods, FruitVeg and National Food Processor Association) that process cumulatively about 1,367 Mt of mango into different forms (jam, syrup, *pulp,* etc.), FAO Value Chain CA 2019.

4.5.4 Export Market

The export market of fresh fruits is dominated by Gambia Horticultural Enterprises (GHE) and Radville. The latter exclusively supply Wealmoor in UK, which is the wholesaler and supplier to UK supermarkets. Radville Farms is the largest mango producer and exporter in the country and completed planting 300 ha of land with fruit trees. It also engages 130 mango out-growers. It has the capacity to grow and produce more, and now looking at extending their

area to the North Bank Region of the country. Gambia Horticulture Enterprise produces mango for export at its Kembujeh farms, which is approximately 100 ha. In 2018, GHE exported approximately 7 containers (40ft) and has potentials to increase future production to over 30 containers per season, these were mainly sourced from its out-growers. Small and Medium Enterprises in the Gambia have not significantly explored the potentials of mango/fruit export market.

There are huge potentials for growth in the fruits sub-sector mainly in export market, processed products, and the tourism industry. The number of tourist arrivals has increased significantly during the 2018 tourist season (October to May) and most hotels are offering all-inclusive package. Therefore, the hospitality industry will need fresh supply of fruits and vegetables. The processing capacities in the country is growing from purely artisanal to industrial level, to meet up the high demand for fruits.

4.5.5 Core Value Chain Functions

The core value chain functions of fruits are generally functions performed by either private individuals or associations at different stages of the chain, using their own resources. These functions include inputs supply, production, aggregation, processing, and commercialization. Actors involved in each function adds value in the process of changing the product form from production to final consumption. Some functions or roles are performed by more than one actor, and some actors perform more than one role.

The role of each primary actors along the fruit value chain is discussed further below.

- Input Supply: These are actors that are engaged in the supply and, planting materials, agrochemicals and other inputs for fruit production. The involvement of input suppliers in the fruit is not intensive as would be expected, and small-scale local producers use more of traditionally available inputs instead of the modern inputs. Only few commercial producers and orchard owners use improved seedlings and technologies.

  The Large-scale commercial fruit producers have out-grower schemes with small-scale farmers, who are trained on improved production technologies and tools such as harvesting equipment. However, distribution of improved fruit varieties and harvesting equipment are not made available to all small-scale mango producers because of the limited supply. Improved fruit varieties are mainly for the export market which have the comparative advantage over the local varieties. In addition to these, there are other agencies such Food and Agriculture Organization of the United Nations, Government, and donor funded projects that are providing inputs, i.e. seedlings, agro-chemicals including fertilizers, either as target beneficiary input supply (grant) or sold at subsidized price.

- Production: Fruit producers are both small-scale and commercial farmers who use their own resources. The main production activities are nursery preparation and management, orchard development and transplanting, tree growing and management including irrigation, pruning, and harvesting. Organic fruit farming is predominant using inputs such as compost/farmyard manure and irrigation. Production technology for small scale fruit production is still rudimentary with use of local hand tools such as hoe and cutlass, but large-scale commercial producers are increasingly mechanising the production process using heavy equipment like tractors and power-tillers.

  Fruits can be produced country-wide because of the flat topographic features of most arable land in the country. However, production is largely predominant in the West Coast and North Bank Regions. Traditionally, fruits are grown in ecologies associated with deep, medium textured sandy loam or loamy soils. However, many orchards in The Gambia are now developed on the lowlands with shallow water tables characterised by fertile and well-drained soil which provides physical support, nutrients, and water. It is also worth noting that, the provision of support, nutrients, and water by soil depends to a larger extent on the topography, soil type, soil structure and soil management practices.

  Post-harvest functions performed by small-scale producers is limited to sorting, while commercial producers do sort, grading, and cleaning to ensure quality commodity to the market. Most local producers use own labour for all the activities in the value chains. Conversely, commercial fruit producers engage hired labour, transport system (air and sea) to supply produce to the export market.

Almost all fruit orchards in the country are owned by men. This is mostly attributed to local land tenure rights, which provides user rights to women for production of annual crops. An assessment of the capacity of small-scale farmers reveal that most are resource constrained; land and financial, and their activities are mostly labour intensive.

- Aggregators: In most cases, middlemen/traders would aggregate fruits at farm-gate level for evacuation to in country markets (*Sandika*) or to neighbouring Senegal. They are synonymous to wholesalers because they purchase produce in bulk and usually with better financial resources and access to market information. They use their financial resources and local knowledge to bulk purchase and collect fruits from communities within 5 - 7 days and transport to target markets. Aggregators have very little access to relevant services and market infrastructure such as cold storage facilities. Stakeholder consultations found only one non-functional facility in Nuimi Lamin, NBR because many communities lack energy (electricity). Thus, these traders incur high post-harvest losses of fruits at every stage of the value chain from farm to market.

- Processing: There are limited number of private entrepreneurs engaged in fruit processing in the country. GHE and Tropingo are the known private investors processing mango into juice and dried mango respectively. Others might be hotels and restaurants who process fruits into fresh juice. Non-government organization like TARUD in Gunjur and Women's Food Processors conversely are involved in artisanal processing of mango in particular into jam and juice for preservation purposes. The few processing facilities in the country have created job opportunities for youth and women at production, processing and marketing levels, amidst limited skills, since most of available labour are unskilled.

- Distribution: The system of mango transportation in the Gambia is mixed; both public and private operations, mainly through roads (both paved and unpaved), sea and air. Harvested mangoes are transported in bags, baskets, plastic containers on trucks, small taxi, and mini-buses. Fruits are highly perishable, and due to the poor methods of post-harvest handling at both farm-gate and market levels, large proportions of the commodities are wasted. Lack of appropriate packaging material for transportation was found a major contributing factor of the high percentage of wastage for transporters, retailers, and wholesalers. Mostly, fruits are transported in bags which causes mechanical damages, and heat build-up causing the quality of fruit to deteriorate and eventually unfit for human consumption.

  There is neither coordination nor cooperation among transporters of fruits in the country. Although the Gambia Transport Union is a formidable trade union body, which has strengths for advocacy and lobbying for its members' welfare, there is no coordinated transporters union specifically for distribution of fruits. Road connection between major markets in the country are either tarred (paved) or laterite (unpaved), thus movement of fruits from one region to another has not been a constraint.

  However, retailing of mangoes is dominated by women, while aggregators are mixture of women and men.

4.6 FRUITS VALUE CHAIN GOVERNANCE

Fruits are part of the horticulture sub-sector, which are governed by Government's National Horticulture Sector Masterplan (NHSM). Government recognized that horticulture has great potentials for food, nutrition, and income security as well as export prospects for the Gambian economy. A number of horticulture development models using out-grower schemes supported by Gambia Competition Project (GCP) were implemented with facilitation of the private sector (GHE and Radville)[59].

Governance of the horticulture subsector is vested in key public institutions comprising: (a) the Ministry of Agriculture (MOA) which provides the overall supervisory, regulatory, policy guidance, coordination and monitoring and evaluation role for the public sector in agriculture; (b) the Ministry of Environment Climate Change and Natural Resources, responsible for managing and conserving the environment; (c) the Ministry of Water Resources, Fisheries and National Assembly Matters, charged with supervision, policy implementation and regulation of the water and fisheries resources; and (d) the National Nutrition Agency (NaNA), charged with coordination of nutrition related

[59] GNAIP II (2019 – 2026)

policies and programs and is under the purview of the Office of the Vice President. There are a number of coordinating structures in the development of the sub-sector:

Ministry of Agriculture (MoA), through its Department of Agriculture, provide extension services for small-scale farmers in agriculture sector, covering the fruit industry. Government provides the enabling environment for UN agencies, NGOs and Farmer Organisations to provide extension through farmer-to-farmer learning approaches such as Farmer Field Schools (FFS). The FFS facilitation provide technical training on organic farming (compost and inorganic pesticides making and application) and post-harvest handling. Due to low extension worker-to-farmer ratio, services provided by FFS complements the limited extension technical services provided by Government.

- Readily available Markets: Fruits exported from the Gambia are on UK supermarkets shelves within one-week, through airfreight. This short transportation period increases farmers' access to export markets. Conversely, there is an increase in number of artisanal and medium-scale processing of fruits in the country. This enables fruit producers in particular mango to sell straight to processors at farm gate, who will be responsible for transportation of the produce from the farm, thus reducing farmers' cost of production.
- Farmers' Skills and Know-how: Fruit production, especially nursery production skills and know-how are acquired by many farmers in the country. There is a network of plant trees nurseries, established by private farmers, supplying seedlings of different types (graft and ungraft). This facilitates farmers to conveniently establish fruit orchards countrywide.
- Access to Inputs, Services, and Assurance: Some donor support projects (FASDEP) for instance are enabling private farmers through grants to establish large orchard of fruit trees including. These farmers have access to different products of inputs; seedlings and agro-chemicals to grow mangoes.

Quality assurance services can be accessed from Food Safety and Quality Authority and other agencies such as National Agriculture Research Institute, Plant Protection Services. However, other factors that could influence growth in sub-sector and development of the fruit value chains, include control of fruit-fly and build capacity of NARI and horticultural extension services, Food Technology Services and University of The Gambia to develop knowledge on post-harvest, including artisanal processing.

4.7 POULTRY VALUE CHAIN ANALYSIS

Poultry sector in The Gambia has a huge potential to serve as one of the key propellers of the country's agricultural transformation. Its contribution to food and nutrition security, poverty alleviation, diversification of the livelihoods, income, and employment is well recognized. In recent years, the sector has witnessed some developments mainly attributable to increase in investment by an emerging pool of local entrepreneurs in line with government's call for national food self-sufficiency that will contribute towards reducing dependency on imported food products and creating opportunities for employment and income generation for the all actors along the value chain in particular youth and women. However, the potential of the sector is yet to be fully unlocked. This requires among others the identification the intervention gaps and priority areas, key issues and challenges as well as appropriate policy and intervention framework.

4.7.1 End Markets

There is an increasing demand for poultry products in The Gambia due to increase population, urbanisation, and growth in nominal incomes. This increase in demand has been met mainly through importation as only about 9% - 11% of the domestic demand is supplied through local production. In 2014, 9,504 MT of poultry meat and 3277 MT of eggs were imported into the country (GBoS, 2014). In 2016 this has increased to 15,504 MT of poultry meat and 4,077 MT of eggs (DLS 2016, FAOSTAT). In 2018, 20,928 MT of poultry meat and 5,368 MT of eggs (GBoS,2019) were imported into the country. This shows that there is a rapidly growing market for poultry and poultry products in the country. The poultry products are mainly imported from Brazil, Holland, and China and the United States.

Chicken imports represent the third highest commodity imports in the Gambia (based on value) only second to Rice and Oils. The Major importers are Supermarkets, Hotels, and Restaurants. These include Tajco firms, Kariaba

Shopping Centre, Chellarams, Alvehag, and Marouns Supermarket. These firms are mainly owned by foreign investors in The Gambia or Gambians of Lebanese descent.

While the estimated price of imported chicken is about D90/kg, a Kg of locally produce chicken is estimated at D131.00. The major cost in production of chicken is feed (by 60% of the cost). The cost of maize is also estimated to be 60% of the cost of feed. Thus, a clear under-utilized end market at production is maize bran. Currently, much of the maize bran use for the production of feed in The Gambia is imported from Mali.

The price of imported whole chicken (of approximately 1.3kg – 1.5kg) has increased over the years from approximately GMD 45 in 2004 to GMD 190 in 2019. The same can be noted of the price of eggs. It was estimated that the price of egg was GMD 4.35 in 2004 and now ranging between GMD 8- GMD 10 in 2019 (ActionAid and Oxfam 2004). In 2013, frozen whole chicken, chicken cuts and offal and eggs represent the most significant poultry products imported to the country. Close to 88% of the population purchase their poultry products (meat and eggs) from the supermarkets, while a quarter each buy from local producers, as well as the local market (Touray, 2008). Most of the Supermarkets get their supplies from imports. Importation of poultry and poultry products is mostly from Europe (Holland, Germany), USA and Brazil and Senegal as well.

Most of the farms prefer to sell life birds than engage in processing. The economics of processing for small scale firms show that when birds are sold life, they price higher than the dressed chicken. For example, the farm gate price of dressed chicken is about D225, whilst whole chicken is sold at D220. Most of the industrial buyers (Hotel, Supermarkets, and Restaurants) also have a preference for life birds. This is because of the safety and hygiene status of the meat they need to sell to tourists, which is not often guaranteed by small scale commercial producers.

The sale of chicken products is seasonal. The tourist season (November – April) represent the peak market period whilst June – September is the period of lowest demand of poultry products. For example, GIEPA 2012, reported that the highest monthly importation of eggs was observed in October (270 MT) coinciding with the start of the winter tourist season and the least in August.

4.7.2 Poultry Production Systems

Chicken is managed in the Gambia under the two predominant management system namely the traditional poultry management system and commercial poultry management system. The Deportment of Livestock Services 2016 National Livestock Censors revealed that out of the 937,951 chicken in the country, 94.5 percent were traditional (village chicken) whilst 5.5 percent were for commercial (Broilers and Layers). Villager chicken is managed under the traditional management system whilst Broilers and Layers are managed under the Commercial Poultry Management System.

4.7.3 Poultry Management Practices under the Traditional System

The village or backyard production system predominates in The Gambia, with 94.5% of chicken which comprise of village chicken being managed under this system (DLS National Livestock Census, 2016). Village chickens are raised extensively in small numbers and obtain most of their diet from scavenging for food and water in their immediate environment with very little capital investment in their husbandry. Village chicken obtain most of their diet from scavenging for food and water in their immediate environment with very little capital investment in their husbandry. Overall, the performance of village chicken in terms of growth, efficiency of feed utilization, live weight gain and egg production is low. It is a low producer of meat or eggs as compared to the exotic broiler or layer. Overall, the performance of village chicken in terms of growth, efficiency of feed utilization, live weight gain and egg production is low. It is a low producer of meat or eggs as compared to the exotic broiler or layer.

The village chicken is a dual-purpose type, small body size with variable body confirmation and physical characteristics. It lays on average of 40 eggs per annum with egg weight ranging from 35-40 grams. The female bird normally hatches their eggs 3-4 times a year and generally lays 10-12 eggs before becoming broody. It only attains a live weight of .3 kg at eight weeks of age (LHDP Market Study, 2013). Village chicken production is based mainly on indigenous fowls (*Gallus domesticus*) and is common in rural households in developing countries (Blackie, 2014). They play a vital role in the livelihood of rural communities and contribute significantly to their food security and income. Besides, they are used in customary rites and festivals and play an important role in pest control (FAO, 1997). According to the FAO

/ISRAD Baseline Survey 2018, 80.4% of households reportedly keep livestock for multiple reasons mainly for income, home consumption, social and religious reasons.

In the Gambia, chicken is predominantly owned by rural women and their management is mainly the domain of women and children. They are a valuable livelihood asset, especially for the poor and marginalised, and are a source of income and household food security.

Poultry Sector Review (2008) provided a comprehensive description of the traditional village or backyard production system as practiced in The Gambia. The review defined traditional village or backyard production system as the production of village chicken (poultry meat and eggs) using locally available household feed resources.

The Gambia Livestock Sector Review (2012) classified into traditional village production system into three systems:

- System 1: The Free Range is characterized by scavenging and extensive husbandry practices. Adequate housing is generally not provided, supplementation is rarely done, and water is provided occasionally. Confinement of the birds normally takes place at night in kitchens, owners houses or locally made hencoops primarily to minimize predation. The major constraints faced by this system are the extremely high incidence of diseases, mainly Newcastle Disease (NCD) resulting in high mortality rates. The owners are not biosecurity conscious as such; no measures are put in place.
- System 2: The Backyard System is characterized by scavenging, with some husbandry practices including supplementary feeding, provision of water, housing and occasional vaccination, primarily against NCD. The birds are occasionally sold but are usually kept for home consumptions and social occasions.
- System 3: Improved Backyard System is characterized by scavenging, the provision of houses with nest boxes, improved feeding and diseases control (mainly deworming and vaccination against NCD). Farmers undertake this as an income generation venture.

These three production systems utilize indigenous chickens; chicks are produced by natural incubation. However, incubating hens under the free range and backyard systems receive little care or attention resulting in high chick mortalities. In contrast, under the improved backyard system where incubating hens are provided with nest boxes, feed, and water chick mortality is generally low. The number of households engaged in poultry production is 33,403 representing 21% of the total number of households in the Gambia (Gambia Livestock Sector Review, 2012).

ISRAD Baseline Survey (2018) reported disease as the single most important constraint limiting village poultry production in the Gambia. Newcastle disease is the most important poultry disease in the Gambia, accounting for most of the morbidity and mortality. Providing vaccination against Newcastle disease is one of the ways to strengthen resilience of the most vulnerable segment of Gambian farmers against climate change. If Newcastle disease is controlled, farmers' intake of protein and farmers income will improve. This will positively impact on their livelihoods. Training of village women as auxiliaries/ vaccinators for Newcastle disease prevention has been very successful in Burkina Faso. In the Gambian context, with the inadequate Livestock Assistants (DLS field staff) coverage at field level, the training of auxiliaries could be considered.

4.7.4 Commercial Poultry Production

Depending on the size of operations (number of birds kept), commercial poultry production as practiced in The Gambia could be classified into 2 broad categories (I) small-medium scale production and (II) Medium to large scale production.

With small-medium scale production, farm sizes range from 50 to 500 birds. Farms are managed under semi intensive to intensive production system. Increasing number of women in rural areas are now involved in small-medium scale commercial poultry production. Marketing of products is conducted in local markets, restaurants, and supermarkets. Major constraints encountered by this category include lack of feed, poor quality feeds, poor infrastructure, disease, and pest incidences, limited research and extension support, and marketing bottlenecks.

Medium to large Scale production farms are mostly found within the GBA, where the purchasing power is relatively high and where hotels and restaurants thrive. Stocks range from about 500 to over 10,000 birds. These utilize modern

production systems raising exotic breeds3 with day-old-chicks imported from Europe or Senegal. The production systems are characterized by high input utilization. The birds are kept indoors on deep litter and provided with compounded feed. They generally follow recommended vaccination programs and rely on private veterinarians and or extension agents from the Animal Health and Production Services for provision of services. Levels of biosecurity measures vary from moderate to low, depending on location, ability, and willingness of the proprietor to maintain standard operating procedures. They mainly market through hotels, supermarkets, and retailers. The primary challenge is the competition that the poultry producers face in relation to the cheap imported poultry meat ad eggs. This issue is a subject of continuous advocacy by local producers towards the government, but there is no policy in place to address the issue.

The need to promote commercial poultry production in rural Gambia as a means for attaining economic growth in agriculture cannot be overemphasized. Commercial poultry production is a viable livelihood opportunity for farmers in rural Gambia. It has great potential to increase production to meet the local demand and reduce high importation of poultry meat as well as potential to create employment for youths and women. It also has the potential to uplift the economic status of the rural folks

4.7.5 Production Inputs

The key inputs in the production of chicken are:

- Provision of Day-old chicks: As it has been in the past years, day-old chicks (DOC) for the commercial sector are mainly imported from outside the country, with most of the chicks imported from Dakar, in neighboring Senegal. The chicks are transported by road, and enter the country through various land border entry points and are therefore not captured in official statistics.
- Feed: Despite the presence of 6 local poultry feed producers in the country with combined capacity to produce 52MT if operating at full potential, the actual combined capacity is limited to only 1.444MT. The biggest of the feed producers, Gambia Feed and Food Industry with capacity to produce 40MT has not been operational since 2012. SAADIS has the capacity to produce 2MT, Arafat 2.5MT, CENELA 3.5MT, T Farms 2MT, and GAM HOLLAND 3M. Access to feed (availability and affordability) is the most one important constraint to poultry production. Commercial poultry producers rely on imports of compounded feed rations from neighboring Senegal. The feed importers are SEDIMA, PRODAS, SANDAS, KOUDJUS, and JARGA
- Housing and equipment: Housuing equipment are mainly imported into the country by few business.
- Veterinary services: There are 6 suppliers of veterinary drugs and vaccines namely: Agrovet, Sumavet, Samivet, Vet Sans, Kombo Vet, Touray, Meyer Vet Clinic, and AHS Vet Veterinary Clinic. They are all located in KMC with only two of them having outlets at regional level namely Agrovet and VetSans. Access to veterinary drugs is a major constraint at regional level.
- Hatcheries: There are 3 hatcheries (EMPAS, Tee farms and Abuko Poultry Training Centre) with capacities of 142,200. Under full operation, each of the hatcheries assessed has the capacity to hatch 7 times per annum. As such, the annual production capacity of the three hatcheries in the period under review was estimated at 995,400 day old chicks. These hatcheries are therefore seriously underutilized in that only 22.5% of the total capacity is hatched.

4.7.6 Aggregation

Aggregation in the chicken value chain in the Gambia is least developed and utilised. The potential to modernise the traditional poultry production in The Gambia lies in aggregation and storage of live bird for marketing. Storage facilities are scare, and where they are utilised, cost of electricity is high and uncompetitive. The three industrial level farms namely EMPAS, T-Farms, and Gunjur Poultry farm operate outlets close to the Tourist Development Area that collect live birds, process them and package them for selling. However, in the past two years, most of the market outlets have not operated even up to 30% capacity.

4.7.7 Processing

The two processing plants have the capacity to process 2,565,000 broilers per annum when fully utilized in 190 working days. During the Livestock assessment of 2014, an observation of the poultry processing process was conducted as depicted in the figure below.

Table 6: Chicken-Processing Facilities - The Gambia

Region	Facility	Capacity	Actual Processed in 2014	Utilization rate
WCR	Empas	2,280,000	20,000	0.9
	Tee farms	286,500	60,000	20.9
Total		2,566,500	**80,000**	3.1

Source: Department of Livestock Services 2014

It is estimated that less than 1% of traditionally produced chicken is processed. There are about four small scale processing facilities (for slaughtering and dressing) established by the Livestock and Horticulture Development Project in some regions of the Gambia. However, even these are grossly underutilised, as most people prefer live birds.

4.7.8 Distribution

The mode of transport for the distribution of chicken and chicken products is by road transport using cars. No specific types of cars or vehicles are used for the transportation of poultry products from farms to markets or from one market to another. The two industrial poultry producers EMPAS, Tee Farms have had market outlets near the Tourist Development areas. At village level, chicken are either sold at village level, farm gate or taken to the nearby lumos in small quantities.

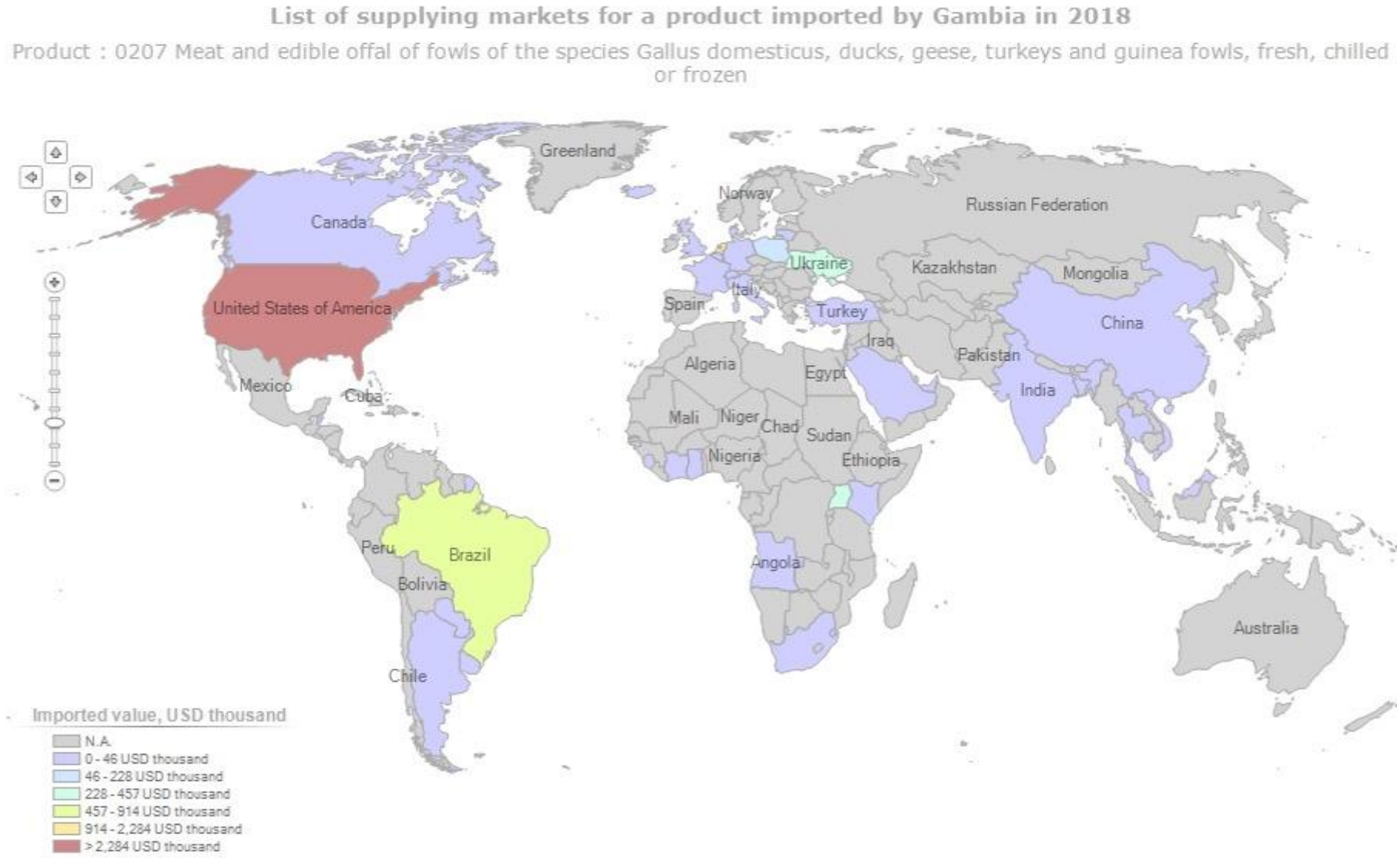


Figure 21: Import Sources _ Chicken

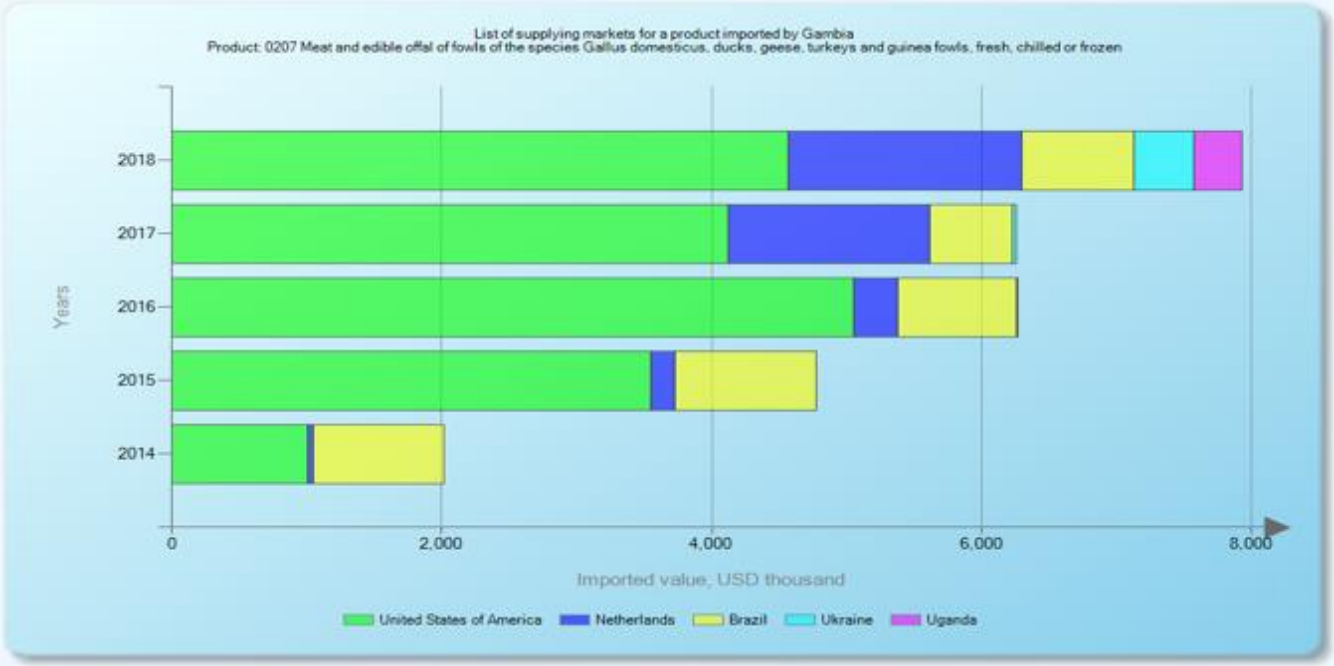


Figure 22: Chicken Imports_ Sources and Volumes

In 2009, the country imported 4,237 metric tonnes of chicken and 565 metric tonnes of eggs valued at D51,743,000 and D27,679.000.00, respectively. In 2010 and 2011, 4,909 and 6,484 metric tonnes of poultry meat were imported. The quantities of shell eggs imported during the same periods were 2,108 and 3,333 metric tonnes. In 2018 The Gambia imported 20, 928 MT of chicken with CIF Value of D 388,560,000.00 and 5,368Mt of eggs with CIF of D 62,710.000.00 as shown in Table 7 below.

Table 7: Importation of Chicken and Chicken Eggs into the Gambia in 2018

Products	Meat and edible offal of the poultry		Eggs	
Months	Cif value in 000	M/tons	Cif value in 000	M/tons
January	32,632	1,654	2,964	278
February	37,002	1,950	4,402	381
March	28,396	1,606	7,295	626
April	58,884	3,070	10,785	932
May	54,931	2,795	4,652	440
June	31,209	1,863	1,776	160
July	12,606	761	3,213	279
August	29,237	1,572	4,327	374
September	13,834	753	7,649	654
October	16,214	813	4,328	345
November	39,377	2,180	6,091	490
December	34,239	1,909	5,228	408
Total	**388,560**	**20,928**	**62,710**	**5,368**

Source: Gambia Bureau of Statistics 2019

Chicken products from the traditional sector and commercial farms are sold live (broilers), at farm gate, to intermediaries, or directly to consumers. In the rural areas, the main live bird (indigenous) markets comprise the *Lumos*. Beside the Lumos, the other markers are urban markets in the urban areas of the Gambia. Industrial buyers also form a significant market for life birds in The Gambia.

In these markets, there are specific areas where the caged birds are sold. These birds are either sold live or slaughtered and dressed, at the request of the client. These designated areas lack the basic hygiene and sanitation facilities. As the birds are in close contact with humans, and also given that the offal and by-products from the slaughtered birds are not properly disposed of, the potential risks for disease transmission are high. Furthermore, the slaughtering of the birds is done without veterinary supervision.

4.7.9 Chicken Value Chain Governance

The Chicken value chain is one of the common targeted commodities for most government projects, especially for projects implemented in the Agriculture and in Climate Change Adaptation intervention.

Department of Livestock Services (DLS) is the technical arm of Ministry of Agriculture mandated with full responsibility to provide technical services and relevant support for the development of the livestock sector. At central level, DLS comprised of two directorates namely Directorate of Veterinary Services and Directorate of Animal Production Services headed by Deputy Director Generals respectively. There is a Monitoring and Evaluation unit for cross cutting M&E activities. At regional level, the Department comprised of 6 regional directorates, one in each of the Agricultural Regions. The department has a pool of experience field staff posted throughout the country and a network of dedicated contact farmers who regularly provide information on disease outbreaks.

DLS serves as the technical service for the Ministry of Agriculture supports in extension services provision, disease control, meat examination, training of livestock producers, etc. There is no poultry nutrition specialist in the country and no feed testing laboratory.

The Ministry of Trade industry and employment is responsible for the trade policy. Together with the Ministry of Finance and Economic Affairs and the Gambia Revenue authority influence chicken imports through policies around tariffs and other import taxes.

The projects under the Ministry of Agriculture, International NGOs, FAO, UNDP, etc provide financing and startup capital. Over the years, projects have provided startup capital for youth and women farmers either individually or as a group. Donor funded projects have also provided training to livestock producers, provision of grants for the construction of key infrastructure such as hatcheries, slaughter houses, live bird markets, meat stall, etc.

Private sector plays a predominant role in poultry value chain. The Gambia Poultry Farmers Association was founded in 2003 to build on the achievements of the Small Scale Commercial Poultry Association and has federated the 8 poultry farmer associations (NBR Poultry Farmers Association, WCR poultry Farmers Association, LRR Poultry Farmers Association CRR North Poultry Farmers Association, CRR South Poultry Farmers Association, URR Poultry Farmers Association, Gambia Commercial Poultry Farmers Association).

It has a national coverage with objectives to:

- Coordinate the activities of divisional and professional poultry associations at the national level; and
- Act as the conduit for the mobilization and provision of resources to the different associations.

Other constraints inhibiting the effective functioning of the association include too much dependence on external resources, the spread of membership and the low capacity of some of the constituent associations.

Gambia Poultry Farmers Association has been dormant for years without organizing regular meetings and congresses. However, in 2008, some members of the association in partnership with the Department of Livestock Services came together to set up a task force; poultry sector revitalisation-working group. The objective of the group is to work closely with the government to revive the poultry sector through addressing key challenges affecting the sector. The group Lobbied for the levying of sales tax on chicken feed, lifting of sales tax on Day Old Chicks (DOC) and veterinary drugs, vaccines, and supplements. Through the efforts of the working group, a national congress of the

association was organized in 2009. Since then, no national congresses were organized. This situation has prompted some members of the association to come together in 2015 to establish a new association, Gambia Poultry Farmers' Cooperative whose principal objective is to enhance market access for its membership. The competition from the importation of cheap poultry products into the country limits market access for local poultry products.

Key interventions required to improve productivity of members and for the effective functioning of the association include favorable policy environment, capacity building in organizational management, resource mobilization and in organizing regular meetings on information sharing.

4.7.10 Chicken Value Chain Support Services

The private sector is a key enabler of the chicken value chain in The Gambia. Veterinary services are mainly provided by private veterinary services. In 2019, six privately owned veterinary services providers are in operation. However, most of them target commercial farms.

Only 5-8% of the chicken value chain in The Gambia is financed by banks and Microfinance instructions. The transaction cost for loans is high estimated at 27- 30% (including interest and transaction cost) Reliance Financial Services provides most of the private financing to chicken farmers in The Gambia. For example, Reliance Financial Services provides loans at a cost 1.5% per month interest, 2% transaction fees with Land Clearance/ Lease document serving as collateral. On the other hand, most commercial bank loans are structured around 21% interest annually with monthly interest rate of 1.75%. A 3% transaction fees with a Land Lease document as guarantee is also required.

Table 8: Causes of Constraints and Integrated Solutions

Causes of Constraints	Integrated Solutions
• Competition that local producers face from cheap chicken imports. The cost prices of chicken produced in the Gambia is estimated to be 34% expensive than imported Chicken. Evidence of dumping has been reported with retail prizes in the Gambia cheaper than source countries. Relative to imports, chicken production is affected by high cost of production in The Gambia. This is as a result of the high cost of inputs which are also imported. These include feed and day-old chicks, which represent close to 85% of the cost of production.	• Regulate the importation of chicken to guard against unfair trade practices. Enhance access to quality and affordable poultry feed and day-old chicks by creating enabling environment and enhancing access to appropriate financial mechanisms for private sector investment in the chicken value chain. • Levying of sales tax on chicken feed, lifting of sales tax on Day Old Chicks (DOC) and veterinary drugs, vaccines and supplements will contribute to reduce the high cost of production. • Promote maize cultivation to cut down on the price of feed
• There is no feed testing lab in the Gambia. This poses serious challenges for both feed manufacturers and the Food Safety and Quality Authority, the competent authority for feed regulation.	• Establishment of food and feed testing laboratory under the Ministry of Agriculture and regulated by the Food Safety and quality Authority.
• Inadequate access to ready markets for locally produce chicken as a result of the high production cost and competition from cheaper imports from Europe and North and South America (USA and Brazil respectively). As a result, farmers do not produce at capacity. The inability for farmers to secure markets makes poultry production in The Gambia highly risky and not attractive to bank financing.	• In addition to the measures stated above, additional measures such as investment in improve marketing and storage facilities is recommended.
• Inadequate access to loans provided by commercial banks. • High cost of interest rates as well as the poor penetration of financial services providers, excludes farmers from	• Enhance access to appropriate financing mechanism. This is a key in GATP.

Causes of Constraints	Integrated Solutions
accessing loans. Banks also provide short-term loans, which are largely seen to be inappropriate for long gestation periods for poultry production (especially layers). • In addition, collaterals requested by banks cannot be provided by farmers, especially women farmers and small businesses.	
• In 2016, the number of feed mills was estimated to be four. In 2019, none of these feed mills is operational. In 2019, there is only one feed mill (GamHolland Enterprise) currently operating in The Gambia. Despite the fact that the mill has the capacity to produce more than 80% of the feed demand for the national poultry industry, it is still underutilized and lack functional laboratories for feed analysis (DLS, 2014). The largest feed mill in country Gambia Food and Feed Industry is currently not operational. • The cost of producing feed is high due to high cost of maize bran, a key ingredient in feed production.	• It is estimated that investments in a proper feed milling plant with well-qualified skilled staff can reduce cost of production by 14 - 18%. This is largely dependent on reducing the prize of locally produce maize. Investment in feed milling can also have a multiplier effect of maize production and maize farmers in The Gambia. It is for this reason that promotion of maize production is in the transformation in poultry production in the Gambia.
• There are 3 hatcheries in the country with capacity to produce 995,400-Day-old Chicks. However, they producing only 3% of at capacity. The low utilization of hatcheries is caused by unavailability of parent stock in the Gambia. Currently, most of the day-old chicks are imported into the country and sold at GMD45. This is one reason for reason for the high cost of locally produce chicken compared to imported chicken.	• Access to appropriate financial resources for private sector investment in day old chicks. As a short-term measure government should waive taxes on importation. For the medium to long term enhancing private sector investment in parent stock will help to sustainably addressing the gap
• The processing function of chicken in the Gambia is not developed as more than 90% of birds are sold as live birds	• Portioning of poultry into smaller potions presents an opportunity that is untapped. Secondary portioning, roasting and selling is growing in The Gambia because it provides buyers with small family sizes who cannot buy a whole chicken or prefer to buy some part of the chicken.
• Absence of aggregation points fitted with storage facilities is one of the key limiting factors to the expansion and the modernization of the traditional poultry production in The Gambia. For traditional poultry producers, the market is at local level where prices are low. In most cases, sale of chicken is done during the hungry or lean period when prices are low.	• The availability of aggregation Centres fitted with storage capabilities close to communities can create a market for farmers at local level. • Enhance establishment of processing plants
• Traditional chicken production mostly suffers from high mortality. However, their low input nature makes them the choice of resource-constrained farmers and thus more widespread. • The high mortality rate in local chicken is mainly attributed to Newcastle Disease	• Control NCD through countrywide mass annual vaccination campaign for a period of 10 years will sustainably impact on local chicken production in the country, thus improving lives and livelihoods of the majority of rural households.
• Lack of poultry Nutrition Expert at DLS	• Provide specialize training on poultry nutrition

4.8 SMALL RUMINANTS VALUE CHAIN ANALYSIS

Small ruminants are selected for wealth and employment creation. Activities of the various livestock value chains - production (of ruminants and poultry), processing, marketing, and services - provide diversified livelihood opportunities to rural, peri-urban and urban inhabitants. Livestock contributes 7percent of national GDP and 25-30percent of agricultural GDP with majority of farmers being smallholder farmers[60]. The milk value chain is dominated by small-scale farmers practicing integrated crop/livestock production. The present domestic production of beef, milk, lamb, meat, and chicken is far short of national demand. The deficit in supply is supplemented with imports. The demand for livestock products throughout the year offers an opportunity to generate income by increasing the quantity marketed.

4.8.1 End Markets

In 2012 the annual per capita consumption of mutton and goat meat was estimated at 0.3kg and 0.6kg respectively (FAO Livestock Sector Review, 2012). There has been significant increase in demand for meat products in the Gambia in recent years. Imports of high-quality meats have been increasing mainly for the supermarkets and hotels. The table below shows the quantity of meat produced[61], imported and demanded from 2012 to 2017. The general demand of meat increased from 34,751 metric tons to 54,931 metric tons. The growth in production over the same period was however marginal as it was far below the demand. In 2017, the total annual local meat production/ output was estimated 11,995 Metric tons whilst demand was estimated at 54,931 Metric tons of which of imports cover 42,936 Metric tons implying a deficit in supply of about 30,941, which is 56%. Out of these figures, sheep and goat meat constitute only 3% of the meat imported into the country representing 1,288 metric tons.

Based on slaughter figures over the years, it has been estimated that mutton and goat meat constitute 11.5% of the total meat production output in The Gambia. Thus in 2017, the mutton and goat meat account for 1,379 metric tons of meat produced in The Gambia. Based on this estimate, the per capita consumption of mutton and goat meat in 2017 could be estimated at 1.55 Kg.

Table 9: Supply and demand of meat in metric tons

Rubrique	2012	2013	2014	2015	2016	2017
Production	8,799	9,239	9,701	10,380	11,107	11,995
Imports	25,952	29,066	32,554	3,581	39,391	42,936
Demand	34,751	38,305	42,255	4,619	50,497	54,931
Deficit	17,153	19,827	22,853	2,543	28,284	30,941
% Deficit	49	52	54	55	56	56

Source FAO 2016[62]

The actors in the Small ruminant value chain include input suppliers, small-scale sheep and goat producers, livestock dealers including middlemen/ intermediaries, butchers/processors, retailers and end-users. Producers sell live animals to primary livestock dealers on farm or at the weekly markets. The primary dealers then resell these animals to butchers or transport them to the terminal markets where they are sold to butchers or individual consumers. The butchers then slaughter the animals and retail the meat to consumers, which include households, restaurants, and hotels. Also included are importers of mutton and goat meat who sell their product to supermarkets, hotels, and restaurants. The table 10 below presents the number of value chain actors by components in the Gambia.

Table 10: Number of value chain actors by component

[60] DLS.GBOS 2016/2017 Livestock Census
[61] Meat production estimates include beef, mutton, goat meat, pork and chicken meat from the traditional and commercial sectors.
[62] FAO 2016. Review of Livestock / meat value chain and Policy Influencing it

Value chain Actors	Number
Sheep/mutton producers	29 997
Goats/ goat meat producers	50 923
Mutton and goat meat importers	4
Suppliers of veterinary drugs and vaccines	6
Feed importers	6
livestock Dealers	406
Butchers	350
Road side roasters (registered)	105
Meat processors (Modern Butchery operators)	4

Source: GLMA 2019 &DLS 2019

Small ruminants are produced by smallholder family farms across the country. This study shows that 76.3 % of rural households owned goats and 56.6% owned sheep. At regional level, Upper River Region (URR) recorded the highest percentage of sheep in the Gambia with 35.9%, followed by Central River Region South (CRR South) 17.1% and West Coast Region (WCR) 13.5%. The Kanifing Municipal Council (KMC) 2.9% and Banjul City Council (0.2%) had the least percentage of sheep in the country. As for the goat population, URR with 26.2 percent, has the highest percentage of goats in the Gambia, followed by WCR (20.3%) and NBR (18.4%). Banjul (0.1%) and Kanifing (1.2%) has the least percentage of goats in the country.

