

# THE JINJA- KAMPALA-MPIGI CORRIDOR

## PHYSICAL DEVELOPMENT PLAN

JUNE 2023

### CHAPTER 8 AGRICULTURE SECTOR STRATEGY



**Government of Uganda**  
Ministry of Lands, Housing and Urban Development

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## 8 Agriculture Sector Development Strategies

### 8.1 Overview of the Existing Situation

#### 8.1.1 Introduction

The Jinja-Kampala-Mpigi (JKM) corridor in Central Uganda is strategically located in the Lake Victoria Crescent agro-ecological zone, with coffee, fish and poultry being the priority commodities. More so, the corridor has a diversity of economic activities including crop farming, livestock production, fishing, trade and tourism. In a nutshell, each unit in JKM has a unique social, economic, and natural resource endowment, giving varying competitive advantages across the corridor. Illustrating this uniqueness is underscored by analysing the outstanding characteristics of each district in the corridor.

Additionally, from the perspective of current land-use patterns, JKM Corridor constitutes the most strongly urbanised region in Uganda. However, despite the growing urbanisation taking place across the JKM corridor, agricultural land still provides by far the strongest land use. Land use distribution and differences in agricultural production volumes reflect the variations across the JKM region. In this regard, analysis of land use in Wakiso and Mukono districts indicates that agriculture occupies 40.6 percent and 41.59 percent respectively. In Buikwe and Jinja districts, despite agriculture occupying 54.6 percent and 83.2 percent respectively, large-scale commercial agriculture occupies substantial portions of land. Precisely, Kakira Nucleus Estate, for example, has almost 10,000 hectares under sugarcane cultivation.

Furthermore, excluding open water, agricultural land use in JKM constitutes 62 percent of the total area. The built-up area is approximately 600 sqkm (8.5 percent). As most land uses that contribute to environmental quality provide much smaller areas of land to be mobilised, expansion of the built-up area is likely to come from land that is currently under agricultural use. Therefore, improving the agricultural productivity of the remaining land is critical to sustaining the growing population in JKM.

JKM is characterized as a very large-scale urban configuration and spatial economy which takes the specific form of a polycentric and multi-nodal regional corridor. It constitutes districts, cities, towns, villages, peri-urban and rural areas operating together as a regional economy at the heart of Uganda and collectively encompass varying specialisations and competitive advantages. In this respect, economic activities vary across the JKM corridor.

Precisely, myriad smallholder farming (crop and livestock), fishing and forestry activities surround the cities, towns and villages in the corridor, and provide farmers, fishers, foresters and resident population with sustenance – while also

making up a large part of Uganda's exports. The centre of Kampala City features one of East Africa's largest concentrations of producer services, serving both private and public sectors.

Overall, agriculture in the JKM Corridor competes with expanding urbanisation. Thus, subsistence farmers have been deprived of land, which is their most valuable resource. Consequently, the livelihood survival mechanisms are changing from agriculture-based to other alternatives. Generally, the main sources of income in the JKM region have become wage employment and non-agricultural enterprises.

According to a study by Mugisa *et al.*, (2017), cropping activities contribute on average 40% to the income of farming households in Central Uganda, complementing other livelihood sources such as transport business, livestock production, formal employment and other trade. As Agriculture continues to compete for land with increasing urban settlement and industrial establishment in the JKM corridor, its role as a main source of income in the household diminishes. Thus, putting pressure on the capacity of the regional economy to generate enough jobs to absorb the workforce that is leaving agriculture. Notwithstanding, the JKM corridor is a prime location for industrial investment due to the relatively developed infrastructure and market availability. Therefore, this presents an opportunity to strengthen agro-industrialisation, adding value to farm produce and employing especially the youth.

### 8.1.2 Crop sub-sector

Generally, people in most parts of the JKM region are farmers, mainly smallholder producers of bananas, coffee, tea, Irish potatoes, sweet potatoes, beans, maize, groundnuts, cassava, fruits and vegetables. Notably, agriculture in most districts of JKM is predominantly subsistence and at varying levels. Specifically, in Mpigi district the share of households strongly dependent on subsistence farming almost reached 60 percent in 2014<sup>1</sup>. Moreover, smallholder farmers in Mpigi grow fruits and vegetables, as well as coffee, maize, cassava and groundnuts. Likewise, agriculture is the main source of employment in Buikwe at 80 percent and this includes both commercial and subsistence farming<sup>2</sup>. According to the District Development Plan for Buikwe<sup>3</sup>, 46.7 percent of households in the district are subsistence farmers and particularly, 63.9 percent engage in crop production. Similarly, despite the presence of industries, Mukono district still has its economic base in agriculture and much of this is smallholder production for subsistence (42.8 percent)<sup>4</sup> and market sales, primarily in fruits, vegetables, grains, coffee production and horticulture. Additionally, Mukono is famous for growing high-value crops like vanilla, flowers,

<sup>1</sup> UBOS, (2017). National Population and Housing Census 2014. Area Specific Profile. Mpigi District.

<sup>2</sup> Buikwe District Development Pan, (2015/16 – 2019/20)

<sup>3</sup> UBOS, (2017). National Population and Housing Census 2014. Area Specific Profile. Buikwe district.

<sup>4</sup> UBOS, (2017). National Population and Housing Census 2014. Area Specific Profile. Mukono District.

aloe vera and hot pepper, which are steadily replacing coffee growing.<sup>5</sup> Furthermore, the Uganda Bureau of Statistics<sup>6</sup>, in the Area Specific Profile, indicates that 38.2 percent of the population in Jinja is in subsistence agriculture. What's more is that 56,737 households representing 53.9 percent in Jinja, engage in growing crops with maize and beans leading and growing by 48.9 percent and 42.1 percent of households respectively. Moreover, despite coffee's economic value, it was produced by only 2.5 percent of households in Jinja. A study by Mwavu *et al.*, (2016)<sup>7</sup>, indicates that in some sections of Jinja, especially in Budondo and Butagaya sub-counties, sugarcane cultivation has been highly preferred relative to other more traditional crops, as it is perceived to be more profitable and economically valuable. Increased cultivation of sugarcane and other non-food crops in rural households, resulted in the decline in productive land available for food production.

Considering the dominant urban settlement in Wakiso and Kampala, farming and particularly, subsistence is the lowest in the region. Kampala city's economic prowess is diversified across all sectors, but primacy translates into a large-scale concentration of personal and business (producer) service activities. Notably, the informal sector in Kampala city is estimated to account for 57 percent of employment.<sup>8</sup> Like any other African city, Kampala City's informal sector includes individuals, micro-businesses and a limited number of small businesses in a wide variety of activities that range from urban agriculture to fruit and vegetable sales among others. Classically, Kampala City is a predominantly built up area with commercial agriculture land use occupying 1 percent and subsistence equally 1 percent.

Wakiso surrounds Kampala city and therefore, this proximity has a greater influence on economic activities, more especially the extent of agriculture in the district. UBOS, (2017)<sup>9</sup>, in the Area Specific Profile, estimates 3.9 percent of households are engaged in subsistence farming in the Wakiso district.

Large-scale commercial crop farming is visible, especially in Jinja and Buikwe districts. Typically, specialised enterprises in these districts characterise commercial farming, while inter-cropping is dominant in subsistence farming with diverse enterprises. Important commercial farming enterprises are, for instance, Kakira Sugar Works Limited in Jinja, Sugar Corporation of Uganda Limited (SCOUL) and Kasaku tea estate in Buikwe. Kakira Sugar Works Limited,

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<sup>5</sup> Second Five Year Mpigi District Development Plan (FY 2015/2016 to FY 2019/2020, Mukono District Local Government, February 2015.

<sup>6</sup> UBOS (2017). The National Population and Housing Census 2014 – Area Specific Profile Series, Kampala, Uganda.

<sup>7</sup> Mwavu, E.N.; Ariongo, E.; Ssegawa, P.; Kalema, V.N.; Bategonya, F.; Waiswa, D.; Byakagaba, P. (2016). Agrobiodiversity of home gardens in a commercial sugarcane cultivation land matrix in Uganda. *Int. J. Biodivers. Sci. Ecosyst. Serv. Manag.* 12, 191-201 [CrossRef]

<sup>8</sup> Greater Kampala Economic Development Strategy, *op. cit.*, p. 7. Under-employment is estimated to at 10%.

<sup>9</sup> UBOS, (2017). National Population and Housing Census 2014. Area Specific Profile. Wakiso District.

often referred to as Kakira Sugar Works (KSW), is a leading sugar manufacturer in Uganda. Additionally, Kasaku Tea Estate in the Buikwe district is leading in national tea production. Its significant output gives Uganda the third position in tea production in Africa. Uganda produces about 10,000 metric tonnes (MT) of tea per annum and about 90 percent of this tea is exported.

Understanding variation in productivity for the most common crops in the JKM Corridor is important, as it informs the strategic direction to develop the agriculture sector in the region. UBOS, (2020)<sup>10</sup>, in the 2018 annual agriculture survey, presents an update of statistics including acreage, production and yield of the most common crops. An extract of these statistics for South and North Buganda Uganda is presented in Tables 1 to 3. Note that, the JKM Corridor is largely located in South Buganda.

