Food and Agriculture Organization of the United Nations

Jumuiya ya Kaunti za Pwani (JKP)

GENDER SENSITIVE FOOD AND NUTRITION SECURITY STRATEGY 2017-2030

FINAL REPORT, 2017

PRESENTED TO FAOKE

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Executive summary

In 2010, the Kenyan citizens took an historic step by promulgating a new a constitution which created 47 devolved units (Counties) to facilitate grass root development in previously marginalized parts of the country. This new constitutional dispensation paved the way for the formation Jumuiya ya Kaunti za Pwani (JKP) which is a tripartite formation of the six coastal counties of Kenya (Mombasa, Kwale, Kilifi, Lamu, Tana River and Taita Taveta), the three local Universities (Taita Taveta University, Pwani University and Technical University of Mombasa) with local professionals and private sector as key stakeholders. The cooperation was formally inaugurated on July 13th, 2015 by the collective signing of common socio-economic development initiatives by the six county governors. The primary aim of the JKP is to harmonize the six counties development priorities for cross-sector cutting projects leveraging the vast shared county resources for sustainable socio-economic empowerment of her people.

The development of this gender sensitive food and nutrition security strategy is the pioneer project being undertaken by the JKP with support from FAOKE. The strategy aims to address the challenges resulting from the vulnerability of the JKP regions to climate variability which is mostly associated with natural hazards encompassing the rise of the sea level, chronic coastal erosions, coastal floods, storm surge, and dry spells resulting to chronic food shortages and malnutrition currently experienced in some parts of the JKP region. Coastal communities and the livelihood support ecosystems have therefore become susceptible to the compounded effects of climate variability, as well as unsustainable food production practices.

The strategy is leveraged on the exisiting international and national development plans and specifically aims to achieve the objectives set out in the Millenium Development Goals, Sustainable Development Goals and the Kenya Vision 2030 development blue print. The strategy has identified policy issues that need to be adressed to enusure food and nutrion security for the populations inhabing Coastal regions of Kenya. Key flagship projects to aid the realization of the objectives set out in this strategy have been identified through reasearch and engagment of all stakeholders within the JKP region.

Acknowledgements
The development process of this First JKP-Gender Sensitive food and nutrition Security Strategy (GSFNSS) has been made possible through participation of several individuals and institutions. As it is not possible to mention all individuals who participated in the development of this document, I wish to express my appreciation and sincere gratitude to the people of Coastal counties for their participation in the development of this inaugural (GSFNSS-2017-2030). Majority of the suggestions and programme and project ideas collected during consultative meetings and field research have been considered and included in this document as a reflection of the shared aspiration of the local people.

I would like to take this opportunity to thank all the six Governors and their deputies from all the coastal counties together with all the staff working under their stewardship for their participation, support, guidance, leadership and dedication toward the production of this GSFNSS. Special tributes also go to FAOKE staff at the head office and field officers within the JKP region under the leadership of Dr. Rugalema (FAO county Rep) who not only gave their sector inputs in various forums but also participated in the consultation meetings at all levels of the development of the GSFNSS. FAO also provided funding support for developing this strategy.

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Finally, I wish to recognize the great work done by the JKP secretariat under the leadership of Dr. William Kingi and Mr. Emmanuel Nzai. They coordinated all the activities during the development of this GSFNSS and provided an enabling environment for the research team to accomplish this great task.