There are 23 major livestock markets in the country. Except for Abuko and Brikama, which are located in urban areas and operate on daily basis, the rest are all weekly markets call "Loumo" Markets located mostly in villages close to the border areas with Senegal. Most of the small ruminants sold in these markets originated from Senegal. The livestock markets lack proper facilities for both dealers and animals on sale. Access to water is one of the key concerns at livestock markets. Also important is lack of shade for both dealers and animals. Whilst dealers can sit under trees, which provide shades, the livestock are left under the scorching sun for hours with either feed or water. This is a serious compromise of the welfare of the animals.

There are 34 slaughter facilities distributed throughout the country. Only one of them is classified as an abattoir, the Abuko Central Abattoir located in the KMC. Of the 23 slaughter facilites, 4 of them are slaughter houses. They are lacated in Brikama WCR, Soma, LRR, Wassu CRR North and Basse in URR. The dilapidated conditions of the slaughter slabs are a major issue of concern. A case in point is dilapidated slaughter slab at Sare Bajo, one of the biggest livestock markets in the country located in Gimara District, Upper River Region.

4.8.2 Input Supply

There are 6 suppliers of veterinary drugs and vaccines namely: Agrovet, Sumavet, Samivet, Vet Sans, Kombo Vet, Touray, Meyer Vet Clinic, and AHS Vet Veterinary Clinic. They are all located in KMC with only two of them having outlets at regional level namely Agrovet and VetSans. Access to veterinary drugs is a major constraint at regional level. Feeds such as groundnut hay, groundnut cake, rice bran, mineral and vitamin supplements play key roles in small ruminant production. Groundnut hay business is a thriving serving as livelihood opportunity for many traders both in the urban, peri urban and rural areas.

There are 5 feed importers of concentrate feed in the country namely SEDIMA, PRODAS, SANDAS, KOUDJUS, and JARGA. Although they mainly import poultry feed, they also import concentrate feed for ruminants, which is in high demand by commercial small ruminant producers. The biggest of the feed producers, Gambia Feed and Food Industry with capacity to produce 40MTof feed has not been operational since 2012.

Input markets in the Gambia for the livestock is underdeveloped and function in inefficient fashion. Pasture and forage materials are the main component of small ruminants' diet, although the sheep fattening is becoming more widespread among the communities supported by Agricultural projects such Livestock and Horticultural Development Project (LHDP), Agriculture Value Chain Development project (AVCDP), and Food and Agriculture Sector Development

project (FASDEP). Small ruminant fattening schemes require compound feed and nutritional supplements, which are limited in supply and sometimes considered costly. There is a great opportunity to expand number of compound feed mixing operations in the country in order to expand meat output that can attract more income for the producers. Women and children play an important role in taking care of the animals feeding.

4.8.3 Production

The small ruminant population of the Gambia is 500,998 heads of which sheep comprise 172,662 heads and goats 328,336. They are mostly produced by smallholder farmers scattered across the country. Upper River Region (URR) has the highest percentage of sheep population with 35.9%, followed by Central River Region South (CRR South) and West Coast Region (WCR) with 17.5% and 13.5%. Respectively the Kanifing Municipal Council (KMC) and Banjul City Council produce the least percentage of sheep in the country with 2.9% and 0.2% respectively. On the other hand, goat population was recorded high in URR with 26.2 percent, followed by WCR (20.3%) and NBR (18.4%) while. Banjul and Kanifing had the least percentage of goats with 0.1% and 1.2% respectively.

The average number of sheep and goats owned per households is reported to 6 heads. The vast majority of households keep small ruminant, either goat or sheep or even both. At national level, Agricultural census has revealed that the number of households engaged in sheep production in 2012 was estimated at 29 987 and goat production at 50 923. It is also evident that women owned most the sheep in the country, which is reported as 51.3% while the remaining 48.7% owned by the men folks[63]. Small ruminant production is predominantly local breeds that are resistant or trypano to learn to diseases. Throughout the country, Djallomke Sheep constitute 96.6% of the sheep population while West African Dwarf goat constitute 99.5% of the goat population.

These small ruminants are indispensable for food security and income generation for the rural households. Sheep and goats are mainly the livestock species owned by the rural households and constitute an important source of cash inflow for them. It is considered as an important asset for the households where they can easily fall back at the time of need for cash.

The predominant production system in The Gambia is the low input subsistence system characterized by high disease incidence, low quality feed, high infestation of gastrointestinal worms, and poor selection and poor mating practices which results to in breeding. More than 90% of small ruminant owners practice free-range system during the dry season. Tethering is practice during the rainy season to minimize crop damage. Mortality is a major constraint to livestock production and productivity. This could be attributed to high prevalence of diseases, in particular, PPR and Pasteurellosis, as well as inadequate access to veterinary drugs and vaccines. Inadequate access to feed and water during the dry season is also a major constraint.

Semi-intensive system is also practiced. It is a combination of limited grazing and stall-feeding. The establishment of intensive feed gardens characterizes the system and supplementation with conserved feed resources (feed resource management and conservation). Improved local housing (roofed with raised platforms), access to water and access to veterinary services are provided. It has paid dividends with higher productivity of small ruminants managed under the system. The semi-intensive system paved the way for the introduction of commercialization of small ruminant production in the Gambia. Producers through this system began to establish small ruminant value chains and value addition processes. Semi intensive system is technically easy and within the capabilities of small-scale farmers to implement. It provides livelihood options for livestock dependent communities. Women and youth entrepreneurs are increasing venturing into this production system.

Ram fattening is widely practiced in the country. Ram fattening is a market-oriented activity aimed mainly at satisfying ceremonial demand for rams and is undertaken by rural, urban, and peri-urban farmers, including women and youth. The main strategy is to fatten lean rams over a three-month period using groundnut hay, oil seed cakes and cereal brans (Livestock Sector Review, 2012). The rams are usually purchased at livestock markets in The Gambia or in neighboring countries; a limited number are obtained from the farmer's own flock. The rams are kept in a small enclosure at the backyard, fed, and watered individually. The technique is relatively simple, easy to adopt and within

[63] National Livestock Census, 2016

the capabilities of small-scale farmers to implement. It has highly visible results and benefits can be realised within a short period. It is being promoted by the Department of Livestock Services over the years and has been adopted by many famers across the country. The main challenge, however, is the high cost of feed and inadequate access to veterinary services.

Lot of efforts and initiatives have begun in the Gambia. The ministry of agriculture through agricultural projects are supporting up to 359 fattening schemes with over 3323 heads of sheep owned by mostly women groups and individuals in different regions of the Gambia. These schemes support farmers to enhance their welfare and improve rural livelihood as well as ensure food security.

Table 11: Village Sheep Fattening Schemes

Region	Scheme	Number of animals	Funding agency
LRR	12	146	AVCDP/ IND
WCR	2	60	FASDEP
NBR	51	861	AVCDP/ IND
CRR/S	122	1220	AVCDP/ IND
CRR/N	160	676	AVCDP/ IND
URR	12	360	AVCDP
Total	**359**	**3323**	

Source: DLS 2018

Similarly, there are a number of small ruminant breeding schemes across the country. Currently, about 888 small ruminant breeding schemes were established and supervised by the Department in collaboration with projects, NGOs and individual farmers nationwide (Table 12).

Table 12: Small Ruminant Breeding Schemes

Region	Scheme	No. Of animals	Funding agency
WCR	4	48	FASDEP
NBR	165	531	P2RS/ FNS
LRR	169	430	FASDEP/ FNS
CRR/S	176	669	P2RS/ FASDEP / FNS
CRR/N	145	472	P2RS/ FNS/ FASDEP/ AVISU
URR	229	523	P2RS/ FNS
Total	888	2673	

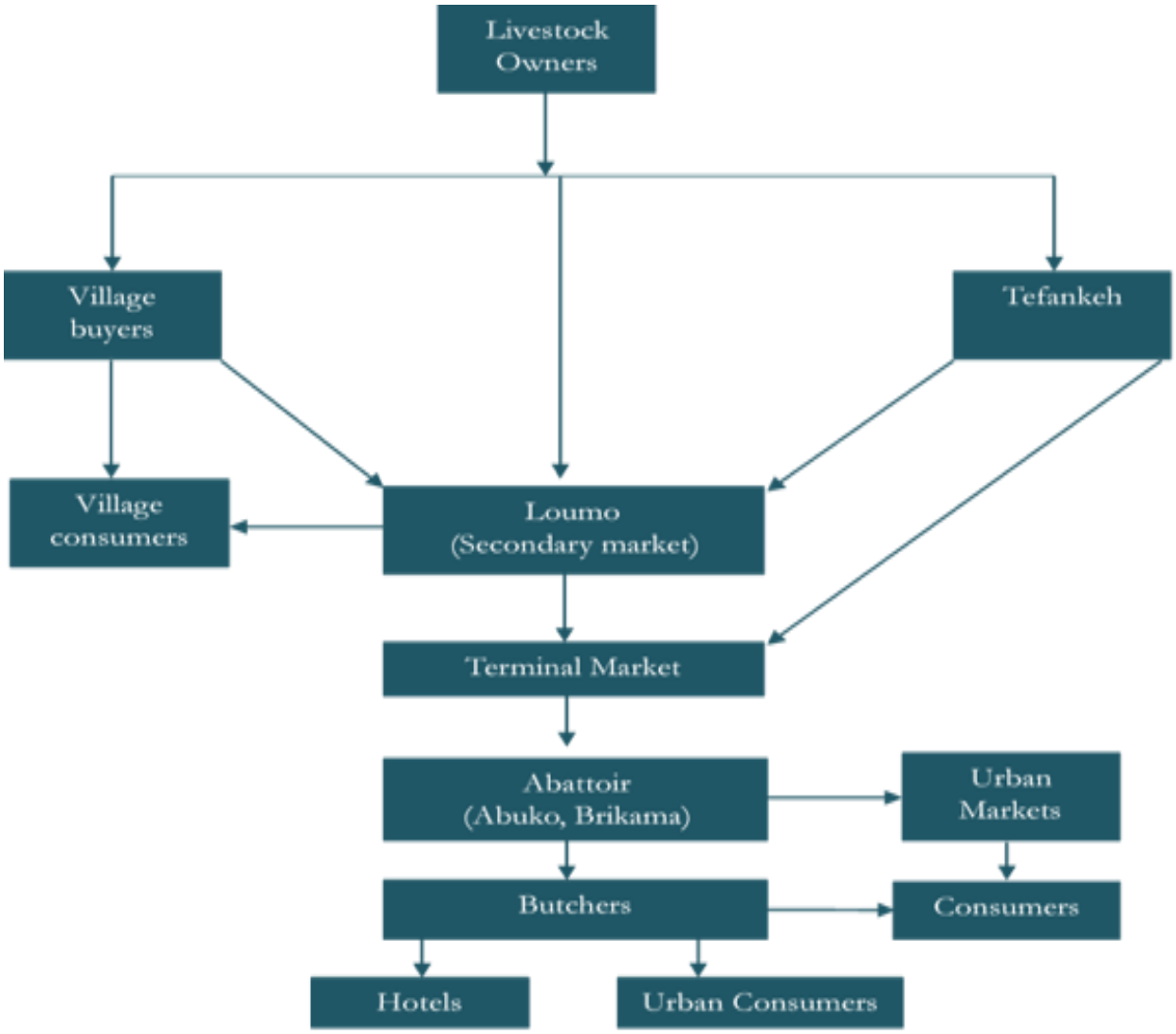


Figure 23: Livestock and Meat Marketing Channels

Source: DLS 2018

4.8.4 Marketing

Livestock and livestock product marketing is a complex process with several actors and transactions. However, a simplified picture depicting the pattern is of producers/farmers selling their livestock to dealers who operate in most parts through loumos. In most cases, the livestock are transported to terminal markets in the urban areas (Abuko and Brikama). The livestock is then sold or loaned to butchers who then slaughtered at abattoirs and the meat transported to their premises for sale to other butchers or consumers. This simplified picture is presented in the Figure below.

There are 23 major livestock markets in the country [64] Except for Abuko and Brikama, which are located in urban areas and operate on daily basis, the rest are all weekly markets located mostly in villages close to the border areas with Senegal. The location of these markets is premised on the significant cross border trade in livestock between the two countries and by extension with major livestock exporting countries namely Mali and Mauritania. URR and CRR have the highest number of weekly livestock markets numbering 7 in both regions; 5 in NBR, and 2 in LRR as shown in the table below.

[64] Gambia Livestock Marketing Agency 2018

Table 13: Livestock Markets in The Gambia

S. No.	Region	District	Village/Town
1	URR	Kantora	Fatoto
		Kantora	Lamoi
		Tumana	Dinguiri
		Fuladou East	Basse
		Fuladou East	Sabi
		Jimara	Gambisara
		Wuli West	Sare Ngai
2.	CRRs	Upper Fuladou	Bansang
		Lower Fuladou	Brikama Ba
		Niamina East	Jarreng
3	CRRn	Sami	Sami Tenda
		Niani	Wassu
		Niani	Nyanga Bantang
		L/Saloum	Kaur
4	LRR	Jarra East	Bureng
		Kiang West	Kwinella
5	WCR	Kombo Central	Brikama
6	KMC	Abuko	Abuko
7	NBR	Lower Nuimi	Fass Njaga Choi
		Lower Nuimi	Ndungu Kebbeh
		Lower Badibou	Kerr Pateh
		Lower Badibou	Njaba Kunda
		Upper Badibou	Farafenni

Source: GLMA 2019

Livestock and livestock products constitute very important income and food sources for consumers, traders and consumers alike. However, most of the production is concentrated in the rural areas whilst most of the effective demand is from the Greater Banjul Area with its higher population concentration, tourist and restaurant trade, and relatively higher income. Consequently, the major proportion of the livestock/livestock products marketing (including meat imports) are geared to servicing the demand in this area. As a result, the predominant flow of livestock is from the east of the country to the west, with the relatively open borders there have been livestock movement to and from neighboring Senegal especially during Muslim feast periods, "Tabaski".

Thousands of livestock owners dispersed through the rural areas with most selling only a few animals each year. The main constraints for marketing include erratic variations in supplies coming to the market, lack of basic infrastructure and amenities at the weekly livestock markets such as lack of fencing for the markets, lack shed and inadequate access to water for both dealers and animals, inadequate cold storage and meat processing facilities as well inadequate transportation facilities, high prevalence of credit buying and inadequate access to micro finance. Inadequate means of transportation is also an important marketing constraint. There is a lot of animal suffering in the Gambia during transportation. Overloading of vehicles is common. The condition of the vehicles involve in transportation of small ruminants has often resulted to frequent injuries. The bad conditions of feeder roads are also a major constraint.

4.8.5 Retailing

Retailers including butchers at municipal and village markets, modern butcheries, private meat stalls and shops, supermarkets, roasted meat shops, and street food vendors:

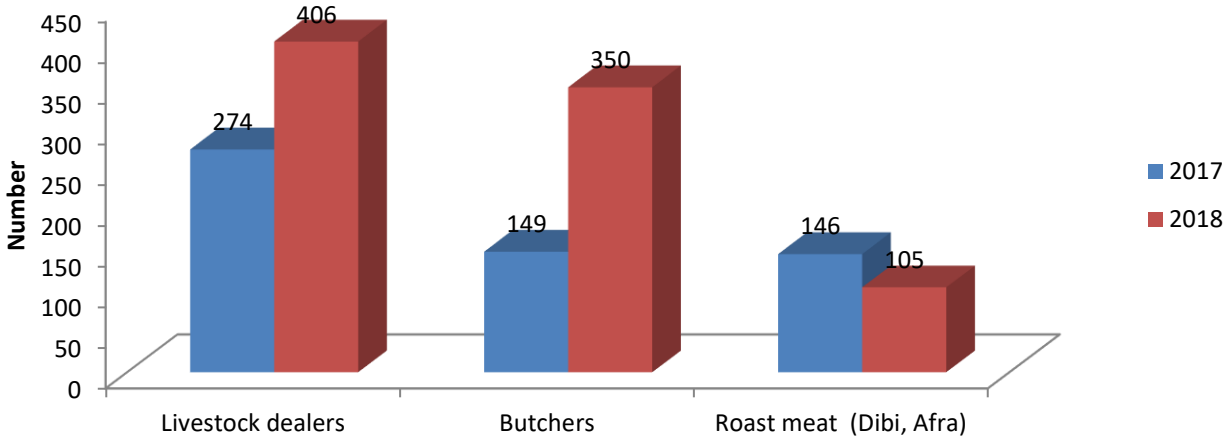


Figure 24: GLMA Registered dealers and butchers in 2017 & 2018

In 2018, there were 406 GLMA registered Livestock dealers compared to 274 in 2017. In the same year, the number of GLMA registered Butchers were 350 compared to 149 registered in 2017. For roasted meat, the registered sellers were 105 in 2018 compared to 146 in 2017 as shown on Figure 24.

The price of mutton and goat meat per kg ranges from D250/Kg in the Greater Banjul Area, D250/Kg in North Bank Region and D200/Kg in Central River Region. It is important to note that URR has the highest number of small ruminants in the Gambia.

There has been some development in modern butcheries in recent years with the objective to cater for the needs of the ever-growing urban consumer markets including supermarkets, restaurants, and hotels. The distinguishing factor among these shops is the amount of investment in refrigeration, meat cutting, and processing facilities. Currently, the modern butcheries include Central Butchers being the latest modern butchery to be opened in the country, Muslim Butchers that specializes in selling only Halal products, Butcher Shop, Kombo Meat Factory and "Ndawal". All of the modern butcheries are located in Kanifing Municipal Council (KMC). They generally rely on local sources for the supply of meat, although they occasionally utilize imported meat to augment supplies to meet demand. They acquire meat from local dealers with animals slaughtered at the abattoirs and transported to the butchers' premises where there have chilling, freezing, cutting and processing facilities. The clientele are high-income residents demanding quality meat, high-class restaurants and some of the tourist hotels. The main concerns of these outlets are:

- A problem of sourcing meat of suitable quality throughout the year. The quality of meat is poor towards the end of the long dry season, mainly because of the absence of supplementary feeding practices and improves as the rainy season progresses. For this market, good quality beef is available from November to April with quality peaking in January. Fortunately, this coincides with the main tourist season.
- Competition from imported meat. Many of the tourist hotels probably find it more convenient to purchase the cuts of imported meats that they require rather than purchase locally produced meat that may be variable in quality and quantity.

4.8.6 Processing

Slaughtering of small ruminants is conducted at the abattoirs, slaughterhouses and slaughter slabs. There are 34 slaughter facilities distributed across the country. The main slaughter facility is the Abuko Central Abattoir. There are four slaughterhouses located in Brikama, West Coast Region, Farafeni in North Bank Region, Wassu in Central River Region South and Basse in Upper River Region. The remaining 29 are classified as slaughter slabs. The facilities are managed and owned by The Gambia Livestock Marketing Agency. The Kombo Meat Factory processes meat and meat products such as special cuts, sausages, and smoked chicken. They have been outsourcing live animals from the dealers and slaughter at the Central abattoir and primarily targets supermarkets, hotels, and urban consumers. Livestock

processing and marketing are constrained by inadequate or absence of basic facilities like sheds, feeding and watering facilities at the livestock markets (*lumos*); poor hygienic conditions of abattoirs, processing facilities, transportation, and butcher shops; and absence of appropriate transportation for live animals and processed meat (FAO 2016). The dilapidated condition of most if not all the slaughter slabs in the country is a source of concern for the development of small ruminant value chain.

Table 14: GLMA Slaughter facilities

No	KMC	WCR	LRR	NBR	CRRS	CRRN	URR
1	Abuko Central Abattoir	Brikama	Soma	Barra	Janjanbureh	Wassu	Sare Bojo
2	Abuko Cashew Plantation	Gunjur	Bureng	Fass Njaga Choi	Brikamaba	Kaur	Basse
3		Sanyang	Kwinella	Njaba Kunda	Jarreng	Nyanga Bantang	Dingiri
4		Tanji		Farafenni	Bansang	Chamen	Kulari
5		Sukuta		Kerr Pateh	Sinchu Alagi		Sotuma Sere
6		Lamin			Taifa		Fatoto
7		Bwiam					Gambisara
8		Sibanor					
9		Brufut					

Source: GLMA 2019

4.8.7 Distribution

There is high flow of traffic in livestock trade from the eastern to the western part of the country. This is attributable to the fact that the most of the small ruminant production is concentrated in the rural areas whilst most of the effective demand is from the Greater Banjul Area with its higher population concentration, brisk tourist and restaurant trade, and relatively higher income. The distribution, though currently considered as a key challenge could serve as a future business opportunity for transporters. There are no special vehicles in the country for transporting livestock. Small ruminants are at times placed on top of commercial vehicles or even in the boot of small vehicles. Transportation is characterized by undue animal suffering, frequent injuries and at times mortalities. There are no regulations pertaining to the transportation of livestock in the country in line with OIE Animal welfare standards on transportation. However, the Department of Livestock Services recently validated the Animal Health Bill 2019 for submission to the National Assembly through the Ministry of Agriculture. An integral part of this regulation is the Animal Welfare Regulations 2019, which seeks to address animal welfare issues in a holistic way. The problem of poor transportation is further compounded by the fact that feeder road network is generally poor.

4.8.8 Commercialization

There is huge opportunity to increase local producer involvement in the commercialization of small ruminant sales. Local producers' involvement in commercialization in the sale of small ruminant is inadequate despite the very high number of households reportedly selling small ruminants. This information was adequately captured in the FAO Baseline Survey 2018 in which 92% of households in Five Regions of the country namely URR, CRR North, CRR South, North Bank, and LRR reported sold livestock. However, despite the high percentage of households reportedly selling livestock, the average number of livestock sold per household remains very low showing 2.9 and 5.7 heads per household for Sheep and Goats respectively. The low numbers of livestock sales are an indicator of inadequate commercialization in the sector. Farmers usually sell livestock for emergency reasons to raise funds but not usually as

form of business. Small ruminants have a huge potential to increase farmers income and improve their lives and livelihoods. The increase in small ruminant population reported in the 2016/2017 livestock censors did not translate into increase in the number of livestock sales per household.

Table 15: Percentage of households selling Livestock and Number sold per household

Region	% of Households Selling Livestock	Livestock Number Sold per Household	
		Sheep	Goats
CRRN	68.4	0.6	1
CRRS	42	0.4	0.7
LRR	42.5	0.2	0.5
NBR	47.5	0.2	15.2
URR	53.3	11.4	1.2
Total	92	2.9	5.7

FAO Value Chain Study, 2019

The opportunity missed out by local producers is fully captured by livestock dealers who import live animals from Senegal, Mauritania, and Mali. The Muslim annual feast of Eid ul Adha locally known as Tabaski offers limitless opportunities for farmers to market their rams. An estimated 400,000 rams are annually slaughtered in The Gambia for Tabaskio. In 2005, this number was estimated at 160,000 (DLS, 2005). The national demand in rams for the feast cannot be met locally thus lots of importation of rams from neighboring countries. The 2016 /2017 National livestock Census reported that only 14.3% (12,236 heads) of the exit from the National Sheep flock was for the Muslim feast of Eidul Adha. There has been significant increase in importation of rams into the country to meet the ever-increasing demand for the feast. As shown in Table 16, the total heads of sheep sold in 2017, amounted to 33,090 sheep during the National Livestock Show and 15,862 rams originated from Senegal alone. This represents 47.93% of all the rams sold at the national livestock show ground at Abuko. A similar situation prevails every year.

Table 16: Origin of Tabaski rams for sale at National Livestock Show

Origin	Number	Percent
KMC	4,293	12.97
CRR/North	2,534	7.65
CRR/South	2,095	6.33
NBR	2,433	7.35
URR	1,511	4.56
WCR	3,432	10.37
LRR	130	0.39
Senegal	15,862	47.93
Mali	379	1.14
Mauritania	421	1.27
TOTAL	33,090	99.96%

Source: GLMA (2017)

The butchers, retailers, and input suppliers are fully active in the commercialization of the value chain. However, credit buying is mostly involved. Access to credit for their business has been reported as a challenge by most of them. Besides live animals, there is also importation of mutton and goat meat into the country.

4.8.9 Small Ruminant Value Chain Governance

Small ruminants' production is dominated by smallholder farmers operating mixed crop/livestock production systems in all parts of the country. Producers' interaction with either dealers or butchers occurs at the farm or at the weekly markets. There are various supporting actors who facilitate the activities of the primary actors in the small ruminant value chains, which include Department of Livestock Services (DLS), Gambia Livestock Marketing Agency (GLMA) and West Africa Livestock Innovation Centre (WALIC). They provide wide range of services including veterinary services as well as research and extension services.

Department of Livestock Services: Serious technical capacity gaps existing at the Department constitute major deficit for development, planning, and implementation of programs. At field level also, there are serious capacity gaps with some major livestock communities currently without livestock assistants to provide services for the animals.

a) Gambia Livestock Marketing Agency (GLMA): The Gambia Livestock Marketing Agency (GLMA) is established to promote the commercialization and marketing of livestock and to facilitate the participation of Gambians in the marketing of livestock and all matters connected therewith. In order to strengthen the aforementioned portfolios and achieve maximum efficiency in the discharge of its functions, the Agency was mandated to establish and manage the livestock commercialization and marketing Development Fund in accordance with the Act.

   In pursuance of this mandate, the Agency has developed strategies to enhance the capacities of livestock Owners Associations and other value chain actors by:

   - Revitalizing the Livestock Owners Associations
   - Strengthening and building the capacity of the livestock value chain actors
   - Facilitating linkages with the Department of Livestock Services, projects, and programs that have livestock activities
   - Facilitating linkages with microfinance institutions for the acquisition of soft loans

b) West Africa Livestock Innovation Centre (WALIC): West Africa Livestock Innovation Centre (WALIC) formerly International Trypanotolerant Centre (ITC) has led the way in the preservation of the trypan tolerant breeds in The Gambia.

To this end, ITC has worked on a number of ways to genetically improve the desirable traits of these breeds. Among the most remarkable steps taken in this direction was the design and establishment of a pure breeding program called an open nucleus breeding system (ONBS) at their production centers (Keneba) for in-suto genetic improvement for better productivity. Multiplier schemes were established in various farming communities as outreach schemes for in-suto genetic improvement of community ruminant livestock. This breeding scheme for N'dama cattle started in the mid-1990s in the Gambia with the objective of improving milk and meat but without losing the unique characteristics of the breed in terms of trypanotolerant and adaptive traits (Dempfle and Jaitner, 2000; ITC, 2004). The rationale for the breeding program is based on the fact that local breeds such as the N'dama and the D'jallonke are threatened with extinction due to gene dilution through cross breeding activities with exotic breeds not adapted to the low input system, characterized by high level of humidity, low quality diet, high infestation of trypanosomiasis, and poor selection.

i) National Livestock Owners Association (NaLOA): The National Livestock Owners Association (NaLOA) is the umbrella body of all Livestock Producer Association in The Gambia, established on 15th October 2015 following intensive consultations among all relevant stakeholders. It is created out of the desire to develop and promote the struggling sector in meeting the National demand for livestock and livestock products and by-products. The National Livestock Owners Association (NaLOA) brought together livestock Apex bodies and District livestock producer Associations across the Country to form a unified National Association that would support the varied interests of all livestock producers and address the emerging needs of the livestock value chain actors in The Gambia. The association has current membership of about 4000.

NALoA is governed by a president assisted by four vice presidents (Animal Health & Production, Livestock Security, Livestock Marketing & Commercialization and Environment & Natural Resources) and has a secretariat which comprise; Secretary General, Cashier and an Auditor). Similar structures are found at the regional and district levels whose mandates are to coordinate programs of the association at their respective regions and districts.

ii) Gambia Livestock Dealers Association (GaLDA): The Gambia Livestock Dealers association was established in 2018. The association is one of the apex bodies under the National Livestock Owners Association. GLDA brought together all the value chain actors in the commercialization and marketing of Livestock. The organization has a National President supported by Regional Presidents in each of the 6 administrative regions. The president of GaLDA doubles as one of the Vice Presidents of NaLOA assisting the President on marketing and commercialization.

iii) Gambia Indigenous Livestock Multipliers Association (GILMA): GILMA, founded and registered in May 2002 is an active and founding member of NaLOA. The rational of the organization is to increase the pure breeding stock of The Gambia by breeding pure Ndama, Djalonke sheep and West African Dwarf goat and thereafter extending the program by giving out offspring to other farmers. The specific objectives of GILMA include:

- Ranking farmers aware of the availability of breeding males in multiplier villages;
- Producing the males and distributing them to needy farmers; and
- Organize to be more involved in breeding.

GILMA members encounter a number of constraints including:

- limited knowledge of members on breeding and selection;
- high morbidity among animals due to lack of regular vaccination particularly of PPR;
- difficulties in marketing indigenous djalonka particularly due to it smaller size;
- difficulties in communication among members; and
- Tendency of some members to sell breeding stock.

4.8.10 Value Chain Support Services

There is huge potential for the private sector to play a greater role in the small ruminant value chain in the Gambia. There are 6 private veterinary clinics providing veterinary services in the country are located within the Greater Banjul Area. There are no qualified veterinary Doctors at regional level in the country. This is further compounded, by the limited number of paravets/ Livestock Assistants at the Department, leaving entire districts in the country without a paravet. Sandu District in Upper River Region with a high livestock population distributed in its 60 villages does not have a single Livestock Assistant/paravet. The gap is filled by untrained practitioners.

Access to veterinary drugs and vaccines at district level is poor. Most of the private veterinary dug outlets are based in urban areas. This also provides opportunity for private sector participation.

Enhancing access to credit for actors along the small ruminant value chain is another avenue for greater private sector participation. The existing high transaction cost for bank loans estimated at 27%-30% poses difficulties for farmers, traders and value chain actors to access bank loans. Reliance Financial Services provides loans at a cost 1.5% per month interest, 2% transaction fees with Land Clearance/ Lease document serving as collateral. On the other hand, most commercial bank loans are structured around 21% interest, 3% transaction fees with a Land Lease document as guarantee.

Table 17: Root causes of constraints and integrated solutions

Root causes of Constraints	Proposed Integrated Solutions
• The inadequate supply of feed and water during the dry season due to seasonal variations of rainfall is one of the major constraints. The high incidences of bush fires also deplete the range resources and leads to the drying up of natural watering points. Due to these reasons, ruminant livestock tend to be severely emaciated and susceptible to disease during the dry season.	• Building the capacity of farmers on Feed conservation strategies, supplementary feeding using crop residues and concentrates, and providing drinking in points for animals. Sensitization on bush fires prevention,
• High morbidity and mortality in small ruminants due to preventable diseases like PPR and Pasteurellosis.	• Organization and conduct of nationwide vaccination campaigns against PPR and Pasteurellosis for duration of ATP will lead to sustainable control of these diseases.
• Inadequate or absence of basic facilities like sheds, feeding and watering facilities at the livestock markets (lumos).	• Improving livestock markets by providing adequate facilities for animal handling including sheds and watering facilities.
• Depleted number of qualified livestock personnel delivering services to livestock farmers in the rural area. • Insufficient numbers of veterinarians in the public service, with only 2 currently in service and lack of policy on private veterinarians.	• Training Gambians at Veterinary schools abroad to become veterinarians. • Establish a faculty of veterinary medicine at the University of The Gambia. • Articulate and adopt well-defined roles for the public and private veterinary service providers in conformity with the recommended OIE sanitary mandate.
• The lack of appropriate policy and legal framework, including local conventions, for the protection and management of grazing lands and watering points.	• Formulating Policy on protection of grazing lands and providing livestock drinking points.
• Poor hygienic conditions of abattoirs, processing facilities, transportation, and butcher shops; they do not meet the required sanitary and hygienic standards.	• Upgrade slaughter, processing facilities, transportation, and butcher shops to comply with the national food safety and quality regulations.
• Inadequate access to micro finance • Inadequate access to niche markets	• Enhancing access to micro finance for value chain actors. • Access to niche markets enhanced for women and youth farmers by providing rams to fattening schemes as revolving fund. • Access to markets enhanced by supporting annual Livestock show at regional level

4.9 ANALYSIS OF MECHANIZATION FOR PRODUCTIVITY

Mechanisation, the process of employing machinery and mechanical power to render labour more productive is recognised by the CAADP platform amongst others as an important element in promoting the intensification required to transform African agriculture and bring about broader growth and development outcomes.

For agriculture to propel the nation's economic growth as enshrined in national policy and strategic framework documents, namely the NDP, ANRP and GNAIP II-FNS amongst others, the sector challenges resulting to under-performing value-chains (low production and productivity) must be addressed. Under an aging agricultural workforce and climate variability, appropriate technological innovations geared towards production intensification and associated improvement of post-harvest processes must be adopted for the desired sector performance to be modernised, sustainable and market-oriented. This implies the transition to higher level of mechanisation, that would increase work

rates, improve labour efficiency (productivity per worker), enhance land productivity, facilitate adoption of improved agricultural techniques such as irrigation, and subsequently ushers in commercialization of the agricultural commodity value chains. A synopsis of the potential non-human source of power envisaged to positively contribute towards the realisation of the GATP goals are discussed hereunder. However, NARI will be empowered under GATP to conduct adaptive research within the various agro-ecological zones and different soil typologies with a view to map and recommend appropriate alternative machinery and equipment essential for the development of a sustainable transformation program. Furthermore, DOA, DLS and FSQA will be equipped with appropriate farm machinery and equipment to facilitate/enable:-

- The Agricultural Engineering Services of DOA to train and certify operator in appropriate use of farm machinery and equipment;
- Food Technology Services of DOA to develop and conduct training on appropriate agro-processing technologies including the production of ready-to-use products;
- DOA Regional Directorates to conduct on-farm demonstration of recommended mechanisation technologies;
- DLS Headquarter and Regional Directorates to produce feed to support the poultry and small ruminant training programmes; and
- FSQA to certify food products.

In the Gambia, agricultural land classification can be broadly based on soils, that is, upland and lowland typologies. The upland comprises light soils (sandy and sandy loam) that are generally of low fertility (poor in nutrient) and highly susceptible to erosion. These soils are mainly used for growing groundnuts, upland rice and coarse grains (maize, millet, and others) under rain-fed, and vegetables under irrigation. The lowlands, on the other hand, comprised of heavy soils (clays, clay loams, silts, silty clay loams amongst others) and are poorly drained with water logging being a common phenomenon. These soils are very hard when dry and, muddy and slippery when wet, and are mainly used for rice production and in some cases dry season vegetable production.

Crop production of the target value chain commodities is partially mechanized with draught animals being the predominant providers of power for the upland ecology. The extend of mechanization along the production phase of the value chain varies from crop to crop with upland rice and coarse grains being mechanized up to the weeding stage whilst groundnuts are mechanized all through the production phase. As noted during the stakeholder consultations, the Wolof communities are amongst the most highly mechanized integrated crop and livestock production model villages of Ndrammeh Joka in the NBR and Madina Sancha in LRR are living testimonies. The use of tractors for land preparation as introduced during the Second Republic was ineffective due to inappropriate handling and management. The scheme was marred with operator-associated problems leading to inappropriate use of implements with consequence soil degradation, operation methods, and maintenance services. Currently, serious shortage of these machinery and associated tillage equipment is hampering effective production and productivity of the lowlands, more so, the rice irrigation schemes.

CASE STUDY: THE IMPACT OF ANIMAL TRACTION ON PRODUCTIVITY AT NDRAMMEH JOKA, NBR

Ndrammeh Joka is a small Woll of settlement in the North Bank Region close to the Senegalese border. The residents are mainly dependent on rainfed agriculture, growing cereals, groundnuts, and other upland crops. The community has over the years adopted the use of animal drawn implements which has helped to transform their lives and livelihoods.

The village has about 50 households and every household have on the average three horses, a sine hoe package and a horse cart. According to the Alkalo/Head of the village (Pa Ebou Drammeh) who was a key informant to this study, indicated that his household alone harvested in 2018 over 300 bags of groundnuts, 30 bags of millet and 60 bags of maize. These production figures far outweigh the national average production rates. The community was able to significantly increase their agricultural productivity largely due to the widespread adoption of appropriate animal drawn implements.

Given the pivotal role that draught animals play in their production systems, the villagers ensure the optimal care, health, and welfare of the animals. The animals are well fed, watered and housed! Asked as to whether they would prefer heavy duty mechanized agricultural implements, the key informant respondents indicated that they preferred assistance in the form of draught animals and animal drawn implements, which are easier to operate, maintain and easy to replace. They further averred that these implements are less destructive on the soil structure and by extension the natural environment.

This case study illustrates the significance of achieving appropriate technologies suited to the farmers preference and ability to own, operate and maintain animals and appropriate farm implements. The widespread adoption of animal traction in Ndrammeh Joka has contributed significantly to raising productivity levels of the villagers thereby reducing poverty, increasing wealth, incomes and enhancing food security. These are key development priorities enshrined in the NDP and SDGs and thus warrant robust considerations in the context of the GATP.

Estimated Annual Gross Income of the KII (GMD)

Commodity	Quantity	Unit Price	Total
Groundnuts	16 tons	18,000.00	297,000.00
Millets	60 bags	1,200.00	72,000.00
Maize	30 bags	1,200.00	36,000.00
Total			**405,000.00**

Source: Field consultations GATP 2019

5. PROFIT MARGIN ANALYSIS

5.1 GROSS MARGIN ANALYSIS OF MAIZE

Margin analysis is an examination of the additional benefits of an activity compared to the additional costs incurred by that same activity.

The margin analysis for maize was at three levels, producer, and trader and processor levels. It provides an insight on costs and revenues across all major activities at each level of operations in the three tiers. It provides an indication of the profitability or otherwise for each level of operations and possible leverage points of entry for future investments. The constant factor in the calculations is a potential yield of 1400kgs/hectare, assuming that the agronomic recommendation of 150kgs of NPK and 50kgs of Urea (inorganic fertilizers) are applied to a hectare of maize to maximize yields. The current yields per hectare are far below the optimal levels. Farmers, in general, apply far below the recommended fertilizer rates and the agronomic practices.

5.1.1 Production Profit Margins

Data analyzed from stakeholder consultations revealed some staggering information on profit margins calculations at the producer level. Results on the table below show a profit margin of GMD 15,575.00 per hectare at producer level. The total cost of activities at the farmer level is GMD 9,425.00 and the total revenue was GMD 25,000.00.

Table 18: Production profit margins (1 ha)

Cost of production			
Description	Quantity	Unit price (GMD)	Value (GMD)
Seed	25kgs	20	500.00
Labour (seeding, weeding (2), pest scaring, harvesting and threshing	-	-	5,375.00
Fertilizers	4 bags x 50 kgs	700.00	2,800.00
Transportation	-	-	750.00
Total Cost (A)			**9,425.00**
Return to the farmer			
Sale of produce	20 bags x 70 kgs	1,250.00	25,000.00
Bran	-	-	-
Revenue (B)			25,000.00
Gross margin (B-A)			**15,575.00**

Source: Stakeholder Consultations, 2019

5.1.2 Trader Profit Margins

The profit margin calculations at the trader/retailer level shown on the table below indicates a profit margin GMD 1,700. 00 on produce directly bought from the producer by the trader. It can be observed that the profit margin at the trader level is drastically reduced compared to the maize producer.

Table 19: Trader profit margins (ha)

Cost of production			
Description	Quantity	Unit price (GMD)	Value (GMD)
Maize procured	20 bags x 70kgs	1,250.00	25,000.00
Labor	20 bags	10.00	200.00
Transportation	20 bags	55.00	1,100.00

Cost of production			
Description	Quantity	Unit price (GMD)	Value (GMD)
Total Cost (A)			**26,300.00**
Return to the trader			
Sale of produce	20 bags x 70 kgs	1,400.00	28,000.00
Revenue (B)			28,000.00
Gross margin (B-A)			**1,700.00**

Source: Stakeholder consultations, 2019

5.1.3 Processor Profit Margin

The data on the table below indicates the margin calculations at the level of the processor. The results reveal a profit margin of GMD 2,500.00 on produce from one hectare purchased from the trader. The registered margin is almost at the same level with that of the trader.

Table 20: Processor profit margin (ha)

Cost of produce			
Description	Quantity	Unit price (GMD)	Value (GMD)
Maize purchased	20 bags x 70kgs	1,400.00	28,000.00
Labor	-	-	200.00
Value addition (de-husking and processing)	20 bags	65.00	1,300.00
Total Cost (A)			**29,500.00**
Return to the processor			
Sale of produce	20 bags x 80 kgs	1,500.00	30,000.00
Bran	5 bags	400.00	2,000.00
Revenue (B)			32,000.00
Gross margin (B-A)			**2,500.00**

Source: Stakeholder consultations, 2019

Finally, data on the table below indicate that based on the above profit margin calculations, the farmer registers a profit margin of 62.3%, followed by the processor 7.8% and then the trader 6.1%. Furthermore, results on the market shares of each category indicate the producer has 18.3% of the market share, followed by the processor 2.9% and the trader 2%. The leverage point to entice future investments in the maize value chain is at the producer level for high level market penetration.

This conclusion is very revealing in that despite the use of low inputs and technologies, actors at the production levels earn higher profit margins and have a bigger market share those other actors along the value chain. This, therefore, reinforces the earlier assertion that one of the leverage points along the maize value chain is future investments at the production level have higher prospects of promising returns to investment.

Table 21: The market share of actors in the core maize value chain

Value chain actor	Cost of product	Value addition	Total Cost	Revenue	Gross Margin	Gross Margin (%)	Market Share (%)
Farmer	-	-	9,425.00	25,000.00	15,575.00	62.3%	18.3%
Trader	25,000.00	1,300.00	26,300.00	28,000.00	1,700.00	6.1%	2%
Processor	28,000.00	1,500.00	29,500.00	32,000.00	2,500.00	7.8%	2.9%

Source: Stakeholder consultations, 2019

The margin analysis on millet was assessed at three levels producer, trader, and processor levels. The analysis provides an insight on costs and revenues across all major activities at critical levels of the value chain. However, it provides an indication of the profitability or otherwise for the various level of operations and possible pull points of entry for future investments. The constant factor employed in the calculations is a potential yield of 1400kgs/hectare, assuming that good agricultural practices are put in place along the value chain.

The price variables on activities carried out by each actor at different levels of the value chain were collected through quantitative and qualitative methods. Due to the geographical small size of the country, there are little price variations of millet in markets. Therefore, for the purpose of calculating the profit margins of different actors in the value chain, average costs and revenues of all actors in millet value were used.

5.2 GROSS MARGIN ANALYSIS OF MILLET

5.2.1 Producer Profit Margins

Data analyzed reveals profit margins calculations at the producer level. Results on the table below show a profit margin of GMD 8,570.00 per hectare for the producer. However, this can be partly attributable to the simple fact that production of millet requires low input farming activities, and hence does not required high technological investments. This information was obtained from the field level stakeholder consultations.

Table 22: Producer profit margins (ha)

Cost of production			
Description	Quantity	Unit price (GMD)	Value (GMD)
Seeds	3 kg	35.00	105.00
Labour (seeding, weeding (2), pest scaring, harvesting and threshing.	-	-	5,375.00
Fertilizers	6 bags of 50kg	700.00	4,200.00
Transportation	-	-	500.00
Total Cost (A)			**10,180.00**
Returns to the farmer			
Sale of produce	15 bags of 80 kg	1,250.00	18,750.00
Bran	-	-	-
Revenue (B)			10,180.00
Gross margin (B-A)			**8,570.00**

Source: FAO Value Chain Study, 2019

5.2.2 Trader Profit Margins

The profit margin calculations at the trader/retailer level shown on the table below indicates a profit margin GMD 1,275.00 on produce directly acquired from the producers. This indicates a marked decline from the profit margin recorded at producer level.