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<sup>10</sup> Uganda Bureau of Statistics (UBOS), 2020. Uganda Annual Agricultural Survey 2018. Kampala, Uganda; UBOS



Table 1: Total area and total production by crop cultivated in 2018 in South Buganda

Crop	First season 2018		Second season 2018				Total 2018	
	Area Planted (Ha)	Production (MT)	Area Planted (Ha)	Area Harvested* (Ha)	Production (MT)	Yield***	Area Planted**	Production (MT)
Maize	118,026	150,590	65,790	57,062	144,894	2.5	183,817	295,484
Millet	50	35	940	940	988	1.1	990	1,023
Sorghum	91	225	143	143	79	0.6	234	304
Beans	53,574	35,046	66,753	60,918	38,430	0.6	120,327	73,476
Banana food	62,526	237,172	76,617	72,595	418,846	9.0	76,617	656,018
Cassava	19,801	59,187	28,912	19,044	107,695	8.8	28,912	166,882
Sweet potato	18,632	31,640	21,188	19,006	61,275	3.2	39,819	92,915
Groundnuts	8,835	4,690	11,901	11,808	6,350	0.5	20,736	11,040
Irish potato	7,005	19,886	12,572	6,739	16,557	2.5	19,576	36,443
Rice	1,608	1,746	484	484	2,314	4.8	2,093	4,059
Soya beans	32	18	401	242	311	1.3	433	329
Simsim	328	0	1,336	1,336	140	0.1	1,664	140
Coffee Robusta (all types)	51,846	11,008	92,914	74,976	23,392	0.5	92,914	34,400
Coffee Arabica	306	195	359	359	579	2.2	359	774

(\*) The total area harvested is the area planted calculated on those observations whose production is available (not missing) and higher than zero

(\*\*) The annual area planted in 2018 is equal to the area planted in the second season (ie., reference date for area planted is equal to the end of the reference period)

(\*\*\*) Ratio between production (MT) and area harvested (Ha) in the second season.

**Source:** Uganda Annual Agricultural Survey 2018.

Table 2: Total area and total production by crop cultivated in 2018 in North Buganda

Crop	First season 2018		Second season 2018				Total 2018	
	Area Planted (Ha)	Production (MT)	Area Planted (Ha)	Area Harvested* (Ha)	Production (MT)	Yield***	Area Planted**	Production (MT)
Maize	364,012	525,077	205,357	150,464	312,612	2.1	569,368	837,689
Millet	2,723	1,496	1,813	1,141	553	0.5	4,536	2,048
Sorghum	323	320	288	288	126	0.4	611	447
Beans	110,838	87,177	103,868	94,309	55,256	0.6	214,705	142,433
Banana food	99,902	410,444	112,416	97,552	568,371	10.0	112,416	978,815
Cassava	113,381	361,450	74,630	41,074	252,236	14.9	74,630	613,688
Sweet potato	89,611	183,411	72,809	58,657	242,257	4.1	162,420	425,668
Groundnuts	23,115	13,482	19,478	15,928	8,792	0.6	42,593	22,274
Irish potato	2,586	11,968	6,366	5,709	21,863	3.8	8,951	33,831
Rice	3,881	3,566	6,421	5,896	4,010	0.7	10,301	7,576
Soya beans	1,243	667	1,901	1,523	684	0.4	3,144	1,351
Simsim	-	209	474	198	94	0.5	-	303
Coffee Robusta (all types)	121,605	28,426	139,757	109,521	36,402	0.6	139,757	64,828
Coffee Arabica	595	312	1,456	523	116	0.8	1,456	428

(\*) The total area harvested is the area planted calculated on those observations whose production is available (not missing) and higher than zero

(\*\*) The annual area planted in 2018 is equal to the area planted in the second season (ie., reference date for area planted is equal to the end of the reference period)

(\*\*\*) Ratio between production (MT) and area harvested (Ha) in the second season.

**Source:** Uganda Annual Agricultural Survey 2018.

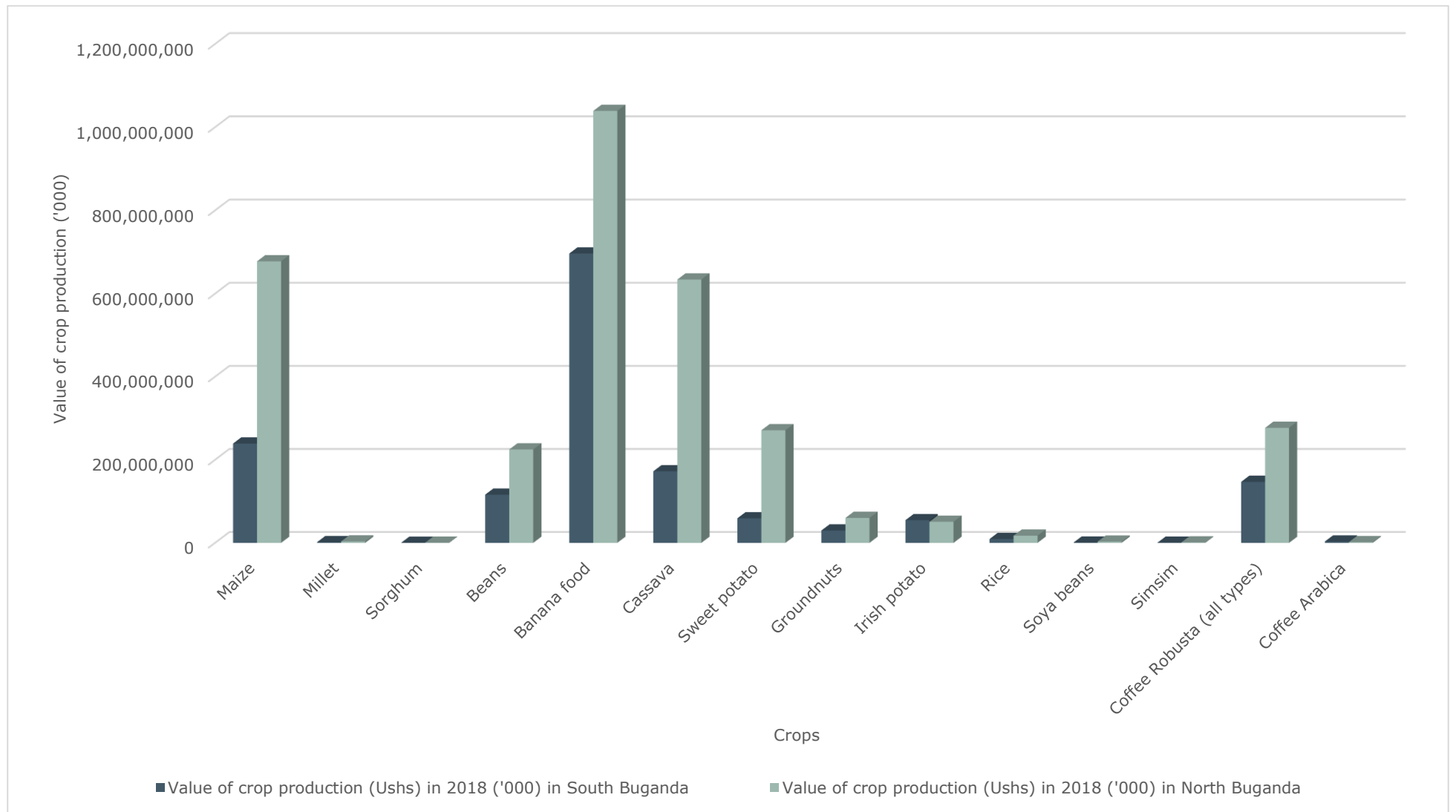
Table 3: Annual value of crop production in South and North Buganda for the year 2018

Crop	South Buganda			North Buganda		
	Production (MT)	Farm gate price (Ushs)/MT '000	Value of crop production (Ushs) in 2018 '000	Production (MT)	Farm gate price (Ushs)/MT '000	Value of crop production (Ushs) in 2018 '000
Maize	295,484	809	<b>239,046,556</b>	837,689	809	<b>677,690,401</b>
Millet	1,023	1,700	<b>1,739,100</b>	2,048	1,700	<b>3,481,600</b>
Sorghum	304	1,000	<b>304,000</b>	447	1,000	<b>447,000</b>
Beans	73,476	1,579	<b>116,018,604</b>	142,433	1,579	<b>224,901,707</b>
Banana food	656,018	1,061.7	<b>696,494,310.6</b>	978,815	1,061.7	<b>1,039,207,885.5</b>
Cassava	166,882	1,033	<b>172,389,106</b>	613,688	1,033	<b>633939704</b>
Sweet potato	92,915	636.88	<b>59,175,705.2</b>	425,668	636.88	<b>271,099,435.84</b>
Groundnuts	11,040	2,700	<b>29,808,000</b>	22,274	2,700	<b>60,139,800</b>
Irish potato	36,443	1,500	<b>54,664,500</b>	33,831	1,500	<b>50,746,500</b>
Rice	4,059	2,293	<b>9,307,287</b>	7,576	2,293	<b>17,371,768</b>
Soya beans	329	2,286	<b>752,094</b>	1,351	2,286	<b>3,088,386</b>
Simsim	140	3,500	<b>490,000</b>	303	3,500	<b>1,060,500</b>
Coffee Robusta (all types)	34,400	4,272	<b>146,956,800</b>	64,828	4,272	<b>276,945,216</b>
Coffee Arabica	774	4,272	<b>3,306,528</b>	428	4,272	<b>1,828,416</b>

**Source: Farm gate prices** – Ocung Samuel, (2021). *Livelihood Restoration Plan for Kalagala and Itanda Falls Special Conservation Area.*

It is evident from tables 1,2,3 and figure 1, that banana, maize, cassava, coffee, beans and sweet potatoes are strategic crops to be targeted for nutrition and economic development in central Uganda, particularly JKM corridor. As much as the price of coffee is high, its production volume is relatively low. Therefore, it's recommended strategies designed aim at increasing yield of coffee per hectare. However, this analysis indicates that, banana, maize and cassava have higher production value than coffee, which is target crop in the Lake Victoria crescent agro-ecological zone.

Figure 1: Value of crop production in the South and North Buganda in 2018



In light of increasing urbanisation, strengthening urban agriculture in the JKM Corridor, is a viable strategy to address the issue of diminishing land for farming. Urban and peri-urban farming has the potential to address challenges related to food insecurity among city and town dwellers. It provides the urban population with food, nutrition and a source of income and employment, thus reducing poverty and increasing food security. It has the advantage of proximity to urban markets which saves on transportation costs, thereby increasing farmers' profitability.