List of abbreviations

JKP- Jumuiyia ya Kaunti Za Pwani

EEZ -Exclusive Economic Zone

ASAL-Arid and Semi-Arid Land

AEZ- agro ecological zones

NCPB- National Cereals and produce Board

WHO- World Health Organization

FAO-Food and Agriculture Organization

MDGs-Millennium Development Goals

SDGs-Sustainable Development Goals

GSFNSS- Gender Sensitive Food and Nutrition Strategy

NEPAD-New Partnership for African Development- NEPAD

CAADP-Comprehensive Africa Agriculture Development Programme

ASDS-Agricultural Sector Development Strategy

ICT-Information and Communication Technologies

NGEC- National Gender and Equality Commission

CL- Coastal Lowland

MOA- Ministry of Agriculture

KCDA- Kenya Coconut Development Authority

AFA-Agriculture and Food Authority

GDP-Gross Domestic Product

SDA -State department of Agriculture

EEZ- Exclusive Economic Zone

ESP- Economic Stimulus Programme

DWFN- Distant Water Fishing Nation

1. Background information

Kenyan citizens took an historic step in 2010 and promulgated a new a constitution which created 47 devolved units (Counties). This new constitutional dispensation paved the way for the formation of Jumuiya ya Kaunti za Pwani (JKP) which is a regional economic block bringing together six Coastal counties of Kenya. The Jumuiyia ya Kaunti Za Pwani region covers 103,326 km2 and the Exclusive Economic Zone (EEZ) 200 Nautical Miles of the Indian Ocean. The population in the region has grown from 2.7 million (1999 census) to 3.4 million[1]. This is estimated to rise to 3.5 million in 2019 (using the inter-censal growth of 3.8 %). The majority of the population (70.8%) live in the rural areas and engage in subsistence farming in high and medium agricultural potential areas. Of the total land area, only 34,314 km2 (31%) is suitable for crop production and the remaining 69% is Arid and Semi-Arid Land (ASAL) supporting mainly livestock production and wildlife. The JKP region is well endowed with natural resources that include the ocean, rivers, springs (fresh and hot water), lakes, deltas, water catchments, hills and rangelands, marine resources (fisheries, corals), tree crops (cashew nuts, coconuts, mangoes, bixa), forestry (mangroves), minerals (gemstones), wildlife (hirola, butterflies, etc.), diverse cultures, Kayas, monuments and history. These resources are yet to be fully exploited for the benefit of the JKP communities. Despite the rich natural resource endowment, high levels of absolute poverty (62%), food deficit (70%), unemployment, poor infrastructure, environmental degradation (2% forest cover), gender inequality and high prevalence rate of HIV and AIDS continue to prevail. These challenges are not only encountered in the JKP region but also in the whole country in varying degrees. In order to address these development challenges, there is need to employ a participatory and integrated development approaches for sustainable utilization of the natural resources for the region’s economic development.

[1] (KNBS, 2010)

The region has a consolidated land area of approximately 132,375 Ha under food crop production The main food crops grown are maize, cassava, green grams, cow peas. Other food crops grown albeit in small quantities are Irish Potatoes, rice and Sorghum, the later emerging as more of an industrial crop than a food crop. The food security of the region is anchored on the unique agro-ecological features that endow this part of the Kenyan coast. It has four topographical features including foot plateau, coastal plain, Nyika plateau and coastal range. Rainfall in the region ranges between 400-1200 mm. The region has four agro ecological zones (AEZ), which defines areas with similar characteristics such as vegetation, humidity and annual mean temperatures, which in turn influence the cropping patterns. The AEZ include:

CL 3-Coconut-Cassava Zone

This zone has the highest potential for crops. It spreads along the coastal uplands and low level coastal plains with mean annual temperatures of 24-260C and annual rainfall of 1000-1200 mm. Main crops include tree crops, food crops and vegetables.

CL 4-Cashewnut-Cassava Zone

This region stretches northward along the coastal plains and has an annual precipitation of 850-1100mm, and mean annual temperatures of 24.9-26.60C.

CL5-Lowland Livestock-Millet Zone

This zone is less potential and has an annual precipitation of 700mm-900mm and mean annual temperature of 24.90C-26.60C. It is suitable for livestock ranching and dry farming.

CL6-Lowland Ranching Zone

It ranges from altitude 90m-300m above the seal level. It has an annual precipitation of 350-700mm and annual mean temperatures of 24.90C-270C. Major activities in this region are wildlife and ranching.

1.1 Agriculture

The agricultural sector is the mainstay of the Kenya's economy. Agriculture contributes about 26 % directly to the Gross Domestic Product (GDP) and a further 25 % GDP indirectly through linkages with agro-based and associated industries in Kenya. Thus, the sector is the driver of Kenya's economy and livelihoods for the majority of the population. The sector accounts for 65 % of the National total exports and provides more than 70 % informal employment in the rural areas. Over 80% of the population, especially living in rural areas, derive their livelihoods mainly from agricultural related activities. Agriculture contributes over 75% of industrial raw materials[2]. The JKP region is one of the regions in the country which experience perennial food and nutrition insecurity and especially the ASAL areas of Tana River, Kilifi, Kwale, and Taita Taveta counties. In order to be food secure, the JKP

[2] Daily Nation Tuesday 25th April, 2017 pg. 16.

counties must increase agricultural productivity and incomes especially for small-holder farmers, lay emphasis on irrigation to reduce over-reliance on rain-fed agriculture in the face of limited high potential agricultural land, encourage diversification into non-traditional agricultural commodities, value addition and agri-business development. The purpose is to reduce vulnerability, enhance food security and reduce nutrition related challenges, ensure environmental sustainability and encourage private-sector participation.

The agriculture sector in the region experiences a number of challenges that has limited its growth. They include but are not limited to the following;

1. *High costs of recommended crop farming inputs:* The cost of key farming inputs such as certified seed, pesticides and fertilizer is high for resource poor farmers in the region. The high cost of improved crop varieties for instance has resulted into use of low quality often recycled seed. While most counties have initiated programs to either subsidize or provide some of the inputs for free e.g. certified seed of selected crops and fertilizer, accessibility by the most vulnerable farmers remains a challenge. For instance, in Taita Taveta county subsidized fertilizer is issued at the NCPB depot located in Voi town making it inaccessible to farmers in Taveta.