Table 23: Trader profit margins (ha)

Cost of produce			
Description	Quantity	Unit price (GMD)	Value (GMD)
Millet procured	15 bags of 80kg	1,250.00	18,750.00
Labor	15 bags	10.00	150.00
Transportation	15 bags	55.00	825.00

Cost of produce			
Description	Quantity	Unit price (GMD)	Value (GMD)
Total Cost (A)			**19,725.00**
Returns to the trader			
Sale of produce	15 bags x 80 kgs	1,400.00	21,000.00
Revenue (B)			21,000.00
Gross margin (B-A)			**1,275.00**

Source: FAO Value Chain Study, 2019

The data analyzed on the table below indicates the margin calculations at the level of the processor. The results reveal a profit margin of GMD 2,375.00 on produce from one hectare purchased from the trader.

Table 24: Processor profit margin (ha)

Cost of produce			
Description	Quantity	Unit price (GMD)	Value (GMD)
Millet purchased	15 bags of 80kg	1,400.00	21,000.00
Labor	-	-	150.00
Value addition (de-husking and processing)	15 bags	65.00	975.00
Total Cost (A)			**22,125.00**
Returns to processor			
Sale of produce	15 bags of 80 kg	1,500.00	22,500.00
Bran	5 bags of 60gk	400.00	2,000.00
Revenue (B)			24,500.00
Gross margin (B-A)			**2,375.00**

Source: FAO Value Chain Study, 2019

Finally, data from the field level consultations analyzed on the table below indicate that based on the above profit margin calculations, the farmer registers a profit margin of 70%, followed by the processor 19% and then the trader 10%. It can be seen that the variations are huge comparing farmers and the other level of actors along the value chain. Conversely, results on the market shares for each category indicate the processor has 38% of the market share, followed by the trader 33% and the farmer 29%. In conclusion, despite the producer registering the highest gross margin, the market shares are around the same range, the processor enjoying the highest market share.

Table 25: The market share of actors in the core millet value chain (GMD)s

Value chain actor	Cost of product	Value addition	Total Cost	Revenue	Gross Margin	Gross Margin (%)	Market Share (%)
Farmer	-	-	10,180.00	18,750.00	8,570.00	70%	29%
Trader	18,750.00	975.00	19,725.00	21,000.00	1,275.00	10%	33%
Processor	21,000.00	975.00	22,125.00	24,500.00	2,375.00	19%	38%

Source: FAO Value Chain Study, 2019

5.3 GROUNDNUTS PROFIT MARGINS

5.3.1 Production Profit Margin

The profitability of groundnut production heavily depends on several factors including affordability and timely access to farm inputs, volumes and prices of output, favorable climatic conditions and farmers' management practices, particularly post-harvest operations and responsive market arrangements. Due to high cost of chemical fertilizers: a key input in groundnuts production; most farmers result in applying marginally low rates on their farms. The field level consultations realized that most farmers use seeds saved from previous harvests or donated by Agricultural projects, NGOs, Donors or sometimes from relatives/friends. From the consultations, farmers use 70-80kg/hectare of shelled groundnuts. Seeds are purchased mainly from weekly markets at a price of GMD50 per kg. Therefore, a hectare of land requires GMD3500 – GMD4000 for seeds. The study found that the use of chemical fertilizers in groundnuts production is infrequent due to many factors such as costs, untimely availability, etc. The findings also revealed that ploughing, weeding, harvesting, and threshing are among the labor costs incurred by farmers. However, it was found that groundnut cultivation is normally done on less dense vegetation which requires minimal land preparation compared to other crops. Variable costs are computed to estimate the market margin for the various actors in the groundnut value chain.

Table 26: Gross margin for producer (ha)

Cost of production			
Description	Quantity	Unit price	Value (GMD)
Production cost			
Seed	70kgs	50	3500.00
Fertilizer	6 bags (300kg)	700	4200.00
Labor			5,000.00
Ploughing	1	2000	2000.00
Planting	1	2000	2000.00
Weeding	2	1500	3000.00
Harvesting	1	2000	2000.00
Threshing	1	2500	2500.00
Transportation			1,200.00
Total Cost (A)			**25,400.00**
Returns to farmer			
Sale of groundnut (tons)	1.0	15,250	15,250.00
G/nut hay (tons)	3	5000	15,000.00
Revenue (B)			30,250.00
Gross margin (B-A)			**4,850.00**

Source: FAO Value Chain Analysis 2019

Based on production margin calculations, the estimated cost of producing 1 ha of land is about GMD 25,400.00. For every one hectare cultivated, farmers receive a gross margin of GMD 4,850.00 (USD97.00). However, fixed cost such as cost of land, family labor, depreciation and interest working capital were not captured in the calculation.

Table 27: Gross margin for groundnut traders (Assemblers)

Cost of production			
Description	Quantity	Unit price	Value (GMD)[65]
Costs			

[65] 1USD = 50GMD

Cost of production			
Description	Quantity	Unit price	Value (GMD)[65]
Purchase (tons)	1.0	15,250.00	15,250.00
Transport(tons)	1.0(10bags)	50.00	500.00
Loading and offloading (tons)	1.0(10bags)	10.00	100.00
Total Cost (A)			15,850.00
Returns to Producer			
Revenue on sales(tons)	1.0	16,500.00	16,500.00
Revenue (B)			16,500.00
Gross margin (B-A)			**650.00**

Source: FAO Value Chain Analysis 2019

Farmers normally sell their produce to CPMSs, GGC depots or traders. On average, a farm gate price of GMD 15,250 per ton is paid to the producer. The groundnuts purchased are then stored and later transported to the processors. Considering the evacuation of groundnuts to the GGC depots, the gross margin for the traders is estimated at GMD 650.00 (USD13.00) for every 1.0 tons purchased from producers. The trader adds value to the product by providing storage and transportation.

Table 28: Gross margin for groundnuts processor (primary processing)

Cost of production			
Description	Quantity	Unit price	Value (GMD)
Cost			
Purchase	1.0	16500	16,500.00
Transport	1.0	50	500.00
Loading and offloading (bags)	1.0	10	100.00
Cost of value added	1.0	1000	1000.00
Cost of labor (per month?)			1500.00
Total Cost (A)			**19,600.00**
Revenue			
Output after decertification (-32%)	**0.68**		
HPS (handpicked selected (60%)	**0.408**	35000	14,280.00
FAQ fair average quality (40%)	0.272	25000	6,800.00
Revenue (B)			21,080.00
Gross margin (B-A)			**1,480.00**

Value addition in groundnut processing is obvious. The margin calculation of processed groundnut is carried out at two basic systems; that is primary and secondary processing. The primary processing involves i) groundnut decortication and tolling, and ii) groundnut decortication and trading; while the secondary processing involves i) roasting shelled HPS and ii) processed ground paste from the shelled FAQ. However, for the purpose of this Program processing at the primary level is considered for the margin analysis.

5.3.2 Primary Processing

Using a simple decorticating machine with an input capacity of one ton of unshelled groundnut per hour and an efficiency of 68%, it costs about GMD 141,000.00(USD 2820.00) (including the Sheller and the diesel generator)[66]. This does not include the cost of structures and other fixed costs. Manual operations during the processing include winnowing and hand picking which are mainly carried out by women with maximum capacity utilization to 12 hours per day. Assuming that stored groundnuts are shelled within 3 months to maintain their quality, the processing can take up to 90 days with a maximum capacity of 734.4 tons of shelled groundnuts. After shelling and winnowing, the shelled groundnuts are sorted and graded into (HPS) handpicked selected and (FAQ) Fair Average Quality. The economics of primary processing of 1.0 tons of groundnuts with 68% efficiency will yield 0.408 tons of HPS and 0.272 tons of FAQ. Considering the market price of GMD 35,000 for HPS and GMD 25,000 for FAQ, the gross margin is estimated at GMD 1,480 (USD 30.00) for every 1.0 ton of groundnuts decorticated (FAO Value Chain Analysis 2019).

Table 29: Gross Margin of core Actors in the Groundnut Value Chain

Value chain actor	Total Cost	Revenue	Gross Margin	Gross Margin (%)
Producer	25,400.00	30,250.00	4,850.00	16%
Merchant trader (wholesalers)	15,850.00	16,500.00	650.00	3.9%
Processors	19,600.00	21,080.00	1,480.00	7.0%

Source: FAO Value Chain Analysis 2019

Finally, considering the profit margins of these core actors along the groundnut value chain, the farmer registers a profit margin of 16%, followed by the processor 7% and then the trader 3.9%. This is a leverage point to entice future investments in the groundnut value chain particularly at the groundnut production and processing where there is high percent of gross margin. These levels of profit margins can be greatly increased if the optimal levels of inputs and appropriate agronomic technologies are judiciously used by actors along the value chain.

5.4 GROSS PROFIT MARGIN ANALYSIS FOR POULTRY

5.4.1 Producer Profit Margins

The major cost in the production of chicken in The Gambia is the cost of feed. This is approximately 60-63% of the cost of raising chicken. The second most important cost is the cost of buying day-old chicks. Currently, all the day-old chicks being raised in The Gambia are imported from Senegal. This represents 18 – 23% of the cost of producing chicken.

The major cost in the production of chicken in The Gambia is the cost of feed. This is approximately 60-63% of the cost of raising chicken. The second most important cost is the cost of buying day-old chicks. Currently, all the day-old chicks being raised in The Gambia are imported from Senegal. This represents 18 – 23% of the cost of producing chicken.

The profit margin for broilers is indicated in Table 30. From our calculation, we estimate that the cost of raising 500 broilers as proposed for the upscaling of small size producers in GAT is about USD2,160. For every broiler cycle, farmers receive a gross margin of about USD 240. Therefore, the return on investment for raising 500 broilers is calculated at 11.1%. Most chicken produced in The Gambia (60-70%) are sold as live birds at maturity to retailers. These are sold at farm gate. On average, the cost is about USD 4.5 per life bird, weighing approximately 1.3 - 1.6 kg after dressing. Retailers will transport, keep them in customized cages around major markets for selling to individual consumers. On average, the chicken is sold for the price of USD 5 – USD 5.5.

[66] Calculation from Lieshout and Khan (2017

The chicken value chain in the country comprises the farmer, wholesalers, retailers and market traders. However, for the purpose of this report, we will focus on the chain from local production to retailers and then market vendors.

The table below is the margin analysis for 500 broilers as recommended for the upscaling of small scale producers within the framework of GATP.

Table 30: Margin Analysis (USD)

Value chain actor	Cost of product	Cost of production to next stage	Total Cost in USD	Revenue	Gross Margin	Gross Margin (%)
Traditional Producers (Free range)						
Farmer[67]	0.4	0.8	1.2	4	2.8	70
Retailers	4	0.2	4.2	5.5	1.3	23.6
Local Commercial Producers						
Farmer	500	1750	2250	2370	120	5.06
Retailers at farm gate	2250	100	2350	2500	150	6
Hotel & Restaurants	2500	350	2850	4000	1150	28.75
Sourced from Importers (***information on cost of importation could not be obtained)						
Retail (Supermarkets & Shops)	2.6	0.6	3.2	3.8	0.6	18.75
Road side roasting (Afra)	3.8	0.4	4.2	6	1.8	42.85

The margin analysis shows that, while it is very profitable to produce chicken through traditional means, the production cycle is much longer and done at far small scale. With effective diseases control and access to market, traditional chicken production in The Gambia can be expanded and commercialized through control of Newcastle Disease and improved management practices.

Below Figure 25 shows that 90% of the cost for raising poultry is operating costs. These include cost of buying day-old chicks, feed, drugs and vaccines, labor costs, and transportation. The sale of chicken and eggs represents between 85-96% of the revenue from chicken production. The detailed cost calculations are shown below in Tables 29 and 30.

[67] This is estimated for semi-intensive production, where housing is provided

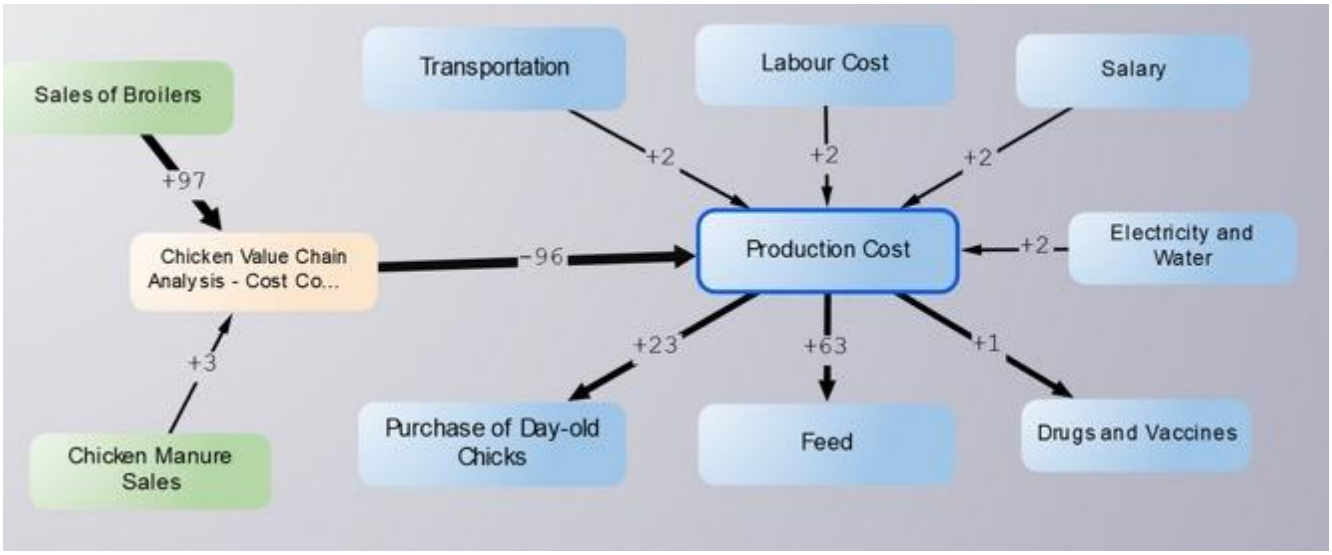


Figure 25: Cost Components for Chicken Production

Source: Value Chain Study, 2019

The tables below show estimated cost for the production of broilers and layers. These data are collected from discussions with poultry farmers and through reviews of accounts held by some of the farms. The figures were validated during the Stakeholders consultations. The output of broiler production system is estimated at 625 birds for one ton of chicken with an average weight of 1.6 kg per life bird.

Table 31: Broilers Production @ Growing Cycle

Particulars	Unit (birds)	Cost (USD)	Amount	%
Sales	500	4.5	2,250	93.75
Manure Sales	50	3	150	6.25
Total Revenue		0	2400	0.0%
Capital Cost		0	0	0.0%
Land - Rent	1	60	60	2.78
Housing & Equipment – Rent	1	60	60	2.78
Production				
Day old chicks	500	0.9	450	20.83
Feed	500	2.6	1,300	60.19
Drugs and Vaccines	500	0.06	30	1.39
Transportation	500	0.2	100	4.63
Casual Labor	1	60	60	2.78
Labor/Salary	1	60	60	2.78
Electricity and Water	1	40	40	1.85
Production Cost			2040	94.44

Total Cost		0	2,160	100%
Profit per cycle		0	240	
Profit margin				11.11
Annual Profit			1,080	

It was observed that the larger the number of birds in broiler production, the lower the unit costs and thus the higher the profitability. This is similar to the conclusion in Lieshout and Touray 2018 that Broiler farming will only yield an attractive work/risk rewarding profit for a farmer with a minimum of 500 live birds.

The figures are slightly different from the production of broilers. The table show that it is relatively more productive and profitable to produce layers than broilers.

It was observed that the larger the number of birds in broiler production, the lower the unit costs and thus the higher the profitability.

In the tables above, the following assumptions are made.

- Every layer produces at least 330 eggs per cycle (18 months)
- Exit rates for commercial poultry are low
- The minimum broiler farm size to employ 1 Full Time Equivalent (FTE) is 500 birds.
- Every bird sold at the market weighs between 1.3kg to 1.6kg.

Table 32: Layer Production: Cost Components

Particulars	Unit (birds)	No. of days/months	Cost (USD)	Amount	%
Eggs sales	425	330	0.1	14,025	81.2%
Meat	425	1	4	1,700	9..9%
Manure Sales	28	18	3	1,512	8.8%
Total Revenue				17,237	
Capital Cost					
Land - Rent	1	18	60	1,080	6.96
Housing & Equipment – Rent	1	18	60	1080	6.96
Production				2160	13.93
Day old Chicks	500	1	2	1000	6.45
Feed before laying	500	1	6	3000	19.34
Feeed during Laying	445	12	1.5	8010	51.65
Drugs and Vaccines	445	2	0.2	178	1.15
Transportation	500	Lump sum		80	0.52
Labor Cost	1	18	30	540	3.48
Electricity and Water	1	18	30	540	3.48
Production Cost				13,348	86..07
Total Cost				**15,508**	
Profit per cycle				**1729**	
Profit Margin					11.14
Annual Profit				**7,200**	

It was observed that small-scale layer farming is more attractive than small-scale broiler farming, this was further corroborated some KII respondents during GATP field consultations.

5.5 MARGIN ANALYSIS SMALL RUMINANTS

5.5.1 Producer Level

Cost of rams is the most expensive cost in the fattening scheme. It takes 74.2% of the total investment cost in the first year of production. The other major cost items include feed that takes 10.4% of the investment cost and construction of small ruminant housing for 100 rams, which consumes 9.9% of the investment. The remaining 6% is shared between cost of medication, labor, and transportation as indicated in the table below. The cost of 100 rams is USD 15000 with unit price of USD 150/ram. The cost of fattening 100 rams for 3 months is USD 5, 225. The rams are sold at USD 300 each. Thus, the total investment on each ram is USD 202.25 making the total investment on the 100 rams at USD 20, 225 as presented in table below. The projected profit on each ram is USD 97.75 with total profit of USD 9,775. The profit margin on ram fattening is 33%.

Table 33: Profit Margin for Ram Fattening Scheme of 100 Rams

Item	Quantity	Unit Price USD per month	Total Cost USD for 3 months	Selling Price/ram	Total Selling Price	Profit	% Margin
Rams	100 rams/ D7500/ram	150	15000				
Groundnut hay	150 Kg at USD0.2 by 100rams	30	300				
Groundnut cake/Sesame cake and rice bran	1 Kg/ram/month/USD 0.4/3months	18	1800				
Medication	USD2/ram/month	2	600				
Labor	USD75/month	75	225				
Transportation	USD 3/ram	3	300				
Housing	Lump sump	20	2000				
Total		**298**	**20, 225**	**300**	**30, 000**	**9, 775**	**33**

Source: GATP Stakeholder Consultations 2019

Table 34: Margin analysis from year-two onwards

Item	Quantity/3 months	Unit Price USD per month	Total Cost USD for 3 months	Selling Price/ram	Total Selling Price	Profit	% Margin
Rams	100rams	150	15000				
Groundnut hay	150Kg at USD0.2 by 100rams/	30	300				
Groundnut cake/Sesame cake and rice bran	15Kg/ram/month/ USD0.4	18	1800				
Medication	USD2/ram	2	600				
Labor	USD75/month	75	225				
Transportation	USD 3/ram	3	300				

Item	Quantity/3 months	Unit Price USD per month	Total Cost USD for 3 months	Selling Price/ram	Total Selling Price	Profit	% Margin
Housing	Lump sump						
Total		**298**	**18, 225**	**300**	**30, 000**	**11,775**	**39**

Source: GATP Stakeholder Consultations 2019

Discount the cost of construction of housing in year one, the profit margin subsequently increases in the following years.

Key challenges that limit farmer participation in ram fattening schemes. include inadequate capital to purchase rams, veterinary inputs, and inadequate institutional support and the proposed program will seek to address these challenges.

The main risk involve in ram fattening is mortality due to diseases. Experience has shown that mortalities are usually associated with the use of Sahelian breeds for fattening. These breeds are less adapted to the prevailing conditions and more susceptible to diseases compared the local *D'jallonke* ram, which is more adapted to prevailing conditions and therefore less susceptible to diseases. To minimize risk of mortality due to disease, the proposed program is suggesting the use of mainly *D'jallonke* rams.

Table 35: Profit margin at different levels of the Value Chain

Value Chain actor	Cost of Product In USD	Cost of Production to next stage	Total Cost	Revenue in USD	Gross Margin	Gross Margin Percent	Market Share
Farmer	150	32.25	182.25	300	117.75	32.7	57.4%
Dealers	300	10	310	350	40	12.9	22..6%
Roadside Roasting	350	10	360	400	40	11.4	20%

Source: GATP Stakeholder Consultations 2019

5.6 MARGIN ANALYSIS FOR GOATS

Goat fattening is comparatively cheaper than sheep fattening. However, during the period of Muslim feast of Eid ul Adha prizes for sheep surge up due to the hike in demand for sacrificial lambs. This makes sheep fattening to be more profitable than goat fattening. However goats multiply faster than sheep. This compensate for the prize margin. Goat meat is the choice of roadside meat roasters. Goats are cheaper in the market for cash-strapped roadside meat roadrosters. Most customers of roadside meat roasters prefer goat to mutton.

Table 36: Margin Analysis Goat fattening under the improved traditional system.

Item	Quantity/3 months	Unit Price in USD	Total Cost USD for 3 months	Selling Price/ram	Total Selling Price	Profit	% Margin
Bucks	100rams	50	5000				
Groundnut hay	10Kg at USD0.2 by 100rams/	30	200				
Groundnut cake/Sesame cake and rice bran	10Kg/buck/month/ USD0.4	18	1920				
Medication	USD2/ram	2	600				
Labor	USD75/month	75	225				

Item	Quantity/3 months	Unit Price in USD	Total Cost USD for 3 months	Selling Price/ram	Total Selling Price	Profit	% Margin
Transportation	USD 3/ram	3	300				
Housing	Lump sump						
Total		**178**	**8,245**	**100**	**1000**	**1, 775**	**17.5**

6. AGRICULTURE VALUE CHAIN FINANCING

Agriculture value chain financing is the provision of multiple types of services dedicated to supporting both on and off farm agricultural activies and business including input provision, production, and distribution, wholesale, processing and marketing. This discription of agricultural financing indicate that finance is a cross-cutting issue in the agriculture value chain from production through to the altimate consumer. Agricultural financing without doubt, therefore, is the main link for all the activities and stages in the value chain. In the generic sense, sources of agricultural finance would include own capital, loans from commercial and microfinance institutions, donors through grants and to a to a large extent government.

6.1 THE STATE OF AGRICULTURE FINANCING IN THE GAMBIA

The scale of agricultural financing especially from the private sector domain is very low as compared to demand for such financing. For example, the share of agriculture in the overall loan portfolio of commercial banks for the five year period ending 2017/18 stood at only 4 percent. The contribution of the Micro-Finance Institutions in providing agricultural credit, on the other hand, is limited, for the fact that these institutions have very little internal resources generation capacity resulting in their high dependence on outside funding. This has warranted public sector direct intervention in some areas mainly input provision and crop finance, or through projects by way of matching grant. Sources of financing for the agricultural sector could be classified into two main categories

6.1.1 Financial Institutions in the Formal Sector

Formal sector financial institutions are those financial institutions (irrespective of category), that are covered under the FIA 2003 Act, as such regulated by the Central Bank of The Gambia (CBG).

In accordance with the 1995 Constitution, Central Bank of The Gambia is the government's Agency responsible for the rugulation and supervision of all financial institutions in the country. In this regard, and under Financial Institutions Act (FIA) 2003 the CBG issues licences to institutions wishing to operate as financial institutions. Accordingly, the CBG categories the Financial institutions into three main categories namely: Commercial Bank or Banking Institutions, Non-Bank Financial Institution (NBFI) and Micro-finance Institution. The criteria for each category which may be reviewed from time to time is determined by the CBG. As regulators of these financial institutions, CBG in entrusted with the responsibility of monitoring and supervising them through the Banking Supervision and the Micro-finance Departments of the Central Bank. Each of these categories of financial institutions is briefly described below:

i. Banking Institutions (Commercial Bank Lending): There are 12 commercial banks within the country with a total of 86 branches distributed across the five administrative regions and municipalities. Of this number, 54 branches representing over 67% are located in the manucipalities of Banjul and Kanifing, leaving the rest to the five regions as Table 37 indicates. Average loan portfolio for the five year period ending 2018 for all the 12 commercial banks put together stood at GMD23.976 Billion of which agriculture constitute only GMD .957 Billion representing only 4% of the total loan portfolio. This is an indication of the very low intervention of the commercial banks towards financing of agricultural ventures despite the importance and need for such intervention. At the same time, policy intervention to reverse the situation are not forth coming. The main barriers for the low level of commercial banks lending to the agricultural sector could be attributed to the following reasons:

- Investment in the sector is risky, and there limited means of mitigate the risks meaning very high exposure for the banks. For example, eratic weather condition, rainfall, and outbreak of deseases are some of the problems of the agricultural sector.
- Agriculture investment requires very large amounts of capital which is mostly recovered after a long period of time which is not favorable to the commercial banks.
- Collateral requirements for the loans are usually difficult to meet due to the large amount of money involved.

- There are other alternatives ventures that are more attractive to the banks than agriculture for example trade and industries.
- High interest rates on commercial loans and long term repayment period makes cost of capital more expensive hence un-profitable. For example, average lending rate for commercial loans for the past five years to December 2018 stood at 21.4% ranging between 17% in 2017/18 and 23% for the preceding two year in succession. This is not encouraging for potential investors who may be interested in agriculture,

Table 37: Distribution of Commercial Banks Across the Country

Region/LGA	No of Banks	No of Branches
Banjul	12	13
KMC	12	41
WCR	8	21
NBR	4	5
LRR	1	1
URR	5	5
CRR	0	0
Total	**42**	**86**

Source: CBG

ii. Non-Bank Finance Financial Institutions (NBFI): This category financial institutions fall between commercial banks on the one hand and smaller microfinance institutions like Cooperative Credit Unions and Village Savings and Credit Associations (VISACAs). The scale of business for this category is smaller than that of the commercial banks but bigger than MFIs. The two main non-bank financial institutions in the country are Reliance Financial Services and Supersonicz. During the past two years 2016/17 and 2017/18, Reliance provided a total of GMD 154.9 Million and 165.1 with a share of 9.9% and 4.4% for agriculture sector respectively. Supersonicz is very much less into agricultural financing and has not provided any loans to the sector during the past two years under reference. A good proportion of the loans provided to the agricultural sector by these banks are sourced from public sector financing agents such as Social Development Fund (SDF) and or matching grant schemes of projects for onward lending to potential investments in agriculture within the frame work of the MOU signed between them. The limited financing available with the commercial banks due to barriers highlighted above, and the inability of non-bank financial institutions to service large scale investors, creates financing gap at the level of large scale investors who could be a driving force for the agricultural transformation program. If only for this reason, establishment of gricultural development bank would be justified.

iii. Micro Finance Institutions (MFIs) in the Formal Sector: Microfinance lending is the most comnon way of lending at grassroots level and has a much larger outreach, inspite of their limited capacity. There are two main types of micro-finance models that could be found in the formal sector and these are:

a) VISACAs (Village Savings and Credit Associations): These are community base associations (usually at village level) that have been duly registered as legal entities by the AG Chambers and issued licence by the Central Bank of The Gambia to operate as micro-finance institutions. In this regard, they are permitted under the law to receive deposits from members as well as provide them with loans. VISACAs are owned and managed by their members. The concept of VISACA was first introduce by the European Union, to make rural people more accessible to credit through project approach. By 2018, there were 80

registered VISACAs covering the entire country. All the VISACAs are afficilted to an apex body called VISACA Promotion Centre (VCP). The centre by itself is not a micro-finance institution but provides services in terms of capacity building, advocacy and promotion to afficiated VISACASs. According to the CBG, the loan portfolio of all the VISACAs put together dropped from as high as 23.9 Million to 13.1 in 2016/17 indicating a decline of 45%. In fact, according to the same source, no loans were issued by the VISICAs during the year 2017/18. The poor performanc of the majority of the VISACAs in the recent years could be attributed to their dependence on project financing, which over the years has not been forthcoming as indicated in Table 38 below. Notwithstanding, there are still some very active VISACAs that are existing and this includes the Medina Sancha in LRR. The village is running its VISACAs with 100% loan recovery over the past years. Because of the village's impressive performanc, it has been getting GMD 1 Million annually as loan from SDF for onward lending to their members to buy inputs for their farms. This, in fact, has greatly enhanced the income of the villagers and inculcated the concept of prudence in the management of their resources. The income levels of households at Medina Sancha is comparable to that of the income level of the farmer at Ndarame Joka sighted as case study in the report which is estimated at at GMD 405,000.00 as household income. At an average household size of 8 persons per household, this income level will exceed the national per capita income as well as the USD 2 per day income benchmark for the MDG. The two scenarios of Ndarameh Joka and Medina Sancha suggest that small farmers with the right orientation and attitude should be able to lift themselves out of poverty with limited support from such credit schemes.

Another very important characteristic of the VISACAs is that the best part of their loan portfolio went to the agricultural sector as was the intention from the very onset when they were formed. Close proximity of the services of the VISACAs to the farmers and their direct involvement in the management makes the model extrimely important and useful. However, most of the VISACAs as at now have very little resources to provide credit to their members, and due to low level of incomes of villagers, the small savings alone are inadquate to operation effective loan schemes. As a result, the many of them are less active than before.

Table 38: Sources of Financing and Loans issued and recovered over the Five Year Period 2013-18

Year	Source of Financing					Status of Loan to Members			
	Savings	Grants	Loans	Total	Issued	Int.	Repaid	Outstanding	% repay
2012				4,048,000	4,048,000	553,200	4,418,450	96,000	96
2013				3,755,000	3,755,000	373,125	3,933,875	259,375	94
2014				2,975,000	2,975,000	324,000	3,096,500	202,500	94
2015				1,350,000	1,350,000	185,625	1,051,925	383,700	68
Total				12,128,000	12,128,000	1,435,950	12,500,750	941,575	93

Source: VPC

b) Cooperative Credit Unions: Like VISACAs, Cooperative Credit Unions are another type of member based micro-finance institutions that operate in all the regions and manucipalities in the country. Unlike the VISACAs, Cooperative Credit Unions are registered under the Cooperative Societies Act Cap 50.02 of the Laws of The Gambia and as such, are also regulated by the Director of Agribusiness as the regulatory institution for cooperative organizations. This brings about dual regulatory mandates over Cooperative Credit Unions by two regulatory institutions, thus a potential source for conflict in regulation of Credit Unions. This conflict is being addressed by the two institutions working in tandum to regulate the operation of Credit Unions. Clear policy stance would be required to address this particular issue bearing in mind the capacity of the two institutions, their statutory mandates and the very principles of cooperatives. Review of the CBG policies as recommended in this study should, therefore, be done with

reference to that of Cooperatives which is currently in progressso that all grey areas with regards to their relationship is streamlined accordingly.

Cooperative Credit Unions are mostly found at community and workplace levels. By the end of 2018, there were in a all 53 Credit Unions with a total individual membership of 74,426 plus 2,833 Kafos (groups), making a total of 77,259 members. All the 53 credit unions are affiliated to the National Association of Cooperative Credit Unions The Gambia (NACCUG), which is the umbrella body for credit unions. The total savings of all members of Credit Unions put together stood at over a billion Dalasis as could be seen in table xxx below. However, over 95% of the deposits made at credit unions by way of savings come from workplace Credit Unions, whose members savings are made through direct deduction from their salaries. A large proportion of the loans issued by credit unions are classified as personal loans. Demand for agricultural loans mostly come from community based Unions. To enhance access to micro-credit by members of smaller credit unions, NACCUG operates a Central Finance Facility (CFF) where the excess liquidity of larger credit unions are paid into and subsequently given out to needy credit unions at consessionery interest rates. This model makes it possible to reduce dependency of credit unions on outside financing, thus making it one possible way of sustaining micro-fininance lending system at grassroots level. NACCUG also operates micro-credit schemes in partnership with farmer associations across the country. For example, it was entrusted to manage the credit scheme scheme of Wuli And Sandu Development Association (WASDA) supported by EC.

Table 39: Distribution of Cooperative Credit Unions by Chapter, membership, and savings as at 2018

	Chapter	No of CUs	Membership				Total Savings (GMD)
			Male	Female	Kafo	Total	
1	Banjul	12	22,209	6,652	54	28,915	426,568,905
2	Kanifing	16	25,466	10,690	1,550	37,706	606,863,083
3	Brikama	10	2,243	2,685	572	5,500	22,608,550
4	Bwaim	5	1,254	1,550	604	3,408	21,774,818
5	North Bank	7	481	990	21	1,492	6,114,392
6	Bansang/Basse	3	83	123	32	238	1,040,439
Total		**53**	**51,736**	**22,690**	**2,833**	**77,259**	**1,084,970,187**

Source: NACCUG Statistics 2018

6.1.2 Agricultural Financing in the Informal Sector

These are microfinance institutions and models that are not within the purview of the CBG. They are either public agents through which government and development partners provide resources to the agricultural sector through projects and or agent, or Rotating Savings and Credit Schemes amongst individuals within the same community. These category include the following:

i. SDF (Social Development Fund): SDF is a financial institution that is wholly financed by the public sector mainly through projects funded by bilateral and multilateral Agencies. Unlike the other microfinance institutions, it does not receive savings from clients but rather manages funds of these agencies on trust basis. As a result of the cheap source financing for SDF, it is able to provide loans at cheaper rate of interest (presently less than 12%) to it clients than other microfinance systems. Most of the cridit provide by SDF is in the agricultural sector which constitutes 67% of 2018 loan portfolio as indicated in table 39 below.

Table 40: Loans Disbursement by Sector as 31st December 2018

No.	Sector	Amount (GMD)	Percentage
1.	Agriculture	25,409,000.00	67.0
2.	Livestock/Poultry	5,095,000.00	13.4
3.	Trade	6,588,150.00	17.4
4.	Fisheries	825,000.00	2.2
Total		**37,917,150.00**	**100%**

Source: SDF

Table 39 shows that as at 2018, out of the total loan portfolio of GMD 37.92 Million, 80.4% of the total loan issued went to the agricultural sector comprising of 67% for crops and 13.4% for livestock. This clearly illustrates that interventions of SDF in the agricultural sector particularly at rural level is very significant. According to the same source, 24,895 people benefited from this loan comprising of 5,918 males and 18,977 women, indicating that women benefited more than men did, which is a big encouragement for women participation. This is a step in the right direction considering the role that women play in some of critical stages of the agricultural value chain mainly production and processing.

SDF provides loans to three main categories namely: Non-Bank Financial Institutions (NBFI) comprising of Reliance Services and Panasonsonicz as earlier mentioned, Micro-finance Institutions including Cooperative Credit Unions, VISACAs and CBOs. The loan ceiling for each of these categories are GMD 20 Million, GMD 5 Million, and GMD3 Million respectively. In this way, SDF serves as a conduit for the rural farmers to access credit through their respective organizations and clients.

The governance structure of SDF in terms of loan recoveries is satisfactory as can be seen in table 41 below. The high loan recovery rate indicates the success of the model. The table indicates that a total of GMD 110.5 Million was allocated by donors for disbursement by SDF. Out of this amount over GMD81 Million was disbursed to clients with recovery of GMD 79.4 representing 98%. This is a clear demonstration of the ability of the institution to manage the funds in line with its mandate.

Table 41: Cumulative disbursement and payment figures as at 31st December 2018

S. No.	Source of Financing/Credit Lines	Cumulative disbursement and payment figures as at 31st December 2018 (GMD)			
		Disbursed	Payment Due	Repayment Made	Repayment rate
1.	EPMDP	250,000.00	263,200.24	265,064.13	101%
2.	KGCF	15,209,800.00	15,001,406.52	14,112,530.75	94%
3.	PSIP	5,500,000.00	5,451,811.96	5,451,811.96	100%
4.	BADEA	70,237,000.00	46,655,063.93	46,358,376.42	99%
5.	PRP	9,757,000.00	9,269,445.84	9,253,608.17	100%
6.	CILIP/IsMF	7,900,000.00	4,524,523.74	3,955,289.10	87%
7.	YEP Mini Loan Scheme	1,667,150.00	0.00	0.00	0.00
	Totals	110,520,950	81,165,452.23	79,396,680.53	98%

Source: SDF

The main challenges facing SDF is the issue of sustainability as they rely mainly on donor funding. In the event that such funding ceases, SDF would have to find alternatives for the way forward. Another main challenge is that SDF is Trust funded institution, presently with a Board of Directors appointed by government. Coming under CBG regulation like VISACAS and Cooperative Credit Unions as envisaged, may significantly affect the resource flow into the institution with consequential negative impact of reduced lending to beneficiaries.

This program, therefore, will support the SDF by entrusting it with money to support individual value chain actors through the VISACAs and NACCUG.

ii. Matching Grant: Matching grant model of agricultural financing was initiated by FASEP five years ago as an opportunity for agriculture value chain actors to access funds to go into profitable agribusiness ventures. The concept was later adopted by NEMA and GCAV projects all within the purview of the MoA. Under the matching grant window of these projects, specific amount of money is allocated by the project for disbursement to value chain actors who come up with proposals for agribusiness ventures in all sub-sectors and along all stages of the agriculture value chain. The facility was opened to individuals, groups as well as firms.

At FASDEP a total of GMD 55 million representing 60% of the total investment was disbursed during the entire five-year life of the project, and the amount was distributed to 63 schemes across the country benefiting 7,603 people of which 57% are women. Out of the 4 regions targeted, the bulk of the support went to WCR which benefited more than GMD37 million representing 67% of the total envelope. The situation as indicated in Table 42 below suggests that this not in conformity with the national policy of reducing rural urban migration.

Table 42: Distribution of the Amount of Matching Grant Fund by Region, Sub-Sector and Clientele

Region	Group Allocation				Non-Group Allocations				Total Amount Provided (D)
	No of Groups	No of Beneficiaries		Amount (D)	No of Schemes	No of Beneficiaries		Amount (D)	
		Male	Female			Male	Female		
WCR	29	256	1049	16,816,328	56	157	153	20,267,891	37,084,273
CRR (N)	14	2,184	2,382	8,095,956	2	13	3	540,570	8,636,526
CRR (S)	6	92	188	3,974,400	2	5	7	726,750	4,701,150
LRR	10	556	537	4,057,810	3	12	9	563,442	4,621,252
Total	59	3,088	4,156	32,944,494	63	187	172	22,098,653	55,043,201

Source: FASDEP Data base

The situation at FASDEP is to a greater or lesser extent similar to that of NEMA where more than 50% of the total amount so far disbursed went to WCR. The distribution of NEMA project resources across the country is indicated in table 43 below:

Table 43: Disbursement of Matching Grant Funds by NEMA to individuals by Region

Region	Number of Beneficiaries			Amount Granted (GMD)			Average (GMD)
	Female	Male	Total	Female	Male	Total	
NBR	--	8	8	--	D8,915,600	8,915,600	1,114,450
CRR (N)	--	1	1	--	D990,000	990,000	990,000

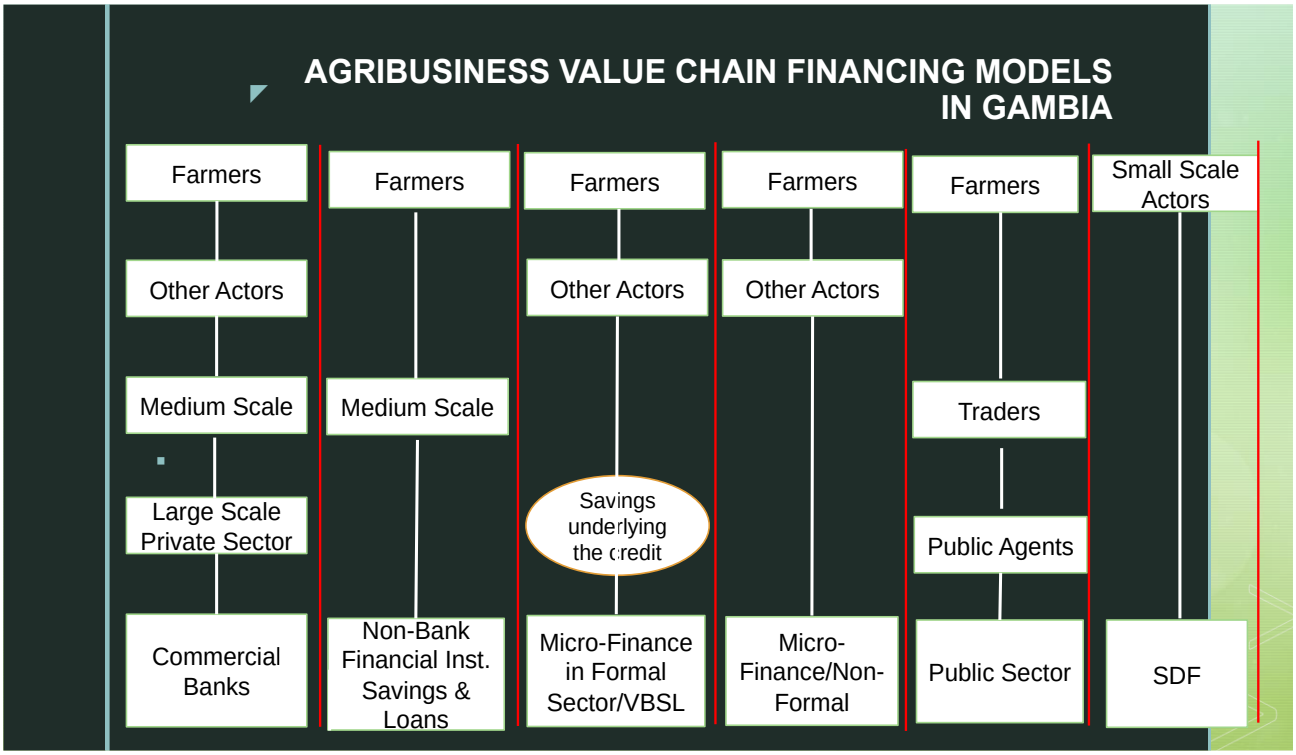
Region	Number of Beneficiaries			Amount Granted (GMD)			Average (GMD)
	Female	Male	Total	Female	Male	Total	
CRR (S)	--	--	--	---	--	--	--
URR	--	--	--	--	--	--	--
LRR	1	4	5	D1,125,000.00	D2,577,300	3,702,300	740,460
WCR	3	10	13	D6,501,000.00	D10,863,531	17,364,531	1,335,733
U. D	--	--	--	--	--	--	--
Total	**4**	**23**	**27**	**7,626,000**	**23,346,431**	**30,972,431**	

Source: NEMA Data Base

Matching grant initiative is indeed laudable. However, procedures and conditions for accessing the funds are generally very rigorous for most smallholder farmers thus making it difficult for them to access the grant. For example, funding of projects from matching grant funds required development of a business plan which illiterate farmer cannot do on their own thus requiring them to contract it for a fee. The fee attached to development of a business plan is usually not less than GMD 5,000 which in fact consumes substantial part of the grant. This is perhaps one of the reasons why the large proportion of the amount distributed is in the WCR where literacy level is highest.