Mugisa *et al.*, (2017)<sup>11</sup>, in a study to establish the current characteristics and trends of urban and peri-urban crop farming in Central Uganda, revealed that cropping activities contribute on average 40 percent to the income of farming households. The major crops grown include vegetables, maize, beans, bananas and avocado. A number of home gardening techniques were identified among farmers, for instance, growing crops in food towers, in buckets and bags (sacks). Irrigation and fertilizer application were practised by 60 percent of households, mainly on vegetables. More so, 64% of the households recycled waste and of these, 75 percent converted kitchen waste into manure for crop production.

### 8.1.3 Livestock sub-sector

Traditionally, the JKM sub-region largely practices zero grazing of livestock, while the northern part of the central region is characterised by pastoralism. The animals kept in JKM include cattle, goats, sheep, pigs and poultry. Largely, there is a variation of livestock across the JKM corridor. For instance, according to UBOS (2017) Area Specific Profile, 39,932 households (37.9 percent) in Jinja were in livestock production. More so, 46.6 percent of subsistence farmers in the Buikwe district engaged in livestock production. On the other hand, commercial farming in Wakiso is limited in the main to dairy and poultry. Particularly, JESA dairy is a large-scale commercial farm in the Wakiso district. Moreover, JESA Dairy farm is the premier provider of value-added dairy products for consumers in Eastern Africa. JESA has become a home-grown, commercial success story and a flagship East African consumer brand. Table 4 presents the proportional of livestock in Buganda compared to other regions across Uganda.

Table 4: Percentage of livestock type in Mukono ZARDI from national estimates

Livestock Type						
Cattle	Goats	Sheep	Pigs	Chicken	Turkeys	Rabbits
11.0%	9.9%	3.2%	27.3%	18.5%	13.9%	28.1%

<sup>11</sup> Mugisa, I. O., Fungo, B., Adur, S. O., Ssemalulu, O., Molly, A., Atim, J., Nakyagaba, W., Kizza, T., Kabanyoro, R., Sseruwu, G. and Akello, B. O. (2017). Urban and peri-urban farming in Central Uganda: Characteristics, constraints and opportunities for household food security and income. African Journal of Plant Science. Vol 11(7), pp. 264-275.

**Source:** *Uganda Annual Agricultural Survey 2018*

The Mukono Zonal Agricultural Research and Development Institute (ZARDI) has among other responsibilities, the mandate to oversee all livestock development in Buganda. The geographical scope of Mukono ZARDI includes Mukono, Wakiso, Mpigi and Buikwe districts among others in Buganda.

Furthermore, central Uganda has the highest number of pigs dominated by the landrace and large white breeds. More so, the southwestern and central regions together produced almost 50 percent of the 1.8 billion litres of milk in 2012<sup>12</sup>. However, cross-breeding of local breeds have increased, especially the Friesian which has led to increased productivity, particularly in the Southwestern, Midwest and Central regions.

Undoubtedly, the livestock sector development is fundamental to supporting the transformation of the JKM Corridor. However, the critical questions to ponder are: in the next couple of decades, how will technology uptake affect livestock productivity? How will the feed-food competition unfold? How will livestock value chains transform to satisfy the demand of an increasingly affluent and urbanised population?

According to FAO, (2019)<sup>13</sup>, the growth and transformation of the livestock sector will bring about major developmental opportunities and challenges for society in the future decades. Certainly, the expected growth in demand for beef, milk and poultry products will provide major business opportunities for cattle and poultry farmers. More so, there will be business opportunities also for value chain actors, such as input and service suppliers, traders, processors, wholesalers and retailers of animal feed.

However, these development opportunities come with some major challenges that, if not properly addressed, risk jeopardizing the development of the livestock sector itself, with broader negative impacts on public health, the environment and livelihoods.

First and foremost, due to growth in the animal and human population, there will be an increased risk of outbreaks and the spread of zoonotic diseases, including infectious emerging and re-emerging diseases.

Secondly, antimicrobial resistance has devastating consequences. Already today, specific infectious diseases cannot be or are difficult to treat with commonly available first and second-line antimicrobials as the pathogens have developed resistance to antibiotics, such as Bovine Tuberculosis. In 2018 the Uganda Government launched the Antimicrobial Resistance Action Plan.

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<sup>12</sup> Agrittera, (2012). Identification of livestock investment opportunities in Uganda. Kingdom of the Netherlands.

<sup>13</sup> FAO, (2019). The future of livestock in Uganda. Opportunities and challenges in the face of uncertainty. Rome.

The third challenge concerns natural resource depletion and climate change. In all scenarios, the competition for land, feed and water is fierce. Moreover, in the favourable scenarios, a high level of livestock production poses an immense environmental challenge, while in less appealing scenarios bad management and lack of regulations can result in land degradation, soil and water pollution, high levels of greenhouse emissions and biodiversity loss.

Furthermore, a high level of urbanization, especially in the JKM corridor, is expected to lead to the emergence and concentration of middle-scale commercial farms in and around urban centres. This is anticipated to pose major public health and environmental threats.

On one hand, the high density of and frequent interaction between humans and animals – as well as wildlife such as urban rodents – are major determinants of outbreaks and the spread of emerging and re-emerging infectious diseases. On the other hand, the concentration of animals and the processing of livestock products in urban and peri-urban areas, especially slaughtering, can result in water and soil contamination, contributing further to health threats.

Therefore, it is recommended that stakeholders in JKM ensure policies and programmes effectively deal with zoonoses, emerging infectious diseases and natural resource use along the livestock value chains serving urban areas. This is essential for sustainable livestock in the future.

#### 8.1.4 Agricultural extension service

Agricultural services play an important role in helping farmers to make the most of the resources they have. Apart from the physical resources such as land and seeds, farmers need knowledge in order to produce the quality and quantity of produce that meets demand. These services are designed to guide and advise farmers right from the period before planting to the post-harvest period. Statistics from the UBOS, (2021) annual agricultural survey 2018, indicate that 121,841 (12.7 percent) agricultural households in Mukono ZARDI, received extension service during the 12 months prior to this data collection.

Certainly, there are emerging challenges affecting agricultural extension in JKM. In particular, the key issues affecting the performance of agricultural extension include lack of coordination and collaboration that leads to duplication of services, low coverage of extension beneficiaries and inadequate provision of services – largely due to limited transportation means for agricultural extension workers, poor adoption of agricultural technologies and best practices, ineffective extension approaches, and late release of funds that delays implementation.

#### 8.1.5 Agro-industrialisation and value addition in JKM

During the 1960s and early 1970s, Jinja town in the eastern section of JKM was the main industrial hub of Uganda. However, this has since changed with Kampala emerging as a major industrial town. More so, there is a high concentration of firms and the manufacturing sector in the central region and more specifically Kampala

(UBOS 2007)<sup>14</sup>. The central region accounts for 61 per cent of manufacturing firms with 42 per cent located in Kampala, as illustrated in Table 5. Further disaggregation of the distribution of firms by region shows that Kampala has the highest proportion of firms in all manufacturing sub-sectors except for coffee processing, grain milling, and tea processing. In addition, the central region has the most coffee processing firms (51 percent).

Table 5: Proportion of manufacturing firms in the Central region and Kampala

Industry	Kampala	Central
Processing of meat, fish, and dairy products	25%	21%
Coffee processing	11.4%	51%
Grain milling	32%	16.4%
Tea processing	5.3%	21.1%
Bakery and manufacture of other food products	46%	22.2%
Manufacture of beverages and tobacco	62%	15%
Manufacture of textiles and leather products	36.4%	15%

Source: UBOS (2007)

Similarly, other reports indicate Kampala City as the largest manufacturing centre in the country, housing 32% of national plants in food and non-food manufacturing.<sup>15</sup> Moreover, the district is witnessing the growth of manufacturing, including agro-processing industries. Precisely, the Kampala Industrial Business Park currently contains 33 factories.

Furthermore, the Mpigi district forms the western peri-urban and rural fringe of the JKM Corridor and about 80% of households derive their livelihoods from agriculture, forestry and fishing.<sup>16</sup> These clusters are at lower levels of their value chains and with limited value-adding processing occurring in the district – specifically coffee processing, maize milling, fruit packing and floriculture.

### 8.1.6 Market for farm produce

The JKM region is endowed with many trade opportunities, providing market to agricultural commodities and other tradable goods. Moreover, Kampala, the capital city, is the centre of trade. The large population in Kampala, Wakiso and Mukono provide a market for agricultural commodities produced in JKM and from other regions across the country. In addition to providing a market for farm commodities produced within JKM, the region also engages in trade with other parts of Uganda and neighbouring countries. In other words, some of the farm produce from JKM is

<sup>14</sup> Uganda Bureau of Statistics (UBOS), 2007. Report on the Uganda Business Register 2006/7. Kampala: UBOS.

<sup>15</sup> See Manwaring, Priya. Location, location and information: Firm clustering in Kampala, blog post, IGC, 2020: <https://www.theigc.org/blog/location-location-information-firm-clustering-in-kampala> w Consumer services,

<sup>16</sup> Second Five Year Mpigi District Development Plan (FY 2015/2016 to FY 2019/2020, Mpigi District Local Government, February 2015.



exported to neighbouring countries through connections in Mutukula (Rakai) border post to Tanzania, across Lake Victoria to Kenya and Tanzania through Port Bell (Kampala), and by air to other countries through Entebbe International Airport.

### 8.1.7 Fisheries sub-sector

Importantly, the proximity of JKM to Lake Victoria makes fishing one of the priority economic activities. Fishing is also done in small lakes like Wamala and in fishponds established by fish farmers. Generally, there is potential in fisheries to develop the economy of the JKM Corridor.

The JKM area encompasses considerable open water – primarily Lake Victoria – whose combined area represents 25 percent of the total jurisdiction area. This water resource contributes to economic development in the corridor and Uganda at large. Fishing, transport, recreation, and water for domestic use and production are some of the economic benefits of the water bodies in JKM. Uganda's main source of fish supply for both the domestic and export markets are the districts on Lake Victoria, particularly Mukono, Mpigi, Kalangala, Masaka and Luwero<sup>17</sup>. The major urban centres within the Lake Victoria belt, namely Kampala, Masaka, Jinja and Entebbe constitute the main domestic market centres for fresh fish. Although considerable fish supplies reach these market nuclei and most of the other district headquarters' markets, inadequate supplies reach most of the rural markets.