2. *Reliance on rain fed agriculture:* The dependency on rain fed agriculture has led to reduced production of major crops due to the erratic and unreliable rainfall. Farmers in counties with huge potential for irrigated agriculture such as Tana River, Taita Taveta Lamu and Kilifi still rely on rain fed agriculture. The effects of climate change with the characteristic changes in raining seasons has greatly affected the ability of rain fed farmers to plan their farming activities.

3. *Poor transport and telecommunication infrastructure:* Poor rural roads and other key physical infrastructure have led to high transportation costs for agricultural inputs and produce. The poor infrastructure is also associated with high post-harvest losses and exploitation of farmers by brokers/ middle men. The telecommunication infrastructure for farmers in far flung areas of Tana River county and poor water based transport infrastructure has placed a heavy burden on farmers in Tana River and Lamu respectively.

4. *Limited storage facilities and infrastructure:* although there is an effort to establish agricultural produce collection centres across most centres, these efforts have not been sufficient to address storage requirements from perishable and non-perishable agricultural produce leading to post harvest losses.

5. *Crop Pests and diseases:* Pests and diseases continue to cause a lot of losses to farmers. Due to the hot and humid coastal climate, most tropical pests and diseases breed at higher rates exposing the farmers to crop failure and deterioration of the produce. In counties such as Tana River, Taita Taveta and Kwale, farmers face extra threats from wildlife pests due to their proximity to wildlife conservation areas.

6. *Land tenure system:* Lack of land title deeds has been a major problem in coastal areas since independence. Most of the small holder families who represent the majority of farmers do not have title deeds. In some counties a good proportion of small scale farmers are squatters who face the threat of eviction every now and then. The result of this is poor investment in mechanized farming infrastructure and perennial crops such as coconut, cashew nuts, mangoes and macadamia. In Kilifi county, untitled land is usually not fenced results in destruction of crops by livestock. Lack of title deeds (important form of collateral) limit farmers' ability to access credit. Women and youths in the Jumuiya are more disadvantaged and therefore not sufficiently motivated to participate in agriculture.

7. *Poor agronomic practices:* Farmers continue to use ineffective agricultural technologies and agronomic practices. Establishment of crop is rarely informed by research and meteorological predictions. The limited access to extension services has constraint most farmers from accessing good and timely agricultural advices leading to depressed yield. The extension staff: farmer ratio stands at 1:1,500.

8. *Lack of appropriate planting materials and pesticides:* Farmers have challenges accessing recommended planting materials for drought tolerant and nutrient rich crops. For instance, availability of planting materials for cassava was a problem during the recent planting season. Besides, the pesticides that were available on local markets for the management of army worms were not effective in managing the maize pest.

9. *High Post-harvest losses:* Most of the produce goes to waste due to losses association with poor packaging and transportation. The losses incurred are also a direct result of poor post-harvest handling.

10. *Culture norms and practices:* Communities in Tana Rivers and Kilifi have a cultural practice of not fencing their farming fields since it denotes a characteristic of meanness which is taken as a vice. The livestock farmers take advantage of this to graze their animals on crops.

11. *Management of available water for irrigation:* In counties with high potential for irrigated agriculture, the problem is how to manage the water. In Tana River for instance, farmers downstream have been affected by construction of dams upstream. In fact, some channels of the river Tana in the Tana Delta have dried up whereas unpredictable artificial flooding occasioned by occasional release of dam waters often destroy farmer's crops.

12. *Insecurity:* In Lamu county farmers have been forced to abandon their farms due to insecurity associated with Al Shabaab. The farmers are sometimes forced to abandon their farms when the produce is ready for harvest.

13. *Climate change:* The effects of climate change has been felt mostly by the farmers especially due to dependence on rain-fed agriculture. The changing and unpredictable raining seasons has greatly affected their ability to plan their farming activities. Areas which received adequate rainfall now receive insufficient rainfall reducing the land that can support agriculture. This brings the need for more exploitation on irrigation farming especially in ASALs areas. It is estimated that intensified irrigation can increase agricultural productivity fourfold and, depending on the crops, incomes can be multiplied 10 times.

14. *Access to credit facilities:* Farmers have no or limited access to agricultural credit facilities. This has limited their capital formation for investment in modern agricultural technologies.

15. *Poor crop establishment:* This has been a major challenge facing the tree crops in the coastal region. Most of the tree orchards are very old, mostly over 50 years. Such orchards have their productivity on the decline while others are no longer producing. The tall coconut varieties that are associated with low yields dominates the coconut orchards in Kilifi and Kwale Counties. Younger members of the farming communities are also cutting down old tree crops such as coconut and cashew for timber and firewood without establishing new crops.