The level of contribution from the beneficiary is also high. In FASDEP beneficiary contribution was 40% of total cost of the business plan, whereas for the NEMA until recently was (60%). There is also no direct involvement of beneficiaries in the selection process. Other challenges include inadequate monitoring leading to failure of some of the projects. These challenges notwithstanding, the grant has to a greater or extent benefited many farmers most of whom were women as the tables above indicate. Therefore, future project and programs will have to put into consideration the constraints associated with matching grant in order to make them more easily accessible to smallholder farmers as well as other actors in the agriculture value chain. In that regard, it is recommended that the scope of the management of the grant be expanded to micro-finance institutions also to bring about complementarity between the matching grant and the saving and credit models.

iii. Rotating Savings and Credit Associations: These are a group of people united by a common bond who meet periodically to collect money from each member of the group and the money so collected given to one of them. The process continues until all group members have benefited and then the process starts all over again. Although informal, they form the basis of very strong solidarity amongst themselves, which is driven by peer pressure. Given the high sense of solidarity amongst group members, the program will support such initiatives through the MFIs by deliberately targeting them as potential beneficiaries of the program.


AGRIBUSINESS VALUE CHAIN FINANCING MODELS IN GAMBIA
Farmers
Other Actors
Medium Scale
Large Scale Private Sector
Commercial Banks
Farmers
Medium Scale
Non-Bank Financial Inst. Savings & Loans
Farmers
Other Actors
Savings underlying the credit
Micro-Finance in Formal Sector/VBSL
Farmers
Other Actors
Micro-Finance/Non-Formal
Farmers
Traders
Public Agents
Public Sector
Small Scale Actors
SDF

7. ENGAGING YOUTHS IN AGRICULTURE

7.1 APPROACH TO ENGAGE YOUTH IN AGRICULTURE

The proposed approach to engage youths (both male and female) in agriculture will be largely informed by prevailing national policy objectives and priorities and also guided by relevant regional, international and multilateral best practices and proven strategies in the sector. Vision 2020, the country's blueprint for the strategic direction for national development and more recently the Gambia National Development Plan NDP (2018 – 2021) have all provided some guidiance on the approach to engage youths in agriculture.

The goal of the Government under the plan is to "deliver good governance and accountability, social cohesion, and national reconciliation and a revitalized and transformed economy for the wellbeing of all Gambians. The vision and overall goal of the NDP is to be realized through eight strategic priorities including

i. Restoring good governance, respect for human rights, the rule of law, and empowering citizens through decentralization and local governance;
ii. Stabilizing our economy, stimulating growth, and transforming the economy;
iii. Modernizing our agriculture and fisheries for sustained economic growth, food and nutritional security and poverty reduction;
iv. Investing in our people through improved education and health services, and building a caring society;
v. Building our infrastructure and restoring energy services to power our economy;
vi. Promoting an inclusive and culture-centred tourism for sustainable growth;
vii. Reaping the demographic dividend through an empowered youth; and
viii. Making the private sector the engine of growth, transformation, and job creation"[68].

These two landmark national development blueprints provide valuable justification and strategic direction for youth and women's involvement in the agricultural transformation process of the country. The approach is further guided by relevant regional, international and multilateral agricultural transformation strategies and programs.

The African Development Bank (AfDB) at the continental level has also adopted a strategy that is closely aligned to the dual key principles laid out in its 10-Year Strategy 2013–2022: inclusive growth and gradual transition to green growth. On the one hand, the AfDB Strategy for Agricultural Transformation in Africa promotes inclusive and green growth through direct programming. For example, it prioritizes projects designed to target historically underserved rural, female, and youth populations to encourage equitable participation in all areas of the sector and increase number of farmers using climate-smart agriculture practices.

However, it also elevates the importance of inclusive and green growth by mainstreaming these issues across all of its activities and the initiatives it funds. This will include ensuring that M&E is gender responsive, putting in place safeguards to protect against disenfranchisement of smallholder farmers as certain sub-sectors are commercialized, and supporting governments in developing country-level data systems required to track the use and impact of climate-smart agriculture practices. Fundamentally, the overarching aim of the strategy is to drive inclusive gains in agriculture to sustainably transform the lives of all, including the poorest and most vulnerable Africans.

Several respondents of the Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) conducted during the consultation phase of the study, mentioned the prevailing land tenure system as a constraint to promote youth and women's involvement in agriculture. This has also been corroborated by the landmark study on "Improving Land Sector Governance in The Gambia: Implementation of the Land Governance Assessment Framework (LGAF)" by Amie Bensouda & Co (August 2013). The findings of the study point to significant constraints in trasforming the agriculture sector in relation to the existing land tenure system.

To mitigate this challenge, the approach will adopt in the medium term a system of contract farming as well as land leasing arrangements to ensure access and security of tenure for investment in the agriculture sector. Similarly, under

[68] The Gambia National Development Plan NDP (2018 – 2021), January 2018

the prevailing national land administration regulations, there is the possibility of state acquisition of communual land for identified public use, including agricultural land for PPP purposes. In addition, efforts will be made to register existing agriculture land assets and to develop a comprehensive inventory of all land assets belonging to the sector for effective land banking and security purposes. This will facilitate future access to land by the youth, women and PPP initiatives. Without a comprehensive inventory of all agricultural land assets and land banking, the available land resources of the sector stand to be increasingly encroached upon and lost.

7.2 ASSESSMENT OF EXISTING YOUTH AGRO-RELATED PROJECTS

Over the years, the country has withnessed the proliferation of various organisations providing services to youths in agro-related projects. The organisational mix range from Non-Governmental Organisations (NGOs) to government institutions and government supported programs, private sector initiatives, training, and research institutions. Similarly, their areas of focus vary and sometimes overlap albeit in a complementary manner. The table below provides a synopsis of the organisations engaged in some form of youth entrepreneurship support program as well as their mandates, year of establisment, coverage and reach over the last ten years. Table 44 also presents the current operational status of these organisations including strategic support requirements.

Table 44: Youth Entrepreneurship Support Program/ Institution by Institution

No	Name of Youth Entrepreneurship Support Program/ Institution	Year Established	Area of Focus	Coverage by Region	# of Youths reached[69]:			Current Operational status
					Males	Females	Total	
1	Youth Empowerment Program (YEP)	2017	Youth empowerment, training, financing & development	Nationwide	N/A	N/A	1,622	Operational on a project basis & needs to be extended
2	The Association of Small Scale Enterprises in Responsible Tourism (ASSERT)	2000	Responsible Tourism	Nationwide	N/A	N/A	N/A	Operational as an NGO
3	EMPRETEC Entrepreneurship training	2014	Entrepreneurhip, business development training & Advisory services	Nationwide	1,161 (48%)	1,257	2,419	Phased-out and not currently operational. Sustainability constraints & funding for students.
4	Gambia Songhai Initiative (GSI -Chamen)	2015	Agricultural/Agribusiness trainings & support	NBR, CRR & LRR	115	115	230	Operational but needs replication to other regions
5	Njawara Agricultural Training Centre (NATC)	1997	Training on sustainable farming systems	NBR	191	373	564	Functional but needs support in electricity, Internet Connection & sustainability.
6	National Youth Service Scheme (NYSS)	1999	Training in livelihood skills, entrepreneurship & Agric skills	Nationwide	2,797	1,536	4,333	Functional but weak after training support & M&E system
7	President's International Award (PIA)	1978	Youth empowerment, skills training & leadership	Greater Banjul Area & NBR	570	645	1,215	Operational but requires infrastructural & equipment support for training
8	National Enterprise Development Initiative (NEDI)	2004	Training in agribusiness, entrepreneurship & business planning	Countrywide	120	80	200	Operational

[69] Number of Youths reached over the last ten years (2008 – 2019)

No	Name of Youth Entrepreneurship Support Program/ Institution	Year Established	Area of Focus	Coverage by Region	# of Youths reached[69]:			Current Operational status
					Males	Females	Total	
9	The Startup Incubator Gambia (SIG)	2015	Business Dev, advisory services, incubation & financing	Greater Banjul Area	N/A	N/A	62[70]	Operational
10	The Gambia Youth Chamber of Commerce	2016	Entrepreneurship training, mentoring, coaching & trade promotion	Nationwide	N/A	N/A	355	Young organisaion but functional & needs strengthening
11	Global Youth Innovation Network (GYIN) Gambia Chapter	2012	Training in agribusiness, entrepreneurship & leadership & ICT	Nationwide				Operational
12	The National Association of Cooperative Credit Unions of The Gambia (NACCUG)	1991	Micro finance, Entrepreneursjip & Business Dev trainings	Nationwide				Operational[71] but still needs to expand its outreach to some other regions eg LRR
13	University of The Gambia (UTG)	1999	Higher education in Agric, ICT, business & engineering	Nationwide	1,308	744	2,052[72]	Functional but needs infrastructural, lab and equipment support
14	Social Development Fund (SDF)	1998	Micro finance, Entrepreneursjip & Business Dev trainings	Nationwide	5,918	18,977	24,895	Operational with challenges in technology, policy & incluciveness
15	VISACA Apex	2012	Micro finance, Entrepreneurship & Business Dev trainings	Nationwide			80 VISACAs	Operation[73] but the micro-finance policy environment needs strengthening

[70] Out of the 62 entrepreneurs incubated 42 had graduated with 160 Jobs created
[71] NACCUG currently has 55 active credit unions of which 24 are community-based and engaged in various agri-businesses
[72] Student enrolment for a single year
[73] The apex has 80 registered VICASAs with 43 of them active and operational

No	Name of Youth Entrepreneurship Support Program/ Institution	Year Established	Area of Focus	Coverage by Region	# of Youths reached[69]:			Current Operational status
					Males	Females	Total	
16	Gambia Young Men's Christian Association (YMCA)	1979	Youth empowerment, entrepreneurship & ICT training	Nationwide	330	243	573[74]	Operational
17	The Gambia Tourism and Hospitality Institute (GTHI)[75]	2009	Tourism & Hospitality training	Greater Banjul Area (GBA)	N/A	N/A	Over 4,000	Operational
18	The Institute of Travel & Tourism of The Gambia (ITTOG)[76]	2007	Skills in travel and toursm iindustry	Greater Banjul Area (GBA)	N/A	N/A	N/A	Operational
19	The Food Safety and Quality Authority of The Gambia (FSQA)	2011	Regulation of safety & quality regarding food commodities	Nationwide	N/A	N/A	N/A	Operational
20	Rural Development Institute (RDI)	1979	Rural Dev., Agricultural & livelihood skills	Nationwide	178	92	270	Operational but needs infrastructural & equipment improvement
21	Gambia College of Agriculture		Agriculture extention training	Nationwide				Functional but needs infrastructural, lab and equipment support
22	Gambia Chamber of Commerce, Industry, Agriculture and Employers' Association (GCCI)	1967	Business advocacy, entrepreneurship & management training	Nationwide	N/A	N/A	N/A	Operational
23	The National Agricultural Research Institute (NARI)	1993	Agricultural research and technology transfer	Nationwide	N/A	N/A	N/A	Operational

[74] Student enrolment for a single year
[75] GTHI is a government established Centre offering training in tourism and hospitality in four main disciplines.
[76] ITTOG is a private specialist tourism college offering courses ranging from 3 months to two years.

No	Name of Youth Entrepreneurship Support Program/ Institution	Year Established	Area of Focus	Coverage by Region	# of Youths reached[69]:			Current Operational status
					Males	Females	Total	
24	National Women's Federation, The Gambia	2010	Empoweriing women in enterprise particularly in various agriculture commodity value chains	Nationwide including women from the diaspora.	Nil	500,000	500,000	Functional but needs support in capacity building of members & storage & handling facilities
25	Women's Enterprise Fund (WEF)	2019	Entrepreneurship & entreprise dev., & access to finance	Nationwide	N/A	N/A	N/A	Newly established & functional
26	Gambia Technical Training Institute (GTTI)	1983	Technical & vocational skills training[77]	Nationwide[78]	N/A	N/A	2,000 annually	To be transformed into higher education institution
27	The Gambia Telecommunications & Multimedia Institute (GTMI)	1992	Technical skills training in ICT & Telecommunication engineering	Greater Banjul Area (GBA)	N/A	N/A	N/A	Operational

[77] Offers over 60 training courses in various technical & vocational fields
[78] Operates outreach centres in Banjul, Mansakonko (LRR) & Julangel (URR)

The majority of these organisations are based in the Gretaer Banjul Area (GBA) and maintain some form of outreach to the rural areas, whilst a few of them established regional outfits in some of the regions.

7.3 ANALYSIS OF THE CAPACITY OF THE EXISTING IN-COUNTRY YOUTH ORGANIZATIONS

To attain food self-sufficiency, the youth of the country must be engaged in agriculture as they are strong, energetic and able to endure hardwork on farms for better productivity[79]. It is disheartening to note that one of the reasons why the country's agricultural production has significantly declined, in the past few years, is because most of the able-bodied men and women have turned their backs to farming. They, particularly the urban and educated category, prefer office-based white-clour jobs or to travel to Europe through illegal migration than be engaged in agro-related enterprises. The dominant and prevailing perception regarding agriculture is that it is a job for the dropouts and uneducated, unrewarding, unattracctive and labour intensive.

The existing in-country youth organisations are not a homogeinous category and must, therefore, be analysed according to their groupings. There are i) rural- youth organisations (based on age, gender, location or interest groups); ii) faith-based youth organisations; iii) urban-youth organisations (based on interest, profession, location or academic orientation); and iv) youth organisations focusing on advocacy, networking and lobbying on varying thematic interest areas. The membership, focus, strength, and capacities of these different categories vary. In the majority of cases, the rural-youth organisations are resource-poor and characterised by focusing on social and short-term goals hinging on subsistence, survival, and satisfaction of immediate needs. The membership is largely composed of illerates and poorly educated and therefore have weak management/ leadership structures.

7.4 TRAINING AND CAPACITY BUILDING

There are seven higher learninig institutions and 103 non-degree tertiary institutions in the country includingg public and private institutions[80]. However, only a few of these institutions in the country are implementing youth agro-related projects of different types and targeting different youth categoriesUniversity of The Gambia (UTG) and Gambia College of Agriculture: The University of the Gambia (UTG) and Gambia College of Agriculture are government institutions of higher learning providing academic and professional cources in youth agri-related areas. The Gambia College of Agriculture offers certificate and diploma programs in agriculture and animal husbandry whilst the University offers degree level programs in various agro-related disciplines.

However, the scope and level of specialisation especially in relation to the various agricultural value-chains are limited. Furthermore, as indicated above, students from the two institutions do not have access to relevant and appropriate demonstration/practical training opportunities and learning materials to enable them to acquire adequate skills and knowledge for self employment and or value addition in their respective fields. Another challenge with these two facilities as it relates to the implementation of agro-related projects and programs has to do with their locations. They are both located in within the greater banjul area thus restricting access to their services by the rural resource-poor youths. None of them have established any outreach facilities/ campuses in the provinces where agriculture is the predominant means of livelihood and employment.

[79] ThePoint.gm/ youth involvement in agriculture, July 8th, 2010.
[80]UNESCO – Shenzhen Project study on Policy Review and Quality Assurance in higher Education in Africa, 2019

Figure 26: Photos of GSI interventions at Chamen

The National Seed Secretariat (NSS) established in 2017 is the technical arm of the national Seed Council, chaired by the permanent Secretary of Minnistry of Agriculture. NSS has already developed a national seed policy, plan, regulation and manual to guide and govern the seed sector. NSS has also established a national seed laboratory with standard equipment and accordingly trained technicians with the support of FAO, which has since started operations. The first national seed policy was formulated in 2008 and after a decade of operations, it became necessary to update it to reflect current realities in order to conform to new objectives as well as address new emerging issues. "It is envisaged that the updated National Seed policy will enhance the relevance of its tenets to the overall agriculture needs of the Gambia and contribute further to enhancing national seed security and the creation of a persistent and effective seed system that will serve farmers across all production systems, and promote smallholder seed enterprises"[81]. The Seed Technology Unit of NARI went through series of transformations which resulted to the birth of the National Seed Plan 2019. Similarly, the National Seed Plan was developed to promote production, availability, and utilization of quality seed that would improve agricultural productivity and contribute to economic growth of The Gambia. The formation of the first ever Seed Grower Association with responsibility to multiply improved seeds generated from research, to meet the needs of farmers is a strategic move and already making strides. It is indicated that for the 2019-20 farming season, the National Seed Secretariat has planned to cultivate sixteen thousand (16,000) hectares of foundation seeds. In 2018 cropping season, NSS procured 276 metric tons of groundnuts, 33 tons of maize, 26.16 tons of rice and 6 tons of cowpea from its certified Seed Growers alone. It has identified and trained contract Growers who produce quality seeds for the Growers, thus yeilding millions of Dalasis revenue for those farmers and saving the country from importing that quanty of quality seeds. Good quality seed is an essential input for farmers[82]. Uncertified seed comprises a comparatively large share of the seed used by farmers globally and is often sourced through informal

[81] www.fao.org/world/Gambia, June 2019

[82] World Bank. 2019. Enabling the Business of Agriculture 2019. Washington, DC: World Bank.

channels. While farmer-based informal seed systems are vital to support biodiversity and resilience against climatic shocks, uncertified seeds may be of variable quality. For those farmers who decide to sell produce on local, regional or international markets, the availability of registered varieties and quality of certified seed are of paramount importance.

Notwithstanding these gains, the NSS has key challenges which continue to constrain the full realisation of its stated objectives. The issue of inadequate staff compliment with the right qualifications and competencies is a concern. Furthermore, inadequate fuunding to enable the secretariat to effectively and comprehensively implement its plan (2019 – 2023) with a total investment package of $20 million over a five year period is also a challenge. This has implications for its ability to attract and train more youths in relevant seed technolgies and practices. Acess to appropriate storage facilities as well as relevant technologies (seed processing, cleaning and packaging machines) are key challenges requiring urgent interventions by both public and private sectors. There is no gain saying that the seed industry globally is a lucrative market and offers considerable opportunities for youth engagement and income generation, and the Gambia is no exception. The seed sector offers considerable yet untapped potentials for youth engagement and income generation as well as serve as an engine of growth for the country.

Additionally, studies[83] have shown that unsuitable qualifications and cost of additional training required are the greatest barriers in employing young people in the ICT sector. This clearly shows the skills gap between the private sector's needs and the level of competence of young people looking for a job in the ICT sector.

Agriculture is one of the leading economic activities in The Gambia and new technologies could particularly serve to modernize the sector. In particular, the use of smartphones through basic phone applications, such as smartphone apps or voice-based services, or the trend is now on smart-agriculture or precision agriculture using latest technologies such as drones or Internet of Things (IoT), including -

i. Improving communication between value chain actors with Web 2.0 and social media;
ii. Mobile apps for agriculture play an important role in connecting different nodes and supporting actors along value chains to make informed decisions; For instance, a smartphone app facilitates real-time data collection during harvest periods for all crop types, including information about exact location, quantity, quality, and price. The information is then stored in searchable databases; and
iii. Participatory spatial information management and communication is extremely effective in giving a voice and authority to grassroots concerns and aspirations related to spatially defined issues, such as climate change adaptation, land use planning and land tenure[84].

7.5 START-UP INCUBATION AND BUSINESS ADVISORY SERVICES

Startup incubation programs are relatively new phenominon in the business landscape in the country and there are thus limited institutions offering such services and facilities. Startup Incubator Gambia (SIG) is the first ever business incubator center in the Gambia providing business incubation services and facilities to young entrepreneurs in various fields. SIG's Startup Incubator Center is a co-working space for young entrepreneurs, with cubicles, computers, high-speed internet, printing and a fully equipped training room with a capacity of 25 participants[85]. This provides a suitable forum to clients to meet and discuss with mentors and thereby conduct site visits by incubator clients.

SIG works with clients to develop their ideas, validate their business strategies and professional business plans through practical. support clients and provide access to finance. It exposes clients to other funding opportunities suitable for their businesses and provides access to office resources, computers and high-speed internet facilities coupled with conducive spaces suitable for individual and collaborative works. These facilities are available to clients during there incubation period and after graduation from the program. To date, it has invested in over 50 startup; incubated 62 business enterprises of which 42 have so far graduated and thereby created 160 jobs in the country[86].

[83] Youth and Trade Roadmap for the Gambia: ICT Sector (2018 – 2022)
[84] Youth and Trade Roadmap for the Gambia: ICT Sector (2018 – 2022)
[85] www.startupincubator.gm
[86] www.startupincubator.gm

The need for inclusive and balanced socio-economic development have been adequately arrticulated in the country's NDP (2018 – 2021) as well as the various regional, international and multilateral development partners through their strategies, policies and priority programs for the continent. The agricultural transformation program will thus take cues from the evidences and concerns of the national and external development entities.

Experience has shown that active engagement and participation of youth is essential for structural transformation in agriculture. Using the IITA Youth Agripreneurs model, one can attest to the fact that with an enabling environment that will allow for mindset change and reorientation of youths about agriculture, coupled with training and incubation, young and unemployed graduates can succeed in generating employment and wealth through agriculture. The IYA model has also demonstrated links between graduate youth development and rural youth development and engagement. This linkage is projected to increase in the various countries and will require government policy support through incentive mechanisms and enabling environment linked to rural development strategies

AGRA was formed in 2006 in response to a call from former UN Secretary-General The late Kofi Annan, maintained that the time had come for African farmers to wage a "uniquely African Green Revolution." AGRA recognizes the centrality of governments in driving Africa's transformation and works to strengthen country planning, coordination, implementation, and accountability while supporting the development of an effective private sector through an enabling and regulatory environment.

AGRA has been a strong voice for rural development, fostering a prosperous agricultural economy supporting thousands of farm-based businesses and 30 million African smallholder farming families in ways that ensure food security and improved livelihoods.

AGRA's partnerships align government priorities and private sector interest to improve the integration and coordination of investments and mobilize private sector investment to scale efforts.

Moreover, entrepreneurship in agriculture may not be an option for many low-skilled, rural youth who lack access to knowledge, land, credit, and markets. An inclusive approach (i.e. decent jobs for all youth) focuses on additional constraints faced by marginalized youth. For these youth, comprehensive programs that combine skills training with additional education, mentoring and asset transfers are more likely to alleviate their specific constraints. This enables us to move beyond harvesting low-hanging fruit to reap the rewards of the full range of options that agricultural transformation has to offer Africa's youth.

The Forum for Agricultural Research in Africa (FARA) is the apex continental organization responsible for coordinating and advocating for agricultural research for development (AR4D). FARA serves as the technical arm of the Africa Union Commission on matters concerning agriculture science, technology, and innovation. It was conceived in the late 1990s by a core group of committed champions, including both African scientists and enlightened donor aid officials, who believed in agriculture's potential to lift the continent from poverty, yet realized that this would only be achieved if the continent's weak and fragmented agricultural research systems could somehow be brought together and strengthened under a common banner. FARA was subsequently established in 1997 by the Sub-Regional Organizations, including CORAF/WECARD, ASARECA, and SADC-FANR, at the 17th Plenary of the Special Program for African Agricultural Research (SPAAR), a precursor organization to FARA, situated within the World Bank.

FARA serves as the entry point for agricultural research initiatives designed to have a continental reach or a sub-continental reach spanning more than one sub-region. Headquartered in Accra, Ghana, FARA has been in existence for 12 years. Over this period, FARA has provided a continental forum for stakeholders in AR4D to shape the vision and agenda for this sub-sector, and to mobilize themselves to respond to key continent-wide development frameworks, notably the Comprehensive Africa Agriculture Development Program (CAADP).

African Development Bank (AfDB): The AfDB's strategic approach to agricultural transformation in Africa is encapsulated in its 'Feed Africa: Strategy for agricultural transformation in Africa (2016–2025' strategy documnt. The report maintains that farming has an image problem in large parts of Africa. For many people, it's synonymous with poverty. So it's hardly surprising that parents don't want their children to end up working the land. Things may be

starting to change, though. A growing number of African millennials are working to dispel the notion that all educated young people should aspire to professional desk jobs[87].

The understanding that agriculture is key to the continent's long-term economic viability and growth is prompting an increasing number of African university graduates to choose careers in farming. The African Development Bank (AfDB) says these millennials are a driving force for agricultural transformation and it's spending $350 million to support them with training, advice, and technology.

Under the DFIs Action Plan for Africa, the African Development Bank plans to use an emergency liquidity facility of USD 1.5 billion to provide financial support to eligible countries and operations that are suffering from a lack of liquidity; introduce a new USD 500 million trade finance line of credit and consider committing USD500 million to global trade finance liquidity programs to support commercial banks and other institutions finance trade; contribute to funds to support agribusiness, microfinance; and coordinate a platform for co-financing projects in Africa through the African Financing Partnership.

The AFD Group will contribute to investments and programs totaling up to the equivalent of USD 3.1 billion to focus on the SMEs and infrastructure projects in Africa through Proparco, the Fonds d'Investissement et de Soutien aux Entreprises en Afrique, and loan guarantees. Launched with AfDB, the International Fund for Agricultural Development, and the Alliance for a Green Revolution in Africa, and AFD, the African Agriculture Fund will raise EUR200 million during its first phase and subsequently EUR 550 million to target private companies and cooperatives to increase and diversify agricultural production.

Boost Africa: Empowering Young African Entrepreneurs. Africa has some of the world's fastest-growing economies and a young, and quickly growing population. However, a consistent trend in young graduates leaving or failing to return home at the end of their studies is an increasing threat for the continent's social, economic, environmental and technological progress.

Boost Africa[88], a joint initiative between the African Development Bank (AfDB) and the European Investment Bank (EIB), and one of the flagship initiatives of the AfDB's Jobs for Youth in Africa strategy, aims to harness the continent's potential and create opportunities on the ground through:

- enabling and enhancing entrepreneurship and innovation across Africa;
- creating new and quality jobs for young Africans;
- contributing to the development of an efficient entrepreneurial ecosystem in Africa;
- addressing the financing gap at the earliest and riskiest stages of enterprise creation; and
- developing and strengthening skills and expertise with young entrepreneurs.

Boosting the entrepreneurial power of Africa's young people will:

- create innovative and compelling modern businesses;
- increase the capacity for these businesses to compete regionally and globally;
- attract both domestic and foreign investment and diversify investor profile;
- contribute significantly to job creation and economic growth.

The idea is to become the premier platform to launch globally competitive companies from Africa. Boost Africa stems from a belief in entrepreneurship and innovation, and that they can play a significant role in accelerating living standards and social progress in Africa by meeting the needs of the people.

7.6 INVENTORY OF EXISTING INCUBATION AND LEARNING CENTERS

The majority of the incubation and learning centres are located in the Greater Banjul Area ad therefore not easily affordably acessed by the rural youth, particularly young women. Their proximity to strategic value chain development activities is a challenge except for some ICT related businesses. All the identified institutions as per the table below are

[87] Feed Africa: Strategy for agricultural transformation in Africa (2016–2025), African Development Bank Group, 2016
[88] AfDB.org; Boost Africa: Empowering Young African Entrepreneurs

operational although in need of various rehabilitation and institutional support interventions. A few of the initiatives will need to be replicated in the rural areas to provide similar services to the resource poor rural youth including young women and disabled persons.

Table 45: Incubator/ Learnuing Centres by status

No	Name of Incubator /Learning Center	Year Established	Location	Target Sector/ Value Chain	Operational Status		Rehabilitation status/ requirement	Gaps in the sector
					OK	No		
1	Njawara Agricultural Training Centre	1997	Njawara, NBR	Sustainable farming systems	x		Electricity & internet connectivity	Needs to be replicated in other regions
2	Gambia Soghai Agriculral Initiative	2015	Chamen, NBR	Agricluture & Agribusiness	x		Equipment & after training support	Needs to be replicated in other regions
3	St Josephs family farms	2007	Buiam, WCR	Agric, food security & environment	x		Program funding	Resources for program funding needed
4	Gambia College (Agricultute)		Brikama, WCR	Agriculture	x		Infrastructure, lab & equipment support	Practical & lab facilities for students
5	GTTI	1983	Jeswang, KMC	Technical & vocational training	x		To be upgraded to higher learning status	Practical & lab facilities for students
6	Julangel Skills Training Centre		Julangel (URR)	Technical & vocational training	x		Technical & program funding	Resources for program funding needed
7	Rural Development Institute	1979	Mansa Konko, LRR	Rural Dev & Agric skills	x		Infrastructure, equipment & additional staff	No effective links with industry
8	University of The Gambia (UTG)	1999	KMC & Brikama	Higher edu in Agric & ICT	x		Infrastructure, lab & equipment support	Practical & lab facilities for students
9	EMPRETEC Entrepreneurship Training	2014	Sere Kunda, KMC	Entrepreneurship & business advisory		x	Project phased-out	N/A
10	Startup Incubator Gambia (SIG)	2015	Sere Kunda, KMC	Business incubation & mentoriing	x		Infrastructure & equipment support	Need to repricate in other regions
11	National Youth Service Scheme (NYSS)	1999	Bakau, KMC	Livelihood skills, agriculture & entrepreneurship	x		Expansion & M&E support	Inadequate program funding

No	Name of Incubator /Learning Center	Year Established	Location	Target Sector/ Value Chain	Operational Status		Rehabilitation status/ requirement	Gaps in the sector
					OK	No		
12	Presidents International Award Scheme (PIA)	1978	Bakau, KMC	Youth empowerment & skills training	x		Infrastructure & equipment support	Inadequate program funding

7.7 CHALLENGES TO ACHIEVING PARITY IN PROPOSED YOUTH EMPLOYMENT PROGRAMS

The bid to achieving parity in the proposed youth employment programs in the country, there will be a number of challenges that will require consideration and attention in order to achieve maximum impact. In this regard, key challenges particularly gender, disability, cultural and rural-urban biases require special attention. This is further butressed by the National Youth Policy which recognised that there are different categories of youth with different and peculiar sets of concerns and problems. Some categories of vulnerable youth groups with special circumstances, require concerted, focused, and well targeted attention. The policy further stated that it is important to recognise that young people are not a homogenous group and they differ in terms of their needs, opportunities, and circumstances. They differ in terms of gender, educational level, social status, urban/rural status, and disability status[89]. Youth are a highly heterogeneous group, in terms of location, type and level of education, type of employment, gender (in)equality, embeddedness in community and other socio-demographic factors.

The Government of the Gambia recognizes that sustainable economic and social development of the country requires full and equal participation of women, men, girls, and boys. However, The NDP (2018-2021), the 2018 Gambia Labour Force survey, National Gender Policy (2010-2020) and the revised National Youth Policy (2015) all highlighted the gender disparity on youth employment in the country. The 2018 Gambia Labour Force survey reveals that the unemployment rate for youth aged 15-35 years is 44.7 per cent for males and 55.3 per cent for females. However, the population of males with diploma (62.3 percent) and upper secondary (57.5 percent) education have the highest proportions of unemployed youth. While for females, those with early childhood education (73.7 percent) and tertiary (66.6 percent) education had the highest proportions of youth that are unemployed. The study further revealed that rural areas (69.4 percent) have a higher proportion of unemployed youth than the urban areas (30.6 percent), whilst at the LGA level, Basse (24.6 percent) and Brikama (21.7 percent) have the highest proportions of unemployed youth; thus signifing considerable regional and rural-urban variations.

The existing gender imbalances in Gambian societies also reinforce poverty within the country. The National poverty gap ratio is 25.1 percent and the share of poorest quintile in national consumption is 8.8 percent. (MDG Status Report 2007). Poverty is extreme in the rural areas; with an average of 60 percent while in the urban area, poverty is estimated at 13 percent. A great proportion of those affected by poverty are women who have little or no access to productive resources such as land, credit, technology, and information[90].

Disability is an important characteristic in assessing employment issues in the country. It provide a significant barometer for inclusive growth and development. The findings of the 2018 Gambia Labour Force survey show that of the persons with disabilities, 58.1 per cent live in the urban areas and 41.9 per cent live in the rural areas. Brikama has the highest proportion of persons with disabilities across LGAs with 50.1 per cent, followed by Kanifing and Mansakonko LGAs with 15.4 per cent and 10.4 per cent respectively. Banjul has the lowest proportion of persons with disabilities with about 2 per cent. Furthermore, the Labour Force study indicates that 58.75 percent of the disabled persons within the age of 15 – 64 were found outside of the labour force. These trends on disability provide valuable indications regarding the distribution of disabled persons and the strategies to target them for greater inclusion and participation in the proposed youth employment programs.

7.8 YOUTH IN AGRIBUSINESS IN THE GAMBIA

To ensure effective and sustained involvement of youth in agribusinesses in the country, the agricultural sector must be appropriately transformed from subsistent, rainfall reliant and supply oriented to an approach that is business-oriented, demand driven and commercialised. The prevailing negative perceptions on agriculture must be changed to reflect a promising, rewarding and attractive enterprise worthy of engagement. The approach must also be underpinned by a shift from government focused and undifferentiated targeting to a farmer-led, public-private partnership and multi-pronged targeting based on well defined youth categories.

[89] Revised National Youth Policy (Nov 2015)
[90] Gambia National Gender Policy (2010 – 2020)

The youth should be empowered through the provision of relevant capacity building and training opportunities to enable them to acquire appropriate skills for engagement in the various agriculture commodity value-chains. Some of the existing incubation anf training facilities should be strategically supported to enable them to expand and consolidate their programs and outreach. In doing so, consideration should be given to the location, target, and content of the programs to ensure inclusion and impact.

The existing agriculture mixed farming centers (MFCs) are currently under-resourced and under-utilised. They should be transformed to become model mini Songhai agriculture centres within the various districts whereby the youth and women could have access to production facilities and capacity building services operated on viable business and profitable models. The centers should be upgraded and operated along the shonghai initiatives with identified youths trained and engaged in agro-related enterprises on a commercial scale and basis.

Finally, the challenge in the country's land tenure system particularly as it relates to youth and women's involvement in agriculture need strategic and deliberate interventions. The land tenure system should be reviewed and restructured to encourage private sector investment and participation as well as the involvement of youth and women in agriculture. However, this could be time consuming and certainly beyond the remit of agriculture alone. Much more cogent and pragmatic strategies could be deployed to achieve same results. There is need to strengthen and promote the strategies with respect to contract farming, land leasing arrangement and a careful process of identification and appropriation of agricultural land for PPP engagements in strategic locations. The existing land regulation and legislation mechanisms allow for such interventions in the interest of public good.

One of the main reasons for the current lack of Africa's agricultural success is the fact that the two most important conditions – an enabling policy environment and agricultural research to provide productive and sustainable technology have never coincided[91]. It is in recognition of these policy and reseach gaps that neccissitated the Government to establish regulatory institutions (NAQAA, FSQA, and NSS) to help provide an enabling policy environment in the relevant agro-related enterprises. Their work though instrumental in enhancing the activities of young agri-preneurs is punctuated with organisational and resource constraints which require attention.

The 2018 Gambia Labour Force survey findings indicates that majority of the people who migrated outside the country by both regular (21.6 percent) and irregular (59.6 percent) means left the country due to lack of work. The Gambia National Development Plan (2018 – 2021) and the revised National Youth Policy (Nov 2015) both have policy objectives geared towards addressing the growing youth unemployment in the country and the associated youth migration resulting to decreasing labour force, particularly within the agriculture sector. Therefore, a key strategy within the agricultural transformation program should focus on strategic interventions, investments and policy directions with the aim of creating sustainable employment opportunities for the youth on a differentiated targeting basis. An undifferentiated "one strategy for all categories" does not and will not work.

7.9 KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) STATUS OF YOUTH EMPLOYMENT IN AGRIBUSINESS IN THE GAMBIA

A demographic profile of youth employment in the Gambia's Agricultural value chain as prioritized in the Agriculture Transformation Progrmme.

As inidcated ealier, the majority of the population of the Gambia is largely youthful. They are almost equally distributed between urban and rural areas 50.1 per cent in the urban areas and 49.9 per cent living in the rural areas. However, there are slightly more male youth in the urban areas 63.0 per cent, than the rual areas due partly to sex selectivity of migration with males more likely to migrate than females.

The rural areas lag behind the urban areas in terms of educational attainment at tertiary and vocational levels. This is hardly surprising as the majority of the tertiary and higher learning institutions are located in the urban areas. This gives indication of areas that need both public and private sector attention in providing the necessary facilities and opportunities to bridge the rural-urban gap. It is in recognition of these gaps that the Gambia NDP (2018 -2021)

[91] Haggblade, Hazell and Kisamba-Mugerwa (2010). Transforming the rural nonfarm economy.

maintained that efforts are required to improve the transition and retention of female and the rural youth, as well as improving access to vocational and tertiary education, and skills training in rural areas.

The Gambia National Development Plan (2018 – 2021) rightly emphasised that the realisation of the outcome for *Value chains enhanced for Agriculture and Livestock Transformation*, measures will have to be taken to: identify priority value chains in agriculture (crop and Livestock), identify and strengthen the capacities of value chain actors; promote agribusiness and agro-processing, including access to finance; promote a viable agricultural marketing system, including cooperatives and commodities exchange; and adopt and implement quality assurances framework in line with National, Regional, and International standards.

8. PUBLIC PRIVATE SECTOR PARTNERSHIP

Private Sector Operators in the agriculture sector comprise of public and private sector players. The public sector domain comprises of institutions wholly or partially owned by government like the National Food Security Processing and Marketing Corporation (NFSPMC) as the case in the groundnut sub-sector and Banjulinging horticulture processing plant. Both institutions are owned by government, and in the case of NFSPMC managed by them under the steawardship of a Board of Directors appointed by Government.

On the other hand, private sector are actors in the sector that have no direct commercial links with the government, and as such government has no control over the running of their business. Even though Smallholder farmers fall under this category, the effect of their individual output on the industry as a whole is minimal and insignificant. Their impact as actor in the private sector category becomes more relevant when they form themselves nto legally constituted groups such as cooperatives.

Players in the private sector are only required to follow the stipulated policies and regulations that are laid down by government for all actors operating in the sector. In that regard, government are suppose to establish mechanisms for compliance and enforcement of the stipulated rules as laid down in the regulations. It should also be able to provide adequate corrective measures on operators that fail to comply with the regulations.

8.1 ROLE OF PRIVATE SECTOR IN AGRICULTURE

The role of the private sector as key actors in the agricultural sector is to ensure that all activities related to the commercial aspects of the agriculture value chain are carried out effectively and efficiently for the benefit of all actors. The general classification for the various stages of the chain are as follows: Producers (farmers), Transporters, Processors, Distributors, Exporters and Consumers who pay the altimate price for the operation and sustainability of the value chain. Notwithstanding, some actors in the private sector may, for one reason or the other participate at multiple stages of the value chain. For example, The Gambia Horticulture Enterprise (GHE) provides supplies services to the sector, produces, process and also exports horticultural agricultural produce. Likewise, Reliance Oil Mill (ROM) plays the role of processor as well as exporter in the groundnut value chain. In the same vein, the producers organizations may also choose to add value to their produce by processing and or exporting for themselves. Despite the important role that the private sector play in developing the agriculture value, the link between the actors in the chain is generally weak which could be attributed to the following:

- Low private sector capacity in terms of capital, knowledge, and skills.
- Inadequate policy and regulatory measures to create conducive and rewarding market for local and the private sector.
- Limited market access as a result of low quality of output and poor infrastructure at the various stages of the value chain.
- Poor organization and governance at the level of the producers leading inequitable distribution of the share of value added to to the disadvantage of the Producers.
- Poor coordination between Actor in the value chain, with much disadvantage to the Producers. For example, the Gambia Chamber of Commerce and Industry (GCCI) which is the main private sector platform for advocacy and promotion of private sector interest is without Producer representation.

8.2 PUBLIC PRIVATE SECTOR PARTNERSHIP MODELS (PPP)

Given the inadequacy of capacity at public and private sector levels as described above, the need for effective partnership for complementarity of efforts between the two cannot be overemphasized. This could pave the way for greater private sector investment in the agricultural sector which would be reduced financial burden on government. However, PPP could could be potential source for conflict where political interest over-rides the commercial interest. Using the case of the groundnut sector in The Gambia, for example, plans to privatize the sector completely have been delayed due to high political stake that the government has for the industry. The low prices offered by the private sector, which is purportedly based on world market price is not acceptable by government for political reasons, hence forcing it to declare prices higher than what the private sector offers. This has result the sector being in the hands of

NFSPMC which is government agency. Except for challenges such as this one, PPP in general stands to benefit both Public and private sector actors in the value chain. There are various models of PPP that are applicable in the agricultural sector some of which are listed below:

i. Traditional: This is the most often used model in The Gambia. In this model, the government would contract a private partner to carry-out the project. The public agent, therefore, provides the finances required to do the work with full title over all the assets of the project. This is the case with infrastructural works done by agricultural project, which are contracted through tender process. The main problem with this model is the culture of neglecting proper maintenance after works are completed and the project handed over to government.

ii. Operate and Maintenance (OM): In this model, the public agent assumes ownership of the project while the private partner operates and maintains the facility. Whilst this model is less common in The Gambia, there is growing potentials for it considering the trend of development in the agricultural sector. Some of the Training Institutions like GSI, for Example, could be given to private sector using this model.

iii. Design and Build (DB): Under this situation, the public agent provides money to the private partner for the design and construction of the project after which it is handed over to the public agent to operate and maintain. This is the situation with the *Karmalo* Feed mill.

iv. Design Build and Operate (DBO): In addition to his role as Private partner as in (iii) above, he will also be required to operate the facility. This model is also applicable in the rice sub-sector which requires large sums of money for investment, yet inadequate manpower to produce the required quantities. The public sector could provide money for development of key infrastructure and give it to private sector to operate them so that rice production could increase as envisaged.

v. Design Build Operate and Transfer (DBOT): This model is the same as iv above, except that under this scenario, the private partner will be required to operate the facility for a given period of time after which he is supposed to return it to the owner.

vi. Design Build Finance and Operate (DBFO): The model assumes total private sector management. Government neither contributes money towards the project nor controls the management of the facility. Its only contribution would be as a user of the facility when it pays for the services rendered by the facility. Swami India 80 hectare Banana Plantation at Korop in the Central River Region (South).

vii. Build Transfer and Operate (BTO): Under this scenario, the private partner builds the facility and transfer it to the public agent who will, in turn, lease the operation of the facility to another private partner on long-term basis usually. This is uncommon in the Gambia, more so the agricultural sector.

viii. Build Own Operate and Transfer (BOOT): Public agent build, own and operate the facility for a limited period of time, after which he transfers it to another public sector. An example of this is the Vegetable Processing Plant located at Banjulinding which was designed and built by government but meant to be transferred to the private sector at a later stage. However, attempts to proceed with the transfer are being delayed due to capacity constraints at the level of private sector.

ix. Build Own and Operate (BOO): Private sector builds, possesses and operate with full control over the revenue and losses generate therefrom. This is the ideal situation for investment in the agricultural sector by the private sector. However, for that to happen, opportunity must be given for foreign investors to come in given the limited capacity of local investors.

x. Lease PPP: Leasing arrangements involves a public partner leasing a facility to private partner for a period with full responsibility of maintenance over the agreed period. This arrangement would be the most appropriate way of supporting the private sector in this country to become strong enough to resist competition from foreign investors. It is also possible to lease the facility to private foreign investors, which will guarantee ownership at least for the duration of the lease, while the performance of the private partner is being assessed.