Specifically, the long-shared boundary between the Buikwe district, Lake Victoria and the Nile, greatly influences economic activities. In other words, the district borders Lake Victoria with a shoreline estimated at about 160 km<sup>18</sup>. In this case, fishing is the main source of employment in the 52 fishing communities. Precisely, it is estimated that about 70,000 people in Buikwe directly depend on fishing in L. Victoria and the Nile as a source of livelihood. Furthermore, 94% of landing sites are involved in fishing as the main activity. Moreover, among second-level activities in the communities bordering the lake are agriculture (67 percent), trade (57 percent) and transport (16 percent). It's worth noting that there is an overlap of above activities as each household engages in several economic enterprises.

Without a doubt, the fisheries sector in the JKM Corridor is important in terms of employment, poverty reduction and foreign exchange revenues. Moreover, fisheries activities are mainly carried out in open water sources and provide a livelihood to many people in Uganda. In this regard, there are an estimated 136,000 artisan fishermen on Lake Victoria, while nearly 700,000 people around Lake Victoria benefit from fishery-related activities like local fish-processing, fish trade, boat-building, industrial fish processing, net making, trade of fishing equipment, fisheries research, extension service and administration<sup>19</sup>. Lake Victoria is Africa's most important source of inland fishery production, exhibiting an annual catch of about 500,000

<sup>17</sup> UNUFTP, (2014). Towards an Appropriate Management Regime for the Fisheries Resources of Uganda

<sup>18</sup> Iceida, (2013). The status of fishing communities in Buikwe district, Uganda. Ref. No.: UGA13050013

<sup>19</sup> "The political economy of fisheries sector in Uganda: ruling elites, implementation costs and industry interests" subweb.diis.dk, 2014

metric tonnes<sup>20</sup>. More so, Lake Victoria is shared by the Republic of Kenya (6 percent), the United Republic of Tanzania (51 percent) and the Republic of Uganda (43 percent), most of which are located in the JKM Corridor.

Aquaculture is practised around the JKM corridor. According to FAO, (2020)<sup>21</sup>, there are an estimated 20,000 ponds throughout the country and with a significant proportion in the JKM Corridor. Production ranges between 1,500kg per hectare per year for subsistence farmers and 15,000 per hectare per year for emerging commercial fish farmers. Precisely, Namatovu *et al.*, (2018)<sup>22</sup> in their analysis of the profitability and viability of aquaculture production in central Uganda, revealed positive gross margins, especially for tilapia and catfish. However, fish farmers are constrained by expensive fish feeds, predators and water quality problems due to increasing urbanisation.

However, the following challenges affect fisheries in JKM:

- > Increased costs of fishing and loss of livelihoods resulting from flooding and infestation of water bodies by invasive aquatic weeds especially Kariba weed and water hyacinth. These have led to the loss of fishing gear and the destruction of fish handling and processing infrastructure.
- > Limited capacity for regulation and enforcement of laws and guidelines on all water bodies hence continued use of illegal destructive gears that catch immature fish.
- > Aquaculture is constrained by limited investment in fish farming; high cost; limited access to high-quality fish seed and feed; and inadequate extension services.
- > Both capture and aquaculture production systems face challenges of high post-harvest losses; inadequate human, technological and infrastructural capacity at all stages of the value chain leading to low production and productivity.
- > Limited response and financing for the control of the spread of Kariba invasive weeds in ponds riparian to Lake Victoria.
- > Lack of financing for infrastructure development in fish landing sites
- > Overwhelming demand beyond budgetary allocation for inputs by farmers and fishing communities.

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<sup>20</sup> M. Njiru, J. Kazungu, C. C. Ngugi, J. Gichuki and L. Muhoozi. (2008). An overview of the current status of Lake Victoria fishery: Opportunities, challenges and management strategies.

<sup>21</sup> FAO, (2020). Uganda National Aquaculture Sector Overview.

<sup>22</sup> Namatovu Safina., Atukunda Gertrude., Obeti Lawrance., Walozi Ronald., Candia Alphonse., Onep Samuel., Bwambale Mbilingi., and Andrew A. Izaara (2018). Profitability and Viability Analysis of Aquaculture Production in Central Uganda: A case of Urban and Peri-Urban Areas. AJAEES, 22(4): 1-11; Article no. 37721.

- > Loss of livelihoods in fishing communities as a result of strong enforcement operations.

Furthermore, like many other freshwater systems around the world, Lake Victoria faces numerous threats, including environmental degradation, the introduction of exotic species, eutrophication and over-fishing. More so, stock assessments indicate that unsustainable fishing practices have caused a serious decline in fish populations (Mkumbo *et al.*, 2007)<sup>23</sup>. Exacerbating these stresses is a high human migration rate into many of the Lake Victoria basin's cities, ~ 3 percent per year (Njiru *et al.*, 2006)<sup>24</sup> as a result of erratic rains, poor soils, crop failures and high unemployment outside of the basin.

This migration threatens the integrity of Lake Victoria and the population is beginning to lose access to clean, fresh water. The migration of fishermen to the Lake Victoria basin, promulgated by the promise of a share in the riches of the Nile perch fishery, is an indicator of the economic success of the fishery. This migration has, unfortunately, created exploitative extraction practices that have greatly stressed the fish stocks, and the introduction of the Nile perch has caused a major ecological shift in the native ecology of Lake Victoria (Aquatic Ecosystem Health and Management Society, 2007)<sup>25</sup>.

### 8.1.8 Forestry in JKM

Forests are part of the visible land use in Central Uganda. Central Forest Reserves (CFRs) in the JKM Corridor include Mabira (300 km<sup>2</sup>) in the Buikwe district and Mpagala (4.53 km<sup>2</sup>) in the Mpigi district. These reserves are part of the protected areas of Uganda. They compose of the natural forests like moist semi-deciduous forests and forest plantations mainly pine and eucalyptus species. However, these forests are at risk of destruction as urban development and large-scale farming expand. Notably, a couple of years ago, environmental activists in Uganda campaigned to save the Mabira forest, as its land was at that time being proposed to be allocated to growing sugarcane.

It is the mandate of the National Forest Authority (NFA) to manage CFRs and more so handle legal activities such as harvesting timber, re-planting and tourism. Nevertheless, forest management in the JKM region is characterised by several challenges. Specifically, while there have been many attempts at collaborative forest management among users, local governments, Non-government Organisations (NGOs), community-based organizations (CBOs) and the central government, results have been consistently disappointing. Moreover, although partnerships enhance local

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<sup>23</sup> Mkumbo OC, Nsinda P, Ezekiel CE, Cowx IG, Aeron M. (2007). Towards sustainable exploitation of Nile perch consequential to regulated fisheries in Lake Victoria. *Aquat Ecosyst Health Manage.* 10(4):449-457.

<sup>24</sup> Njiru M, Ngungi P, Getabu A, Wakwabi E, Othina A, Jembe T, Wekesa S (2006). Are fisheries management measures in Lake Victoria successful? The case of Nile perch and Nile tilapia fishery. *Afr J Ecol.* 45(3):315-323

<sup>25</sup> Aquatic Ecosystem Health and Management Society. (2007). Special issue: great Lake Victoria fisheries: changes, sustainability, and building blocks for management. *Aquat Ecosyst Health Manage.* 10(4):368-483.

management potential, financial and legal means to implement local resource extraction policies are lacking (Turyahabwe *et al.*, 2006)<sup>26</sup>. In addition, there are weak relationships between local institutions and centrally devised policy (Hartter and Ryan 2010)<sup>27</sup> and between people's perceptions and actual uses of forest resources (Watkins 2009a)<sup>28</sup>. According to findings by Watkins (2009b)<sup>29</sup> regarding perceptions and uses, people, particularly women, do not know the full extent of their user rights: not only do many wrongly believe firewood collection is illegal, they allegedly endured harassment by forest officials for collecting it. These findings support Ribot *et al.*, (2006)<sup>30</sup> conclusion that central governments in multiple LDCs 'erect imaginative obstacles' in front of decentralised institutions, such that downward accountability and local-level discretionary power are lacking.

## 8.2 Policy Response

This section reviews policy responses to key issues in the current situation of agriculture in the JKM Corridor. Primarily, the focus of this review is to highlight policy responses to key issues in agriculture, specific to the JKM Corridor. However, from the review of secondary sources, it's clear that most of the policies address issues at a national level. Nonetheless, there has been an emphasis to identify policies addressing agriculture issues in the JKM Corridor. Particularly, policy responses to issues in agriculture are presented at different levels. Initially, this section presents a review of relevant international protocols focusing on agriculture and where Uganda has obligations. In addition, the long-term national policies, strategies and sector policies are then summarised. An overview of policies impacting agriculture in the JKM region and their aspiration is presented in Table 6.

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<sup>26</sup> Turyahabwe N, Banana A. (2008). An overview of history and development of forest policy and legislation in Uganda. *Int For Rev.* 10(4): 641-656.

<sup>27</sup> Hartter J, Ryan S. (2010). Top-down or bottom-up? Decentralization, natural resource management, and usufruct rights in the forests and wetlands western Uganda. *Land Use Policy* 27: 815-826.

<sup>28</sup> Watkins C (2009a). Natural resource use strategies in forest-adjacent Ugandan village. *Hum Ecol.* 37(6): 723-731.

<sup>29</sup> Watkins C (2009b). Natural resource use in Uganda: attitudes, behavior and the links in between [doctoral dissertation]. [Ann Arbor (MI)]: University of Michigan.

<sup>30</sup> Ribot J, Agrawal A, Larson A (2006). Recentralizing while decentralizing: how national government reappropriate forest resources. *World Dev.* 34(11):1864-1886.