1.2 Livestock

The livestock sector in Kenya contributes about 12% of the entire GDP, about 42% of the agricultural GDP and 50% of the country's agricultural sector employment. Over 70% of these livestock are found in the Arid and Semi-arid Lands (ASALs) which form about 80% of the country's land area and where they employ 90% of the local population. The Counties of the JKP region are some of the semi-arid counties in Kenya which unlike arid counties have a more mixed economy including rain-fed agriculture, agro-pastoralism and

conservation or tourism-related activities and better opportunities for intensification of production. Traditional livestock systems based on local resources and animal breeds are the major source of livelihoods for 200 million rural families, and provide food and income for some 70% of the world's rural poor (FAO, 2009). But the traditional livestock sector is under growing pressure. Booming urban demand for meat, milk and eggs is being met worldwide by intensive, largescale production systems that squeeze traditional producers from markets, erode the genetic diversity of local livestock breeds, and favour the emergence and spread of animal diseases. Sustainable increases in world livestock production, will in turn, contribute to food security, poverty alleviation and economic development. There is need to increase low income producers' access to resources and services, such as land, water, credit, extension and veterinary care (ibid). The livestock sector is key to the economic prosperity of most Arid and Semi-Arid Lands (ASALs) counties in Kenya where pastoralism is the dominant form of livelihood. Under the Economic Pillar of Kenya Vision 2030 strengthening livestock health, production and marketing is a major area of intervention in the ASALs with special focus on: disease control, marketing infrastructure, promotion of public-private partnerships and value addition to livestock products[3].The performance of the livestock and agriculture sectors is key to food security, poverty reduction, improving living standards and national economic performance. Enhanced sector growth at the national level will only be possible if strong performance is realized at the county level. To achieve the ambitious growth targets identified in the Vision 2030, both National and County governments need to work seamlessly and complementarily (FAO-Kenya, 2017).

1.3 Fisheries

Fish sector in Kenya is made up of three sub-sectors: inland capture fisheries, aquaculture, and coastal and marine capture fisheries with overall contribution to total production of 85%, 9% and 6% respectively [4]The bulk of the total annual catch is landed along the shores of Lake Victoria. An average of 9,000 metric tons of coastal and marine capture fisheries is landed and this is valued at USD 4.1 Million contributing 5% of the total fisheries revenue annually. This is landed by an estimated 13,000 artisanal fishers whose fishing activities are restricted within the 0 – 3 nautical miles territorial waters, as these fishers are not sufficiently equipped to venture into the offshore fishing grounds (Government of Kenya, 2016).

Fisheries are essential to the economic well-being of millions of rural people in the developing world. Capture fisheries and aquaculture provide direct employment for some 200 million people, the vast majority of whom work in the traditional, small-scale sector, which accounts for about 70% of fisheries production (FAO,2009). Fish and other aquatic species are also vital to food

[3] See Vision 2030 economic development blue print for Kenya.

[4] Government of Kenya, 2014

security. They provide almost 30% of the animal protein consumed in Asia and the Pacific, and more than 20% in low-income food-deficit countries. There is need to enhance productivity in the small-scale sector – and its contribution to food security and livelihoods – in the face of growing competition from industrial capture fisheries and large-scale aquaculture (ibid). The fisheries sector is critically important especially in the developing world where millions of people depend on fish for livelihood.

1.4 **Nutrition**

Good nutrition is a prerequisite for the national development of countries and for the well-being of individuals. The nutritional indicators of the nutritional status of children are calculated using growth standards published by the World Health Organization (WHO) in 2006. Over the last few years, concern for food and nutritional security, as well as the eradication of hunger, has been increasingly rising up Kenya's economic agenda. The work on this subject will not only enable the achievement of the Millennium Development Goals (MDGs) but also Sustainable Development Goals (SDGs) considering that over 10 million people in Kenya suffer from chronic food insecurity and poor nutrition. About 3-6 million people require emergency food assistance at any given time, nearly 30% of Kenya's children are undernourished with 26 % stunted (MOH, 2014)[5]. Nationally, 26 per cent of children are stunted, while 8 per cent are severely stunted. Stunting levels are higher among boys (30 per cent) than girls (22 per cent). Stunting is higher among rural children (29 per cent) than urban children (20 per cent). At the regional level, JKP region (31 per cent), Rift Valley and Eastern (each 30 per cent) have the highest proportions of stunted children. Stunting in children generally decreases with education of the mother. Wasting levels are highest among children in the age groups 6-8 months and 9-11 months (each 7 per cent). The percentage underweight is slightly higher among boys (12 per cent) than girls (10 per cent) (MOH, 2014).