8.3 CONSTRAINTS FOR PUBLIC PRIVATE PARTNERSHIP

From the forgoing, it becomes clear that both the public and private sector have vital roles in the process of commercializing the agricultural sector. In the ideal situation, the role of government should be limited to that of regulation and supervision while the private sector concentrates on activities directly linked to the value chain itself. Such ideal situation is hardly possible for reasons already stated above. In the absence of an ideal situation, it becomes very necessary to build genuine, healthy, strong and sustainable partnership between the Public and Private Sectors to bridge the financing gaps facing the sector. Some of the challenges faced in building Public Private Partnership include the following:

- Inability of local private sector partners to raise large amount of capital required to build the necessary infrastructure that would enhance creation of the required business dynamics in the value chains. The alternative of using foreign investors may be considered however, it must be cautioned that appropriate PPP are used and prudent regulatory measures put in place to avoid national economy being dominated by foreign multi-lateral investors.
- Apart from the fact that the indigenous private sector operators do not have the required capital, the sources of accessing such funds for certain levels of investment are not readily available in the country compounded by high interest rates thus making the cost of capital expensive and the business venture unprofitable.
- As a result of the above, development programs are mainly dependent on donor funding which makes them have greater influence over overall direction of the program. The fatal consequence of this the ineffective use of project funds, as there is no genuine commitment from either or both sides.
- Political interference by Government as the case with the groundnut sector highlighted above is another challenge for the partnership. Arguably, though, such interference may be necessary, but the scale of interference needs to be marked to avoid over burden on public resources.
- Inadequate Policy and Regulatory measures to enhance coordination, monitoring, and supervision at all levels to ensure that all actors are working in unison and as such moving towards common direction. For example, the poor governance at the level of the Farmer organizations over the past decade or two is a result lack of national policy on cooperatives.
- Poor institutional framework at all levels of the value chain. The situation is more pronounced at the production level, where coordination mechanism for the distribution of inputs, provision of credit and marketing of output are almost failing leading to poor access to these vital services by the farmers. For example, the impact of the subsidized fertilizer provided by government through NFSPMC over the past three years had been very minimal due poor distribution and marketing. This problem is further compounded by lack of adequate harmonization between regulatory institutions operating at that level involving Agribusiness, Attorney General Chambers, NGO Affairs Agency (NAA) and CBG.

9. Strategic Plan For Gambia Agricultural Transformation Programme

9.1 THE STRATEGIC OVERVIEW OF GAMBIA AGRICULTURAL TRANSFORMATION PROGRAMME

This section highlights the strategic overview of the GATP starting with the overarching vision, objectives and the long-term targets of the programme. The strategic plan also details out the strategy highlights of the six areas of the programme namely: 1) upgrading strategies for crops improvement, 2) upgrading strategies for poultry and livestock improvement, 3) value chain financing, 4) youth engagement in agriculture, 5) public private partnership, and 6) coordination and management of the strategy.

Table 46: Strategic Vision, Objectives and Targets of the Programme

VISION	• Inclusive agriculture and agribusiness for transformational economic growth
OBJECTIVES	• Make gambia self sufficient in the key value chains • Create employment for youth and women • Stimulate private sector investment and promote value addition • Accelerate wealth creation • Position gambia agriculture to be climate resilient
TARGETS	• Increase productivity of Maize 0.5 – 3.5 mt/ha Millet 0.5 – 2.0 mt/ha Groundnut 0.7 – 2.0 mt/ha • Poultry broilers 1,513 mt - 10,561mt annually broilers 94 farms - 650 farms layers 420 mt - 8, 078 mt layers 54 layer farms – 580 layer farms • Small ruminants 1,379 mt – 2,000 mt meat 500,998* – 1,001,996 small ruminant population 172,662* - 345,324 sheep population 328,336* - 656,672 goat population • Reduce post-harvest loss 25-30% to 10-15% for crops (including horticulture) • Youth 1 – 4 regional songhai initiatives and 0 – 25 agricultural and youth improvement centres

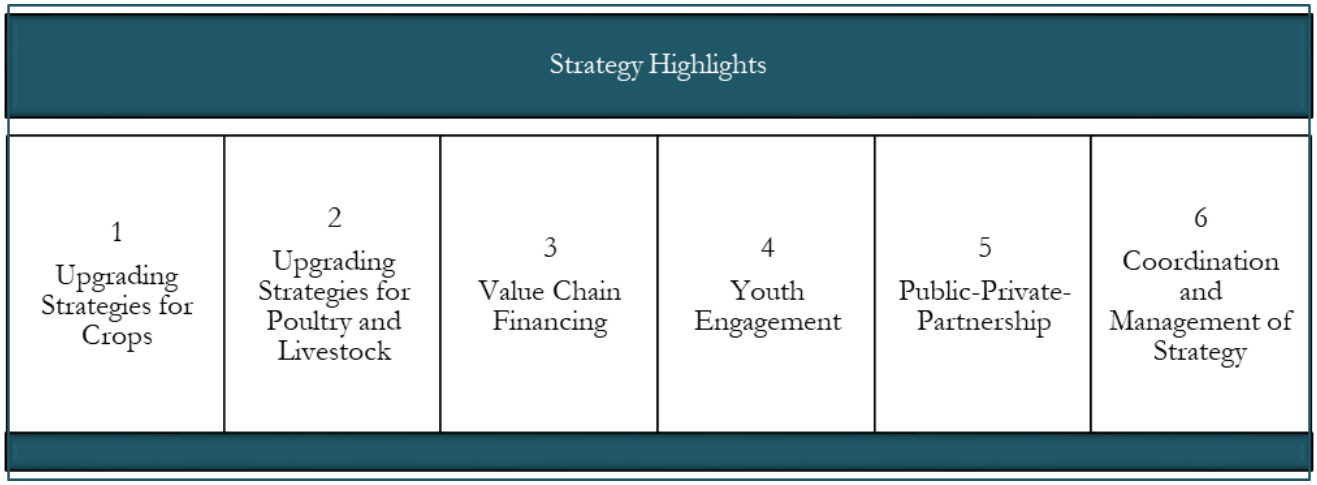


Figure 27: Strategy Highlights

9.2 STRATEGIES FOR CROP IMPROVEMENT

Crop Upgrading Strategy

- Production Expansion and Productivity Enhancement;
- Upgrading the Agricultural Extension Program;
- Training of Extension/Frontline Agents;
- Training of Trainers (TOT) on technology transfer for commodity value chain crops;
- Training of Women on Lowland Cereal/Vegetable growing;
- Strategies for Land Consolidation;
- Improving Horticulture (fruits and vegetables);
- Controllling Soil Degradation;
- Commercialization of the Seed Industry and Refurbishment of Village Seed Stores;
- Revitalization of Farmer Cooperatives for improve Market Access; and
- Institution of Structured market System.

9.2.1 Production Expansion and Productivity Enhancement

Implementing the GATP means adopting an increased production and productivity pathway that will sustainably promote and develop agriculture, which forms the rural base, as well as the engine of growth of the national economy. In the past, the objective of modernization led policy planners to lay the stress on industrialization at the expense of agricultural development, in the illusion that the modernization of the urban sector would naturally spread in time to the rural sector (FAO, 2005).

Based on the consultations and interviews across the country, the formulation will be based on an increased production and productivity pathway. This production strategy will be based on the use of certified, high yielding varieties for increased and stabilized production of all the strategic commodities. The immediate goals of the pathway will be

- To sustainably increase the level of production and productivity of the strategic commodities through the adoption and use of a
    i. Package of production inputs;
    ii. Maximum utilization of the underutilized agricultural labor force of the country;
    iii. Maintaining a registry and updated record of all the participants in the program; and
    iv. A seasonal assessment of performance through individual planning notes and group evaluation of the season's achievement referenced on the targets-based YIELD.

- The long-term objective will be the rapid development of the rural sector to provide for a viable and sustainable linkage between agriculture and the value addition industry.

This increased production and productivity pathway will be guided by:

- The signing of a memorandum of understanding (MOU) between the program/project management and the beneficiaries to produce rice, maize, millet, groundnuts, fruits/vegetables and livestock (small ruminants and poultry) on a targets-based production strategy;
- The adoption of the targets-based production strategy is to produce enough of the commodities in question for the household needs and a marketable surplus for the value chain industry. Farmer beneficiaries will be supported to use an approved appropriate production technology, to be composed time, labor savings and output booster inputs, that will minimize drudgery and generate efficiency;
- There will be an intensive introduction of approved new technologies in the ATP process. But for these new technologies to be fully harnessed for the implementation of the program, they will be made accessible to the beneficiary farmers through their Micro Finance Institutions (MFIs), details to be provided by the Finance Specialist.
- The adoption of a massive infrastructure development program, designed to support the strategic crops/livestock production systems within a well defined main road/feeder road network to adequately support the transportation of the produce to the value addition sites.
- To sustainably increase the level of production and productivity of the strategic commodities through the adoption and use of a (i) package of production inputs; (ii) maximum utilization of the underutilized agricultural labor force of the country; (iii) maintaining a registry and updated record of all the participants in the program; and (iv) a seasonal assessment (through individual planning notes and group evaluation) of the season's achievement based on YIELD.
- The long-term objective will be the rapid development of the rural sector to provide for a viable and sustainable linkage between agriculture and the value addition industry.

A strategic crop production outline as shown in Table 47, to be carried out during the first five years of the transformation, through a targets-based production strategy.

Table 47: Strategic Crops Production Outline From Low Input Low Out (LILO) to High Input High Output Production Strategy*

Strategic Crop	Current Yield T/Ha	Targeted Yield Mt/Ha	Innovation
Rice (Irrigated)	1.0 Mt[92]/Ha[93]	7 Mt/ha/year (double cropping)	Improved seeds, extension coverage and 200 kg 15-15-15 and 100 kg Urea 46% N/ha.
Maize	0.5 Mt/Ma	3.5 Mt/ha	Improved seeds, extension coverage and 200 kg 15-15-15 NPK and 100 kg Urea 46% N/ha.
Millet	0.5 Mt/Ha	2.0 Mt/ha	Improved seeds, extension coverage and 150 kg 15-15-15 NPK and 100 kg Urea 46% N/ha
Groundnuts	0.7 Mt/Ha	2.0 Mt/ha	Improved seeds, extension coverage and 100 kg 6-20-10 NPK/ha.

[92] Mt = Metric tons
[93] Ha = Hectare

Increased production and productivity growth in the country, whether measured per unit of land or labour, lags far beind the growth required to meet food security and poverty reduction goals set forth in national plans, as well as, to sustain a viable value addition process. Low fertilizer use and inadequate use of improved varieties are some of the factors explaining the lagging growth. The strategic crop varieties: Rice, Millet, Maize, Groundnut, Fruits, and Vegetables proposed in this program are photoperiod insensitive; therefore, they can be grown throughout the year, through irrigation and use of recommended inputs in the dry season, which will give significantly higher yields to support the transformation program Upgrading the Agricultural Extension Program

Agricultural extension under GATP must be conducted by a cadre of front line extension personnel trained in various on-farm and community innovations geared to make modern agricultural methods available not only to the small farmers in general but to the newly participating young farmers (unemployed youth: men/women) in particular.

Of special relevance to the agricultural transformation program is the Gambia Songhai Initiative (GSI), located in Chamen, Lower River Region. Here, young Gambians are trained in multi-agricultural production systems designed to provide year-round employment to small farm family members while maximizing production and income per unit area. This initiative can be replicated in select Mixed Farming Centers (MFCs) across the country, with special focus on horticulture (fruits and vegetable) and livestock (small ruminants and poultry) production. This arrangement should serve as the focal point for horticulture (fruits/vegetable) production as well as livestock (small ruminants/poultry) production.

9.2.2 Training of Extension/Frontline Agents

Despite considerable efforts, it has proved impossible to assist rural communities attain an adequate income level; unemployment and under-employment are increasing and the numbers of the poor and the impoverished are growing constantly. The creation of employment possibilities, both on the land itself and in rural communities generally, in support of increased productivity, the value chain process and the creation of rural wealth – which makes possible sustained improvement of social conditions in the longer term – is seen as the most vitally important task for the GATP. Such an innovative skills training, could reduce or hopefully even eliminate the uncontrolled and unmanageable drift of rural populations to urban centres in search of non-existent employment opportunities. In the fight against poverty the transformation policy must be the integration of the underprivileged sections of the community into the economic and social life of the whole rural population. The word integration implies the full utilisation of totally underutilised resources, human and otherwise, to improve the income and living standards of these population groups as a whole as part of the overall economic growth and social development of the GATP.

9.2.3 Training of Trainers (TOT) on technology transfer for commodity value chain crops

There is an emerging consensus that (a) in any resources-poor agrarian society increased crop production and productivity growth are essential for sustainable poverty reduction, provided that technically acceptable input utilisation mechanisms are put in place to increase production as a basis for poverty reduction, (b) as long as a large number of resource-poor farmers have little or no on-farm operational technology/skills, the quest for transformation geared to economic growth will remain illusory, (c) we need to understand that agricultural growth, through the value chain process has a stronger positive impact on poverty and hunger reduction in both rural and urban areas than growth in other sectors, because of its potentially strong multiplier effects. In a country where significant production inputs and other production technologies are often misused for lack of know-how/skills/technology, one element of the strategy must be to address this shortcoming through method and result demonstrations. It is assumed that this component will generate increased production and productivity growth by arming the many beneficiaries with the state-of-the-art knowledge of yield increasing technologies for a targets-based production programme.

9.2.4 Training of Women on Lowland Cereal/Vegetable growing

It is only through increased agricultural production that the country can develop its trade and industry, the products of which can be readily marketed in the domestic market, and in some cases processed, thus generating additional value. Maize, Millet, Groundnuts and vegetables are photo-period insensitive and can, therefore be produced in the

dry season, under irrigation. Crops produced on this basis are usually not only less capital intensive and easier to plan, but also technically and economically easier to manage. The lowlands can be used for dry season cropping under irrigation. Dry season crops give higher yields and this will give rise to increased purchasing power which, in turn, will lead to an increase demand for production inputs, consumer goods, and services in the value chain, which in turn will lead to the further build-up of small businesses and cottage industries.

9.2.5 Strategies for Land Consolidation

Farm holdings, which are scattered in fragments, need to be consolidated for better management. Land consolidation, especially for rainfed upland crops; Groundnuts, Millet and Maize, will involve the rearrangement of farm holdings through mergers or redivisions to attain concentration and regularity in the provision of services. A special feature of land consolidation, apart from increased production, will be the provision of land infrastructure development, minimum tillage land preparation, watering facilities, the construction of farm roads and the introduction of appropriate farm mechanization including the upgrading of animal traction. As in compact farming, the cost of the interventions and earnings will be shared among the members in proportion to their farm holdings.

Land consolidation will be in the upland rainfed areas and will involve the following strategic commodities: maize, millet, and groundnuts. These are rainy season crops that are not photosensitive; therefore, they can be produced during the dry season under irrigation. These strategic crops will be produced initially in the rainy season only, at a targets-based yield of 2 tons per hectare (2 t/ha.). Dry season adaptive irrigated trials (targeted at 2.5 tons/ha will be conducted for possible adoption.

To transit from the present low input low output (LILO) production system, to the high input high output (HIHO) production system, research recommended high yielding varieties will be used to be supported with the research recommended fertilizer use rate of:

- 200 kg/ha. NPK as Basal
- 100 kg/ha. Urea (46%N) as top dressing (for millet and maize).

For groundnuts, the research recommendation is 100 kg/ha of NPK 6-20-10 before planting preferably to the preceding crop.

9.2.6 Improving Horticulture (fruits and vegetables)

Horticultural crops, essentially fruits and vegetables, are concentrated in the Western and North Bank Regions of the country, where the climate is much more favorable. In addition to this, the increasing urban population, as well as the concentration of the tourist industry, provides a ready market. While the sector has major commercial private sector participants, it also has a larger number of private sector small-scale women growers, scattered all over the country. Most of these women are either engaged as individuals in their small perimeters or in communal horticultural activities provided by development projects.

The potentials in this sector are barely exploited. This provides an opportunity for more investment in the sector to create employment, reduce malnutrition, generate additional income and alleviate poverty. The sector has the potential to play a leading role in the value addition industry through:

Adequate investment geared to a planned year round production system;

- Provision of year-round varieties;
- Provision of cold storage and processing facilities;
- Reliable information, education and communication system; and
- Establishing an appropriate linkage with the value addition process.

Table 48: Distribution of Service Providers by Region

Region	Number of seed growers	Input dealers (fertilizer/seeds)	Land preparation
West Coast Region (WCR)	15	20	20
Lower River Region (LRR)	15	20	20
North Bank Region (NBR)	25	20	25
Central River Region-N (CRR-N)	25	15	20
Central River Region-S (CRR-S)	35	25	30
UPPER River Region-N (URR-N)	15	15	20
Upper River Region-S (URR-S)	30	25	30

- Outlining methods to ensure the large-scale adoption of locally adapted agricultural technologies to remove the constraints to increase production and productivity growth;
- Methods to help the predominantly small-scale producers and youth groups to become competitive in an effort to promote and stabilize the value addition process, as a prerequisite to the building of a functional agro-based industry;
- Ways of bringing about institutional innovations that will enable the resource-poor farmers and youth beneficiaries to adopt and maintain and efficient, dynamic, demand-driven, participatory and pluralistic production system; and
- Methods to cope with climatic uncertainties in the dominant rain fed ecologies.

9.2.7 Controllling Soil Degradation

Controlling the causes of soil degradation are necessary to increase crop yields and food production in order to combat the worsening food security in the country. The recommended policy measures and investment strategies must be viewed as key contributors to the joint goals of increased agricultural production, food security, economic development, land conservation, and environmental protection.

The more direct and effective ways to reverse and prevent soil degradation in important areas of agricultural lands will be through the promotion of judicious use of mineral fertilizers and sound integrated soil fertility management practices, such as:

- Conservation farming
- Efficient use of fertilizers
- Organic Farming
- Cultivation of nitrogen fixing legumes
- Extended fallow system
- integrated soil fertility management practices, and
- The integration of soil management practices within the farming system.

9.2.8 Commercialization of the Seed Industry and Refurbishment of Village Seed Stores

This model seeks to guarantee regular and reliable supply of quality seeds for the groundnut and maize value chains by ensuring availability and accessibility of quality seeds of the right varieties in the country at all times on regular and reliable basis. In this regard, national seed baskets would be established at selected regions of the country operated by large-scale commercial seed growers who will in turn work with multiplier (existing and new seed growers) to supply the national seed market. The program will therefore support:

- Establishment of 3 commercial groundnut seed baskets in three of the regions namely NBR, CRR/S and URR, and 3 maize baskets in URR, CRR/N, and LRR by providing the commercial seed growers at these locations with the required quantity of certified seed of the appropriate variety for cultivation of 12 ha of land 2 of which shall be under irrigation condition.
- Provide machinery including tractors with ancillary attachment, sine-hoes and draught animals.
- Construction of appropriate drying, processing, packaging, storage and drying facilities.

Again, Gambian farmers used to grow, harvest and keep their own seeds (especially groundnut seeds in the village seed stores, treated with protective and environmentally friendly chemicals) for use in the successive farming season. This is not happening anymore and most of the seed stores are in a very poor state. Government and donor partners have been providing farmers with groundnut seeds over the past years. This is a situation that cannot be sustained. Refurbishing the village seed stores will be supported by an extensive extension programme that will try to convince farmers to grow their own seeds and keep them in the seed stores at a minimal cost. This component will save the government millions of Dalasi and will promote increased production and higher productivity through timely access to planting seeds.

9.2.9 Revitalization of Farmer Cooperatives for improve Market Access

The interventions of the program as highlighted in the value chain analysis and models are expected to yield higher production levels. One of the key motivations for maintaining the trend is improved and reliable market access for value chain actors especially the farmers. Lack of such market could serve as a dis-incentive for participation of farmers especially the youth who are the main targets of the program. The program will therefore support:

- Revitalization of 100 multipurpose district cooperatives in the field crops, horticulture and livestock sub-sectors;
- Support the 100 multipurpose cooperatives with revolving fund for marketing of farmers produce;
- Provide necessary marketing equipment for the 100 cooperatives; and
- Develop marketing plan for the cooperatives.

9.2.10 Institution of Structured market System

- Identify, nurture and Strengthen Aggregators and Offtakers to provide vital market pull;
- Promote contract farming, outgrower schemes and Formalizing supplier agreement; and
- Support product aggregation financing and Promote input credit scheme.

9.3 UPGRADING STRATEGY FOR POULTRY AND LIVESTOCK

The proposed plan for the development of poultry and small ruminant value chain takes into account the livestock sector policy and strategies, National Development Plan (NDP), on-going development projects, and attempts to address some of the fundamental constraints to the development of small ruminant and poultry value chains. This plan aims to increase the productivity of the small ruminant and poultry managed under the Low Input Production System and to promote private-led vibrant commercial livestock production system to meet the demand for animal and animal products for our rapidly growing population. The overall objective is to develop a sustainable poultry and small ruminant industry that contributes to the improvement of the livelihoods of all the actors across the poultry and small ruminants/value chains and the overall national economy. The proposed investment program for livestock would have four sub programs:

Upgrading Strategy For Poultry And Livestock

- Improve Production and Productivity of Local Breeds;
- Improve Local Chicken Production and Productivity;
- Enhance Commercial poultry production (Broilers and Layers);
- Strengthen Public and Private Sector Veterinary Service Delivery;
- Strengthening Poultry Value Chain;

- Strengthening Small Ruminant Value Chain; and
- Enhancing Management of Shared Resources.

9.3.1 Improve Production and Productivity of Local Breeds

This sub program will focus on enhancing the sustainable production and productivity of local chicken, sheep and goats for increased income generation, commercialisation, household food, and nutrition security. It comprises four components:

i. Improved small ruminant production and productivity: Targeting the Djallonke sheep and West Africa Dwarf Goats. This component has 3 sub-components.

ii. Enhance farmers' access to quality breeding rams and bucks: The West Africa Livestock Innovation Centre (WALIC) will be supported to sustain the open nucleus flock at Keneba located in Kiang West District, Lower River Region. This will ensure the availability of breeding rams and bucks for the continuation of the village based pure breeding program initiated in 2000 with Gambia Indigenous Livestock Multipliers Association (GILMA) and working in close collaboration with the Department of Livestock Services. Matching grants will be provided to 100,000 individual farmers to purchase breeding rams and bucks from ITC and to construct suitable small ruminant pens. Furthermore, training needs assessment will be conducted. Based on this, training materials and extension manuals will be developed.

iii. Support ram fattening Schemes: This component will target only farmers involved in the breeding schemes to fatten their rams. It will enhance access to inputs such as rams, feed, drinkers, feeders, and medication and necessary technologies. It will also enhance access to farmer advisory, training, and veterinary services for small ruminant producers. The dependency on our neighboring countries for fattened rams is huge, especially during festive periods such as *Tobaski* as the associated loss of foreign currency. To reduce this dependency, the support to establish ram fattening schemes is aptThe key results for this component will be as follow:
    a. Availability of rams during Tobaski and other feasts;
    b. Better access to advisory and veterinary services; and
    c. Reduce poverty.

iv. Strengthening Disease Surveillance, Prevention, and Control in Small Ruminants: This sub component will address the high morbidity and mortality in small ruminants throughout the country annually exceeding 20% of the small ruminant population. This has adverse effects on household food and nutrition security, income and livelihoods of the vast majority of rural households for whom livestock serve as their major asset. Although many diseases of small ruminants are prevalent in the country, the highest mortality rates are attributed to Peste des Petits Ruminants (PPR) and Pasteurellosis. Both diseases are preventable through mass annual vaccination campaign. However, inadequate access to veterinary services in terms of coverage at district level coupled with lack of access to quality drugs and vaccines, as well as inadequate technical capacity of farmers greatly contribute to the high disease prevalence. Conducting Mass vaccination campaign against PPR and Pasteurellosis concurrently for 5 years will contribute to the control of these diseases thereby boosting and sustaining famers output, income, household food, and nutrition security. The vaccination program will annually target 600,000 heads of small ruminants of which sheep comprise 200,000 heads and goats 400,000. Training of women and young farmers as village auxiliaries on early recognition, prevention, control and treatment of diseases in small ruminants will enhance early warning system and contribute to addressing the inadequate number of DLS field staff at district level. 1000 farmers will be trained as auxiliaries and disease reporting agents.

9.3.2 Improve Local Chicken Production and Productivity

Targeting Improved production and productivity of local chicken ensures inclusive participation of vulnerable households in the drive to transform the agricultural sector. Village chicken production predominates in the country. Of the 937,951 chicken produced in the country, 94.5 percent constitute village chicken managed under the traditional system. Above 80% of rural households keep local chicken. Its potential to contribute to uplifting the economic status of the majority of rural households cannot be overemphasized. However, the realization of this potential is hindered

by a number of constraints including among others high prevalence of diseases and poor management practices. This component seeks to strengthen local chicken production and productivity through addressing the key constraints holding back the growth of the sector.

i. Strengthening Disease Control in Village Chicken: Disease is the single most important constraint limiting village poultry production in the Gambia. The DLS 2016 National Livestock Census, reported that 271,657 chicken were lost to disease in the census year. A survey conducted in 2018 (FAO, ISRAD Baseline Survey) also reported that more than 90% of households owning village chicken reported disease in their flocks. Mortality rate exceeding 70% was reported in some regions. Newcastle Disease (NCD) is the most important poultry disease in the Gambia. It accounts for over 60% of morbidity and mortality. Providing vaccination against Newcastle disease is one of the ways to improve the economic status of rural households and food security needs of the population. If Newcastle Disease is controlled, village chicken population will increase by more than 100% in just one year. Nationwide mass vaccination campaign against Newcastle Disease will be conducted for 10 years. This will positively impact on the supply of chicken in the country. Over the program period, 70% of the chicken population (700,000) will be vaccinated annually.

Training of village women as auxiliaries/ vaccinators for Newcastle Disease prevention has been very successful in Burkina Faso[94]. In the Gambian context, with the inadequate Livestock Assistants (DLS field staff) coverage at field level, the training of auxiliaries will be considered as a coping strategy. Timely and regular vaccination of local birds against NCD and improvement in the small- and large-scale commercial poultry production, the country could be self-sufficient in poultry by the end of the program period.

If Newcastle Disease is controlled, village chicken population will increase by more than 100% in just one year.

ii. Improve Village Management System: This sub component will target to build the technical capacity of 20,000 women and youth poultry producers on improved poultry management practices through demonstration and training on improved management techniques. Best practices on feeding, housing, and disease prevention and control will be key. The capacity of the regional veterinary directorates will be strengthened for this purpose.

9.3.3 Enhance Commercial poultry production (Broilers and Layers)

The poultry industry could serve as an engine of growth for the Gambia's Agricultural Transformation Program. The industry provides food security and employment opportunities for most vulnerable populations. As a result, increased poultry production and productivity provides a platform for youth and women employment, income generation, poverty reduction and attainment of food self-sufficiency. However, a number of constraints impedes the full realization of this potential. These include; high cost of feed, unavailability of day-old-chicks, inadequate health care, lack of access to processing facilities, inadequate marketing and inaccessibility to credit facilities.

In 2018, The Gambia imported 20, 928 MT of chicken with CIF Value of GMD 388,560,000.00 and 5,368 Mt of eggs with CIF of GMD 62,710,000.00. There is high dependence on imported chicken and chicken products. This component seeks to transform the poultry sector to a more vibrant and commercially orientated sector to reduce the dependence on imported poultry and poultry product thus saving the country valuable foreign exchange, creating employment and income generation.

The component is divided into three (3) sub components for different categories of farmers namely small-scale broiler and layer producers with capacity of up to 500 birds, medium to large-scale producers with capacity to produce up to 5000 birds and large-scale producers with up to 10000 birds.

The overall objective of the component is to create employment, improve farmers' lives and livelihoods and contribute to the national economy through increased returns from broiler and layer production. The specific objectives include Increase access to production inputs (feed, day old chicks, and veterinary drugs), Provide capacity building for farmers

[94] www.acdivoca.org/2018/vim-project-expands-incomes-for-small-scale -poultry-producers/

on improved poultry production and productivity, Enhance market access for farmers and Enhance vertical and horizontal linkages across

i. Support Small Scale Commercial Broiler and Layer Production: This component will target small scale commercial broiler and layer producers with capacity of 500 birds in particular women and youth poultry farmers. One thousand (1000) farmers per agricultural region including the Urban Directorate will be supported (500 broiler schemes and 500 layer schemes) with 500 day-old-chicks per scheme, materials, and inputs. The broiler and layer schemes will receive 500-day-old chicks with inputs and health care as seed money. The beneficiaries will provide standard housing and the labor to care for the birds. Biosecurity is important in the control and prevention of NCD and Gumboro diseases and will serve as the cornerstone of the entire program. The Department of Livestock Services will support the schemes with close veterinary and laboratory surveillance for poultry health as monitoring and supervision. Capacity building program for commercial producers will be included in the package to enhance Good Management practices such as appropriate housing (orientation, roofing, ventilation, and spacing), feeding and disease control would be essential for the component. It is envisaged that 8400 MT of broiler meat will be produced annually under these schemes.

ii. Support Medium Scale Commercial Broiler and Layer Production: This component will target medium scale broiler and layer producers with capacity to produce up to 5000 birds. Fifty (50) farms will be supported and upgraded to produce 5000 broiler and layers. Access to funds will be enhanced through appropriate lending schemes. The broiler and layer schemes will receive 5000-day-old chicks with inputs and health care as startups. The beneficiaries will provide standard housing and the labor to care for the birds. Poultry value chain will be strengthened by providing training on poultry processing, storage, and marketing support. Access to markets **(**enhanced processing, storage, and marketing) increased by providing a refrigerated van for transportation of poultry products. It is envisaged that 600 MT of broiler meat will be produced annually under these schemes.

iii. Support Large Scale Commercial Broiler and Layer Production: This component will target large-scale broiler and layer producers with capacity to produce up to 10000 birds. One existing broiler farm and one existing layer farm will be upgraded to produce 10000 broilers and Layers respectively. Access to funds will be enhanced. The broiler and layer schemes will receive day-old chicks with inputs and health care as seed money. The beneficiaries will provide standard housing and the labour to care for the birds. Access to markets **(**enhanced processing, storage, and marketing) will be increased by providing a refrigerated van for each of the two farms for transportation of poultry products. It is envisaged that 48 MT of Broiler meat will be produced annually under these schemes.

9.3.4 Strengthen Public and Private Sector Veterinary Service Delivery

This component among others will focus on strengthening the capacity of DLS as well as promote private sector involvement in veterinary service delivery at regional level. It will facilitate access to timely and affordable financing to the private sector. The component will enhance the articulation and adoption of well-defined roles for the public and private veterinary service providers in conformity with the recommended World Organisation for Animal Health (OIE) sanitary mandate

i. Strengthen the Capacity of Department of Livestock Services: The potential of the livestock sector is limited by inadequate technical capacity of DLS among others. This component will address the capacity gaps of the Department in terms of strengthening the animal health care delivery system at all levels, providing among others disease control and prevention programs, supported by an epidemiological surveillance system and enhanced laboratory diagnosis services.

The program will seek to increase the current inadequate number of Livestock Assistants at field level from about Sixty (60) Livestock assistants to about 150 in line with the recommendations of the OIE PVS Gap Analysis conducted in 2012. This report indicated the minimum required number of Livestock Assistants at one hundred and thirty (138). The inadequate frontline livestock support was corroborated by several key

informants during the consultations. The increase in the number of Livestock Assistants will be achieved through recruitment, training, and deployment of suitable graduates.

Considering that there are only two (2) veterinary doctors currently serving at the Department of Livestock Services with no veterinarian at regional level, the ATP will train 10 suitably qualified candidates to study veterinary medicine. This will ensure that in the next 7 years there will be a qualified veterinary doctor in each of the 6 regions of the country as well as veterinary doctors at the 3 major abattoirs in line with the OIE Performance, Vision and Strategy (PVS) Gap Analysis Report of 2012.

An epidemiological system for surveillance of Transboundary Animal Diseases (TADs) exist in the Gambia at community, district, regional and national levels since 2000 during the implementation of the Pan African Program for Control of Epizootics. However, the system though operational is very weak in terms of human and material resources. No formal training has been conducted over the past few years for disease surveillance officers. This was further corroborated by some key informants. Furthermore, only 45% of disease surveillance officers are mobile. Some of the motor bikes used are not road worthy. Through GATP disease surveillance will be strengthened through targeted capacity building and provision of mobility.

In a similar vein, the program will address the weak diagnostic capacity of the Central Veterinary Laboratory. There is no diagnostic capacity for most of the Transboundary Animal Diseases. To address this situation suitably qualified staff of the lab will be trained as lab technologist in the different areas such as microbiology, virology, and parasitology. The training for the lab will also include vaccine production. The Central Veterinary laboratory within the Department will be upgraded and supported to effectively implement its mandate. Considering the fact that there is no functional veterinary diagnostic laboratory at regional level throughout the country, GATP will establish and support 6 regional labs, 1 per region. There is no qualified poultry nutritionist countrywide. Therefore, GATP will train 2 poultry nutritionists to bridge the gap.

The concept of community participation as a frontline link in the early warning system for Transboundary Animal Diseases was one of the key areas developed as part of the epidemiological surveillance system in 2000. The system was commended as effective by the OIE PVS mission in 2009. However, in the past years, the system has weaken and is currently inactive due to lack of training and animation. The GATP will reactivate the community epidemio-surveillance system. A target of 500 community epidemio-surveillance members will be trained and registered as part of the rejuvenated system. They will be distributed in each of the 41 districts of the country with more emphasis on border areas for trans-border surveillance.

Capacity of DLS in storage of vaccines will be enhance through the provision of solar operated freezers.

ii. Promote Private Sector involvement in Veterinary Service: This component will seek to enhance access to quality veterinary services delivery at regional level through the promotion of private sector involvement. Within the framework of GATP, the private sector will be supported to establish 12 veterinary drugs outlets countrywide. Access to appropriate financing will be enhanced. Additionally, GATP will support a private sector clinic per region. Sanitary mandate protocols will be articulated to clearly define the role of these private sector actors. Veterinary services may assign specific responsibilities to the private sector when the need arises especially in emergency where timeliness counts a lot. Capacity building for private sector operators regarding handling and management of drugs and supplies.

9.3.5 Strengthening Poultry Value Chain

This component will address the inherent gaps in the poultry value chain that impede the development of the poulty sector in the Gambia. Among others, it will addrees the high cost of poultry feed and day old chickes which consitute 85% of the cost of poultry production. It will also addrees gaps in processing and enhance commercialisation and marketing for both poultry and small ruminants. Apropriate policy interventions to address the issue of importation of highly subsidised poultry products into the country by the competent Ministries of Trade, Finance and Agriculture will be recommended. Strenthening the valiue chain approach is a key component on which the success of the broiler and layer schemes envisaged GATP hinges upon.

i. Enhance Feed Production: The current capacity of feed mills is estimated at 1,441 MT. However, they are producing only 52 MT, which is only 2.5% of their actual capacity. Only one feed mill (GamHolland Enterprise) is currently operational. Despite the fact that the mill has the capacity to produce more than 80% of the feed demand for the national poultry industry, it is underutilized and lack functional laboratories for feed analysis. The Government owned Gambia Feed and Food Industry; the largest feed mill in the country with capacity to produce 40MT per day has not been functional since 2012. This feed mill alone has the potential to meet the national demand in animal feed and produce surplus for export.

   GATP will enhancement of Public Private Partnership for the full unitization of this feed mill. At regional level, regional level GATP will support the establishment of small-scale feed mills at DLS regional directorates. 7 mills will be distributed to the regions including one to Abuko. These mills besides feed production for the demonstration farms, these will also serve the objective of farmer training and demonstration.

   GATP will facilitate the establishment of a food/feed testing laboratory for the Ministry of Agriculture.

ii. Enhance Production of Day Old Chicks: This sub component will address the current underutilisation of hatcheries in the country, the main factor in the high cost of day-old chicks. With combined capacity to produce 995,400-day old chicks when fully operational, the 3 hatcheries in the country have the potential to meet the demand in day old chicks. However, they are grossly underutilised. The 2 main hatcheries T-Farms and Empas are no longer operational.

   GATP will enhance private sector access to appropriate financial mechanisms to make the feed mills operational. The long-term sustainability of this sub component hinges on promoting parent stock production through enhance access to financial resources. In the short term, the removing of tariffs on the importation of fertile eggs will go a long way in reducing the current high cost of operating hatcheries and the dependency on imported day old chicks from neighbouring Senegal.

iii. Enhance Processing of Poultry Meat: This sub component will address current underutilization of the processing plants. They have a combined capacity to process 2,565,000 broilers per annum but currently operating at 3% of their capacity. Packaging and labeling materials will also be part of the package. With the expected boost in poultry production as a result of GATP interventions in the sector, the need for investment in processing is eminent. To this end, GATP will enhance access to appropriate financial mechanisms for the revitalization of the processing plant.

iv. Enhance Marketing of Poultry Meat: GATP will facilitate the construction of 4 live bird markets at strategic locations across the country. The markets will be equipped with prerequisite facilities such as storage facilities and a refrigerated transportation van for each live bird market. This will open up market access for producers of both local chicken and broilers.

9.3.6 Strengthening Small Ruminant Value Chain

This component will enhance marketing and commercialization of small ruminants. The increase registered in small ruminant population in the inter census period 1993 to 2016 has not reflected in increase in commercialization.

The component will address will enhance access of livestock dealer, butchers and other actors in livestock trade to investment capital through appropriate financing mechanisms. The dilapidated conditions of slaughter facilities operated by Gambia Livestock Marketing Agency will be rehabilitated to meet necessary sanitary requirements in line with the Food safety and Quality Act of 2011. The lack of shed and watering facilities in the major livestock markets across the country will also be addressed.

i. Enhance to appropriate financing mechanisms: This subcomponent will be integrated into GATP Investment Plan. It will focus on enhancing access to funding through appropriate financing mechanisms for butchers, dealers, village buyers, middlemen and other actors in the marketing and commercialization.

ii. Improvement of Livestock Markets: This subcomponent will rehabilitate 10 weekly livestock markets and two daily terminal livestock markets at Abuko and Brikama. The biggest weekly Livestock Markets in the country are Sare Bojo in Upper River Region , Sare Ngai in Upper River Region, Wasu in Central River Region,

Dinguiri in Upper River Region, Gambisara in Upper River Region, Farafeni North Bank Region, Fass Njaga Choi in North Bank Region, Brikamaba in Central River Region, Bureng in Lower River Region. Abuko Livetock Market and Brikama Livestock markets are da Brikama in West Coast Region. The markets will be provided with shed, watering facilities for both people and the animals and fencing where neccesary. Toilet facilities for the dealers and customers will also be provided. The Gambia Livestock Marketing Agency will take the lead in the implementation of this subcomponent.

9.3.7 Enhance Management of Shared Resources

Overgrazing and recurrent annual bushfires has led to the loss of rangeland diversity of palatable grass species and subsequent domination by invasive species. Related to this is the degradation of communal range resources characterized by low fodder quality and quantity. The underlining cause of which has been climate change and variability manifested by shortened rainy season over the years. This situation is further amplified by inadequate regulatory framework on sustainable use of shared resources. Other challenges linkable to the inadequate regulatory framework include unregulated cross border transhumance exacerbated by low rainfall experienced over the years in zones of origins of transhumant herders and the uncontrolled exploitation of range resources such as illegal cutting down of trees mainly by transhumant herders to feed livestock. A key emerging challenge is the encroachment of farmlands into traditional livestock grazing areas because of population growth and expansion in rice cultivation exacerbated by lack of land-use planning. This component seeks to address al the key issues through 3 sub components namely:

i. Establish deferred grazing areas: Establishment of deferred grazing areas is a key strategy for preservation rangelands and pastures. These are either fenced or identified areas reserved for dry season supplementary grazing of animals. The main objective of deferred areas is to provide standing hay for grazing during the dry season when the marginal grazing areas are completely grazed. It also gives the opportunity to improve quality of the pasture by planting browse tree species and reseeding with nutritive pasture species. Bush fire control and sustainable utilization of pastures are important measures in the establishment of deferred grazing areas. This sub component will establish 41 deferred grazing areas, 1 in each district of the district of the country. In view of the loss of several tree and grass species from de-forestation and overgrazing, priority will be given to regeneration of the vegetation cover by tree planting and prevention of losses by bushfire management measures. Tree planting will be conducted at all 41 deferred grazing sites. DLS and Department of Forestry will collaborate in the implementation of this component. Communities will be trained on bush fire management and provided with assorted fire-fighting equipment in the form of sprayers, fire beaters, rakes, and axes to aid communities in their efforts to manage and control bushfires.

ii. Establish intensive feed gardens (IFGs): This sub component will establish 18 deferred grazing areas across the country 3 per region with average size of 50X50m. The differed grazing areas will serve as a dry season supplementary feeding in a cut and carry feeding system to meet dry matter requirement of some small ruminants. Fodder plants (*Leucaena leucocephala, Moringa Olifera* and *Cajanus cajan*) together with grasses (*Panicum maximum and Andropogon guayanus) are* preferred species for feed production in the IFGs. .To ensure sustainability it is propose to allocate intensive feed garden to recognised women groups. This will guarantee ownership of the feed gardens. It can also offer opportunity for the group to raise income through value addition feed processing (multi nutrient mineral licks) and the production and sales for pasture seeds for rehabilitation of deferred grazing areas. Training will be provided for management committee members

iii. Demarcation of Livestock Routes: GATP will demarcate and mark stock route at I site per district in all 41 districts with the use of 1.5m concrete poles for the marking. For durability of the demarcations, Department of Livestock Services has developed standard specifications for the pillars as follow: Concrete pillars, 1.5 metres high of which 0.5 metres will be below the ground, pillars size 25cm X 25cm, pillars should be reinforced by 10mm iron rods, the concrete should be of standard mixture of sand, cement, and gravel. The demarcation and marking of stock routes will empower livestock owning communities to access pasture and prevent conflicts between the two systems (livestock and crop farming). It will ensured free movement of livestock and facilitate access to feed and water during rainy season and reduce overgrazing during the dry season.

iv. Establishment of local conventions on the sustainable utilisation of shared resources: Local conventions are agreed set of local rules and regulations which are in conformity with the national legal framework. The local conventions on sustainable management on natural resources seeks to address the possible causes of environmental deteriorations, which include among others: land conversion, incompatible and sustainable land management, overexploitation, illegal cutting of trees, bush fires and hunting. These problems all stem from lack of planning and of control over access to natural resources. This lack of planning and control affects the exploitation of forest and the uncontrolled clearing for agriculture at the expense of rangeland. It is strongly believed that good environmental friendly practices must be used in a holistic way and linked to the capacity of the land. To achieve this, the land use must also be linked to the interaction between activities and the interest of the different users. The community should, therefore, develop skills to manage their resources and it implies that communities should be empowered to control resource use base on community consensus.

The conventions on sustainable management of natural resources are bold step taken by the communities to take charge of the efficient, equitable and sustainable utilization and exploitation of their natural resources. They provide an avenue at community level to regulate the root cause of environmental degradation and overexploitation of natural resources. The regulation of transhumance at district level fits very well within the framework of the local conventions. This has already started to take effect in both Nianija and Niamina East. However, to enhance implementation and enforcement of compliance, a lot more needs to be done in terms of sensitization of the entire community in general and of the major stakeholders in particular.