Table 6: Policies impacting agriculture in JKM

Policy	Aspiration
Agenda 2030 (SDG2, and 9)	End hunger, achieve food security, improve nutrition and promote sustainable agriculture as well as promoting inclusive and sustainable industrialization and foster innovation.
Agenda 2063 (Goal 5)	Have modern agriculture for increased production and productivity.
African Community (EAC) Vision 2050	Seeks to promote value addition through agro-processing.
African Continental Free Trade Area (AfCFTA)	Aims to create a single market for goods and services facilitated by movement of persons in order to deepen the economic integration of the African continent.
Uganda Vision 2040	This puts emphasis on establishment of economic lifeline industries including agro-based industries to drive agriculture productivity. Certainly, agriculture in this case has a cardinal role in employment creation, poverty reduction and production of raw materials.
National Agriculture Policy (2013)	Objective XI (ii) requires that, the state “stimulate agricultural, industrial, technological and scientific development by adopting appropriate policies and enactment of enabling legislation.” This policy is relevant to JKM planning as it sets guiding principles for building synergy among all stakeholders in the agriculture sector in Uganda. More so, its focus in agricultural, industrial and scientific development is in line with core issues being addressed in the JKM corridor plan.
Uganda National Agricultural Extension Strategy 2016/17 – 2020/21	Guide, harmonize and implement agricultural extension services to farmers, farmers’ groups, and other actors in agriculture value chains. It is intended to effectively and efficiently provide agricultural extension services in order to support sustained progression of smallholder farmers from subsistence agriculture to market oriented and commercial farming
National Exports Development Strategy 2015/16 – 2019/20	Aims at: increasing the Ugandan productive sectors with international export markets; and increasing the value of Uganda’s export of the specific products and services to the targeted markets.
National Industrial Policy 2008	Provides for establishment of model Agro-processing industries; development of resource-based, Agro-industries for value added products, and provision of transport, power and other infrastructure facilities; facilitates improved supply chain efficiency and market responsiveness; and creates frameworks for public and private participation to increase integration with Agriculture.
Uganda National Coffee Policy, 2013	Seeks to, among others, increase coffee production and productivity at farm level in a sustainable way that addresses the social, ecological and economic dimensions; and to support and strengthen coffee farmer organizations to participate effectively in all the stages of the coffee value chain. Coffee being a priority crop in the JKM region benefits from this policy.

Policy	Aspiration
The Uganda National Fisheries and Aquaculture Policy, (2017)	Designed to inspire the transformation of the fisheries and aquaculture sub-sector and to make it responsive to the challenges at all levels of the value chain. Therefore, this policy is crucial in the development of JKM corridor, given that, fish is one of the priority commodities in this region.
The National Seed Policy, 2018	To guide, promote, develop and regulate the seed sub-sector in order to ensure availability, accessibility and affordability of safe and high-quality seed to all stakeholders. Good quality seed is core component for increasing crop yields. Therefore, it's critical that, services of seed suppliers in JKM corridor are regulated.
The Uganda National Land Policy, 2013	To ensure efficient, equitable and optimal utilization and management of Uganda's land resources for poverty reduction, wealth creation and overall socio-economic development. Land is central factor in the development of JKM corridor
The National Animal Feeds Policy, 2005	To contribute towards maximisation of the potential of Uganda's livestock sub sector on a sustainable yield basis within the framework of sound environmental management limits. Therefore, efficient feed policy is important given that land for grazing is diminishing in JKM. Moreover, this policy provides answers to some of questions in the feed-food dynamics as livestock production is promoted in an increasingly urbanizing JKM region.
The National Forest Policy, 2001	Aims at conserving Uganda's rich forest biodiversity to meet the needs and aspirations of the present and future generations. The policy emphasises watershed management and soil conservation, all of which contribute to sustainable land management. Mabira central forest reserve (300km <sup>2</sup> ), located in JKM corridor is protected by this policy.

### 8.2.1 The National Development Plan (NDP III) priorities for Agriculture

Overall, agro-industrialisation (AGI) is the foremost agenda-defining agriculture programme in NDP III. However, increasing and sustaining Uganda's market share in the current markets is crucial for the agro-industrialization agenda. Moreover, for Uganda to sustain and increase its market share, challenges of complying with Non-Tariff Measures (NTMs) such as sanitary and phytosanitary measures, international quality certification, reliable supply capacity and inability to adhere to international standards need to be addressed. Other challenges include poor market information systems; poor market infrastructure in rural and urban areas, including logistics facilities for product marketing and distribution; and poor analysis, negotiation and development of international market opportunities. Products from agro-processing in JKM eventually need to access the global market. Therefore, compliance with international standards is important and increases the competitiveness of products from JKM.

Furthermore, for agro-industrialisation to work, there is a need for a mechanism to coordinate the value chain players but also ensure that the services and resources are delivered to facilitate the AGI agenda. AGI cuts across the mandates of several Ministries, Departments and Agencies (MDAs) which are not properly coordinated. Additionally, there are other constraints to AGI like i) a cobweb of policies and Acts (over 25 policies and 20 Acts exist under MAAIF and Ministry of Trade and Industry) directly impacting AGI; ii) the government's response to institutional failures by creating parallel institutions; iii) inadequate and poorly sequenced financing; iv) limited policy evaluation that is manifested in the low levels of monitoring and evaluation that in turn impede learning for improvement; and v) the multiplicity of weakly coordinated and inadequately developed support services, including; patient capital (or finance), business infrastructure, land, insurance, and Research and Development (R&D). Moreover, all the MDAs, and policies deliver service through district local government. Thus, the same poor coordination of MDA services is reflected in the districts. Therefore, the JKM corridor plan is a step in the right direction to coordinating and harmonising the implementation of policies.

Achievement of objectives for AGI will be pursued through prioritized interventions along the agricultural value chain in the major export and income generation commodities as well as the food security commodities. These include the 12 main commodities (bananas, beans, maize, rice, cassava, tea, coffee, fruits and vegetables, dairy, fish, livestock – meat) and four strategic commodities (cocoa, cotton, oil seeds and oil palm). These commodities have been chosen using the area-based agricultural planning approach to ensure all agroecological zones are covered. According to agroecological zones, JKM is in the Lake Victoria Crescent and thus, the Agriculture Sector Development Strategy and Investment Plan prioritized coffee, fish and poultry for this region.

### 8.2.2 Agro-industrialisation programme summary

The Agro-industrialisation programme seeks to address key challenges in agricultural production, agro-processing and value addition which include: i) low agricultural production and productivity; ii) poor storage infrastructure and post-harvest management; iii) low-value addition; iv) poor market access and low competitiveness of agro-based products in domestic, regional, continental and international markets; v) limited access to agricultural financial services and critical inputs; and vi) poor coordination and inefficient institutions for planning and implementation of agro-industrialization.

The goal of this programme is to increase the commercialisation and competitiveness of agricultural production and agro-processing.

The objectives of the programme are to:

- > Increase agricultural production and productivity;

- > Improve post-harvest handling and storage;
- > Improve agro-processing and value addition;
- > Increase market access and competitiveness of agricultural products in domestic and international markets;
- > Increase the mobilisation and equitable access and utilization of agricultural finance;
- > Strengthen institutional coordination for improved service delivery.

Furthermore, the following are the required reforms intended to catalyse the attainment of the desired results of the agro-industrialization programme:

- > Develop and implement service delivery standards for sectors;
- > Streamline Operation Wealth Creation (OWC) coordination role into Government systems and legalize it;
- > Incorporate BTVET institutions (engaged in agroindustry) into the agricultural extension system to ensure that what is taught in these institutions is adopted and utilized by farmers;
- > Increase decision-making autonomy of BTVET institutions to increase the relevance of programmes conducted by these institutions for the geographical areas they operate in;
- > Promote joint planning and implementation of projects and other interventions in agro-industrialisation;
- > Establish the Agro-industrialization program Technical Steering Committees to lead and coordinate the implementation of the programme;
- > Revitalise the warehouse receipt and the commodity exchange system;
- > Operationalise the Parish and nucleus farmer models. The Parish as the grassroots structure of the government will be leveraged to play an active role in the production, processing and marketing of agricultural commodities. Under the nucleus farmer model, lead farmers will be selected and supported to drive the uptake and utilisation of modern technologies, practices and innovations. They will host demonstrations, storage facilities, machinery and support training of other farmers.

### 8.2.3 Implication of Agricultural Policies on Strategy – from the perspective of Public Expenditure

The Government of Uganda has undertaken a series of reforms in sector policies. In particular, agriculture being the mainstay of the economy in Uganda had policy reforms with the ultimate goal of eradicating poverty. More so, recommendations emerging from the past review of public expenditure in agriculture culminated in policy reforms and created investment opportunities. It is notable that, all efforts to transform agriculture and eradicate poverty in Uganda, worked within the constrained public expenditure. This analysis of policy implementation is based on lessons from findings of the World Bank, (2019) review of agriculture public expenditure in Uganda, given strategic priorities for sector investment. Therefore, the gaps in policy design and implementation identified in the 2019 agriculture public expenditure review (AgPER), guide the formulation of sector strategies tailored for the JKM Corridor. In other words, coupled with recommendations from AgPER, input from NDP III objectives and stakeholder consultation sharpen the strategic direction of agriculture in the JKM Corridor.