Between 2008 and 2014, consumption of minimum acceptable diet among children aged 6-23 months dropped from 39% to 31%. The primary causes of undernutrition among children are inappropriate breastfeeding and complementary feeding practices (KNBS, 2015). On the other end of the scale, the Kenya Stepwise Survey for Non-Communicable Diseases (NCDs) Risk Factors (2015) shows that 28% of Kenyans aged 18-69 years are either overweight or obese, with the percentage being significantly higher in women (38.5%) than men (17.5%). The proportion of overweight and obese women is higher in urban areas (43%), as compared to rural areas (26%), but even there, it is steadily rising. In fact, almost half of women living in Nyeri, Kirinyaga, and Mombasa are overweight or obese. With regard to children, 4.1% of those under the age of five are either overweight or obese (Ministry of Health, 2015b). Unhealthy diets and physical inactivity are prevalent in the country. Only 5.2% of adults aged 18-69 years consume the WHO recommended five servings of fruits and/or vegetables. Approximately

[5] See Kenya Demographic Health Survey report of 2014

20% add salt or salty sauce to their food before eating; 3.7% consume processed foods high in salt; 83.5% often add sugar when cooking or preparing beverages at home; and 28% always add sugar to beverages. The proportion of Kenyans who use oil is higher (59.1%) than that of those who use vegetable fat (38.5%). About 6.5% do not engage in the WHO recommended level of physical activity, which is 150 minutes of moderate-intense activity per week for 18-64 year olds (Ministry of Health, 2015b).

Table 1: Analysis of nutrition status of children in the Coastal region of Kenya.

County	Height-for-age1			Weight-for-height				Weight-for-age			
	Percentage below -3 SD	Percentage below -2 SD	Mean Z-score (SD)	Percentage below -3 SD	Percentage below -2 SD2	Percentage above +2 SD	Mean Z-score (SD)	Percentage below -3 SD	Percentage below -2 SD2	Percentage above +2 SD	Mean Z-score (SD)
Coast	**10.4**	30.8	-1.3	0.8	4.5	3.3	-0.1	2.4	13.6	1.2	-0.8
Mombasa	7.1	21.1	-1.0	0.0	4.1	4.2	0.0	1.5	9.6	1.9	-0.6
kwale	10.5	29.7	-1.4	0.8	4.4	3.8	0.0	1.5	11.8	1.5	-0.8
kilifi	13.6	39.1	-1.5	0.9	4.1	2.8	-0.1	3.1	16.9	0.6	-1.0
Tana River	9.4	28.1	-1.4	0.9	5.7	1.3	-0.3	3.1	18.6	0.6	- 1.0
lamu	7.1	29.2	-1.2	0.3	4.2	2.0	-0.1	2.1	11.8	2.1	-0.8
Taita Taveta	5.8	23.8	-0.9	3.6	7.2	4.2	-0.1	3.2	7.8	1.8	-0.6

Source :(KDHS, 2014).

1.5 Gender inequality index (GII) in JKP counties

Gender parity in a region is measured in terms of Gender Inequality Index (GII). It reflects gender-based disadvantage in three dimensions; reproductive health, empowerment and the labor market. The index shows the loss in potential human development due to inequality between female and male achievements in these dimensions. It varies between 0 -when women and men fare equally -and 1, where one gender fares as poorly as possible in all measured dimensions. Kenya has an overall GII of 0.651[6]. This is however, not equal everywhere as there are regional disparities with counties located in Arid and Semi-Arid Lands (ASALS) having high Gender Inequality Indices.

Table 2: Gender inequality indexes in JKP counties

County	**GII**
Taita Taveta	0.60
Tana River	0.69
Mombasa	0.65
Lamu	0.71
Kwale	0.63

[6] The County government of Kwale, 2013 : County Integrated Development Framework-2013-2017.

Kilifi	0.67

Source: https://data.humdata.org/.../kenya-gender-inequality-index-per-county.xlsx

2.0 The Community of Jumuiya ya Kaunti za Pwani

Jumuiya ya Kaunti za Pwani is a tripartite formation of the six coastal counties of Kenya (Mombasa, Kwale, Kilifi, Lamu, Tana River and Taita Taveta), the three local Universities (Taita Taveta University, Pwani University and Technical University of Mombasa) with local professionals and private sector as key stakeholders. The cooperation was formally inaugurated on July 13th, 2015 by the collective signing of common socio-economic development initiatives by the six county governors. The primary aim of the JKP is to harmonize the six counties development priorities for cross-sector cutting projects leveraging the vast shared county resources for sustainable socio-economic empowerment of her people.