GEF funded PROGEBE Gambia has successfully facilitated the actualization of local conventions at Project sites. After the fourth year of implementation in 2013, the conventions were assessed by a survey and found to be an effective tool for management of natural resources and public facilities. The approach has yielded dividends in all the 3 districts particularly in Nianija District where it has been very successful, with total absence of bush fires, regeneration of communal grazing lands, and enhanced integration of livestock and crop production in the lowlands. This approach will be replicated in other districts of the country by GATP.

GATP will facilitate the preparation and actualization of a set of agreements within local communities at project sites on how to sustainably manage their natural resources. It is envisaged that the communities will work in partnership with government technical services and extension services who will support, build their capacity and monitor their activities which include among others the protection and improvement of rangelands, and livestock feed resource base, their preservation and utilization, good livestock management practices, animal health management and commercialization of livestock marketing and support the development and implementation of local convention.

9.4 MECHANIZATION AND MACHINERY

In the quest to mitigate labour constraints and enhance timeliness of operations, particularly land preparation, fragility of the upland soils and difficult workability of the heavy lowland soils becomes major factors for consideration in choice of machinery. Operator training will be key in the functionality of the whole mechanisation program and will be therefore be given due attention. The proposed line of action for uplifting the mechanisation process in the production phase of the identified value chain crops is detailed below.

Mechanization And Machinery

- Uplands - Land preparation, seeding, and weeding;
- Lowlands-Land preparation, Seeding, and Weeding;
- Mechanization for Harvesting and Threshing;
- Improving Post-Harvest Technology Promotion;
- Promoting Farmer level Small-scale Processing;
- Expanding Irrigation Facilities and Equipment; and
- Strategies for Feed Production.

9.4.1 Uplands - Land preparation, seeding, and weeding

Cognizant of the fragility of the upland soils, minimum tillage, as widely practiced, will be consolidated for all targeted upland crops, including vegetables. For upland cereals and groundnut production, the program will upscale the mechanisation process through a three-pronged strategy implemented with the adoption of flat planting as opposed to ridging.

a) Sine hoe package: The package comprises of a sine-hoe, super eco-seeder and groundnut lifter. The hoe is widely used for land preparation (minimum tillage) and weeding whilst planting is done with the super eco-seeder, which is equipped with interchangeable seeding plates for different crops. The equipment is animal drawn (oxen, horses, and donkeys), and will be promoted and consolidated as main tillage equipment under the GATP. The output of the integrated crop and livestock production system as highlighted in the box above is key testimony.

b) 2WD tractor: Tractorization in the upland will be limited to the relatively light two-wheel drive (2WD) tractors (not more than 50hp) with appropriate attachments such as harrows, multipurpose seed drills and inter-cultivation equipment for minimum tillage, seeding and weeding operations. Target proprietors include medium to large-scale farmers, individual service providers, youth groups and VDCs. Access to machinery (machines and equipment) will be through appropriate financing mechanisms. With a diminishing planting window as a result of climate change and labour scarcity due to an aging rural farmer population, demand for appropriate mechanisation services by small farmers is inevitable if the desired transformation is to be realized.

c) Integrated use: The third strategy is a combination of the use of tractors and sine hoes. The tractor will be used for the provision of land preparation (tillage) activity whilst the draught animals will used for planting and weeding using the super eco-seeder and sine hoe respectively.

With regards to vegetable production sites, use of 2 WD tractors and power tillers equipped with rotavators will be promoted. More emphasis will be place on power tillers due to their adaptability for use by women, the main actors in the horticultural industry.

9.4.2 Lowlands-Land preparation, Seeding, and Weeding

This typology has the highest potential to uplift the status of the vulnerable groups (youth and women) through the employment of an upscaled mechanize land preparation (tractorisation) service. GATP in pursuance of the commercialization agenda will promote mechanised land preparation within the lowlands. The process, amongst others, will:

- Reduce drudgery associated with land preparation, thus free women for other productive economic activities and entice youth to venture into rice production and/or related activities;
- Mitigate labour bottlenecks arising as a result of the short planting window (climate change effects);
- Facilitate expansion of cropped area;
- Facilitate production intensification especially the irrigated area; and,
- Create avenue for the development of non-farm activities with direct bearing on the machine and equipment sustenance.

Machinery and equipment for the land preparation operations will comprise of -

- 4WD tractors (at least 60hp) with appropriate attachments such as disc ploughs for primary tillage, disc harrows for secondary tillage (breaking of clods and pulverising of soil), rotary cultivators for seedbed preparation and mud rollers to consolidate the soil providing the rice plant a base for a firm root-hold/grip; and
- Power tillers for puddling and seedbed preparation.

Manual weeding is the most effective and could be complemented by a push weeder (widely used in Asia) that can easily be fabricated locally.

9.4.3 Mechanization for Harvesting and Threshing

In the Gambia, harvesting is among the least mechanized production activity of the target commodity value-chain crops except for groundnuts. However, there exist potential to mechanise harvesting of cereals. This will in-turn stimulate upscaling of mechanical threshing thus reducing the workload on women who are normally responsible for threshing.

i. Groundnuts: Both manual and mechanised (using draught animals) methods are adopted in harvesting groundnut. Work rates depends on soils and soil moisture content as well as the species of draught animals used and their condition. As noted during the consultation, a work rate of 0.5ha/day could be realised with a horse, the fastest of the draught animal in the country, under favourable soil moisture condition – friable soil condition. Under the GATP expansion and consolidation of the widely used animal drawn groundnut, lifter will be the first point of entry. Furthermore, a tractor drawn groundnut digger, shaker cum windrower (4-5ha/day)[95] is an ideal substitute for draught animals. Threshing will be better handled by a dry pod thresher (output capacity of 200kg/hr at a feed rate of 500kg/hr)[96] operated by 10hp diesel engine/electric motor.

ii. Coarse grains[97]: The harvesting and threshing of these crops is still labour intensive with women being the main actors for the threshing process. In view of the fragmented nature of the land holding, use of diesel engine (up to 8hp) operated multi-crop mini harvesters (suitable for maize and millet) with reaping widths of 1-1.2m and productivity of 1 to 3ha per day will be promoted. Furthermore, appropriate multi-crop (rice, millet, and maize) threshers will be identified to upscale existing mechanised threshing. Acquisition of equipment to farmer entrepreneurs, individual youth entrepreneurs, youth groups and VDCs will be through appropriate financing mechanism. Thus, create an avenue for employment creation and youth involvement in agriculture.

iii. Rice: Manual harvesting is a tedious and slow operation. The process that involves hand picking with a knife (panicle harvesting) and sickling is a major disincentive to youth participation in rice production. Thus, hindering intensification and subsequent commercialisation, especially within the irrigated areas. For the desired commercialisation to be realized, demand for mechanised harvesting and threshing will emerge to cater for the corresponding expansion and intensification of rice production. Cognisant of the current small land holdings, appropriate machinery to be promoted and adopted includes mini-harvesters and rice reapers with binding facilities. This lightweight 7hp machinery (picture right) with productivity of 0.5ha to 1.5ha per day are suitable for small land holdings and operable by women. Potential clients for this machines/equipment include entrepreneurs (farmers, youth and individuals), youth groups and VDCs through appropriate financing mechanisms. With regards to threshing, the 1 to 1.5mt/ha ASI thresher[98] multi-purpose thresher identified for the coarse grains will be promoted for adoption; thereby reduce losses due to shattering and other effects of delayed harvesting.

9.4.4 Improving Post-Harvest Technology Promotion

Post-harvest processing operations are extremely labour-intensive and tedious to perform[99]. In the Gambia, postharvest technology was mainly characterized by traditional practices that involve use of mortar and pestle, a process highly prone to post-harvest losses. Thus, women, the main actors, were time constrained for the pursuit of off-farm income generation. This tedious operation was a catalyst to the shift in consumer preference from coarse grain based-diets to rice-based diets. With the key production constraints mechanised, employment of improved technologies (mechanisation) to cope with the anticipated increased production will, therefore: -

[95] Mechanization Tools Groundnut cultivation, Department of Agricultural Engineering, RARS, Tirupati
[96] Same as above
[97] Maize, millet and sorghum
[98] Developed jointly by Africa Rice, International Rice Research Institute, Senegalese Institute of Agricultural Research, Senegal River Delta Development and Exploitation Company, adapted Vietnamese extension to MVT model
[99] Pingali, P. Bigot, Y and Binswanger, H.P. Agricultural Mechanisation and the Evolution of Farming Systems in Sub-Saharan Africa, A World Bank Publication (The John Hopkins University Press, Baltimore and London), 1987

- Mitigate labour constraint and reduce post-harvest losses;
- Improve quality and marketability of products;
- Promote value-addition into ready-to-use products and encourage a reversal to the consumption of local produce (cereal based diets);
- Increased income from farming and associated activities; and
- Create a platform for employment, especially for youth.

9.4.4.1 Rice

The lines of action for improving the post-harvest phase of the rice value-chain will be two-pronged. The actions will complement the realisation of the Government's rice development plans in-line with the NRDS, NDP and CIPRiSSA-Gambia investment plan.

Figure 28: Mini rice harvesting machine

- Upgrade and upscale rice processing within the irrigated rice production hub of the country by introducing an integrated rice parboiling and milling machine through a Public-Private-Partnership.
  This would, in-addition to replacing the defunct Kuntaur Rice mill, improve quality of the locally grown rice and generate employment opportunities. Furthermore, the existence of a ready market for quality paddy will increase demand for and adoption of mechanisation services along the production phase of the value chain.

- Upscale the geographical distribution of existing small-scale rice milling machines to reduce drudgery experienced in processing for home consumption and the local market. These machines, equipped with facilities of de-husking and polishing, could be acquired by individual villagers (entrepreneurs) and or the VDCs through appropriate financing institutions.

9.4.4.2 Coarse grains

Post-harvest processing of coarse grains (maize and millet) is highly mechanised though the use of mortar and pestle by women is still practiced. The machines in use for these two-stage processes are (i) abrasive/plate mill for removal of the glumes (non-edible cellulosic tissues) and (ii) hammer mill for grinding into grit and/or flour. Since the labour input for milling is independent of the intensity of farming, mills are rarely owned by individual households. The service is provided by private entrepreneurs or village cooperatives on a charge-per-unit basis. With the process already mechanised, the line of action will include linking of primary processors to entrepreneurs involved in

Figure 29: Briquette and crude oil process in 2010 at GGC

secondary processing (conversion to ready-to-use products), packaging and labelling, and provision of trainings for youths on the operation and maintenance.

9.4.4.3 Groundnuts

Post harvest handling of groundnuts, a major cash crop, is at two levels, namely for export and local market and the machinery requirement varies accordingly. The current state of affairs and proposal for improvement is detailed below.

- Export market - The state-owned National Food Security Processing and Marketing Corporation, formerly Gambia Groundnut Corporation (GGC), is the main conduit for the export market. The corporation has a set of industrial assets comprising ten depots (temporary storage facilities) including Denton Bridge, two shelling plants, two crushing plants, a solvent extraction plant and a groundnut cake detoxification plant. As informed during the consultation, the facilities are being upgraded. Key ongoing and plan program of activities include: (i) crop financing with a view to improve quality through the use aflasave to minimise aflatoxin levels to acceptable standards for the European market; (ii) updating the production line – from shelling to oil extraction; (iii) establishment of a co-generation and briquetting plants for the by-products. The cooperation requires policy and legislative support to reduce overhead cost and penetrate the local and international markets.
- Domestic market – At local level, the process of decortication (including separation of shell from nuts) and sorting (including the separation of bad nuts from the good ones) are the main activities yet to be mechanised. The process of roasting and grinding to groundnut paste is mechanised (see insert below). The important missing link is proper packaging and labelling the improvement on which could be a catalyst for improved product quality. Appropriate intervention will be to expedite the process of decortication and separation of the nuts from the shell. Proposed labour and time saving device will be to adopt a power (2hp single-phase electric motor) operated groundnut decorticator (insert right). This machine, with a capacity of 250 to 300kg/h, separates kernels from shells and other foreign materials. It is a potential venture for entrepreneurs (individuals, youth groups and VDCs).

Figure 30: Power Operated Groundnut Decorticator

9.4.4.4 Horticulture

Currently, horticultural producers market their produce in unprocessed form though an informal marketing system characterised by middlemen who determines producer price to their advantage. Due to the perishable nature of produce and seasonality of production, harvesting periods are depicted by glut in the market, low prices, and high post-harvest losses. This is normally followed by commodity scarcity/unavailability ameliorated by imports at high price to the consumers. To mitigate these economic losses, introduction, and adoption of appropriate processing and value addition technologies in the horticultural industry is a necessity. A two-tier agro-processing strategy is plausible for commercialising the horticultural sector. These, as described below, are small-scale processing at farmer level and cooperative/private sector processing plants.

Figure 31: Groundnut processing at the Brikama Market, West Coast Region, The Gambia regions

9.4.5 Promoting Farmer level Small-scale Processing

At farmer level processing into dried/dehydrated products, sauces, pickles, and jams are proposed. To ensure product safety and quality small-scale processors need to be trained and exposed to Good Processing Practices (GPP).

- Drying/dehydration: To upgrade the long duration (2 to 3 days) traditional method of sun drying (spreading on mats, trays) through the introduction of solar dryers that reduces the drying time to about eight to 10 hours. This reduces susceptibility to microbial proliferation due to prolonged drying especially mould growth in the product during storage.
- Processing into sauces, pickles and jams: Sauces, pickles and jams processing are economically and technically viable microenterprises especially among rural women and therefore should be promoted. These microenterprises will be established through the provision of simple manually operated equipment such as bottling devices, stainless steel pans/vessels, chopping/cutting, mixing/blending, heating, and packaging utensils. Small-scale manufacturing of horticultural products will be promoted through training in appropriate processing techniques and facilitating access to capital, through appropriate financing mechanism, to acquire the technologies.
- Processing plant: in line with the NDP and second generation GNAIP II-FNS, processing of horticultural produce will be promoted through market linkage between producers and established processors, such as GACH Global, GHE amongst others. These processors will be supported to acquire additional processing machines will be appropriately supported. Target machinery and equipment include components required for cleaning, washing, blanching, freezing, colour sorting, snipping and cutting, weighing and packaging.

9.4.6 EXPANDING IRRIGATION FACILITIES AND EQUIPMENT

To mitigate impact of climatic variability on agricultural production as mentioned earlier in this report, development of irrigation and associated facilities is an essential pillar of the country's development agenda. Public and private (including the small-scale farmers) sector intervention in irrigated agriculture have mainly been geared towards rice in the lowlands and horticultural crops in the uplands and upper fringes of the lowlands. Rice irrigation was highly mechanised from the onset-using diesel engine driven low lift centrifugal pumps to draw water from the river Gambia or its tributaries and harnessed to the field through a network of elevated canals. Of recent (since the late 1980s), irrigation through tidal gate for land between the peak and ebb tides was introduced as a measure of reducing the operational cost of irrigation. For horticulture, irrigation water is mainly sourced from groundwater - shallow hand dug wells (traditional seasonal gardens within the upper fringes of the lowlands) as well as concrete lined wells and boreholes. The mode of irrigation varies from the use of simple watering buckets/cans to advanced drip technology.

With regards to livestock, especially small ruminants, and poultry, the village water supply facilities are the main source of watering.

Pumps: For farm pumps, the absence of operational problems and relatively low initial cost are usually considered to be more critical than mechanical efficiency. In this regard, centrifugal pumps due to their suitability for water with sand and grit are the preferred choice in the Gambia; hence, low-lift centrifugal pumps are adapted for lifting water from the river and tributaries whilst submersible centrifugal pumps are the ideal choice for boreholes. The pumps can be powered by electric motors or diesel engines. However, the submersible borehole pumps are solely powered by electric motors with solar modules becoming the most popular source of energy.

Surface water irrigation facilities: Water source for surface water irrigation is predominantly from the Gambia river and its tributaries. Dry season irrigation is feasible within the year round fresh water zone, that is, from the middle belt of CRR to URR. However, with the inflow being a function of the rainfall within the catchment area, there exist the risk of irrigation shifting the upstream limit of the saline front, thus impacting negatively on the production system, environment, and biodiversity along the river. In this regard, dry season abstraction will be regulated and appropriately apportioned pending the realization of the OMVG Sambangalo Dam in the upper reaches of the river (in Senegal). Below are the briefs of the surface water irrigation facilities in operation and deemed appropriate for consolidation within GATP.

- Tidal irrigation: This system has limited impact on the environment and facilities provided for operationalisation are the inlet/outlet structures and other gated water control structures along with flatbed canal network.
- Low-lift pump irrigation currently in use in rice production has the potential for supporting the production of maize and other high value horticultural crop as demonstrated by the erstwhile Rice Development Project at the Sankulay Kunda rice field in the early 1990s and by the Taiwanese Agriculture Technical Mission (1996 to 2013) at the Sapu Research field. A recent intervention is an 80ha Banana plantation at Korup, Fuladu, CRR/S by a private investment company, Swami India; plans are afoot to expand the site by an extra 20ha and development of an extra 200ha from a nearby village, Boraba, Fuladu, CRR/S. Drip irrigation system is the adopted mode of irrigation. This is an investment model that GATP recommends for promotion and upscaling.
- Groundwater irrigation facilities: Endowed with two main groundwater sources, namely Shallow Sand Aquifer (10 m to 90 m below ground level (bgl)) and the Deep Sandstone Aquifer (at more than 200 m bgl), the Gambia has a substantial quantity of water available for storage and productive use including abstraction (currently at about 20%) for crop production. Recharge, especially from rainfall, constitutes the largest input as indicated in the water balance table[100]. It is further indicated that water abstraction from the semi-confined aquifer (40-90mbgl) shallow sand aquifer constitute the largest outflow next to the Atlantic Ocean and River Gambia. The western parts of River Gambia which closer to the Atlantic Ocean are prone to the risk of saline intrusion, unlike the eastern part which is suitable for irrigation. Furthermore, with satisfactory solar radiance, 3.2 WTh/year energy potential with concentrated solar panel (CSP) and 4.74 WTh/year energy potential with solar photo-voltaic (PV)[101], there exist high potential for use of solar energy to facilitate ground water abstraction for crop production and livestock watering.

A recent intervention is an 80ha Banana plantation at Korup, Fuladu, CRR/S by a private investment company, Swami India; plans are afoot to expand the site by an extra 20ha and development of an extra 200ha from a nearby village, Boraba, Fuladu, CRR/S. Drip irrigation system is the adopted mode of irrigation. This is an investment model that GATP recommends for promotion and upscaling.

[100] Adapted from NIRAS, (December 2014). National Water Sector Reform Studies for The Gambia, Groundwater Modelling for Greater Banjul Area – Model Setup, Calibration and Results

[101] Figures derived from GOTG, 2017. Final Draft Agricultural and Natural Resource Policy (2017 – 2026).

With hindsight on labour constraint, problems associated with affordability, accessibility, and reliability of electricity supply and sustenance issues with diesel operated generator, solar powered irrigation systems (SPIS) are the preferred options. This will mitigate drudgery in water lifting and effectively contribute towards transforming the sector. Furthermore, drip system will be the preferred option followed by the field reservoir and/or a stand pipes with tap heads and hose pipes.

Facilities and equipment desired for an effective delivery of a reliable and sustainable SPIS to support the crop production especially horticultural crops include -

- Farm house comprising of sheds, stores, and sanitary facilities;
- Water source – borehole from which ground water is tapped;
- Solar power generating set - solar panels, control unit, and power inverter
- Pumping facilities – pump with motor and conduit pipes;
- Auto shot-off overhead reservoir that serves as buffer stock and pressure generation
- Accessories such as filters, pressure gauges, and regulators, chemigation tanks;
- Distribution/Delivery System - driplines and drippers/emitters with necessary connectors; and
- A secured fence to deter animal intrusion.

With regards to livestock, watering points will be established with drinking troughs connected to an overhead reservoir equipped with solar powered water lifting facilities. The troughs and overhead tank will be provided with appropriate auto shot-off facilities.

9.4.7 STRATEGIES FOR FEED PRODUCTION

A livestock feed mill is a two-part machine that combines grinding and mixing functions to prepare animal feed. The specificity of the feed depends on the composition of grains and other ingredients as per requirement. Livestock feed was referred to as a key constraint hindering the production, productivity, and profitability of the industry during the consultation period. Local feed mills do exist but are underutilised due to quality issues and/or lack of raw materials, particularly maize. Consequently, Senegal is the main source of processed feed for the Gambian livestock industry, particularly poultry farmers. With a current demand of about 380 metric tons per month[102], the national demand could easily be met by operationalising the deficient 40mt/day (5mt/hr) feed mill at Kamalo within the Kanifing Municipality.

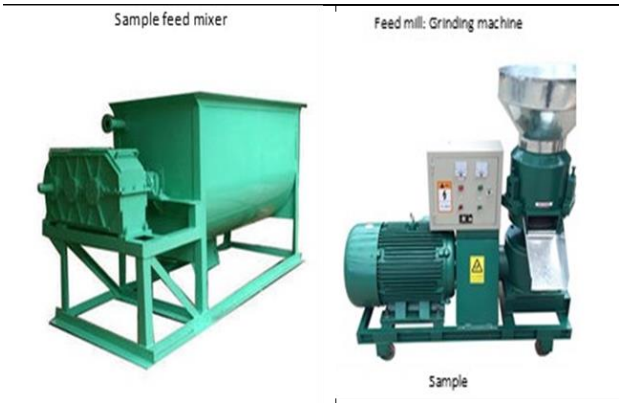


Figure 32: Sample poultry feedmill

To mitigate the feed issue, the country will enact legislation and regulation geared towards facilitating availability of appropriate raw materials for subsequent production of affordable quality feed. This would be complemented by building the capacity of stakeholders in the feed production industry. Current efforts include the ongoing establishment of two feed mills for poultry farmers associations in LRR and CRR/N by the FAO-Gambia Furthermore, in support of the implementation of the GNAIP II – FNS programs, the six DLS Regional Directorates will serve as training and technology dissemination centres equipped with small feed mills, not more than 500kg/hr capacity. This was corroborated by several KII informants.

[102] Stakeholder consultation at the Department of livestock services

9.5 STRATEGIC DIRECTIONS FOR MAXIMUM YOUTH PARTICIPATION IN AGRICULTURE (YOUTH AND GENDER)

This section presents specific and strategic recommendations for youth participation in agriculture in the country, based on the findings of the study as articulated above. For ease of reference and comprehension, the recommendations are presented in discrete albeit inter related headings below.

Youth Engagement Strategies

- Support and Strengthen Youth Empowerment, Training, and Incubation Centers;
- Develop youth-specific financing mechanisms;
- Strengthen existing entrepreneurship education in TVET and university programmes;
- Transform the mix farming centres into model youth and women production centres;
- Revisit and address existing land tenure system challenges;
- Continue to strengthen the policy and regulatory environment;
- Youth Engagement through Peer Review; and
- Youth Engagement through Schools Young Farmers Club.

9.5.1 Support and Strengthen Youth Empowerment, Training, and Incubation Centers

The various existing programmes, such as Empretec, NEDI, PIA, and NYSS are focussing on sensitization and basic fundamentals of entrepreneurship. The success of the programmes in terms of business creation is relatively modest. The support provided is not sufficient to assist businesses or ventures to upscale and become small or medium-sized enterprises, even less to venture into exports particularly to high value markets. The agriculture sector should strive to develop a sector specific entrepreneurship and mentoring programme in collaboration with the relevant stakeholders and development partners to ensure maximum impact, relevance and coverage. Efforts should be made to strengthen the programme and institutional capacities of the existing programmes with support form NAQAA to facilitate the standardisation of their training content as well as quality and relevance to industry demands and requirements.

In a similar but different direction, the government should strengthen the Gambia Songhai Initiative (GSI) at Chamen (NBR) by providing needed resources for equipment, machenery and after training support to enable the graduates to establish viable and profitable own agri-businesses. The government should also provide budgetary allocations to the centre to strengthen its prospects for sustainability. Efforts should also be made to establish effective linkages with industry to facilitate employment and marketing opportunities for their graduates and produce. To ensure adequate coverage and impact, the initiative should be replicated with appropriate adaptations at Kundam and elsewhere with a view to providing employment and income generation opportunities to rural youths.

The government should work with the Ministry of Trade, Regional Integration and Employment (MOTRIE) to implement the action plan carved out for the strategic youth and trade roadmap (2018 – 2022). Being the largest employer of youth, agriculture offers untapped growth potential in agroprocessing. By moving from subsistence agriculture to a more formally structured agricultural production and commercialization with transformation capacities, youth will have a greater chance to engage in the local agricultural value chains.

The development of more inclusive tourism products coupled with the transition to higher-value services and improvement of digital skills can help the country to develop new ICT-enabled services in different sectors to benefit from digital innovations, according to the strategic youth and trade road map.

9.5.2 Develop Youth-Specific Financing Mechanisms

Farmers need access to credit to purchase inputs such as seed and fertilizer, as well as to finance harvesting, processing and transporting operations. In developing countries, the most common form of collateral used for financing are immovable assets, such as land and real estate, while land tenure for many farmers is uncertain or insecure. However,

some farmers may be able to rely on movable assets such as agriculture products, livestock and agricultural machinery[103].

The financial sector must improve its capacity to serve the nascent and weak existing young entrepreneurs throughout the country. The FGDs and KIIs indicate that youth and women have inadequate access to farm inputs, land, appropriate technologies, and credit. In the majority of cases, the youth and women do not have the required collateral to secure these resources. Furthermore, the existing matching grants are reported to be accompanied by stiff conditions that these two groups are often unable to meet, thereby precluding them from accessing the available matching grants. Microfinance holds the potential to reach the youth that conventional banks cannot, and efforts should be made to strengthen the youth specific micro-finance mechanisms to enable them to adequately access and benefit from the facilities. Furthermore, the government should create and strengthen linkages with the regional, international and multilateral youth initiatives with the view to secure additional technical and financial resources for these initiatives. In this regard, an over-arching micro finance institutional framework as detailed in the micro finance chapter above should be accorded due attention.

9.5.3 Strengthen Existing Entrepreneurship Education in TVET and University Programmes

The impact of trained and skilled entrepreneurs and agripreneurs in the agricultural sector cannot be over-emphasised. The challenges and constraints faced by the existing TVET and higher learning institutions have been also succinctly articulated in previous chapters. Therefore, to ensure the attainment of adequate and appropriately trained youths in the sector, measures should be taken to strengthen the existing entrepreneurship education in TVET and higher learning institutions (Gambia College and UTG). The entrepreneurship training education programmes should be conducted on structured and standard curricular that is approved and certified by NAQAA. The training infrastructure including labs, practical facilities, and equipment should be provided to ensure that students acquire relevant and appropriate industry required skills and competencies. There should be provision for adequate financial and programme support to improve the quality of the trainings and the competencies of the graduates.

9.5.4 Transform the Mix Farming Centres into Model Youth and Women Production Centres

The twenty five existing mix farming centers at district level should be upgraded and be transformed into model youth production and capacity building centres on strictly business lines fashioned along the Songhai initiative. These centres should be used by identified youth and women form the neighbouring communities as both a capacity building and production base on cost sharing basis. The centres once properly fenced and equipped with water and possibly electricity should be opened to a selected number of youths to be engaged in appropriate agricultural commodity value chains. The available extension staff should provide regular and relevant extension support and mentoring to the participants and efforts should also be made to link them to markets outlets for their products. Subsequently, reasonable and meaningful cost sharing mechanisms could be developed to enable the centres to be fully self-financing and sustainable. Over time, the participants could be linked to micro finance institutions to upscale and possibly establish own agro-businesses outside of the centres thereby creating opportunities for fresh youth intakes.

This approach would help create a core of youth agripreneurs at community level, who will be well trained in their respective enterprises and effectively linked with industry and sources of finance. The gradual rolling out of the initiative to all the centres across the country will also allow for adequate preparation of the facilities, staff and needed equipment prior to commencement of the actual activities on site. Furthermore, given the shift from solely government funded and operated to famer-focused, business oriented and cost sharing approach, it will attract the attention and support of the development partners including the regional and multilateral institutions. Finally, the sustainability of the transformed 25 district Songhai centres (mix farming centres) will have been assured with minimal government financing, contrary to what obtains currently.

[103] World Bank. 2019. Enabling the Business of Agriculture 2019. Washington, DC: World Bank

9.5.5 Revisit and Address Existing Land Tenure System Challenges

The limitations imposed by the existing traditional land tenure system on the agricultural sector have been well articulated. Therefore, efforts should be made to encourage the Ministry of Lands and Regional Government to conduct a comprehensive cadastral mapping of the country to be able to determine land use patterns of specific geographic areas as well as develop an over-arching land policy that will address the contemporary agricultural, domestic and industrial demands and challenges of the country. The proliferation of new estates encroaching on fertile agricultural land is equally a challenge. This is further aggravated by the lack of regulation in this regard, the body that registers these estate agencies is not the one that regulates them, and there are inadequate coordination mechanisms between the two institutions. Deliberate efforts should thus be made to ensure a comprehensive mapping of all land resources in the country, which could also be a precursor to identifying all agricultural land resources for effective land banking for future uses. To this end, agriculture should urgently collaborate with the Ministry of Lands to identify and map all its land resources to avoid further encroachment and lost.

As a complementary and alternative approach to the land tenure challenges, the sector should adopt and promote the approach of contract farming, land leasing and identifying strategic agricultural lands and work with the Ministry to appropriate them for future agricultural use. The combined adoption of these (medium and long-term) strategies could offer reasonable impetus for private sector involvement and investment in commercial agriculture in the country. Their effective application will, however, require strengthening the policy environment to assure security of tenure and investment over time.

9.5.6 Continue to Strengthen the Policy and Regulatory Environment

The policy and regulatory environment for agri-businesses and agriculture commodity value chains presents some remaining challenges requiring careful attention to promote private sector participation and youth involvement. The establishment of the regulatory institutions (NAQAA, FSQA, and NSS) are welcome moves in the right direction. However, they still require strategic programme and institutional support to enhance their impact and coverage. They all require additional financial resources as well as competent and qualified technical staff to be able to effectively discharge their mandates. Furthermore, the absence of a standard and accredited laboratory facility continues to hinder FSQA's work and renders their services costly as samples have had to be taken to neighbouring Senegal for testing. The government should engage the private sector with the aim of establishing a standard and independent laboratory facility that will offer the needed testing services in country. Finally, NSS should be provided with the needed programme and institutional support as contained in their seed Plan (January 2018), to enable the sector to realise its full potential. Seed business is a viable and lucrative sector and its potential must be fully harnessed. It could offer significant opportunities for youth employment, income generation, and foreign exchange preservation.

9.5.7 Youth Engagement through Peer Review

The case studies of Ndarameh Joka and Medina Sancha as highlighted in the study indicate that agriculture is very lucrative business. The initiative in both villages must not be allowed to die and should be nurtured for continuity. The project will, therefore, support re-integration idle youth in the urban areas to their families in the countryside. This would involve identification of villages with success stories, selection of affected families and couching of family heads to encourage the youth migrant to return. The project will support upgrading of the selected household to a higher level with active involvement of the returnee in the management of its resources. If successful, this this will be a gateway for other youth in similar conditions to follow. In this regard, the project will target at 2 villages as models of this initiative by providing the households with appropriate agribusiness tools that will enable such upscaling.

9.5.8 Youth Engagement through Schools Young Farmers Club

This model aims to encourage and entice youth in agriculture starting from the senior secondary schools by exposing and involving them in agribusiness activities combined with some small savings schemes. The activities would include:

- Development of school farms from the level of grades 10 to 12,
- Study tours to success agribusiness sites e.g. SGI, and

- Provision of capital at the end of the school for the best students that your demonstrated interest and in agriculture.

9.6 VALUE CHAIN FINANCING STRATEGY

Value Chain Financing

- Improving the Operating environment for Agricultural Financing;
- Agriculture Financing Risk Mitigation;
- Promote All-inclusive agriculture financing system;
- Coordination and Information Sharing for Improved MFI operating environment;
- Consolidation and Upscaling of the VISACAs;
- Expand the Scope of the of Matching Grant Funds into Micro-finance system;
- Self-Employment Assistance Programme (SAP); and
- Product Marketing through the use of ICT.

9.6.1 Improving the Operating Environment for Agricultural Financing

This is aimed creating an enabling environment for increased and effective agricultural financing as a means of encouraging actors involved in agriculture value chain financing to participate more effectively. In this regard GATP will support:

- Review of the present policies and regulations of the CBG and other related sectors and revise them to favor agricultural financing. In the meantime, and as a short-term measure, advocate for increased funding from commercial banks by setting a minimum ceiling for their agricultural loan portfolio. The policy proper should weigh between adequacy and long-term sustainability of this loan portfolio ceiling against establishment of an agricultural development bank. The revised policy should be subject to period reviews after every three years to ensure that it is not unduly overtaken by events. The overall cost for the initial review and subsequent intermittent reviews is estimated at a lump sum of USD 300,000.
- Local Training of 20 focal persons for policy implementation at the level of the Central bank and all other relevant institutions including Agribusiness, NAA. Bankers Association, Key Micro-finance institutions namely NACCUG, SDF, and VPC. The estimated budget for this activity is USD 20,000.
- Regional and sub-regional study tours for the policy-implementing agents to places where success stories could be experienced. In this regard, 10 study tours comprising of 10 people will be conducted. Budget estimate for the study tours is a lump sum of USD 50,000.00.

9.6.2 Agriculture Financing Risk Mitigation

This is aimed at minimizing the exposure of beneficiary and client in the provision of agricultural credit as a way of encouraging effective lending system within agriculture. To do so the program will provide support for:

- Establishment of a Credit Reference Bureaus (CRB) to ensure that granting of multiple loans from different sources and clients are minimized if not avoided completely. This will enable lending institutions to be able to get a profile of borrowers from the Bureau to determine their eligibility or otherwise. The program will support establishment, operation, and maintenance of the Bureau for at least a period of 3 years after which CBG could take over. The budget for the establishment, operation, and maintenance for the three year period is estimated at a lump sum of USD 100,000.00.
- Establishment of at least 5 Agricultural insurance schemes, one in each administrative region in partnership with private insurance agents. In this case, the program will provide seed money for these schemes, whilst the Partner private sector insurance will be entrusted with the management. In addition to the seed money, the program will also provide training for 5 operatives of the insurance schemes. The budget for the schemes as a whole including the seed money is USD 2 Million.

9.6.3 Promote All-inclusive Agriculture Financing System

This component seeks to make agricultural credit more accessible to all value chain actors irrespective of where they are located geographically or positioned in the value chain. Therefore in this model, the use ICT for internet banking as well as mobile phones, combined with the CFF (Central Finance Facility) approach would be promoted to facilitate access to credit more cheaply and timely at the level of the grassroots. At the level of large-scale value chain actors, establishment of appropriate commercial lending system would be supported to service the credit needs at that level. The GATP, therefore, will support:

- Establishment of CFF amongst the micro-finance agents i.e. NACCUG, VPC, and SDF, by providing funds for the initial setting up of the facility as well as meet the operational cost for the first three years of the program. This will promote greater access to MFI loans by people living in remote parts of the country. Budget including running cost for three years is USD 7.5 Million;
- Establishment of an Agricultural Development Bank that will attract funding by share contribution from potential shareholders such as government, micro-finance institutions as well as individuals and firms. In addition to these, the project will support professional training for the staff of the bank. In this connection, 10 staff will undergo long-term training lasting for three years in key areas of banking. The total contribution of the program towards the cost of establishing the bank, which will include provision of office space, furniture, and equipment, training, is estimated at USD 2.5 Million. This includes cost of constructing a new building for the bank; and
- Provision of a wide range of network system that will connect clients to all the services required by them including loan applications, repayments, deposit, etc. without having to travel to physically meet them. The use of ICT including internet banking will significantly reduce the cost of operating the agricultural lending system.

9.6.4 Coordination and Information Sharing for Improved MFI Operating Environment

Coordination of interventions of financial services providers through information sharing will bring about synergies and efficiency in the overall financial sector. Through this, actors are able to lobby and influence policy decisions especially at MFI level which is very critical. The program will, therefore, support revival of the defunct micro-finance network by providing an office space, office furniture and equipment, and the operation and maintenance cost of the office for the first 3years of the program. In the same vein, it will also support to strengthen the bankers' association by improving the office through provision of necessary furniture and equipment. The total budget for this component is a lump sum of USD 350,000.00.

9.6.5 Consolidation and Upscaling of the VISACAs

The model aims at to improve the existing condition of the available micro-finance infrastructure and at the same time upscale them to the required standard that will enable them link with internet banking system. The program will therefore support:

- Rehabilitation, renovation, equipment, and furnishing of 80 VISACAs and, 5 Cooperative Credit Unions and installation of necessary office furniture, equipment and software at 80 VISACAs, 1 VPC, 5 cooperative credit union offices, and 5 SDF regional officers. It will also install internet banking facilities at each of the sites linked to the overall banking system. The budget for this is a lump sum of USD 1.5 million; and
- Training of 100 staff on the operation and maintenance of these centers estimated at lump sum of USD 200,000.00.

9.6.6 Expand the Scope of the of Matching Grant Funds into Micro-Finance System

Under this component, MFIs will be involved in the management of matching grant window at the grassroots level through their own structures, mainly SDF, Credit Unions, and VISACAs as a way of complementing the project approach. This will improve access by beneficiaries as well as support long-term sustainability of the MFIs. Given the specialization of these institutions in lending and the expertise available to them, the chances of high success rate are bright. Either way, the need to simplify the procedures to make the funds more accessible by beneficiary is one

key area that should be addressed in this program. This could be done by designing simple forms that could be filled by project staff or managers at the respective MFI offices at no cost to the beneficiaries.

To ensure that loans are disbursed and applied according to the stipulated conditions and guidelines the program will facilitate the movement of Agribusiness staff through provision of serviceable vehicles in addition to project M&E.

The estimated budgetary allocation for the matching grant window for this program is estimated at USD6 Million to be distributed between the implementing project, NACCUG, VISACAs, and SDF.

9.6.7 Self-Employment Assistance Programme (SAP)

This component will provide low interest non-collateral capital assistance to individuals and groups who will be engaged in income generating ventures ranging from crop production, value addition activities and cottage industries. It is assumed that this component will generate significant levels of employment and will attract a significant number of youths to participate in food production and in the value addition activities. It is recommended that Self-Employment Assistance Program, grants non-interest and non-collateral capital assistance to individuals and groups (especially the unemployed youth) who would then engage in income generating ventures ranging from crop and livestock production to service provision for increased production and value addition. When the project becomes economically productive, the capital assistance will be returned through regular bank deposits that can be rolled on to another eligible client.

The SEAP will hinge upon and revolve around the organization of beneficiary associations, which will set up, operate, manage and control various aspects of commodity production, including storage, processing, and marketing.