#### **Highlights of Agriculture Public Expenditure Review, 2019**

Generally, efficient and effective spending on agriculture would help the sector to achieve its potential to contribute to inclusive growth, create employment for the country's growing and predominantly young population, and ultimately reduce poverty. Accordingly, the 2019 AgPER, aimed to identify how public spending can best support agriculture to deliver growth through increased productivity, stronger resilience to climate change and other production risks, and more effective private sector engagement in the provision of public goods in the sector. Specifically, MAAIF had a strong interest to be informed by the outcome of AgPER, on how to tailor its future expenditure to priorities identified under the ASSP, to improve the quality of public service delivery. Key findings from AgPER include:



### **Reforming the policy on public spending for agriculture in Uganda**

The importance of agriculture for inclusive growth is reiterated in various national development strategies but not translated into public expenditure for the sector. It should be a priority of the government to steer public investments in agriculture towards the provision of public goods, such as R&D, extension and advisory services, and rural infrastructure. Input and output marketing should be left in the hands of the private sector. The government should focus on creating the enabling environment for private sector participation (market and policy reforms) and on regulating input quality and standards. In addition, it should fully implement extension reforms by allowing public goods and services for agriculture to be delivered by both public and non-state actors (including agribusiness). Moreover, Government should crowd in the private sector by directly offsetting or defraying the costs to the agribusiness of delivering those services, through public-private partnership (PPP) arrangements.

In a nutshell, critical policy and institutional opportunities need to be given priority for Uganda to transform its agriculture sector. Specifically, reaping the full benefit of the opportunities indicated by sector trends will require an enabling policy environment, efficient institutional processes, and sector stakeholder coordination. Precisely, public spending on agriculture must be directed to the provision of “public goods” rather than “private goods” like subsidized or free inputs. Surely, growth in agricultural productivity cannot be achieved without better access to and adoption of high-quality agricultural inputs by smallholder farmers. Above all, better access to technologies and more widespread technology adoption will require stronger regulatory measures, more secure land tenure, enhanced input quality controls, and full implementation of the ongoing extension reforms to sharpen the focus on knowledge transfer.

### **The resilience of agricultural systems**

Climate variability and pest outbreaks are on the rise; therefore, Uganda’s agricultural systems and rural livelihoods must become more resilient. Farmers should be equipped with climate-smart land, water, and livestock management practices, irrigation infrastructure, and access to information about climate and disaster risks. Producer arrangements and integration into agri-food value chains should be supported to increase farmers’ access to finance and markets, and the competitiveness of the sector more broadly. As diverse agribusinesses develop in a range of value chains, they will link greater numbers of farmers to sources of inputs, markets, and finance and improve rural livelihoods.

### **Budget deficit and implication on Maputo target of 10 percent**

The growing budget deficit means it is unlikely that GoU will increase spending on agriculture to reach the Maputo/Malabo target of 10 percent in the near future. It is, therefore, prudent that MAAIF and other agriculture-related ministries and agencies as well as local governments improve the allocative and technical efficiency to increase the effectiveness (results or impacts) of their current budget allocations. In view of this, although a real GDP growth rate of 6.0 percent or more is projected over the next few years, the competition for scarce resources from other key sectors such as human development (health and education) and infrastructure (energy, roads and water) is also growing.

## **8.3 Input from stakeholder consultation**

Representatives of the JKM team visited the Lugazi town council, Buikwe, Mukono and Mpigi districts to consult stakeholders and get their input into agricultural strategies for the JKM Corridor. The following categories of people participated in the meetings: the District Production and Marketing Officers, District Agricultural Officers, District Planners, and District Physical Planners. Overall, the following summary of

issues was presented by the participants and recommended to be included in the strategic direction of the JKM plan:

- > Just like many of the areas in JKM, Lugazi is now an urban centre. In this case, the land is being developed into housing. Therefore, agriculture should be transformed into intensive farming for both crops and livestock. It's recommended that crop farmers focus on backyard farming in small gardens.
- > In addition, there are many wetlands in the JKM Corridor. Therefore, strengthen fish farming, specifically for tilapia and cut fish.
- > Strengthen the production of bananas (Fhia variety) and add value to produce wine. The Fhia variety of bananas produces good wine.
- > Value chain development: one of the priority projects, in this case, is wine production from Fhia variety of banana. This is expected to integrate a large number of people into the entire value chain. However, it is recommended that value chain development includes all the crops, livestock, poultry and fish.
- > In addition, mushroom value chain development has high potential in the urban centres of JKM. Products from mushroom value addition include pharmaceutical inputs and powder for beverages.
- > The entire Mabira central forest reserve (CFR) is in Lugazi municipality. Leaders of Lugazi municipality recommend strengthening apiary enterprise in Mabira CFR. Value-added products from apiary enterprise include: honey, wax, venom from bees, pollen collected by bees have medicinal value, propolis (the black substance in the bee hive), nectar, and royal jelly.
- > Poultry production, specifically battery cage system is good for urban farming in JKM,
- > Additionally, promote piggery enterprise, especially the Indigenous Micro Organisms (IMO). IMO decomposes the faecal matter and maintains a clean environment in the piggery unit.
- > Promote zero grazing of dairy cattle and goats in the urban centres. More so, promote the production of sheep and goats for purpose of beef. Feed-lots, the technique of keeping livestock in confinement, specifically for purpose of beef is appropriate in the urban setting.
- > Promote bio-gas production alongside the zero-grazed livestock enterprise,
- > Promote horticulture, especially strawberries and vegetables in greenhouses.
- > Establish irrigation systems in JKM taking advantage of plenty of water in Lake Victoria and other water sources.

## 8.4 Conclusion

In light of all the above policies and their implication on strategy, the growth potential for Agriculture Sector in Uganda was identified during AgPER, as outlined below:

The agri-food system in Uganda stands to benefit from enormous opportunities created by population growth and urbanization. Domestic and regional demand for agricultural commodities is rising rapidly as increasing numbers of urban dwellers demand more processed food and protein-rich diets.

What's more is that Uganda already has a strong competitive position in the agri-food trade sector. The country is a net exporter of agri-food products, and in the last decade, it has maintained a positive trade balance for most agri-food products. Agri-food products account for more than half of national exports.

Certainly, in order to capture expanding domestic, regional and international markets for its products in the future, Ugandan agriculture must grow quickly and become more productive. Agriculture has traditionally been an important component of Uganda's economy and a major driver of growth. However, agriculture's share in the overall economy is slowly diminishing because the information and communication services, as well as construction, have been major sources of economic dynamism in recent years.

The good news is that the agriculture sector has tremendous natural potential for additional growth. Land and water resources for agriculture in Uganda are among the best in Africa, due to rich volcanic soils and the occurrence of two wet seasons across most of the country (CCAFS, 2017).

Furthermore, the agri-food system also exhibits strong prospects for value addition. Because Uganda has two wet seasons, it can produce food at a relatively lower cost and in more stable volumes than neighbouring countries. When food processing is considered alongside primary production, the Ugandan agri-food sector has a higher potential to create jobs than the services or industrial sectors.

Nonetheless, continued low growth in agricultural productivity will significantly diminish these prospects. Specifically, agricultural productivity growth is based on increased technical (or financial) efficiency of input use, combined with technological innovation (knowledge), which together allow farmers to produce more with less. Productivity enhancements are measured by total factor productivity (TFP), or the ratio of output produced to the amount of all inputs used. For Uganda, the average TFP has been negative since around 2000 (World Bank, 2018a), primarily because input use and technology adoption in Uganda remain among the lowest in Sub-Saharan Africa.

Moreover, improvements in productivity are critical because food insecurity and malnutrition are still important threats in Uganda. In other words, food insecurity in Uganda is classified as "serious" by the 2018 Global Hunger Index.

The presence of food insecurity and malnutrition reflects the high vulnerability to climate change in Ugandan agriculture and among the rural poor. Uganda is among the countries that are most vulnerable but least adapted to climate change. In this case, crop and livestock pests and diseases, as well as drought spells, are among the top six agricultural risks in Uganda (PARM, 2015), and their occurrence is projected to increase under climate change (CCAFS, 2017). These circumstances indicate that improved inputs alone will not sustainably enhance agricultural productivity if they are not accompanied by knowledge and technology for climate-smart agriculture, as well as sustainable land and water management practices, to build resilience to climate change.

Uganda's agriculture systems are also vulnerable because they depend heavily on rainfall. The government is committed to increasing investments in irrigation and drainage systems to support smallholders who are making the transition from subsistence agriculture to market-oriented commercial production. Since irrigation may be unaffordable for subsistence farmers, the adoption of other measures,

such as rainwater harvesting, water pans, valley tanks, and water conservation technologies, should be encouraged (World Bank, 2018a).

Productive and sustainable agriculture is a proven pathway out of poverty and food insecurity. Uganda is still a predominantly rural country, with over three-quarters of the population residing in rural areas. Moreover, because agriculture employs about 70 percent of the country's labour force, it is critical for household income growth and consumption. The performance of agriculture has been closely linked to household income growth and subsequent poverty reduction (Hill and Mejia, 2016).

Uganda's agri-food system can play a significant role in enhancing employment opportunities for the country's predominantly young and rural population. An analysis of six SSA countries shows that transforming their food system from a focus on primary production to market-oriented agri-food value chains could create more jobs between 2010 and 2025 than the rest of the economy (Townsend et al., 2017).

The Government of Uganda's Vision 2040 and the Third National Development Plan (NDP III), give priority to agriculture because of its capacity to spur the country's socioeconomic transformation into a middle-income country by 2040. In order to achieve the envisaged agricultural transformation, the sector must address the underlying constraints, which will lead to: (1) enhancing agricultural productivity and building resilience to sector-related risks; (2) increasing competitiveness of key agricultural value chains and access to markets by smallholder producers; and (3) strengthening institutional capacity and improving the regulatory environment.

Importantly, to speed the transformation of Uganda's agri-food sector, critical policy weaknesses must be addressed. Primary production cannot become more productive without better access to and adoption of high-quality agricultural inputs. Better access and adoption will require stronger regulatory measures, more secure land tenure, enhanced input quality control, and full implementation of the ongoing extension reforms to sharpen the focus on knowledge transfer.

increase the resilience of agricultural systems and rural livelihoods. To this end, farmers should be equipped with climate-smart land, water and livestock management practices, irrigation infrastructure, and access to climate and disaster-risk information. Productive Alliances and the integration of smallholder producers into agri-food value chains should be supported to increase farmers' access to finance and markets, and the competitiveness of the sector more broadly.