JKP is envisaged to be a strong regional economic bloc with extensive competences and major ambitions. The initiative is intended to be a people-centered and -driven process which puts the citizens of the six counties in the center of the economic development strategies envisioned. To succeed, the JKP realizes the need to be anchored on an enlightened citizenry that understands, appreciates and places common interests above competing ones in making informed decisions and investments for their future. In order to make the JKP- Gender Sensitive Food and Nutrition Security Strategy people-centered, it must be based on data derived from people-driven processes in the county plans and be able to gauge the perceptions of JKP citizens on their expectations, priority issues, challenges and the way forward in its implementation. Vulnerability of the JKP regions to climate variability is mostly associated with natural hazards encompassing the rise of the sea level, chronic coastal erosions, coastal floods, storm surge, and dry spells resulting to chronic food shortages and malnutrition currently experienced in some parts of the JKP region. Coastal communities and the livelihood support ecosystems have therefore become susceptible to the compounded effects of climate variability, as well as unsustainable food production practices. Following studies conducted in the Kenya's coast region by FAO on gender, food and nutrition security and engagement with stakeholders, JKP held consultations with the Food and Agriculture Organization of the United Nations (FAO Kenya Country Office) among other stakeholders, the JKP engagement sort funding support for the development of an Economic Blueprint for the region in selected sectors of Agriculture, Livestock and, Fisheries and the Blue Economy; and Health. The Food and Agriculture Organization (FAO) of the United Nations has partnered with the JKP in supporting the development of gender sensitive food and nutrition security strategy to ensure that JKP- Economic blueprint for the period 2017-2030 is developed and implemented while taking into consideration a gender equality perspective. In his remarks during the inception meeting on 17 May

2017, the FAO Kenya Representative, Gabriel Rugalema, reiterated that his organization is supporting the development of the gender sensitive food and nutrition security strategy as part of the Economic blueprint because of:

i. Opportunity to manage and harness common natural resources such as water, land, forests, national parks, etc.
ii. Opportunity of agglomeration and economies of scale.
iii. Opportunity for a stronger economic and political bargaining power to negotiate as a block.
iv. Opportunity to address common challenges of food security, nutrition, infrastructure, social services, etc.
v. Opportunity to unlock the potential of partnerships and financing for development.

Mr. Rugalema encouraged the JKP project team to identify the specific niche and comparative advantage of each county as the coastal area has a rich eco-system. He further encouraged the bloc to invest in agriculture value chains to ensure food and nutritional security, as well as developing agri-tourism. Further, he observed that with the ocean at the door step, the bloc has huge opportunity for unrivalled mariculture and mariculture-based tourism. The Representative assured the JKP that FAO will support the Blueprint, not only in the formulation, but also in its implementation.

The JKP economic Blueprint 2017-2030's ultimate goal will be a rationalized and sequenced flagship projects with bankable implementation combination for sustainable socio-economic development while enhancing devolution, equity and prosperity in the JKP region. The plan will be consistent with Kenya Vision 2030 and United Nation's Sustainable Development Goals (SDG's). The overall objective of phase one of this initiative is to jumpstart the development of JKP-2030 regional strategic plan foundation and framework, legal and institutional framework and sector plans for the region's agriculture, livestock and fisheries and health. The effort will identify projects and programmes to secure year-round daily food, health and nutrition requirements of the regional communities. Emphasis will be placed on gender based food security, health and nutrition through identification and development of sustainable projects and programmes through regional county collaborations and comparative advantages. This strategy will contribute to achieving concrete results that will lead to significant improvements in the quality of life of the local people, aimed at the eradication of poverty, especially extreme poverty and guarantee food security with a gender focus and respecting the diversity of dietary habits, in order to meet the challenges of food security and nutrition with a view to eradicating hunger and enjoying the Right to Food, especially in vulnerable sectors of the population. In order to move towards the eradication of hunger, poverty and malnutrition and ensure food and nutritional security, the JKP- Gender Sensitive Food and Nutrition Strategy (JKP-GSFNSS) defines

specific areas of action that, at the same time, respect the diversity of political and social projects specific to each county in JKP. In this framework, the strategy is based on four pillars, which seek to meet the goal of creating a JKP free from hunger. They are:

i. Sustainable access to safe food for all populations

ii. Coordinated policy and legal instruments

iii. Sustainable food production during disaster and emergency

iv. Nutritional well-being and assurance for all populations

JKP- economic blueprint will be guided by the principles of gender equality and participation of local communities.

3.0 Policy framework for food and nutrition security

Taking into account that there has been gradual growth in food production in Kenya including the regions of JKP, it is also necessary to look at people's ability to acquire and use the food needed to meet their nutritional needs. The success in meeting the food and nutrition security goals in the region is largely due to the political commitment of each county government to work on this issue. It is important to highlight the efforts made by the national and county governments, which have created their own programs and projects aimed at guaranteeing food and nutritional security in their territories, thereby contributing to the achievement of the goals at the regional and national levels. In this regard, the Gender sensitive food and nutrition security strategy must be linked to the existing development plans at the national level and in each county of the region as well as the JKP-Economic blueprint.