9.6.8 Product Marketing through the use of ICT

The aim of this model is to promote awareness of product availability, price, quantity and source and all other related market information to facilitate the sale of the commodities. In this model, the program will support development and establishment of regional marketing centers that will provide details information on the market situation in the region. This will be linked to potential clients who may want to know the market condition at a fee. Sales made through this system will also attract commission payable to the center which together with the later will be the main source of revenue for the marketing center. Key activities under this model are;

- Procurement and installation of ICT systems at 5 regions.
- Training of 5 operators of the ICT System

10. GAMBIA AGRICULTURE TRANSFORMATION INVESTMENT BUDGET

Table 49: GATP Budget Estimates - Period 2021 To 2030

Main Activity/Enterprise	Total (US$)	Proportion of base cost
Total Machinery and Equipment Budget	142,212,000	44.1%
Support Access to Farm Machinery and Equipment though appropriate financing mechanisms	114,192,000	35.4%
Institutional Support Services	28,020,000	8.7%
Total Livestock Budget	37,714,913	11.7%
Establishment of Small scale broiler and layer production schemes	28,934,750	9.0%
Support for national vaccination campaign	743,100	0.2%
Improved management & enhanced acess to shared resources	617,063	0.2%
Capacity Development	3,620,000	1.1%
Private Sector Support	3,800,000	1.2%
Total Crop Budget	62,211,400	19.3%
Sub-total Value Chain Development Support	21,401,400	6.6%
Sub-total: Institutional support Service	40,810,000	12.7%
Total Finance and Agribusiness budget	46,020,000	14.3%
Sub-total Finance models	21,020,000	6.5%
Sub-total Agri-business models	25,000,000	7.8%
Total Youth Budget	17,666,000	5.5%
Total Coord, M&E and Enviroment & Social Safeguard Audit Budget	16,504,000	5.1%
Total GATP Base Cost Estimates	322,328,313	100.0%

Table 50: Machinery Required - Period 2021 To 2030

Main Activity	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Support Access to Farm Machinery and Equipment through appropriate financing mechanisms												
Regional Centres for sale and distribution of animal drawn equipment: Carts and Sets of Sinehoe Package - 100 sets/Centre	Centres	1	3	3								7
2WD Tractors (50hp)	No			36	60	60	60	60	24			300
4WD Tractor (60-85hp)	No		30	30	30	30	30	30				180
Power Tiller with attachment	No		60	60	60	60	60	60	60			420
Disc plough suitable for 4WD tractor	No		20	20	20	20	20	20	0	0		120
Disc Harrows	No		20	44	60	60	60	60	16	0	0	320
Rototary Cultivator	No		20	44	60	60	60	60	16	0	0	320
Multi-purpose seed drill (Seed cum fertiliser drill/zero tillage planters)	No			24	40	40	40	40	16	-	-	200
Cultivator/ weeder	No			24	40	40	40	40	16	-	-	200
Push weeders	LS		0.2	0.5	0.3							1
Groundnut digger	No		0	36	60	60	60	60	24	0	0	300
Multi-crop cereal harvesters	No			60	60	60	60	60				300
Dry pod Groundnut thresher	No		-	36	60	60	60	60	24	-	-	300
Multi purpose threshers (for cereals)	No		-	36	60	72	48	24		-	-	240
Rice threshers	No		-	36	60	72	48	24	-	-	-	240
Maize decorticators	No			36	60	72	48	24	-	-	-	240

Main Activity	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Small-scale mills for coarse grains	sets		24	36	60	48	48	24		-	-	240
Small-scale rice mills	Sets		24	36	60	48	48	24		-	-	240
Revitalisation of National Rice Mill in CRR through PPP (Rice parboiler and Milling Machine)	No			1								1
Support the establishment of Commercial Vegetable garden schemes (5ha)	Schemes		10	20	20	20	30	20	20	10		150
Water lifting and distribution facilities (Pumps, solar devices, distribution networks, storage facilities) - revolving funds	LS		0.2	0.2	0.2	0.2	0.2					1
Support Secondary processing equipment for coarse grains, fruits and vegetables	LS	0.1	0.15	0.15	0.15	0.15	0.15	0.15				1
Support refurbishment and revitalisation of the Kamalo feed mill	LS		1									1
Cold vans for vegetables	No.		2		2		2		2		2	10
Cold vans poultry products (meat & eggs)	No.		2		2		2		2		2	10
Institutional Support Services												
Collection and aggregation cold stores (solar powered)	No		0.10	0.15	0.15	0.15	0.15			0.15	0.15	1
Support DLS with Small scale Feed mills (grinder and mixer)	No		7									7
Support with truck	No		1					1				2
Livestock watering points	No		10									
Support GGC access additional equipment in the upgrading process	LS	1										1
Support NARI - conduct adaptive research and mapping of appropriate equipment	LS	0.05	0.15	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.05	1
Strengthen formulation analytical laboratory and improve laboratories of other Service provider Institution (DOA, NARI) with equipment and machinery.	LS		0.3	0.2	0.1	0.1	0.1	0.1	0.1			

Main Activity	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Establish and equip Regional veterinary labouratories and strengthen CVL of DLS	LS	0.1	0.4	0.4	0.1							
Strengthen FTS of DOA with equipment and facilities to conduct and develop training in agro-processing technologies - development of ready-to-use products	LS	0.05	0.15	0.15	0.15	0.15	0.15	0	0	0.1	0.1	1
Strengthen AES of DOA with machinery and equipment for traing	Sets	-	6	-	-	-	-	-	-	-	-	6
Provide initial support on improved sorting/grading, packaging, and labelling of products including vegetables and vegetable products	LS		0.1	0.15	0.15	0.15	0.15			0.15	0.15	1
Develop FSQA staff to conduct food accreditation - professional training	LS		0.1	0.15	0.15	0.15	0.15			0.15	0.15	1
Establish, equip and operationalise a national food testing laboratory Accredited (to ISO 17025) to certify food products	No		1									1
Trainings												
Training of tractor operators	Sessions	6	6	6	6	6	6	6	6	6	6	60
Training of value addition operators	Sessions	7	7	7	7	7	7	7	7	7	7	70

Table 51: GATP Budget Estimates for Required Machinery - Period 2021 To 2030

Main Activity	Total Base Cost (US$ x1000)											
	Unit Cost USD	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Support Access to Farm Machinery and Equipment though appropriate financing mechanisms												
Regional Centres for sale and distribution of animal drawn equipment: Carts and Sets of Sinehoe Package - 100 sets/Centre	100,000	100,000	300,000	300,000	-	-	-	-	-	-	-	700,000
2WD Tractors (50hp)	40,000	-	-	1,440,000	2,400,000	2,400,000	2,400,000	2,400,000	960,000	-	-	12,000,000

Main Activity	Total Base Cost (US$ x1000)											
	Unit Cost USD	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
4WD Tractor (60-85hp)	50,000	-	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	150,0,000	-	-	-	9,000,000
Power Tiller with attachment	6,000	-	360,000	360,000	360,000	360,000	360,000	360,000	360,000	-	-	2,520,000
Disc plough suitable for 4WD tractor	17,800	-	356,000	356,000	356,000	356,000	356,000	356,000	-	-	-	2,136,000
Disc Harrows	2,800	-	56,000	123,200	168,000	168,000	168,000	168,000	44,800	-	-	896,000
Rototary Cultivator	2,300	-	46,000	101,200	138,000	138,000	138,000	138,000	36,800	-	-	736,000
Multi-purpose seed drill (Seed cum fertiliser drill/zero tillage planters)	4,000	-	-	96,000	1,60,000	1,60,000	1,60,000	1,60,000	64,000	-	-	800,000
Cultivator/ weeder	1,500	-	-	36,000	60,000	60,000	60,000	60,000	24,000	-	-	300,000
Push weeders	50,000	-	10,000	25,000	15,000	-	-	-	-	-	-	50,000
Groundnut digger	5,000	-	-	180,000	300,000	300,000	300,000	300,000	120,000	-	-	1,500,000
Multi-crop cereal harvesters	4,500	-	-	270,000	270,000	270,000	270,000	270,000	-	-	-	1,350,000
Dry pod Groundnut thresher	10,000	-	-	360,000	600,000	600,000	600,000	600,000	240,000	-	-	3,000,000
Multi purpose threshers (for cereals)	6,000	-						144,000	-			144,000
Rice threshers	6,000	-	-	216,000	360,000	432,000	2,88,000	144,000	-	-	-	1,440,000

Main Activity	Total Base Cost (US$ x1000)											
	Unit Cost USD	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Maize decorticators	4,000	-	-	144,000	240,000	288,000	192,000	96,000	-	-	-	960,000
Small-scale mills for coarse grains	4,000	-	96,000	144,000	240,000	192,000	192,000	96,000	-	-	-	960,000
Small-scale rice mills	5,000	-	1,20,000	1,80,000	3,00,000	2,40,000	2,40,000	1,20,000	-	-	-	1,200,000
Revitalisation of National Rice Mill in CRR through PPP (Rice parboiler and Milling Machine)	1,000,000	-	-	10,00,000	-	-	-	-	-	-	-	1,000,000
Support the establishment of Commercial Vegetable garden schemes (5ha)	400,000	-	4,000,000	8,000,000	8,000,000	8,000,000	12,000,000	8,000,000	8,000,000	4,000,000	-	60,000,000
Water lifting and distribution facilities (Pumps, solar devices, distribution networks, storage facilities) - revolving funds	5,000,000	-	1,000,000	11000,000	1,000,000	1,000,000	1,000,000				-	5,000,000
Support Secondary processing equipment for coarse grains, fruits, and vegetables	5,000,000	500,000	750,000	750,000	750,000	750,000	750,000	750,000	-	-	-	5,000,000
Support refurbishment and revitalisation of the Kamalo feed mill	2,000,000	-	2,000,000	-	-	-	-	-	-	-	-	2,000,000
Cold vans for vegetables	75,000	-	150,000	-	150,000	-	150,000	-	150,000	-	150,000	750,000
Cold vans poultry products (meat & eggs)	75,000	-	150,000	-	150,000	-	150,000	-	150,000	-	150,000	750,000
Sub-Total		6,00,000	10,894,000	16,581,400	17,517,000	17,214,000	21,274,000	15,662,000	10,149,600	4,000,000	300,000	114,192,000

Main Activity	Total Base Cost (US$ x1000)											
	Unit Cost USD	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Institutional Support Services												
Collection and aggregation cold stores (solar powered) -	100,000	-	10,000	15,000	15,000	15,000	15,000	-	-	15,000	15,000	100,000
Support DLS with Small scale Feed mills (grinder and mixer)	10,000	-	70,000	-	-	-	-	-	-	-	-	70,000
Support with truck	75,000	-	75,000	-	-	-	-	75,000	-	-	-	150,000
Livestock watering points	50,000	-	5,00,000	-	-	-	-	-	-	-	-	500,000
Support GGC access additional equipment in the upgrading process	2,000,000	2,000,000	-	-	-	-	-	-	-	-	-	2,000,000
Support NARI - conduct adaptive research and mapping of appropriate equipment	2,000,000	100,000	300,000	300,000	200,000	200,000	200,000	200,000	2,00,000	200,000	100,000	2,000,000
Strengthen formulation analytical laboratory and improve laboratories of other Service provider Institution (DOA, NARI) with equipment and machinery.	5,000,000	-	1,500,000	1,000,000	500,000	500,000	500,000	500,000	500,000	-	-	5,000,000
Establish and equip Regional veterinary labouratories and strengthen CVL of DLS	10,000,000	1,000,000	4,000,000	4,000,000	1,000,000					-	-	10,000,000
Strengthen FTS of DOA with equipment and facilities to conduct and develop training in agro-processing technologies - development of ready-to-use products	1,000,000	50,000	150,000	150,000	150,000	150,000	150,000	-	-	100,000	100,000	1,000,000

Main Activity	Total Base Cost (US$ x1000)											
	Unit Cost USD	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Strengthen AES of DOA with machinery and equipment for traing	2,00,000	-	12,00,000	-	-	-	-	-	-	-	-	1,200,000
Provide initial support on improved sorting/grading, packaging, and labelling of products including vegetables and vegetable products	1,00,000	-	10,000	15,000	15,000	15,000	15,000	-	-	15,000	15,000	100,000
Develop FSQA staff to conduct food accreditation - professional training	200,000	-	20,000	30,000	30,000	30,000	30,000	-	-	30,000	30,000	200,000
Establish, equip and operationalise a national food testing laboratory Accredited (to ISO 17025) to certify food products	2,500,000	-	2,500,000	-	-	-	-	-	-	-	-	2,500,000
Trainings												
Training of tractor operators	30,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	1, 800,000
Training of value addition operators	20,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	14,00,000
Sub-Total		3,470,000	10,655,000	5,830,000	2,230,000	1,230,000	1,230,000	1,095,000	1,020,000	680,000	575,000	28,015,000
Total Machinery budget		**4,070,000**	**21,549,000**	**22,411,400**	**19,747,000**	**18,444,000**	**22,504,000**	**16,757,000**	**11,169,600**	**4,680,000**	**875,000**	**142,207,000**

Table 52: Livestock Related Requirements - Period 2021 To 2030

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Establishment of Small scale broiler and layer production schemes												
Small-scale broiler schemes	No.	70	210	350	420	560	700	560	420	210		3500
Small-scale layer schemes	No.	70	210	350	420	560	700	560	420	210		3,500
Medium scale broiler schemes	No.			5	10	5	5					25
Medium scale layer schemes	No			5	5	10	5					25
Large scale broiler schemes	No.			1								1
Large scale layer schemes	No.			1								1
Support for national vaccination campaign												
PPR and pasteurellosis vaccination	No.	2	2	2	2	2	2	2	2	2	2	20
Newcastle Disease Vaccination	No.	2	2	2	2	2	2	2	2	2	2	20
Improved management & enhanced acess to shared resources												
Differed Grazing Areas	No.	41										41
Intensive Feed Gardens	No.		15									15
Demarcation of routes for animal	No.	41										41
Local Convention	LS	1										1
Capacity Development												
Human Resource Capacity Development - Vet Doctors	Academic year	3	6	10	10	10	10	7	4			60
Human Resource Capacity Development - lab. Technologist	Academic year	3	9	6								18

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	**Total**
Human Resource Capacity Development - Poultry Nutritionist	Academic year	2	2									4
Training - farmer capacity building	No.	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	20,000
Training on disease surveillance	No.	50	100	100	50							
Support to WALIC small ruminant breeding programme	LS	1										
Private Sector Support												
Establishment of vet. Drug outlets	No.		6	6								
Parent stock - for 2 poultry major farms	Farms	1	1									
Life bird market	No.		2	2								
Support to small ruminant value chain operators	LS	1										
Construction of sheds and sanitary facility	No.		10									
Support to small ruminant breeding schemes	LS		5000									5,000

Table 53: GATP Budget Estimates for required Livestock - Period 2021 To 2030

Main Activity/Enterprise	Unit Cost *US$*	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Establishment of Small scale broiler and layer production schemes												
Small-scale broiler schemes	2,085	145,950	437,850	729,750	875,700	1,167,600	1,459,500	1,167,600	875,700	437,850	-	7,297,500
Small-scale layer schemes	5,590	391,300	1,173,900	1,956,500	2,347,800	3,130,400	3,913,000	3,130,400	2,347,800	1,173,900	-	19,565,000
Medium scale broiler schemes	20,850	-	-	104,250	208,500	104,250	104,250	-	-	-	-	521,250
Medium scale layer schemes	55,900	-	-	279,500	279,500	559,000	279,500	-	-	-	-	1,397,500

Main Activity/Enterprise	Unit Cost *US$*	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Large scale broiler schemes	41,700	-	-	41,700	-	-	-	-	-	-	-	41,700
Large scale layer schemes	111,800	-	-	111,800	-	-	-	-	-	-	-	111,800
Sub-total		537,250	1,611,750	3,223,500	3,711,500	4,961,250	5,756,250	4,298,000	3,223,500	1,611,750	-	28,934,750
Support for national vaccination campaign												
PPR and pasteurellosis vaccination	20,130	40,260	40,260	40,260	40,260	40,260	40,260	40,260	40,260	40,260	40,260	402,600
Newcastle Disease Vaccination	17,025	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	34,050	340,500
Sub-total		74,310	74,310	74,310	74,310	74,310	74,310	74,310	74,310	74,310	74,310	743,100
Improved management & enhanced acess to shared resources												
Differed Grazing Areas	4,941	202,600	-	-	-	-	-	-	-	-	-	202,600
Intensive Feed Gardens	4,081	-	61,213	-	-	-	-	-	-	-	-	61,213
Demarcation of routes for animal	4,250	174,250	-	-	-	-	-	-	-	-	-	174,250
Local Convention	179,000	179,000	-	-	-	-	-	-	-	-	-	179,000
Sub-total		555,850	61,213	-	-	-	-	-	-	-	-	617,063

Main Activity/Enterprise	Unit Cost *US$*	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Capacity Development												
Human Resource Capacity Development - Vet Doctors	20,000	60,000	120,000	200,000	200,000	200,000	200,000	140,000	80,000	-	-	1,200,000
Human Resource Capacity Development - lab. Technologist	15,000	45,000	1,35,000	90,000	-	-	-	-	-	-	-	270,000
Human Resource Capacity Development - Poultry Nutritionist	15,000	30,000	30,000	-	-	-	-	-	-	-	-	60,000
Training - farmer capacity building	100	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	2,000,000
Training on disease surveillance	100	5,000	10,000	10,000	5,000	-	-	-	-	-	-	30,000
Support to WALIC small ruminant breeding programme	60,000	60,000	-	-	-	-	-	-	-	-	-	60,000
Sub-total		400,000	495,000	500,000	405,000	400,000	400,000	340,000	280,000	200,000	200,000	3,620,000
Private Sector Support												
Establishment of vet. Drug outlets	50,000	-	300,000	3,00,000	-	-	-	-	-	-	-	600,000
Parent stock - for 2 poultry major farms	100,000	100,000	100,000	-	-	-	-	-	-	-	-	200,000
Life bird market	100,000	-	200,000	200,000	-	-	-	-	-	-	-	400,000
Support to small ruminant value chain operators	100,000	100,000	-	-	-	-	-	-	-	-	-	100,000

Main Activity/Enterprise	Unit Cost *US$*	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Construction of sheds and sanitary facility	50,000	-	500,000	-	-	-	-	-	-	-	-	500,000
Support to small ruminant breeding schemes	400	-	2,000,000	-	-	-	-	-	-	-	-	2,000,000
Sub-total		2,00,000	3,100,000	500,000	-	-	-	-	-	-	-	3,800,000
Total Livestock budget		**1,767,410**	**5,342,273**	**4,297,810**	**4,190,810**	**5,435,560**	**6,230,560**	**4,712,310**	**3,577,810**	**1,886,060**	**274,310**	**37,714,913**

Table 54: Crops Related Facilities Required - Period 2021 To 2030

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Establishment of Seed growers	No	164	164	164	164							656
Followup support to seed grower	No		160	160	160							480
Sellf-employment Assistance programme	No	210	210	210	210	210	210	210	210	210	210	2,100
Refurbishing seed stores	No		6	12	12	6	0					36
TOT on technology transfer for commodity value chain crops	No		18	24	18							60
Training of extension agents	No	80	80	80	80	80	80	80	80	80	80	800
Training of women on lowland cereal/vegetable growing	No	100	100	100	100	100	100	100	100	100	100	1,000
Visit to successful programmes/projects in the Sub-region	No		1			1		1		1		4
MFC improvement programme	No		4	6	6	6	3					25
Upgrade skills of value chain actors in appropriate ago-processing technologies	Lumpsum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Institutional support Service												
Support to RELO for various value chain	Annual	1	1	1	1	1	1	1	1	1	1	10
Support to NARI for on-farm research	Annual	1	1	1	1	1	1	1	1	1	1	10
Support to UTG for training on crop value chain	Annual	1	1	1	1	1	1	1	1	1	1	10
Support to CEES for audio-visual activities on the commodity value chains	Annual	1	1	1	1	1	1	1	1	1	1	10
Strengthening the Genetic Base of Seed Change												
Strengthening NARI Role in variety development and breeder seed production	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Enhancing the VRC processes	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Modernising and expanding Foundation seed production	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Enhancing the Seed Business of Certified Seed Production												
Strengthening collaboration in the seed value chain	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Seed enterprise development	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Strengthening seed marketing	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Expanding the seed certification programme	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Widening Participation in Seed Industry												
Enhancing extension support (promotion, monitoring and inspection, demand creation and assessment)	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Empowering Youth and Women in the seed sector	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Seed Security and Emergency Responses												
Village seed store and village seed banks	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1
Establishing National Seed Security System	Lumpsum	0.1	0.15	0.15	0.2	0.15	0.05	0.05	0.05	0.05	0.05	1

Table 55: GATP Budget Estimates for Required Facilitices for Crops - Period 2021 To 2030

Main Activity	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Establishment of Seed growers	1,000	164,000	164,000	164,000	164,000	-	-	-	-	-	-	656,000
Followup support to seed grower	500	-	80,000	80,000	80,000	-	-	-	-	-	-	240,000
Sellf-employment Assistance programme	454	95,340	95,340	95,340	95,340	95,340	95,340	95,340	95,340	95,340	95,340	953,400
Refurbishing seed stores	5,000	-	30,000	60,000	60,000	30,000	-	-	-	-	-	180,000
TOT on technology transfer for commodity value chain crops	200	-	3,600	4,800	3,600	-	-	-	-	-	-	12,000
Training of extension agents	200	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	160,000
Training of women on lowland cereal/vegetable growing	100	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000
Visit to successful programmes/projects in the Sub-region	50,000	-	50,000	-	-	50,000	-	50,000	-	50,000	-	200,000
MFC improvement programme	720,000	-	2,880,000	4,320,000	4,320,000	4,320,000	2,160,000	-	-	-	-	18,000,000
Upgrade skills of value chain actors in appropriate ago-processing technologies	900,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	900,000
Sub-total		375,340	3,418,940	4,840,140	4,838,940	4,611,340	2,371,340	261,340	211,340	261,340	211,340	21,401,400
Institutional support Service												
Support to RELO for various value chain	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	10,000,000

Main Activity	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Support to NARI for on-farm research	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	5,000,000
Support to UTG for training on crop value chain	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	5,000,000
Support to CEES for audio-visual activities on the commodity value chains	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	5,000,000
Strengthening the Genetic Base of Seed Change												
Strengthening NARI Role in variety development and breeder seed production	2,350,000	235,000	352,500	352,500	470,000	352,500	117,500	117,500	117,500	117,500	117,500	2,350,000
Enhancing the VRC processes	240,000	24,000	36,000	36,000	48,000	36,000	12,000	12,000	12,000	12,000	12,000	240,000
Modernising and expanding Foundation seed production	270,000	27,000	40,500	40,500	54,000	40,500	13,500	13,500	13,500	13,500	13,500	270,000
Enhancing the Seed Business of Certified Seed Production												
Strengthening collaboration in the seed value chain	1,700,000	170,000	255,000	255,000	340,000	255,000	85,000	85,000	85,000	85,000	85,000	1,700,000
Seed enterprise development	370,000	37,000	55,500	55,500	74,000	55,500	18,500	18,500	18,500	18,500	18,500	370,000
Strengthening seed marketing	980,000	98,000	1,47,000	1,47,000	1,96,000	1,47,000	49,000	49,000	49,000	49,000	49,000	980,000
Expanding the seed certification programme	1,550,000	155,000	232,500	232,500	310,000	232,500	77,500	77,500	77,500	77,500	77,500	1,550,000
Widening Participation in Seed Industry												

Main Activity	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Enhancing extension support (promotion, monitoring, and inspection, demand creation and assessment)	990,000	99,000	1,48,500	1,48,500	198,000	1,48,500	49,500	49,500	49,500	49,500	49,500	990,000
Empowering Youth and Women in the seed sector	2,040,000	204,000	3,06,000	306,000	408,000	306,000	102,000	102,000	102,000	102,000	102,000	2,040,000
Seed Security and Emergency Responses												
Village seed store and village seed banks	4,360,000	436,000	654,000	654,000	872,000	654,000	218,000	218,000	218,000	218,000	2,18,000	4,360,000
Establishing National Seed Security System	960,000	96,000	144,000	144,000	192,000	144,000	48,000	48,000	48,000	48,000	48,000	960,000
Institutional Support Service		4,081,000	4,871,500	4,871,500	5,662,000	4,871,500	3,290,500	3,290,500	3,290,500	3,290,500	3,290,500	40,810,000
Total crops budget		**4,456,340**	**8,290,440**	**9,711,640**	**10,500,940**	**9,482,840**	**5,661,840**	**3,551,840**	**3,501,840**	**3,551,840**	**3,501,840**	**62,211,400**

Table 56: Finance and Agribusiness related Requirments - Period 2021 To 2030

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Finance Models												
Model 1: Improving the Operating environment for Agricultural Financing												
Financial Institutions' policy review	Lumpsum	0.25			0.25			0.25			0.25	1
Training of 20 focal persons in policy implementation	Lumpsum	0.25			0.25			0.25			0.25	1
Regional and sub-regional study tours	Lumpsum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1
Model 2: Agriculture Financing Risk Mitigation												
Establish Credit Reference Bureaus (CRB) and support operation and maintenance of bureau	Lumpsum	0.7	0.15	0.15								1

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Establish 5 Agricultural insurance schemes and train an operative per scheme	Lumpsum		1									1
Model 3: Promote All-inclusive agriculture financing system												
Establish CFF amongst micro-finance agents and promote access to MFI loans	Lumpsum		0.7	0.15	0.15							1
Establishment of an Agricultural Development Bank; and training of 10 staff	Lumpsum			1								1
Support integration of ICT in the banking system	Lumpsum		0.7	0.1	0.1	0.1						1
Model 4: Coordination and Information Sharing for Improved MFI operating environment												
Support revival of the defunct micro-finance network	Lumpsum		0.7	0.15	0.15							1
Model 5: Consolidation and Upscaling of the VISACAs												
Rehabilitation, renovation, equipment and furnishing MFIs	Lumpsum		0.6	0.4								1
Staff training on O&M of VISACAs	Lumpsum		0.6	0.4								1
Model 6: Expand the Scope of the of Matching Grant Funds into Micro-finance system			0.2	0.2	0.2	0.2	0.04	0.04	0.04	0.04	0.04	1.00
Agribusiness Models												
Model 1:Commercialization of the Seed Industry												
Establishment of commercial seed growers	Lumpsum		3.333	3.333	3.333							10
Model 2: Revitalization of Farmer Cooperatives for improve Market Access	Lumpsum		0.2	0.4	0.4							1
Model 3: Product Marketing through the use of ICT				0.2	0.4	0.4						1
Model 4: Demand Driven Production Systems		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1
Model 5: Youth Engagement through Peer Review including agribusiness tool provision		10	10	10	10	10	10	10	10	10	10	100
Model 6: Youth Engagement through SchooLumpsum Young Farmers Club.												
Develop school farms SSS (1 school/Region)	schooLumpsum	5	5	5	5	5	5	5	5	5	5	50
Study tours	tours	5	5	5	5	5	5	5	5	5	5	50

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Provision of capital to potential agri-business students (10/anually - 2 per target school)	No	10	10	10	10	10	10	10	10	10	10	100
Model 7: Develop specialised cooperative training centre	No		1									1
Annual O & M =10% of cost			0.3	0.3	0.4							1

Table 57: GATP Budget Estimates for Finance and Agribusiness - Period 2021 To 2030

Main Activity	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Finance Models												
Model 1: Improving the Operating environment for Agricultural Financing												
Financial Institutions' policy review	300,000	75,000	-	-	75,000	-	-	75,000	-	-	75,000	300,000
Training of 20 focal persons in policy implementation	20,000	5,000	-	-	5,000	-	-	5,000	-	-	5,000	20,000
Regional and sub-regional study tours	50,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	50,000
Model 2: Agriculture Financing Risk Mitigation												
Establish Credit Reference Bureaus (CRB) and support operation and maintenance of bureau	100,000	70,000	15,000	15,000	-	-	-	-	-	-	-	100,000
Establish 5 Agricultural insurance schemes and train an operative per scheme	2,000,000	-	2,000,000	-	-	-	-	-	-	-	-	2,000,000
Model 3: Promote All-inclusive agriculture financing system												

Main Activity	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Establish CFF amongst micro-finance agents and promote access to MFI loans	7,500,000	-	5,250,000	1,125,000	1,125,000	-	-	-	-	-	-	7,500,000
Establishment of an Agricultural Development Bank; and training of 10 staff	2,500,000	-	-	2,500,000	-	-	-	-	-	-	-	2,500,000
Support integration of ICT in the banking system	500,000	-	350,000	50,000	50,000	50,000	-	-	-	-	-	500,000
Model 4: Coordination and Information Sharing for Improved MFI operating environment.												
Support revival of the defunct micro-finance network	350,000	-	245,000	52,500	52,500	-	-	-	-	-	-	350,000
Model 5: Consolidation and Upscaling of the VISACAs		-	-	-	-	-	-	-	-	-	-	-
Rehabilitation, renovation, equipment and furnishing MFIs	1,500,000	-	900,000	600,000	-	-	-	-	-	-	-	1,500,000
Staff training on O&M of VISACAs	200,000	-	120,000	80,000	-	-	-	-	-	-	-	200,000
Model 6: Expand the Scope of the of Matching Grant Funds into Micro-finance system	6,000,000	-	1,200,000	1,200,000	1,200,000	1,200,000	240,000	240,000	240,000	240,000	240,000	6,000,000
Sub-total: Finance models		155,000	10,085,000	5,627,500	2,512,500	1,255,000	245,000	325,000	245,000	245,000	325,000	21,020,000
Agribusiness Models												

Main Activity	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Model 1: Commercialization of the Seed Industry												
Establishment of commercial seed growers	1,800,000	-	6,000,000	6,000,000	6,000,000	-	-	-	-	-	-	18,000,000
Model 2: Revitalization of Farmer Cooperatives for improve Market Access	550,000	-	110,000	220,000	220,000	-	-	-	-	-	-	550,000
Model 3: Product Marketing through the use of ICT	200,000	-	-	40,000	80,000	80,000	-	-	-	-	-	200,000
Model 4: Demand Driven Production Systems	200,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
Model 5: Youth Engagement through Peer Review including agribusiness tool provision	10,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	10,00,000
Model 6: Youth Engagement through SchooLumpsum Young Farmers Club												
Develop school farms SSS (1 school/Region)	75,000	3,75,000	3,75,000	3,75,000	3,75,000	3,75,000	3,75,000	3,75,000	3,75,000	3,75,000	3,75,000	37,50,000
Study tours	5,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	2,50,000
Provision of capital to potential agri-business students (10/anually - 2 per target school)	**Costed Under Chamen Kundam Training Programmes**											
Model 7: Develop specialised cooperative training centre	1,000,000	-	1,000,000	-	-	-	-	-	-	-	-	1,000,000
Annual O & M = 10% of cost	50,000	-	15,000	15,000	20,000	-	-	-	-	-	-	50,000

Main Activity	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Sub-total: Agri-business models		5,0,000	7,645,000	6,795,000	6,840,000	600,000	520,000	520,000	520,000	520,000	520,000	25,000,000
Total Finance and Agribusiness budget		675,000	17,730,000	12,422,500	9,352,500	1,855,000	765,000	845,000	765,000	765,000	845,000	46,020,000

Table 58: Youth Engagement Activities - Period 2021 To 2030

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Support and strengthen youth empowerment, training, and incubation centers												
Support to existing youth empowerment institutions (NYSS, PIA, Startu Incubator, Julangel & the like)	No		4	4	4	4	4					20
Support to consolidate GSI at Chamen												
a)Infrastructure development	Lumpsum			1								1
b) Equipment Support	Lumpsum			1								1
c) Graduate support - after training	No	40	40	40	40	40	40	40	40	40	40	400
Adapt and replicate GSI programme at Kundam and other identified regions												
a)Infrastructure development	Lumpsum	0.4	0.6									
b) Equipment Support	Lumpsum		0.6	0.4								
c) Establishment of Infrastructure for GSI programmes in 2 other Regions	No				0.2	0.3	0.2	0.3				
d) Equipment support for GSI programmes in 2 other Regions	No					0.3	0.2	0.3	0.2			
e) Training					40	40	80	80	120	120	120	600
f) Graduate support - after training					40	40	80	80	120	120	120	600
Support the implementation of the MOTRIE Strategic Youth and Trade Roadmap (2018 – 2022).	Lumpsum/year	1	1	1	1	1	1	1	1	1	1	10
Strengthen existing entrepreneurship education in TVET and university programmes												
Strengthen TVET curriculum for youth entrepreneurship	Lumpsum	0.5	0.5									1
Support NAQAA in developing higher specialised TVET courses	Lumpsum		0.33	0.33	0.33							1

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Support Gambia College & UTG to have standard practical & lab facilities for agric training	Lumpsum		0.25	0.25			0.25	0.25				1
Revisit and address the challenges in existing land tenure system												
Develop policy on contract farming & land leasing	Lumpsum		0.5	0.5								1
Map out all Agicultural assets	Lumpsum	0.4	0.6									1
Strengthen the policy and regulatory environment												
Support to NAQAA to dev curriculum on entrepreneurship couses on agric value chain	Lumpsum		0.2	0.2	0.2	0.2	0.2					1
Establishing a standard lab for quality testing under built operate and transfer (BOT) model	Lumpsum			0.4	0.6							
Total Youth Budget												

Table 59: GATP Budget Estimates for Youth Engagament Activities - Period 2021 To 2030

Main Activity/Enterprise	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	**Total**
Support and strengthen youth empowerment, training, and incubation centers												
Support to existing youth empowerment institutions (NYSS, PIA, Startu Incubator, Julangel & the like)	5,000	-	20,000	20,000	20,000	20,000	20,000	-	-	-	-	100,000
Support to consolidate GSI at Chamen												
a)Infrastructure development	500,000	-	-	500,000	-	-	-	-	-	-	-	500,000
b) Equipment Support	500,000	-	-	500,000	-	-	-	-	-	-	-	500,000
c) Graduate support - after training	2,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	800,000
Adapt and replicate GSI programme at Kundam and other identified regions												
a)Infrastructure development	500,000	200,000	300,000	-	-	-	-	-	-	-	-	500,000

Main Activity/Enterprise	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	**Total**
b) Equipment Support	500,000	-	300,000	200,000	-	-	-	-	-	-	-	500,000
c) Establishment of Infrastructure for GSI programmes in 2 other Regions	1,200,000	-	-	-	240,000	360,000	240,000	360,000	-	-	-	1,200,000
d) Equipment support for GSI programmes in 2 other Regions	1,200,000	-	-	-	-	360,000	240,000	360,000	240,000	-	-	1,200,000
e) Training	1,320	-	-	-	52,800	52,800	105,600	105,600	158,400	158,400	158,400	792,000
f) Graduate support - after training	2,000	-	-	-	80,000	80,000	160,000	160,000	240,000	240,000	240,000	1,200,000
Support the implementation of the MOTRIE Strategic Youth and Trade Roadmap (2018 – 2022).	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	50,000
Strengthen existing entrepreneurship education in TVET and university programmes												
Strengthen TVET curriculum for youth entrepreneurship	6,000	3,000	3,000	-	-	-	-	-	-	-	-	6,000
Support NAQAA in developing higher specialised TVET courses	6,000	-	2,000	2,000	2,000	-	-	-	-	-	-	6,000
Support Gambia College & UTG to have standard practical & lab facilities for agric training	5,000,000	-	1,250,000	1,250,000	-	-	1,250,000	1,250,000	-	-	-	5,000,000
Revisit and address the challenges in existing land tenure system												
Develop policy on contract farming & land leasing	6,000	-	3,000	3,000	-	-	-	-	-	-	-	6,000
Map out all Agicultural assets	300,000	120,000	180,000	-	-	-	-	-	-	-	-	300,000

Main Activity/Enterprise	Unit Cost USD	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	**Total**
Strengthen the policy and regulatory environment												
Support to NAQAA to dev curriculum on entrepreneurship couses on agric value chain	6,000	-	1,200	1,200	1,200	1,200	1,200	-	-	-	-	6,000
Establishing a standard lab for quality testing under built operate and transfer (BOT) model	5,000,000	-	-	2,000,000	3,000,000	-	-	-	-	-	-	5,000,000
Total Youth Budget		**408,000**	**2,144,200**	**4,561,200**	**3,481,000**	**959,000**	**2,101,800**	**2,320,600**	**723,400**	**483,400**	**483,400**	**17,666,000**

Table 60: Coordination, Monitoring and Evaluation Activities required - Period 2021 To 2030

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
PSC Quarterly Coordination Meetings (40 meetings/15 members)	Person-day	60	60	60	60	60	60	60	60	60	60	600
Component Quarterly Meetings (160 meetings/10 members each)	Person-day	160	160	160	160	160	160	160	160	160	160	1600
Coordination Study tours (4 study tours/8 members)	tours		1		1		1		1			4
M&E Study tours (4 study tours/5 members)	tours			1		1		1		1		4
Study tour for Farmer based Organisation (2 tours/identified commodity)	tours		2	2	2			2	2	2		12
Capacity Building - project staff, service provider institution & beneficiaries	LS	0.1	0.1	0.1	0.15	0.15	0.15	0.1	0.05	0.05	0.05	1
M&E operations to Programme sites	LS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1
Project startup workshop	LS	0.1	0.1	0.1	0.15	0.15	0.15	0.15	0.05	0.05		1

Main Activity/Enterprise	Unit	Quantities										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Baseline study (lump sum)	LS	1										1
Mid-term review (lump sum)	LS					1						1
Programme Completion Report (lump sum)	LS										1	1
Impact Assessment study (lump sum)	LS										1	1
Environment Impact Assessment (EIA)	LS	0.5	0.3	0.2								1
Environmental & Social Management Plans (ESMP)	LS	0.06	0.07	0.08	0.09	0.1	0.11	0.12	0.13	0.14	0.1	1
Environment and Social Safeguard Audit (ESSA)	LS			0.15		0.2		0.3		0.35		1
Construction of Projects Ocffice complex and Relocation of CPCU	LS	0.1	0.4	0.5								1
Vehicles	LS		0.5					0.5				1
CPCU Operations - remuneration, office facilities, vehicles and equipment	LS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1
Equipment support to Service Providers (Implementing Partners)	LS	0.1	0.1	0.1	0.15	0.15	0.15	0.1	0.05	0.05	0.05	1
Knowledge Management and Communication	LS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1

Table 61: GATP Budget Estimates for Coordination, Monitoring and Evaluation Activities - Period 2021 To 2030

Main Activity/Enterprise	Unit cost *USD*	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
PSC Quarterly Coordination Meetings (40 meetings/15 members)	300	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	180,000
Component Quarterly Meetings (160 meetings/10 members each)	200	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	320,000
Coordination Study tours (4 study tours/8 members)	75,000	-	75,000	-	75,000	-	75,000	-	75,000	-	-	300,000

Main Activity/Enterprise	Unit cost *USD*	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
M&E Study tours (4 study tours/5 members)	30,000	-	-	30,000	-	30,000	-	30,000	-	30,000	-	120,000
Study tour for Farmer based Organisation (2 tours/identified commodity)	100,000	-	200,000	200,000	200,000	-	-	200,000	200,000	200,000	-	1,200,000
Capacity Building - project staff, service provider institution & beneficiaries	2,000,000	200,000	200,000	200,000	300,000	300,000	300,000	200,000	100,000	100,000	100,000	2,000,000
M&E operations to Programme sites	64,000	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	6,400	64,000
Project startup workshop	250,000	25,000	25,000	25,000	37,500	37,500	37,500	37,500	12,500	12,500	-	250,000
Baseline study (lump sum)	90,000	90,000	-	-	-	-	-	-	-	-	-	90,000
Mid-term review (lump sum)	70,000	-	-	-	-	70,000	-	-	-	-	-	70,000
Programme Completion Report (lump sum)	70,000	-	-	-	-	-	-	-	-	-	70,000	70,000
Impact Assessment study (lump sum)	90,000	-	-	-	-	-	-	-	-	-	90,000	90,000
Environment Impact Assessment (EIA)	1,000,000	500,000	300,000	200,000	-	-	-	-	-	-	-	1,000,000
Environmental & Social Management Plans (ESMP)	500,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	65,000	70,000	50,000	500,000
Environment and Social Safeguard Audit (ESSA)	500,000	-	-	75,000	-	100,000	-	150,000	-	175,000	-	500,000
Construction of Projects Ocffice complex and Relocation of CPCU	2,000,000	200,000	800,000	1,000,000	-	-	-	-	-	-	-	2,000,000
Vehicles	1,000,000	-	500,000	-	-	-	-	500,000	-	-	-	1,000,000
CPCU Operations - remuneration, office facilities, vehicles and equipment	4,500,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	4,500,000
Equipment support to Service Providers (Implementing Partners)	2,000,000	200,000	200,000	200,000	300,000	300,000	300,000	200,000	100,000	100,000	100,000	2,000,000

Main Activity/Enterprise	Unit cost *USD*	Total Base Cost (US$)										
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Knowledge Management and Communication	250,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000
Total Coord, M&E and Enviroment & Social Safeguard Audit Budget		**1,551,400**	**2,641,400**	**2,276,400**	**1,163,900**	**1,093,900**	**973,900**	**1,683,900**	**958,900**	**1,093,900**	**816,400**	**16,504,000**

11. PROGRAM COORDINATION, MANAGEMENT, MONITORING AND EVALUATION

11.1 COORDINATION

The coordination challenges articulated above will require robust and relevant coordination arrangements for a complex and multi-player program of this nature. Furthermore, the GATP interventions will not only bring together multiple stakeholders of varying interests and power dynamics but will at times have competing and or conflicting interests. For instance, whilst the actors on the production side may aim to expand agricultural production by increasing land under cultivation, the environment, forestry and NEA stakeholders may differ and uphold contrary views. The amicable, rational and timely management of such dynamics will require a strong and functional GATP Program Steering Coordination mechanism to ensure smooth and efficient implementation of the planned program activities.

In this regard, the effective coordination of the GATP program will be achieved at different but complementary levels. At the individual sub program/ component level, the key actors will form a component coordination committee, which will meet periodically to discuss and address relevant component issues at that level. This level will principally comprise members from the departments and heads of agencies involved in the implementation of activities from the same component

At a similar but relatively higher level, a national level Program Steering Committee (PSC) will be established to be constituted by the Secretary General, Permanent Secretaries of relevant Ministries, heads of Private Sector organs/parastatals, as well as Heads of Civil Society and relevant Financial Institutions. The Secretary General Office of the President will serve as chairperson of the PSC whilst the head of the CPCU acts as Secretary. The proposed composition of the PSC will include among others:

i. Secretary General Head of Civil Service, Office of the President (or Representative) Chairman
ii. PS, Min of Agriculture
iii. PS, Min of Finance and Economic Affairs
iv. PS, Min of Regional Government and lands
v. PS, Min of Trade, Regional Integration, and Employment
vi. PS, Min of Youths, Sports and Culture
vii. PS, Min of Women, Children and Social Welfare
viii. PS, Min of Environment, Forestry, and Natural Resources
ix. Governor, Central Bank of the Gambia
x. Director General, Department of Strategic Policy Unit, Office of the President
xi. Director General, GCCI
xii. Executive Secretary, TANGO
xiii. Executive Secretary, NEA
xiv. Projects Coordinator, CPCU (Secretary)
xv. Farmers' Organizations (Representative)

In addition to the above coordination frameworks, the Government will maintain regular and consultative coordination with all the relevant development partners and donors (in country and external) through periodic Program visits and supervision to facilitate effective and smooth coordination and program implementation. This will additionally enhance the timely management of emerging coordination challenges as well as duplication and waste of program resources. Effective interphase with the development partners and donors with government will further strengthen the continued political support and commitment at the highest levels. Study tours to relevant and successful ATP implementing countries will be conducted to offer opportunities for learning and information sharing.

11.2 MONITORING AND EVALUATION (M&E)

The GATP monitoring and evaluation (M&E) system will be executed according to the proposed implementation structure of the Program and therefore will be fully incorporated into the Gambia Agricultural Information

Management System (GAIMS). Thus, the need for setting up a reliable and functional Monitoring and Evaluation (M&E) system for the GATP is apparent and cannot be over-emphasized. After series of difficulties encountered in performance of past donor funded agricultural development programs/projects and absence of a robust M&E reporting system, there is the need to establish (institute) a highly results-oriented, dependable and informative M&E system for the GATP. This will be incorporated into the revitalized Gambia National Agricultural Database (GANAD). Verifiable monitorable indicators with targets stated in the program's log-frame will be used to assess performance over the 10-year program period. This will also be supported by the regular and timely assessment of program activities quarterly as stipulated in the annual work plans and budgets (AWPBs).

In the program areas, a participatory M&E system will be adopted to tap the active involvement of stakeholder/beneficiary participation in the GATP M&E system. This will enhance transparency and accountability of the system as well as strengthen the data collection process for reliability assurance.

Given the current institutional structure and mandate of the MoA, the Central Project Coordination Unit (CPCU) is identified to take overall responsibility of program M&E as aligned to GAIMS framework. The M&E team will ensure effective and timely monitoring of progress towards achieving the program development objectives. Data on demand-driven components can only be gathered as and when program beneficiaries are identified. The program's M&E system will also collect social and environmental monitoring indicators to:

- Verify whether or not the mandatory safeguards screening and other program investments are in line with the Bank's procedures; and
- Assess the effectiveness of the environmental mitigation measures implemented, including the extent to which sub-programs are prepared and subsequently managed in an environmentally and socially sustainable manner.

The M&E system will also collect data on management and impact indicators and disaggregates them to allow for proper assessment of impact on youth and gender. This will also include data collection on environmental and social monitoring results. Regular and timely M&E reports will be prepared quarterly, semi-annually and annually at the project level. The quarterly reports will be disseminated to sector Ministries and interested development partners. At program implementation start up, two main activities will be undertaken: (i) conduct the baseline survey to collect benchmark data/information on indicators for comparative analyses, and (ii) carry out mid-term review (MTR) and program completion report (PCR) at year 5 and year 10 periods respectively.

A program performance audit (PPA) should be carried out shortly after program completion to assess the impacts, achievements and chart the way forward for subsequent programs/projects. The program M&E staff will work with numerous stakeholders and beneficiaries in order to collect invaluable secondary data/information for inclusion in the M&E database for comparative purposes. Similar to the Program Coordination Component, similar study tours to relevant and successful ATP implementing countries will be conducted to offer opportunities for learning and information sharing.