## 8.5 Strategy formulation

### 8.5.1 Summary of priority issues in the JKM agriculture sector requiring strategy formulation

#### **Urbanisation and its impact on agriculture in JKM**

- > The population in JKM is increasingly becoming urban and peri-urban dwellers and yet the majority consider agriculture as their primary source of livelihood.
- > Diminishing land for agriculture due to increasing urbanization. Thus, improving the agricultural productivity of the remaining land is critical to sustaining the growing urban population in the JKM Corridor.
- > As Agriculture continues to compete for land with increasing urban settlement and industrial establishment in the JKM Corridor, its role as a main source of income in the household diminishes. Thus, putting pressure on the capacity of the regional economy to generate enough jobs to absorb the workforce that is leaving agriculture.

#### **Production of food crops and cash crops**

- > Declining production of food crops especially in Budondo and Butagaya sub-counties of Jinja as land is locked up in sugarcane production.
- > Likewise, a large portion of land in the Buikwe and Mukono districts is occupied by tea plantations.
- > The growing of coffee, which is one the prioritised commodities in Lake Victoria Crescent agroecological zone, is declining especially in Mukono and is being replaced by high-value crops like vanilla, flowers, aloe-vera and hot pepper.

#### **Value chain development and agro-industrialization issues**

- > Vertical integration of smallholder farmers in the agricultural commodity value chain is lacking in JKM.
  - > The backward and forward linkages between agriculture and agro-industries will necessitate that agro-value chains are sustainably transformed in the region. Ultimately, this will ensure enough supply for domestic industries to undertake transformative sustainable manufacturing while creating employment.
  - > Need for mechanisms to coordinate the value chain players and also ensure that the services and resources are delivered to facilitate the agro-industrialisation agenda.

- > Fowler and Rauschendorfer's (2019)<sup>31</sup> study of agro-industrialisation, reveal the following critical issues of the current status, future prospects and possible solutions to pressing challenges.
  - > Greater volumes of agricultural production for processing are key to the expansion and development of the agro-industrial sector. At the same time, a significant unused processing capacity in a comprehensive range of value chains remains to be exploited before additional capacity needs to be commissioned.
  - > There is no blueprint or blanket approach that can be followed in establishing agro-industries: investment decisions are location-, value chain- and time-specific.
  - > There is a fundamental lack of understanding of the operations of most of the commodity value chains due to a dearth of agricultural statistics – information on gross margins, prices, production volumes, losses and local consumption is simply not there, or at least not publicly available for interested parties. This significantly hampers the effective planning of the agro-industrial sector.
  - > Many components of an enabling environment for the agricultural sector, more broadly, have been or are being put in place. However, much remains to be done in order for it to be a fully-effective enabling environment, and close monitoring is required in order for policies to be adapted in line with changing circumstances.
- > Furthermore, Fowler and Rauschendorfer recommend the following to address pressing challenges:
  - > There is an urgent need for improved agricultural statistics, for both the public and private sector actors to better plan policies, interventions and investments in the field of agro-industrialization and to be in a position to accurately monitor progress, impact and outcomes. Improved data would also have the potential to improve communication and coordination between public sector agencies with responsibility for the development of agro-industrialisation in the country as well as in the East African region.
  - > The large and persistent agricultural productivity gaps must be addressed as a matter of concern – current yields are only 40% of those currently being realized at agricultural research stations (World Bank, 2012)<sup>32</sup>. Without such a profound and sustained increase in both the productivity of the sector and the quality of farm produce, any moves towards increased agro-industrialization will continue to be undermined.
  - > There is a pressing need to rationalise<sup>33</sup> and prioritise those agricultural commodity value chains that are to form the focus of the agro-industrialization strategy under UNDP III, as well as agree on the investment priorities along each of the value-chains<sup>34</sup>. An exercise should urgently be undertaken to appraise each of them through the 'lenses' of a number of objective criteria, including (i) their employment-creation potential; (ii) their projected foreign exchange earnings;

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<sup>31</sup> Martin Fowler and Jakob Rauschendorfer (2019). Agro-industrialization in Uganda: current status, future prospects and possible solutions to pressing challenges

<sup>32</sup> World Bank, (2012). Uganda: promoting inclusive growth: transforming farms, human capital, and economic geography. Synthesis report. Washington, D. C: The World Bank.

<sup>33</sup> Nine may be too many to start with, for example. A prioritized list would enable national decision-makers to take informed decisions on where efforts and resources should be focused from the outset.

<sup>34</sup> Such as, in the case of the coffee value-chain for example, hulling, or roasting, or transformation into instant coffee.

(iii) past experience (for example, lessons to be learnt from the failure of the cotton manufacturing industry to develop beyond its promising beginnings some 50 years ago); (iv) regional balance/ spatial impact<sup>35 36</sup>. In this way, value chains will be identified that can provide maximum benefits to the economy as a whole (those having the highest economic internal rates of return). This exercise will also enable the public sector more effectively to guide, promote and coordinate the agro-industrial investment efforts of the private sector.

- > The appropriate role for the Government of Uganda (GoU) in fostering the growth of agro-industries must be clearly defined – confusion dominates this discussion at the moment, with contradictory proposals being put forward by key commentators, politicians and think tanks alike. Clearly, the GoU has an important role to play in strengthening the enabling environment to leverage private sector investor investments, and in closely monitoring progress. Much work has already been done in terms of improving the physical infrastructure: expanding the road network and improving the efficiency of border post procedures, for example. However, much work still remains, particularly in terms of (i) expanding the electricity grid and improving the efficiency in the provision of power; (ii) ensuring improved land tenure security; (iii) ensuring effective regulation of the quality of key agricultural inputs such as seed, fertilizers, veterinary drugs and agro-chemicals, and working with the private sector to develop an appropriate and effective regulatory environment for food safety and agricultural marketing; and (iv) increasing the effectiveness and efficiency of the agricultural extension system and in encouraging the creation and development of farmer organizations so that smallholder farmers are in a better position to participate effectively in the supply chains of the priority crop and livestock enterprises and linking with formal sector aggregators.

### **Livestock issues**

- > The livestock sector development is fundamental to support the transformation of Uganda and the JKM Corridor in particular. However, the critical questions to ponder are: in the next couple of decades,
  - > how will technology uptake affect livestock productivity?
  - > how will the feed-food competition unfold?
  - > how will livestock value chains transform to satisfy the demand of an increasingly affluent and urbanized population?

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<sup>35</sup> As a recent study noted "(...) the high concentration (*of agro-industrial enterprises*) in one region and dominance of small scale agro-manufacturing industries raises issues of capacity to foster inclusive agro industry development in the country" (EPRC, 2018). In a similar vein, Gollin (2016) commented that the spatial distribution of much of the growth in the services and manufacturing sectors has been in the Lake Victoria 'crescent', in general, and in the capital city of Kampala, in particular.

Gollin, D. (2016). Agricultural transformation and urbanization: challenges for Uganda. PPT presentation at Bank of Uganda Governor's Lecture Series. 21<sup>st</sup> October. Oxford: Queen Elizabeth House and CSAE.

<sup>36</sup> A simple yet effective methodology along these lines was adopted by the authors of MAAIF's second Agricultural Sector Development Strategy and Investment Plan (MAAIF, 2010; Annex 2) in drawing up a list of priority commodities on which development efforts in the sector were henceforth to be focused.

It's recommended that stakeholders in JKM ensure policies and programmes effectively deal with zoonoses, emerging infectious diseases and natural resource use along the livestock value chains serving urban areas.

### **Key concerns in fisheries**

- > Fisheries especially in Lake Victoria have a lot of opportunities for economic development in the JKM region. Particularly, these investment opportunities include fishing, water transport, recreation, and water for domestic use and production.
  - > In addition, there are an estimated 136,000 artisan fishermen on Lake Victoria, while nearly 700,000 people around Lake Victoria benefit from fishery-related activities like local fish-processing, fish trade, boat-building, industrial fish processing, net making, trade of fishing equipment, fisheries research, extension service and administration.
  - > However, there are increased costs of fishing and loss of livelihoods resulting from flooding and infestation of water bodies by invasive aquatic weeds especially Kariba weed and water hyacinth. These have led to the loss of fishing gear and destruction of fish handling and processing infrastructure.
  - > Furthermore, there is limited capacity for regulation and enforcement of laws and guidelines on all water bodies hence the continued use of illegal destructive gear that catches immature fish.
  - > Aquaculture is constrained by limited investment in fish farming; high cost; limited access to high-quality fish seed and feed; and inadequate extension services.
  - > Both capture and aquaculture production systems face challenges of high post-harvest losses; inadequate human, technological and infrastructural capacity at all stages of the value chain leading to low production and productivity.
  - > Limited response and financing for the control of the spread of Kariba weed on Lake Kyoga, Albert and now in ponds riparian to Lake Victoria.
  - > Lack of financing for infrastructure development in fish landing sites.

### **Forestry issues**

- > Forest management in the JKM region is characterized by several challenges;
  - > Specifically, while there have been many attempts at collaborative forest management among users, local governments, Non-government Organisations (NGOs), community-based organisations (CBOs) and the central government, results have been consistently disappointing.
  - > Moreover, financial and legal means to implement local resource extraction policies are lacking.
  - > There are weak relationships between local institutions and centrally devised policy and between people's perceptions and actual uses of forest resources



**Agricultural extension issues**

- > MFPED, (2019), in its economic policy brief for the performance of agricultural extension services, reveals emerging challenges in the sub-sector. In particular, the key issues affecting the performance of agricultural extension include:
  - > lack of coordination and collaboration that leads to duplication of services,
  - > low coverage of extension beneficiaries and inadequate provision of services – largely due to limited transportation means for agricultural extension workers,
  - > poor adoption of agricultural technologies and best practices,
  - > ineffective extension approaches

**Market development issues**

- > Infrastructure especially the road networks is poorly developed to facilitate connectivity and efficient performance of agricultural input and output markets in the JKM Corridor.
- > Increasing and sustaining the market share of the JKM region in the current markets is crucial for the agro-industrialization agenda. In this respect, for JKM to sustain and increase its market share,
  - > challenges of complying with Non-Tariff Measures (NTMs) such as sanitary and phytosanitary measures, international quality certification, reliable supply capacity and inability to adhere to international standards need to be addressed,
  - > Other challenges include:
    - > Poor market information systems;
    - > Poor market infrastructure in rural and urban areas, including logistics facilities for product marketing and distribution;
    - > Poor analysis, negotiation and development of international market opportunities.