The JKP-GSFNSS will be guided by various national and international policy frameworks related to food production, food security and nutrition security and they include:

i. The Millennium Development Goals were set to among other targets eradicate extreme poverty and hunger by the year 2015. Kenya had made a commitment to reduce the number of people living in hunger, but this target had not been achieved by the end of 2015. While there has been significant improvement, a lot more has to be done to achieve food and nutrition security in Kenya.

ii. Kenya is a signatory to New Partnership for African Development NEPAD’s Comprehensive Africa Agriculture Development Programme (CAADP) which focuses not only on reducing poverty and hunger but also on improving nutrition and reducing malnutrition through its food and nutrition security programme. This is done through support to research, capacity building and implementation of selected projects in maternal and child nutrition, food fortification and bio-fortification, dietary diversity and home-grown school feeding.

iii. The Sustainable Development Goals (SDGs) aims to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. These goals have been domesticated in Kenya's Agricultural Sector Development Strategy (ASDS)-Agricultural Sector Development Strategy 2009-2020 targets to reduce the number of people living below absolute poverty line to less than 25 per cent, reduce food insecurity by 30 per cent and increase the contribution of agriculture to the GDP by more than Kshs 80 billion per year[7].

iv. The Government of Kenya's 2011 Food and Nutrition Security Policy states that nutrition is central to human development in the country.[8]

v. The National School Health Policy that was developed in 2009 promotes good nutrition and gender related issues in schools.

vi. Kenya Vision 2030 that aims at transforming Kenya into a rapidly industrializing, middle income country offering all its citizens a high quality of life recognizes agriculture as a key sector towards the realization of the vision. Key projects particularly in agricultural intensification and manufacturing are to be implemented under vision 2030 agenda. The programmes and projects provide various investment opportunities for both local and international investors.

vii. The 2010 Constitution of Kenya recognizes adequate food and nutrition as a human right. It states that every person has the right to be free from hunger and the right to adequate food of acceptable quality (Article 43) and that every child has the right to basic nutrition (Article 53)[9].

viii. Kenya National Health Sector Strategic plan

ix. National Nutrition Action Plan 2012-2017.

x. National Guidelines for healthy diets and physical activity, 2017.

xi. The United Nations Member States committed themselves to the Millennium Development Goals in 2000 and prioritized eradication of extreme poverty and hunger as one of the goals to be achieved by 2015.

xii. The 189 United nation Members States in the Sustainable Development Goals (SDGs) set in 2015 proposed to end hunger, achieve food security and improve nutrition, and promote sustainable agriculture as the second goal. The member states acknowledged that

[7] Government of Kenya 2009

[8] Government of Kenya, 2011

[9]See Constitution of Kenya 2010

agriculture, forestry and fish farms need to be strengthened to provide nutritious food for all people and generate decent incomes, while supporting the development of rural dwellers and the protection of the environment. Achieving this goal requires a broad reform of the world agriculture and food system in order for the world nations to be able to feed the 925 million people who are currently hungry and the two billion additional people who will be alive in 2050. This reform builds on the commitment of the Member States to work on the promotion of public policies that promote food security and sustainable development.

xiii. World Food Summit in 1996 adopted the Rome Declaration on World Food Security in which member states of the United Nations made a commitment to eliminate hunger and malnutrition and also ensure sustainable food security for the entire population.

xiv. 2016 UN General Assembly declares the Decade of Action on Nutrition (2016-2025). The resolution that proclaimed the Nutrition Decade and its work-plan as guidelines for SAN policies for the coming years (draft resolution A / 70 / L42) should also take into account the gender perspective.

4.0 FOOD AND NUTRITION SECURITY AND GENDER EQUALITY

According to the JKP-GSFNS strategy, in order to achieve concrete results that lead to significant improvements in the quality of life of our peoples, aimed at eradicating poverty, especially extreme poverty, that guarantee food and nutritional security, it is necessary to incorporate the gender approach. This, according to FAO, considers the different opportunities that men and women have, the interrelationships between them and the different roles that are socially assigned to them. All these issues influence the achievement of the goals, policies and plans of national and international agencies and, therefore, have an impact on the development process of society. This approach allows the identification and analysis of existing asymmetries between women and men in specific contexts and areas. JKP-GSFNS strategy is a guide aimed at improving the participation of women in the generation and enjoyment of food and nutrition security and human rights. Women are bound to play a central role in the achievement of SDG No. 2 of zero hunger. The pillars of this strategy cover areas of benefit to women including; nutritional well-being, nutrient assurance, stable production and timely disaster response, framework of public policies; timely and sustainable access to healthy, safe, adequate, sufficient and nutritious food.