Table 62: Coordination and M&E Program costs

No.	Activity	Quantity	Price (USD)	Amount (USD)
1	PSC Quarterly Coordination Meetings (40 meetings/15 members)	40 meetings/15 members	300	180,000
2	Component Quarterly Meetings (160 meetings/10 members each)	160 meetings/10 members each	200	320,000
3	Coordination Study tours (4 study tours/8 members)	4 study tours/8 members	Lump sum	300,000
4	M&E Study tours (4 study tours/5 members)	4 study tours/5 members	Lump sum	120,000

No.	Activity	Quantity	Price (USD)	Amount (USD)
5	Study tour for Farmer based Organisation (2 tours/identified commodity)	40 visits/4 staff	Lump sum	64,000
6	Capacity Building - project staff, service provider institution & beneficiaries	1	Lump sum	90,000
7	M&E operations to Programme sites	1	Lump sum	70,000
8	Project startup workshop	1	Lump sum	70,000
9	Baseline study (lump sum)	1	Lump sum	90,000
10	Mid-term review (lump sum)	1	Lump sum	70,000
11	Programme Completion Report (lump sum)	1	Lump sum	70,000
12	Impact Assessment study (lump sum)	1	Lump sum	90,000
13	Environment Impact Assessment (EIA)	1	Lump sum	1,000,000
14	Environmental & Social Management Plans (ESMP)	1	Lump sum	500,000
15	Environment and Social Safeguard Audit (ESSA)	1	Lump sum	500,000
16	Construction of Projects Ocffice complex and Relocation of CPCU	1	Lump sum	2,000,000
17	Vehicles	1	Lump sum	1,000,000
18	CPCU Operations - remuneration, office facilities, vehicles and equipment	10 years	Lump sum	4,500,000
19	Equipment support to Service Providers (Implementing Partners)	1	Lump sum	2,000,000
20	Knowledge Management and Communication	1	Lump sum	250,000
Total				**16,504,000**

11.3 IMPLEMENTATION CONDITIONS

i. The M&E system should be improved through introduction of CCM (Coordination Committee Meeting) concept at MOBSE. This will entail constitution of technical experts from various stakeholders including farmer representatives that will conduct bi monthly or quarterly meetings at regional level where the status of implementation for the particular region is reported and discussed. At these meetings, the committee would also be able to verify on the spot what is reported. Decision of the steering committee shall be informed by the recommendations of this technical committee. This arrangement has had significant impact on the implementation of MoBSE's "Fast Track Initiative" project funded by The World Bank.

ii. Ongoing initiatives on policy development and development of new ones relevant to the agricultural sector must be pursued urgently to ensure implementation process is not interrupted by inappropriate policy environment. The cooperative and extension policies which are being developed with FAO support and the livestock sub-sector which presently does not have a policy are some of the examples.

iii. Establishment of regional agricultural planning committee chaired by Regional Governors with Regional Agricultural Directors as secretaries would be an impetus in the overall planning and implementation process. The CCM monitoring would be based on the approved plans and budgets, and budgetary allocations would be performance related.

iv. In view of the important role that the public sector should plan for the successful implementation of the program, and given the need for undesirable attitude of staff towards postings and work in general, special staff appraisal schemes for staff of the ministry especially those within the program should be developed and implemented. Staff reward should be based more on performance rather than length of service and level of qualification.

v. To create the capacity at the level of the Ministry (including technical departments ie DoA, DLS and NARI), the need for institutional restructuring either before or during the first year of the program would be of absolute necessity. This will entail detachment and integration of some of units such as Agribusiness and Planning Services as separate departments from DoA. In the same vein, the functions of the various units and departments must also be clearly articulated in their respective policies to enable them to be more focus and efficient. In that regard the need to update some of the sub-sector policies would be necessary.

vi. The GATP will be implemented in line with several national policies, plans, and strategies, therefore the need for coherence and commitment to the identified national policies will be of paramount importance in order for the programme to achieve its stated milestones. In this regard, GATP implementation should therefore meaningfully contribute to the realization of stated national policy objectives and targets.

12. RISK ANALYSIS

Experiential evidence has shown that a program risk factor analysis hinges on the possibility that the program events/activities will not happen as planned or that unplanned events will occur that will have negative impact on a given program. In this regard, the risk factor analysis of a program is usually based on the premise that known risks can be identified before they occur, while unknown ones are unforeseen and almost impossible to plan for or prevent. Under these circumstances, a risk factor analysis is carried out on the GATP to determine the extent to which its key activities are potentially affected by identified risks. These key risks are classified according to their perceived severity into low (L), moderate (M) and high (H) risks that may occur during the implementation and management stages of GATP. Most importantly, the overall risk assessment of the program is rated moderate (M) both at preparatory and implementation stages.

12.1 SOURCES OF RISK

The primary sources of occurrences of these risks can be summarized into political, economic, institutional, donor support, environmental and weather, organizational, elite capture, land tenure system, attitudinal change, and stakeholder/beneficiary risks. The nature and ranking of each of these categories are detailed below:

i. Political: the risk is the government's non-committal to the full implementation and management of the program (GATP) which may delay program start up, implementation and management process. While all national policies, plans, and strategies are supportive of development of the agricultural sector and consider it a high priority, it is recognized that a lack of political will is a critical risk factor (and typically a major driver of failure of past attempts for transformation) and therefore, this risk factor must be maximally mitigated in the construction of the strategy and implementation plan. Other risk factors associated with the political dispensation include:

   - High turnover of responsible senior government officials in the country that may increase uncertainties over coordination, especially at the policy level; and
   - Migration of skilled staff and capacities, which may potentially harm the implementation of policies and represent substantial risks to implementation.

   It is envisaged that key stakeholders notably the public sector, the private sector, NGOs and Civil Society Organizations will all have a buy-in in GATP implementation. This risk is rated low (L) given the current political situation of the country.

ii. Economic: GATP will require substantial investment funding for the realization of its stated objectives and activities. It is therefore important that the Government through the Ministry of Finance and Economic Affairs (MOFEA) and other concerned institutions be able to mobilize substantial financial resources for timely counterpart funding and that the private sector is also properly incentivized including financial and regulatory to actively participate in providing adequate investment to the program. GATP will position agricultural sector as a business hub and focus on the creation of competitive returns to investment through the provision of a conducive environment. Without adequate funding from MOFEA, GATP will run into counterpart funding difficulties hence resulting in undue irregularities in implementation and management. Frequent breakdown in electricity supply coupled with the high cost of fuel will derail the integral value chain process of GATP. This risk factor is rated high (H).

iii. Institutional: the two decades of autocratic rule destroyed the very fabric of the country's efficient and effective institutions built during the first republic. During the autocratic rule, there were massive sackings of professional senior, middle and even junior staff of the public, parastatal, and other institutions allegedly associated with the dictates of the autocratic rule. These unlawful sackings and arrests of a cross-section of the employed mainly weakened public institutions and additionally removed the very cream and experienced human resource base of the country. These anomalies inculcated concoctions in the academic morals of most senior staff who eventually either left the country or stayed in-country with low morals in the execution of their respective responsibilities. This statuesque will not be easy to rectify and may pose high risk for the

implementation and management of the GATP without proper scrutiny of the staff to be recruited. Notwithstanding emerging from an autocratic rule, the implementation and management of GATP will require highly motivated, experienced and moral personnel. This is already a mammoth task given the negative impacts inflicted on the performance of institutions and their employees. To hire the most competent staff for GATP implementation and management, a demanding staff recruitment process should be pursued to employ the most highly experienced and motivated staff. GATP will work with a multitude of institutions, stakeholders and beneficiaries in order to carry out complex tasks. In this regard, it will need a human resource with high negotiation, coordination, and management skills. A lack of incentive to undertake institutional and business process reforms will constitute another implementation risk for GATP. The program will devote substantial resources to institutional strengthening among the technical implementing agencies at the policy, coordination and technical levels. This risk factor is rated high (H).

iv. Donor Support: most if not all agricultural programs and projects implemented in the country were and will continue to be largely donor funded. Given the country's debt GDP ratio of 130 percent, taking exorbitant loans for agricultural development will only increase the country's debt burden and plummets her international credit worthiness and thus perpetuates its economic downturn. GATP requires substantial investment funding for the realization of its stated objectives. It is therefore of paramount importance to provide the enabling environment for the private sector to take lead in the mobilization of adequate investment resources for program implementation. However, this requires that the private sector be properly sensitized and incentivized to actively participate in the implementation. Thus, GATP will position agriculture as a business venture and focus on the creation of competitive returns to investment. This risk factor is rated medium (M).

v. Environmental and Weather: Climate change and its consequences including frequent droughts, floods, and windstorms are key concerns which could inhibit agricultural production and productivity of crops and livestock resulting in the non-attainment of key program targets and activities. This will be mitigated by the employment of appropriate climate smart agriculture practices including the installation of irrigation infrastructure and systems, adaptable seeds and animal species without irreparable damage to the environment. The advent of climate change and associated uncertainties will necessitated the adoption of relevant agricultural insurance schemes within the context of GATP to provide some measure of assurance to the farmers and private sector actor regarding their investments. Regarding environmental and social safeguards, the program is classified as a "Category B" as the negative impacts are likely to be small scale and site specific. The risk is considered moderate (M).

vi. Elite Capture: the risk of elite capture exists and may affect the program. Farming communities may be marginalized in decision making and choice of sub-program, which could create room for elites to divert the benefits of the programs for self-gain. Mitigation measures would include: (i) effective supervision and monitoring to ensure that the benefits are going to the intended target groups; (ii) funds will not be granted to individuals; (iii) representatives of POs/NGOs, civil society and private sector will be represented as part of the approval committees; and (iv) appointment of a technical auditor to review quality of service providers in the sub-projects as well as the management of funds by beneficiaries. These will further be enhanced by ensuring that the targeting and program indicators are unambiguous and sharp. Elite capture can also be worsened by the fungibility of investment funds where such funds are not used for the purpose intended. This risk factor is rated low (L).

vii. Stakeholder/beneficiary: GATP will work with numerous stakeholders and beneficiaries alike. Full acceptance and active participation of stakeholders and beneficiaries will be critical for the implementation and management of the GATP. The risks associated with the capacity of producer organizations and private sector operators to fully take over ownership and management responsibilities for the commercial infrastructure such as farm machinery, processing facilities, warehouses, market stalls that the program will help develop, arrangements will be discussed and worked out with stakeholders right from the conception stage to ensure the effective and rapid transfer of ownership and management responsibilities to them. This risk factor is rated low (L).

viii. Organizational: the limited organizational coordination between partners may pose risks in the implementation of the GATP. Low coordination between partners can lead to moderate to high risk in the implementation and management of the program. GATP will work with a number of partners including public, private sector, and civil society organizations that have interest in agriculture, food and nutrition security, resilience, climate change and so on. It is envisaged that the GATP will foster partnership with all these stakeholders and that they will serve in the multi-sectoral Program Steering Committee (PSC). The membership composition of the PSC will later be determined. The Ministry of Agriculture (MOA) will play a direct lead role in convening partners and facilitating them to hold each other accountable for agreed-upon targets. The MOA will also create the conducive environment in which partners can translate high-level commitments into concrete strategies to transforming specific agricultural value chains and agro-ecological zones. GATP will build internal capabilities to track and monitor progress against these collective commitments.

In addition, the recent countrywide stakeholder consultations by the Team of Consultants revealed that there are gaps between current public/private sector capabilities and those required for program implementation and management. These gaps need to be filled for effective implementation and provided recommendations on how to address the identified gaps through leveraging partnerships, capacity building, and in-house training. It is therefore recommended for approval that the public sector will not execute the program alone. Target partners (yet to be identified) will be charged with the responsibility of executing the various value chains mainly drawing on a broad spectrum of expertise in order to drive program implementation. Coordination of such partnerships inevitably involves trade-off between risks associated with capabilities at the public/private sector/civil society partners vis-à-vis the complexity of coordination. As a result, the coordination mechanisms at the various levels will be critical in ensuring that there is associated breadth and depth in terms of partner capabilities in key execution areas. This risk factor is rated medium (M).

ix. Foreign Exchange Fluctuations with limited Market Access: tradable agricultural products may have only limited access to regional and international niche markets and the resulting foreign exchange fluctuations might not make exports attractive. These risks will be mitigated through the adoption of prudent macroeconomic, agricultural and trade policies that allow for the application of smart agricultural techniques. This will enable the production of standard quality produce that satisfies the sanitary and phytosanitary (SPS) conditions of most regional and international markets (including EU, USA, and Asia). This is rated medium (M).

x. Pest and Disease Outbreaks: the outbreak of pests and diseases in both crop and livestock sub-sectors is critical to agricultural development. This menace can cause serious decline in economic growth and development of the country which may pose potential risk in the performance of GATP. The surveillance and control of domestic and transboundary pests and diseases and promotion of best agricultural practices will be key mitigation measures during the GATP implementation process. This is rated high (H).

xi. Youth Migration: population estimate by GBoS, has shown that Gambian population is youthful and comprises 64 percent of 1.9 million people. They are the cream and potential work force of the country. In recent times, youth are not attracted to agricultural farming as a way of self-livelihood. They often migrate internally to potential peri-urban and urban centres in search of greener pasture. Youth migration is a critical risk factor to the development of GATP implementation which is highly associated with the rural-urban drift where youths move to economic growth centres within the country and also use backway routes where the fortunate ones reached Europe while the unfortunate got many drown in the Mediterranean Sea or repatriated to the country of origin. A situational analysis has shown that youths are not attracted to agriculture. A consultative meeting with some of the National Assembly Select Committee Members revealed that youths are still in agriculture perhaps not in large numbers. Therefore, this risk factor can be mitigated through:

- Sensitizing youth about their invaluable role in agricultural expansion and development for economic growth;
- Providing investible resources (financing and agricultural technologies) to youth for sustainable development of the value chain;

- Linking youth farms with niche markets to ensure optimal produce marketing and above all; and
- Training youth in agribusiness and entrepreneurship skills. This risk factor is rated high (H).

xii. Land Tenure System: inasmuch as land is regarded "state owned" in the country, customary land tenure system prevails where traditional clan or earlier family settlers own land in and around a village. This land can be shared among family members on patrimonial lines with little regard to women ownership of that family land. In this regard, women don't have well-articulated usufruct right to family lands although they can temporally be allocated land (not virgin) for use for agricultural production. They can also have additional land from their husbands' families albeit only when they remain in marriage relationships. During field consultations, it became apparent that access to land is very critical as one of the key factors of production. Smallholder farmers have limited access to suitable land for crop production. This phenomenon poses risk to agricultural production as land may not be available to poor farmers, youth and women thus limiting agricultural production and productivity. To avoid this, farmers' preferred risk mitigation measures include:

- Allowing small scale farmers accessing suitable land with the potential to increase crop production through sharing, hiring and borrowing with women catered for;
- Limiting hoarding land in line with its productive use;
- Avoiding abrupt land seizure out of vengeance or jealousy and also;
- Avoiding expensive cost of hiring land.

All the above should be backed by effective and appropriate national regulation and land mapping to facilitate rational land use planning in future. In the absence of these mitigation measures, GATP performance in terms of crop and livestock production will be seriously limited. This risk factor is rated high (H).

xiii. Attitudinal Change: in general, attitudes towards agricultural development in the country is largely low and unprogressive. With this statuesque, GATP implementation will certainly run into difficulties. It will not be able to deliver on its target objectives and activities if attitudes are not positively changed towards progressive agricultural development. Youths who are extremely targeted by GATP as beneficiaries are largely absent from the agricultural sector and agricultural value chain activities are left to old resource poor farmers. GATP implementation cannot be operated under this dispensation. Therefore, current attitudes toward agricultural development must be positively changed to enhance agricultural value chain. Incentivized and well-sensitized youths will be mobilized to carry out GATP activities on a sustainable basis and such youths will see agriculture as a way of life and business entity that can boost their livelihood.

xiv. Inappropriate Use of Technology: the availability and use of technology in agriculture are critically important for mechanized farming and as labor saving device for all categories of farmers. However, the procurement of inappropriate technology will deter its effective use in the promotion of agricultural value chain. Therefore, the mitigation measures will include:

- Providing appropriate technology;
- Using appropriate technology and
- Providing regular maintenance and repairs services for the purchased technologies.

12.2 SOCIOECONOMIC CHARACTERISTICS OF THE FARMERS

Agricultural production is the main economic activity in the Gambia but has declined throughout the 1990's and even some years in the 21st century in recent times as a result of several factors including poor rainfall distribution, weak marketing infrastructure, lack of access to credit (especially for the youths and women), limited resource base, declining soil fertility, intermittent pest and disease outbreaks, limited availability of inputs for use in the value chain and limited access to agricultural technologies for value chain development and sustenance.

The population of Gambian farmers was estimated at over 0.5 million out of a total population of 1.9 million people (GBoS, 2013) with an annual growth rate of 3.3 percent and 51 percent constitutes women and 50 percent of the total

lives in the rural areas. At least 64 percent of the resident population constitutes the youthful population. The farming population can be broadly classified into three: small-scale resource poor; medium scale and large-scale farmers.

i. Small-scale and Resource Farmers: as the name implies, they operate small farms not exceeding 2ha (1-2 ha) per person without financial resources to buy inputs (seeds, fertilizers and other agro-chemicals) and farming implements. Their primary source of inputs (seeds) is own harvest. They often practice mixed farming where both crops and livestock are raised for subsistence production with little or no use of draft animals. Their mode of crop farming is exclusively traditional using rudimentary farming implements (hand hoes-short and long types) for crop production and extensive livestock production characterized by free range during the dry season. During the rainy season, small-scale farmers mainly grow traditional crops such as early and late millet, maize, sorghum, paddy rice, groundnut, sesame, melon, and pumpkin. While they also rear livestock comprising cattle, small ruminants (sheep and goats), pigs, draft animals (mainly donkeys, horses and oxen) where available and poultry (chicken, ducks, guinea fouls and so forth). For small ruminants, they are tethered during the rainy season or sometimes put on a free range under the supervision of herders to graze in designated pastoral areas. Poultry are kept to roam around the compound where they scavenge for food and water. The bulk of crops and livestock is produced by small scale resource poor farmers thus depicting the subsistence nature of the production system. Attributed to their poverty level, these farmers hardly meet their annual food requirement (food insecure) particularly during the peak of the hungry season (July to early part of September) when food stocks are extremely low. Some families who are lucky to have relatives abroad rely heavily on remittances within and outside the country for assistance during the hungry season. Other small-scale farmers resort to selling a portion of their extremely low stocks of crops and or small ruminants and or poultry as coping strategies to reduce hunger until the incoming crop harvest. At the end of the harvest, they offer for sale their cash crops (mainly groundnuts, sesame and to some extent cotton) through their cooperative agents/individual buyers, the income of which they use for family expenditure (feeding, medical bills, school fees, water and electricity bills and so forth) sourced from the consultative meetings with stakeholders. This is the category of farmers who actually need help to transform their status from dire subsistence to commercially-oriented agribusiness entrepreneurs.

ii. Medium scale Farmers: these are farmers who cultivate between 2-5ha of crops and also rear livestock on free range or semi-intensive system. Most of them live in the rural areas but a sizeable number of them also live in peri-urban areas where they access land through inheritance, hire purchase, renting and borrowing. Their mode of production of crops is largely semi-intensive where animal traction, power-tillers, and tractors are used for land preparation and transportation of produce from farmgate to homesteads and to various marketing centres. These farmers are more food secured and commercially-oriented than small scale farmers. Medium scale farmers also carry out animal husbandry using at least a semi-intensive production system particularly poultry for which housing and conventional feeding system for both broilers and layers are provided. A good number of them is also engaged in horticultural production, processing, and marketing (including exports). They may not be fully involved in the whole value chain system but play a critical role in sustainably promoting and expanding the commercial venture. Medium scale farmers do accrue economic benefits from their agricultural production activities and therefore, need assistance to upscale their invaluable value chain activities to large scale farming system for greater realization of GATP objectives.

iii. Large scale Farmers: include those individual farmers who cultivate 10ha and more. They are more food secured than small and medium scale farmers are. They may acquirement land through traditional land tenure system, hiring and borrowing. They use mixed mode of crop production comprising semi intensive and intensive methods. Principal crops grown include early and late millet, maize, sorghum, groundnuts, rice and fruits, and vegetables. Technologies used include tractors, power-tillers, animal drawn equipment (seeders, sine hoes, and carts) and processing facilities. Their crop production modus operandi is largely efficient and timely due to the fact that they possess farm machinery for early land preparation and ploughing. Some large-scale farmers are also involved in other value chain activities such as milling, storage, and marketing. Few others are also engaged in horticultural production through the cultivation of fruits and vegetables. It is estimated that their levels of production and productivity are grossly higher than both small and medium scale farmers well associated with increased use of improved seeds, chemical fertilizers, and other agro-chemicals.

Large-scale farmers also rear livestock on semi-intensive and intensive production system. For poultry, an intensive production system is largely used through construction of houses, provision of conventional feeding and drinking facilities, electricity, drugs, and vaccines. They at least employ one worker to take care of the daily chores involved in poultry keeping.

iv. Commercial Farmers: these farmers may be individuals or companies mainly engaged in agricultural value chain. They usually cultivate more than 10 ha. Some farms operated under this system of production can measure up to 300ha (for example Radville Farms). They employ modern system of agricultural production and in some cases contract farming. There are not many large-scale farms in the country. These farms include: Radville Farms Gambia Ltd, M.A. Kharafi & Sons Gambia Company Ltd, Moggy Farms, Gambia Horticultural Enterprises (GHE), Yatsse Gardens, Tee Farms, Comafrique Limited, Kombo Farms, Chossan Product Tradings and Romar Farms Gambia Limited are farms operating in the country. Cumulatively, these farms employ a sizeable number of Gambian population comprising males and females as well as youths. Of the 11 farms identified, 4 farms rear livestock mainly poultry and 7 concentrate on growing horticultural crops for commercial purposes. These farms also adopt the use of high technologies in their value chain process in order to produce quality and SPS ready products for exports. These agricultural products are partly consumed in country while a substantial amount enters the EU markets without stiff barriers to trade due to satisfying such requirements. The Government of the Gambia also provides the enabling environment for the proliferation of such commercial farms through the provision of temporal ban on the importation of certain horticultural crops like onions and Irish potatoes in lieu of M.A. Kharafi and Sons' production of these crops. GATP will closely work with large-scale farmers in concretizing their agribusiness achievements and to allowing them train small and medium scale farmers on agribusiness principles, management skills, and success strategies. A private-private sector partnership will be formulated to encourage a sustainable win-win situation. An agricultural financing spectrum should be made available for large-scale farmers to benefit from, in order to expand their agribusiness enterprises at additional economies of scale. The mechanism of this financing window can be modelled on the establishment of a new Non-Bank Financial Institution (NBFI), strengthening existing NBFIs or the setting up of an Agricultural Development Bank (ADB) to offer financing opportunities to all categories of the agricultural value chain operators.

12.3 THE ASSOCIATION BETWEEN THE FARMERS' CHARACTERISTICS AND SOURCE OF RISK AND MANAGEMENT PERCEPTION OF RISKS

In the Gambia, there are many different types of risk factors facing farmers. Some of these risks are almost insurmountable attributed to their exogenous nature beyond both government's and farmers' control. For instance, Gambian farmers have very little leverage points to change EU and US quality and SPS requirement standards. Like other least developed countries, Gambian farmers can only comply with EU and US agric-food or produce requirements. Over a decade or so, Gambian groundnuts exported to the EU markets were regarded as either bird feed or unfit for human consumption and thus returned. This causes great economic and foreign exchange losses to the country which in turn slows down the nation's export promotion efforts as enshrined in many national development policies/plans such as the National Development Plan (NDP, 2018-2021), Agriculture and Natural Resources Policy (ANRP, 2017-2026) and the just ended Program for Accelerated Growth and Employment (PAGE, 2012-2015) and others. The table below presents the association of farmers' characteristic, source of risk and management perception of risks. It is clearly shown in the table that small scale farmers face more risks than medium and large scale farmers due to their poverty level, limited access to suitable land areas, climate change vagaries, limited access to inputs, farm machinery and lack of control over farmgate prices. For the country to minimize the inherent risks encountered in the agriculture value chain, utmost care should be taken to operationalize mitigation measures indicated in the last column of the Table 61.

Table 63: Association of Farmers' Characteristics, Source of Risk and Management Perception of Risks

Farmers' Characteristics	Source of Risk	Management Perception of Risks
Small-scale Farmers:		
Limited access to potential land for production	Land owners (the indigens) don't want to make available potential land for increased agricultural production (L)	Relinquish land to potential farmers through borrowing, hiring and selling
Traditional small size farms not exceeding 1ha per person	Small farmers have inherently low production and productivity of crops (M)	Make land available to small scale farmers through improving customary land tenure system and also provide the necessary inputs such as improved seeds, organic and or chemical fertilizers and other agro-chemicals
Limited or no access to financial resources	Small farmers resort to hire labour or sell their assets which deepen their poverty levels (H)	Improve access to agricultural credit with acceptable interest rate through improved access to NBFIs and Commercial Banks loans
Limited access to agricultural inputs	Limited access to financial institutions undermined access to inputs and hence low output (H)	Improve access to agricultural inputs through adequate financing and accessing matching grants with acceptable collaterals
Limited ownership of and or access to farming implements	Poverty is the bed rock of limited or no access to farming technologies (M)	Allow NBFIs' credit facilities to be extended to small scale farmers and also grant access to matching grants with user friendly terms and conditions
Grow traditionally low yield crops	NARI and the NSS are grossly underfunded to carry out adaptive research on varietal screening and seed varietal (cultivar) certification (M)	Conduct adaptive research varietal trials on seed cultivars to improve seed quality and upgrade them to certification level
Small scale farmers raise indigenious livestock breeds	DLS and WALLIC have limited funding for research on animal breed improvement programs (M)	Encourage and fund the Department of Livestock Services (DLS) and WALLIC carry out artificial insemination schemes between the indigenous and foreign breeds (Friesian) with high yielding milk and body weight improvement capacity. Let the progenies be disseminated among farmers with adequate extension support.
No organized feeding system for livestock (mainly small ruminants and poultry)	Local livestock owners largely rear indigenous breeds (small ruminants and poultry) under free range scavenging for food and water (M)	-Ditto-

Farmers' Characteristics	Source of Risk	Management Perception of Risks
Low or subsistence production and productivity of crops and livestock	Poverty of the small scale farmers accounted for low production and productivity of crops (M)	Give financial support to these small scale farmers to buy agricultural inputs, technologies, and access markets and marketing facilities for remunerative commodity prices
No cash incentive from the sale of their produce	Small scale producers are price takers and not price setters, therefore, they receive low farmgate or market prices (M)	Government to provide the enabling environment to support setting and enforcing remunerative price mechanisms for agricultural produce.
Income not enough for family upkeep	Small scale farmers receive giveaway prices for their produce and caught up in the vicious circle of poverty year in and year out (M)	-Ditto-
Medium scale Farmers:		
Access to land also limited because they can cultivate up to 25ha if not more through inheritance, purchasing, hiring and borrowing with or without cash	Medium scale farmers may not access all the land they require for their mechanized agricultural production system (M)	Make available to these farmers adequate land to carry out their desired agricultural production outlay
Use both extensive and semi-intensive methods of farming	-Ditto-	-Ditto-
Limited access to adequate agricultural financing	Medium scale farmers also lamented over inadequate access to agricultural financing as Commercial banks don't readily lend to small scale and medium scale farmers due to the risks encountered in the agricultural value chain (M)	Support increased financing to the medium scale farmers through improving access to commercial banks' and NBFIs' loans
Limited access to markets and marketing facilities	Government lags behind in providing the enabling environment for farmers to access international niche markets (L)	It is under government's purview to foster public private partnership in niche market access
Large scale Farmers:		
Limited access to international markets due to not satisfying the quality and SPS of some international niche markets	-Ditto-	-Ditto-
Inadequate agricultural financing	Government's minimum intervention in Commercial banks' lending to agriculture is a great cause of concern (L)	Government's intervention will be of key impetus for the regularization of the situation

Farmers' Characteristics	Source of Risk	Management Perception of Risks
Absence of any agricultural insurance scheme to cover agricultural investments	Uncertainties arising from climate change, pest infestation and farm accidents	Hedge against high damages to agricultural crops and livestock produce through joining insurance schemes. Government and private sector partnership should create the enabling environment to access affordable insurance facilities in order to minimize potential damages.

13. STRATEGIC RECOMMENDATIONS

The following recommendations are proposed for GATP's effective coordination and management for the achievement of its stated objectives and targets:

i. Crops, Livestock and Farm Machinery

- The GATP will be implemented in line with several national policies, plans, and strategies, therefore the need for coherence and commitment to the identified national policies will be of paramount importance in order for the programme to achieve its stated milestones. In this regard, GATP implementation should therefore meaningfully contribute to the realization of stated national policy objectives and targets.
- The absence of a well-articulated livestock sub-sector policy rendered the subsector's performance unguided and uninformed. Hence there is urgent need for the sub-sector to prepare, validate and operationalize a user-friendly subsector policy for transparency, accountability, and probity.
- Crop value chain models of GATP are mainly results-based and their applications will need full support from all stakeholders for the realization of GATP objectives and targets with the primary aim of transforming the sector from traditional subsistence to commercially-oriented sector through ensuring food, nutrition and income security of agricultural farmers particularly the smallholder farmers (men, women, and youths) and surpluses to be marketed.
- Improved crop seed varieties are targeted to be used by programme beneficiaries with the main aim of steadily replacing the traditional ones for greater production and productivity. Albeit conscious of this, the National Seed Secretariat (NSS) seed multiplication activities will be strengthened to ensure seed certification and dissemination.
- Access to adequate farm mechanization equipment and the application of various appropriate technologies in the value chain should be fully funded and operationalized for the achievement of GATP stated milestones as well as for labour substitution.
- Adequate farm input availability, accessibility, and affordability must be ensured for increased production and productivity of crops and livestock with remunerative returns to investments.
- The surveillance and control of pest and disease outbreaks should be strengthened to stem against crops and livestock damages with serious consequences to food, nutrition, and income security.
- Introduction and proper utilization of appropriate agricultural machinery, equipment and implement in the development of target commodity value chains is essential to address problems associated with drudgery and post-harvest losses, promote intensification and enhance sustainable food production, and commercialization of the agricultural sector as envisaged in the GATP.
- Promotion and adoption of irrigated agriculture, especially in the seed production sub-sector, is vital in pursuance of climate smart agriculture, and the assurance of crop production under variable climatic condition.
- Cognizant of the fragility of the upland soils of the Gambia, minimum tillage is the preferred mode of cultivation. A policy directive outlining the acceptable cultivation practices under various soil typologies should be developed.
- For sustenance of the machinery and equipment proposed for accessing through appropriate financial mechanism under GATP, operator training and accreditation (in collaboration with the police licensing authority) to operate the agricultural machinery should be an integral part of the conditions of contract.
- Regulate the importation of chicken to guard against unfair trade practices.
- Enhance access to quality and affordable poultry feed and day-old chicks by creating enabling environment and enhancing access to appropriate financial mechanisms for private sector investment in the chicken value chain.
- Promote maize cultivation (an integral component in poultry production) to cut down on the high price of locally produced feed.

- Establish food and feed testing laboratory under the Ministry of Agriculture and regulated by the Food Safety and Quality Authority.
- Investment in the feed mill located at Kamalo through Public Private Sector partnership to restore the operations of the government owned Gambia Food and Feed Industry.
- Enhance access to appropriate financial resources for private sector investment in day old chicks including hatcheries and parent stock production.
- Enhance the establishment of processing plants.
- To enhance production of village chicken by controlling New Castle Disease through countrywide mass annual vaccination campaigns for a period of 10 years.
- Build the capacity of farmers on feed conservation strategies, on supplementary feeding using crop residues and concentrates.
- Provide adequate animal watering points drinking and sensitization on bush fires prevention, since bush fires are detriment to pastures and grazing lands.
- Conduct of nationwide vaccination campaigns against PPR and Pasteurellosis for 10 years to sustainably control these diseases for increased production and productivity of small ruminants.
- Improving livestock markets by providing adequate facilities for animal handling including sheds and watering facilities.
- Articulate and adopt well defined roles for the public and private veterinary service providers in conformity with the recommended OIE sanitary mandate.
- Upgrade slaughter, processing facilities, transportation, and butcher shops to comply with the national food safety and quality regulations.
- Enhance access to niche markets for women and youth farmers by providing rams to fattening schemes as revolving fund.
- Farmer involvement is key and as such the strategy of revitalizing cooperatives is essential. This will enable proper organization of farmers so that agriculture value chain efficiency and effectiveness would be better enhanced. Better organization at farmer level would increase greater confidence of actors at the secondary and tertiary levels of the chain.
- The M&E system should be improved through introduction of CCM (Coordination Committee Meeting) concept at MOBSE. This will entail constitution of technical experts from various stakeholders including farmer representatives that will conduct bi monthly or quarterly meetings at regional level where the status of implementation for the particular region is reported and discussed. At these meetings, the committee would also be able to verify on the spot what is reported. Decision of the steering committee shall be informed by the recommendations of this technical committee. This arrangement has had significant impact on the implementation of MoBSE's "Fast Track Initiative" project funded by The World Bank.
- Improved management of the matching grant to make it sustainable by providing some of the capital to Micro-finance institution as a means of capitalizing them for the first five years. Part of the grant could be provided as interest free to beneficiaries and the principal retained as revolving fund to be lent to subsequent potential borrowers. In this connection, the principles of Islamic Banking as a way of avoiding interest charges could be another model that can be considered. The other component of the grant will be purely grant for low income under-privileged farmers to be identified using criteria that is transparent and relevant for the selection. This component of the grant could be managed by the project in collaboration with beneficiaries.
- Ongoing initiatives on policy development and development of new ones relevant to the agricultural sector must be pursued urgently to ensure implementation process is not interrupted by inappropriate policy environment. The cooperative and extension policies which are being developed with FAO support and the livestock sub-sector which presently does not have a policy are some of the examples.
- Establishment of regional agricultural planning committee chaired by Regional Governors with Regional Agricultural Directors as secretaries would be an impetus in the overall planning and implementation

process. The CCM monitoring would be based on the approved plans and budgets, and budgetary allocations would be performance related.

- In view of the important role that the public sector should plan for the successful implementation of the program, and given the need for undesirable attitude of staff towards postings and work in general, special staff appraisal schemes for staff of the ministry especially those within the program should be developed and implemented. Staff reward should be based more on performance rather than length of service and level of qualification.
- To create the capacity at the level of the Ministry (including technical departments ie DoA, DLS and NARI), the need for institutional restructuring either before or during the first year of the program would be of absolute necessity. This will entail detachment and integration of some of units such as Agribusiness and Planning Services as separate departments from DoA. In the same vein, the functions of the various units and departments must also be clearly articulated in their respective policies to enable them to be more focus and efficient. In that regard the need to update some of the sub-sector policies would be necessary.

ii. Strategic directions for maximum youth participation in Agriculture (Youth and Gender): This section presents specific and strategic recommendations for youth participation in agriculture in the country, based on the findings of the study as articulated above. For ease of reference and comprehension, the recommendations are presented in discrete albeit inter-related headings below.

- Support and strengthen youth empowerment, training, and incubation centers: The various existing programmes, such as Empretec, NEDI, PIA, and NYSS are focussing on sensitization and basic fundamentals of entrepreneurship. The success of the programmes in terms of business creation is relatively modest. The support provided is not sufficient to assist businesses or ventures to upscale and become small or medium-sized enterprises, even less to venture into exports particularly to high value markets. The agriculture sector should strive to develop a sector specific entrepreneurship and mentoring programme in collaboration with the relevant stakeholders and development partners to ensure maximum impact, relevance and coverage. Efforts should be made to strengthen the programme and institutional capacities of the existing programmes with support form NAQAA to facilitate the standardisation of their training content as well as quality and relevance to industry demands and requirements.

  In a similar but different direction, the government should strengthen the Gambia Songhai Initiative (GSI) at Chamen (NBR) by providing needed resources for equipment, machenery and after training support to enable the graduates to establish viable and profitable own agri-businesses. The government should also provide budgetary allocations to the centre to strengthen its prospects for sustainability. Efforts should also be made to establish effective linkages with industry to facilitate employment and marketing opportunities for their graduates and produce. To ensure adequate coverage and impact, the initiative should be replicated with appropriate adaptations at Kundam and elsewhere with a view to providing employment and income generation opportunities to rural youths.

  The government should work with the Ministry of Trade, Regional Integration and Employment (MOTRIE) to implement the action plan carved out for the strategic youth and trade roadmap (2018 – 2022). Being the largest employer of youth, agriculture offers untapped growth potential in agroprocessing. By moving from subsistence agriculture to a more formally structured agricultural production and commercialization with transformation capacities, youth will have a greater chance to engage in the local agricultural value chains.

  The development of more inclusive tourism products coupled with the transition to higher-value services and improvement of digital skills can help the country to develop new ICT-enabled services in different sectors to benefit from digital innovations, according to the strategic youth and trade road map.

- Develop youth-specific financing mechanisms: Farmers need access to credit to purchase inputs such as seed and fertilizer, as well as to finance harvesting, processing and transporting operations. In developing

countries, the most common form of collateral used for financing are immovable assets, such as land and real estate, while land tenure for many farmers is uncertain or insecure. However, some farmers may be able to rely on movable assets such as agriculture products, livestock and agricultural machinery[104].

The financial sector must improve its capacity to serve the nascent and weak existing young entrepreneurs throughout the country. The FGDs and KIIs indicate that youth and women have inadequate access to farm inputs, land, appropriate technologies, and credit. In the majority of cases, the youth and women do not have the required collateral to secure these resources. Furthermore, the existing matching grants are reported to be accompanied by stiff conditions that these two groups are often unable to meet, thereby precluding them from accessing the available matching grants. Microfinance holds the potential to reach the youth that conventional banks cannot, and efforts should be made to strengthen the youth specific micro-finance mechanisms to enable them to adequately access and benefit from the facilities. Furthermore, the government should create and strengthen linkages with the regional, international and multilateral youth initiatives with the view to secure additional technical and financial resources for these initiatives. In this regard, an over-arching micro finance institutional framework as detailed in the micro finance chapter above should be accorded due attention.

- Strengthen existing entrepreneurship education in TVET and university programmes: The impact of trained and skilled entrepreneurs and agripreneurs in the agricultural sector cannot be over-emphasised. The challenges and constraints faced by the existing TVET and higher learning institutions have been also succinctly articulated in previous chapters. Therefore, to ensure the attainment of adequate and appropriately trained youths in the sector, measures should be taken to strengthen the existing entrepreneurship education in TVET and higher learning institutions (Gambia College and UTG). The entrepreneurship training education programmes should be conducted on structured and standard curricular that is approved and certified by NAQAA. The training infrastructure including labs, practical facilities, and equipment should be provided to ensure that students acquire relevant and appropriate industry required skills and competencies. There should be provision for adequate financial and programme support to improve the quality of the trainings and the competencies of the graduates.
- Transform the mix farming centres into model youth and women production centres: The twenty five existing mix farming centers at district level should be upgraded and be transformed into model youth production and capacity building centres on strictly business lines fashioned along the Songhai initiative. These centres should be used by identified youth and women form the neighbouring communities as both a capacity building and production base on cost sharing basis. The centres once properly fenced and equipped with water and possibly electricity should be opened to a selected number of youths to be engaged in appropriate agricultural commodity value chains. The available extension staff should provide regular and relevant extension support and mentoring to the participants and efforts should also be made to link them to markets outlets for their products. Subsequently, reasonable and meaningful cost sharing mechanisms could be developed to enable the centres to be fully self-financing and sustainable. Over time, the participants could be linked to micro finance institutions to upscale and possibly establish own agro-businesses outside of the centres thereby creating opportunities for fresh youth intakes.

  This approach would help create a core of youth agripreneurs at community level, who will be well trained in their respective enterprises and effectively linked with industry and sources of finance. The gradual rolling out of the initiative to all the centres across the country will also allow for adequate preparation of the facilities, staff and needed equipment prior to commencement of the actual activities on site. Furthermore, given the shift from solely government funded and operated to famer-focused, business oriented and cost sharing approach, it will attract the attention and support of the development partners including the regional and multilateral institutions. Finally, the sustainability of the transformed

[104] World Bank. 2019. Enabling the Business of Agriculture 2019. Washington, DC: World Bank

25 district Songhai centres (mix farming centres) will have been assured with minimal government financing, contrary to what obtains currently.

- Revisit and address existing land tenure system challenges: The limitations imposed by the existing traditional land tenure system on the agricultural sector have been well articulated. Therefore, efforts should be made to encourage the Ministry of Lands and Regional Government to conduct a comprehensive cadastral mapping of the country to be able to determine land use patterns of specific geographic areas as well as develop an over-arching land policy that will address the contemporary agricultural, domestic and industrial demands and challenges of the country. The proliferation of new estates encroaching on fertile agricultural land is equally a challenge. This is further aggravated by the lack of regulation in this regard, the body that registers these estate agencies is not the one that regulates them, and there are inadequate coordination mechanisms between the two institutions. Deliberate efforts should thus be made to ensure a comprehensive mapping of all land resources in the country, which could also be a precursor to identifying all agricultural land resources for effective land banking for future uses. To this end, agriculture should urgently collaborate with the Ministry of Lands to identify and map all its land resources to avoid further encroachment and lost.

  As a complementary and alternative approach to the land tenure challenges, the sector should adopt and promote the approach of contract farming, land leasing and identifying strategic agricultural lands and work with the Ministry to appropriate them for future agricultural use. The combined adoption of these (medium and long-term) strategies could offer reasonable impetus for private sector involvement and investment in commercial agriculture in the country. Their effective application will, however, require strengthening the policy environment to assure security of tenure and investment over time.

- Continue to strengthen the policy and regulatory environment: The policy and regulatory environment for agri-businesses and agriculture commodity value chains presents some remaining challenges requiring careful attention to promote private sector participation and youth involvement. The establishment of the regulatory institutions (NAQAA, FSQA, and NSS) are welcome moves in the right direction. However, they still require strategic programme and institutional support to enhance their impact and coverage. They all require additional financial resources as well as competent and qualified technical staff to be able to effectively discharge their mandates. Furthermore, the absence of a standard and accredited laboratory facility continues to hinder FSQA's work and renders their services costly as samples have had to be taken to neighbouring Senegal for testing. The government should engage the private sector with the aim of establishing a standard and independent laboratory facility that will offer the needed testing services in country. Finally, NSS should be provided with the needed programme and institutional support as contained in their seed Plan (January 2018), to enable the sector to realise its full potential. Seed business is a viable and lucrative sector and its potential must be fully harnessed. It could offer significant opportunities for youth employment, income generation, and foreign exchange preservation.

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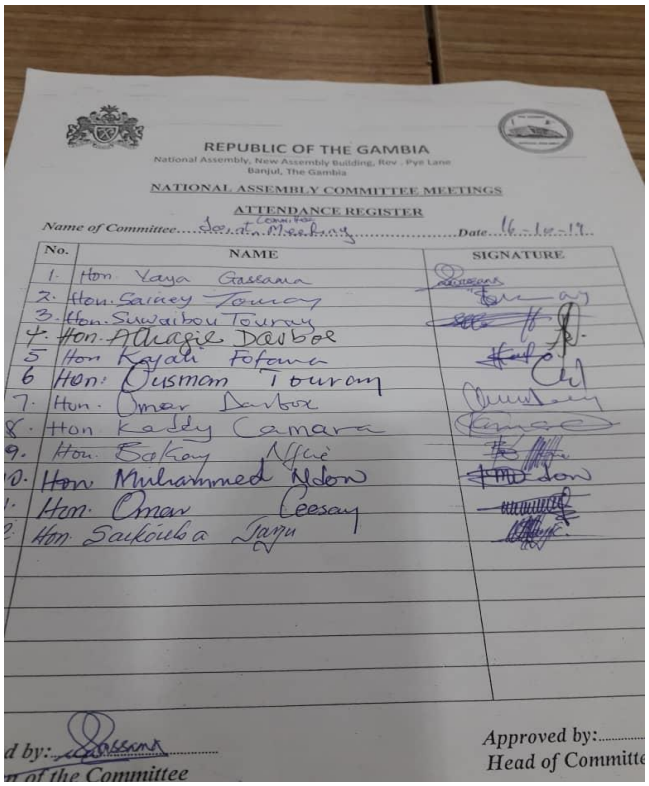
ANNEXURE 3: SOME PICTURES CAPTURED DURING FILED VIITS AND STAKEHOLDER CONSULTATIONS



REPUBLIC OF THE GAMBIA
National Assembly, New Assembly Building, Rev . Pye Lane
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NATIONAL ASSEMBLY COMMITTEE MEETINGS

ATTENDANCE REGISTER

Name of Committee: Joint Committee Meeting Date: 16-10-17

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2.	Hon. Sainey Touray	
3.	Hon. Siwaibou Touray	
4.	Hon. Alhagie Darboe	
5	Hon Kayali Fofana	
6	Hon: Dusman Touray	
7.	Hon. Omar Darboe	
8.	Hon Kaddy Camara	
9.	Hon. Bakary Njie	
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1.	Hon. Omar Ceesay	
2.	Hon Saikouba Jaju	

d by: Gassama
of the Committee

Approved by:
Head of Committe