**Coordination issues**

Agro-industrialisation cuts across the mandate of Government Ministries, Departments and Agencies and more so, districts in JKM which are not properly coordinated.

## 8.5.2 Strategic interventions adopted for Agriculture Sector Development in JKM

Formulation of agriculture sector development strategies for the JKM Corridor integrates synthesis from a review of policies and other secondary sources. In addition, consultation of stakeholders, specifically the MAAIF, its agencies, departments and JKM district local government, helped in verifying information and refining the strategies. The agriculture sector has established policies, strategies, programmes and projects targeting JKM and Uganda at large. Therefore, consolidating agricultural aspirations from all these plans and integrating input from stakeholder consultation forms the main logic in formulating sector strategies for the JKM Corridor.

Accordingly, the review of policies and other secondary literature indicates a thematic focus for agricultural sector development. Precisely, Agro-industrialization is recommended to drive the sector transformation. That is, pursue initiatives to promote agro-processing and encourage agro-industry vertical coordination. Likewise, the proposed focus for agriculture sector development in the JKM Corridor seeks to primarily build on the strategic objectives for agro-industrialization, as set out in NDP III. More so, with additional strategies to address unique challenges in the region, the fisheries and forestry subsectors.

### **Thematic area 1: Increase agricultural production and productivity of agro-enterprises:**

- > Strengthen agricultural research and technology development;
- > Strengthen the agricultural extension system;
- > Strengthen the agricultural inputs markets and distribution systems to adhere to quality standards and grades;
- > Increase access and use of water for agricultural production;
- > Increase access to and use of agricultural mechanisation;
- > Increase access and use of digital technologies in the agroindustry;
- > Improve land tenure systems that promote agriculture investments;
- > Strengthen farmer organizations and cooperatives;
- > Strengthen systems for the management of pests, vectors and diseases;
- > Promote sustainable land and environmental management practices;
- > Improve skills and competencies of the agricultural labour force at technical and managerial levels;
- > Strengthen the capacity of Uganda National Metrological Authority with staff and logistics to collect data on the weather for crop weather index insurance up to the sub-county level.

### **Thematic area 2: Improve post-harvest handling and storage of agricultural products**

- > Establish post-harvest handling, storage and processing infrastructure including silos, dryers, warehouses, and cold rooms of various scales and capacities at sub-county, district and zonal levels;
- > Establish regional post-harvest handling, storage and value-addition facilities in key strategic locations; grain in Jinja and fish in Mukono;
- > Improve the transportation and logistics infrastructure for priority commodities like refrigerated trucks and cold rooms.

### **Thematic area 3: Increased agro-processing of the selected products:**

- > Establish fully serviced agro-industrial parks/export processing zones to stimulate and expand agro-processing;
- > Establish a strategic mechanism for the importation of agro-processing technology;
- > Establish new and expand existing agro-industries for processing of key agricultural commodities;
- > Provide affordable, adequate and reliable electricity in the various production zones of the JKM Corridor;
- > Construct and regularly maintain community access and feeder roads for market access;
- > Improve skills and competencies of the agricultural labour force at technical and managerial levels in post-harvest handling, storage and value addition.

### **Thematic area 4: Increase market access and competitiveness of agro-industry products**

- > Strengthen enforcement and adherence to product quality requirements including food safety, social and environmental standards, grades, etc;

- > Digitalize acquisition and distribution of agricultural market information;
- > Improve agricultural market infrastructure in rural and urban areas;
- > Improve transport and logistics facilities for effective product marketing and distribution;
- > Strengthen the capacities of public institutions in analysis, negotiation and development of international market opportunities, particularly for the selected commodities.

#### **Thematic area 5: Increase the mobilization, provision and utilisation of Agricultural Finance:**

- > Finalise and implement the Agricultural Finance Policy;
- > Develop and implement an Agricultural Insurance Policy;
- > Review tax levies and other incentives on agricultural insurance products to encourage uptake by farmers;
- > Increase the pool of funds available for agricultural lending;
- > Revise the Agricultural Credit Facility (ACF) to fund all levels of the agriculture value chains;
- > Provide incentives to financial institutions to increase agricultural lending;
- > Facilitate the formation of farmers' groups and cooperatives for savings mobilization;
- > Establish an agricultural commodity price stabilization fund for commodities that are vulnerable to high price fluctuations;
- > Develop concessional long-term financing for agricultural infrastructure and capital investments.

#### **Thematic area 6: Strengthen institutional coordination for improved service delivery**

- > Strengthen linkages between public and private sectors in agro-industry;
- > Strengthen coordination of public institutions in the design and implementation of policies.

#### **Thematic area 7: Strengthen urban farming in the JKM Corridor**

- > Train farmers on the use of household biodegradable waste in home gardening for improved nutrient use efficiency;
- > Train farmers on economic irrigation water management strategies;
- > Train farmers on other agronomic and marketing aspects of crops that are commercially viable in urban areas, particularly horticultural crops.

#### **Thematic area 8: Transform the fisheries and aquaculture sub-sector and make it responsive to the challenges at all levels of the value chain.**

Generally, the focus is on the following core policy areas

- > Fisheries and aquaculture management and governance;
- > Research and appropriate technology transfer;
- > Human Resource and Capacity Development;
- > Production and productivity;
- > Post-harvest management, value addition and quality assurance;
- > Trade and marketing;
- > Commercialization of aquaculture through aqua parks.

Specifically, the fisheries and aquaculture sub-sector have the potential to accelerate economic transformation in JKM. Therefore, strategic interventions will strive to achieve the following policy objectives:

- > To strengthen coordination organization, management and development of the fisheries and aquaculture sub-sector;
- > To manage and develop fisheries and aquaculture resources guided by the best scientific evidence;
- > To promote and sustain the availability of adequate fish for domestic, regional and international markets;
- > To promote value addition, quality and safety of fish and fishery products on the market as well as improve the value chain system;
- > To increase the value and volume of fish traded internally, regionally and internationally;
- > To support fisheries and aquaculture management practices and technologies that are environmentally friendly and climate resilient;
- > To prevent and control the introduction of pathogens, disease-causing organisms and contaminants as well as invasive species within the fisheries and aquaculture sector;
- > To create a conducive investment environment through aqua parks to increase fish production and productivity;
- > To promote the availability of effective monitoring systems, and adequate and relevant information for planning and decision-making.

### **Thematic area 9: Improve the management and sustainable use of forest resources**

- > Develop commercial forest plantation
  - > Expand and sustainably manage commercial timber and pole plantations;
  - > Establish and sustainably manage energy plantations;
  - > Encourage the development of community-based out-grower forest plantation schemes around large plantations.
- > Promotion and intensification of tree growing on farms
  - > Support establishment and management of woodlots, hedgerows, windbreaks, shelter belts and fruit orchards;
  - > Promote on-farm growing of high conservation value species.
- > Restore and conserve natural forests in protected areas and private lands
  - > Restore/rehabilitate degraded and deforested natural forests in Central Forest Reserves (CFRs);
  - > Promote the restoration/rehabilitation of natural forests on private and communal lands;
  - > Restore/rehabilitate water catchment areas and fragile ecosystems (bare hills, river banks, lakeshores, wetlands);
  - > Build capacity for community-based natural resource/ forest management and collaborative forest management;
  - > Promote the development of natural forest-related enterprises;
  - > Promote the conservation of biodiversity in priority forest reserves and wildlife conservation areas;
  - > Promote the management of important biodiversity corridors on private and communal land.
- > Forest product processing and value addition
  - > Promote small and medium-capacity sawmills with high recovery rates;
  - > Improve harvesting and processing practices for higher revenue returns from natural forests;
  - > Build the capacity for value addition for processing wood and non-wood forest product.
- > Promotion of urban forestry
  - > Mainstream forestry in urban development plans;
  - > Manage urban forest reserves;

- > Increase urban tree growing and protection;
- > Support urban tree nurseries to produce quality planting materials.
  
- > ICT in Forest Management and Advisory Services
  - > Develop and manage a user-friendly information management system to collect, process and disseminate forest information;
  - > Develop and implement a regional forestry communication strategy;
  - > Establish a regional stakeholder consultative for information sharing and review of forestry sector performance;
  - > Build the capacity of service providers (NGOs, private consulting and contracting companies, etc.) to effectively deliver forest services;
  - > Promote energy-saving technologies in wood-deficient areas and high-population centres;
  - > Build the capacity of local community institutions to demand forestry advisory services.
  
- > Forestry education and training
  - > Develop and periodically review curricula for professional and technical forestry training to enhance knowledge, attitude and skills;
  - > Conduct tailored apprenticeship and on-job training for staff in forestry institutions to improve their performance;
  - > Promote local community training through farmer field schools and agro-forestry demonstrations;
  - > Build knowledge, attitude and skills of service providers for effective delivery of forestry services;
  - > Promote and strengthen the integration of forestry-related co-curricular activities in primary and secondary education.

### **Thematic area 10: Improved livestock production within the public health and environment protection standards**

- > Notably, there is an increasing relevance of urban, peri-urban middle-scale commercial livestock operations and value chains. This is particularly critical in the JKM corridor due to the high rate of urbanization. Therefore, it is important to increase livestock production in JKM while considering the urban concern, specifically the social, public health and environmental protection standards.
  
- > Ensure that policies and programmes effectively deal with zoonoses, emerging infectious diseases and natural resource use along the livestock value chains serving urban areas. This is essential for sustainable livestock in the future.