4.1 Gender and agriculture

Both men and women contribute significantly to agricultural production yet, their access to agricultural resources differ (Deere and Doss 2006; FAO, 2010). In spite of the contribution of women to agriculture, it is evident that

they do not have as much access to and control over agricultural resources as men. Okali (2011) observed that women have been the core subject of gender and indicated that the term ‘gender issues’ has been widely used to refer to disadvantages faced by women in the field of agriculture despite the theoretical meaning of gender as roles of males and females. Gender bias and gender blindness persist: policymakers, development planners and agricultural service deliverers still tend to perceive farmers as being male. Research finds that these barriers account for food shortages, forgone economic growth through lower crop yields, delayed adoption of new technology and plant varieties, and environmental degradation (Brown, et al. 1995). Data from Sub-Saharan Africa demonstrate that agricultural output is reduced because of women’s limited access to inputs and support services (Saito et al., 1994). In agriculture, women feature prominently as they are believed to produce more than half of all the food that is grown, specifically, up to 80% in Africa (Mehra and Rojas, 2008). Seventy per cent of the 1.3 billion people in the developing world living below the threshold of poverty are women.

FAO estimates that worldwide, 870 million people were chronically undernourished in 2012. The vast majority of chronically undernourished people live in developing countries where women face continuous challenges in accessing and managing productive assets (FAO,2013). Worldwide, women constitute 43 per cent of the agricultural labour force, producing a large portion of the world’s food crops (FAO,2011). Statistics reveal an increase in women’s involvement in agriculture, from 39 per cent in 1950 to 41 per cent in 2007 (FAO 2007), with women making up a larger percentage of agricultural laborers than men in Sub-Saharan Africa region (67.9 percent of women vs. 62.4 percent of men) (World Bank, FAO, and International Fund for Agricultural Development 2009).

4.2 Barriers facing women in agriculture

Inequality in the distribution of resources between men and women is linked with production inefficiency yet interventions targeting smallholder farmers often fail to address women's lack of access to and control of important agricultural resources (Viatte et al., 2009; Quisumbing and Pandolfelli, 2010). Potential productivity gains can be realized by substantially improving women’s access to inputs and support services such as land, labor, technology, extension services and credit. Within the agricultural sector, marginalization of female farmers inhibits their economic and political empowerment, and is a serious constraint to improved food and nutrition security. For example, although women may carry a very heavy workload, their work may not be valued as highly as that of men. It has been observed by Mehra and Rojas (2008) that women are able to access only one per cent of credit in agriculture globally. Even though men also face these barriers, those faced by women are more acute in rural agricultural communities. One study calculated that agricultural productivity in Sub- Saharan Africa could rise by 20% if women had equal access to land, seed and fertilizer

(FAO,2009). If men's average input levels were transferred to female maize farmers, yields would increase by 9 per cent (Moock,1976). By increasing women's land area and fertilizer usage to match male farmers' levels, women's yields could increase by 10.5 per cent and 1.6 per cent, respectively (Saito, et al., 2004). If women in Kenya were to apply the same volume and quality of inputs as men, their gross value of yields on maize, beans and cowpeas plots would increase by around 22 per cent (Saito et al., 1994). Total household output could be increased by 10 per cent to 20 per cent if even some of the inputs from the male-controlled plots went to the plots controlled by women (Blackden and Canagarajah, 2003). With similar access to resources and inputs as men, women stand to achieve equal or higher yields than men (Alderman et al., 2003).

4.3. Access to Credit

In cases where women have access to credit, the amount is very small and the repayment conditions are not very suitable, making women not to accept some of these financial arrangements. Poor access to credit facilities prevents women from purchasing the needed inputs for agricultural purposes. In cases where tools which are very suitable for women are available, most of them are either unaware of such tools or do not have money to buy them. They therefore continue to use the old manual methods which decrease their speed of work and productivity (Alderman et al., 2003).

4.4. Extension

Women receive only 5 per cent of extension services worldwide[10]. Where women are targeted for extension services, they produce higher yields.[11] In some cultural settings in JKP countries, contacts between men and women are restricted. Where majority of extension workers are male, women farmers are likely to have less access to public extension services. This is because the male extension agents carefully tend to approach male farmers more than female farmers under the false notion that extension advice will eventually "trickle down" from the male household head to all other household members (FAO, 2010). Moreover, extension services are often directed towards farmers who are wealthier and more likely to adopt modern innovations. Women are less likely to access resources and may therefore be overlooked by extension service providers. Information and Communication Technologies (ICTs) such as radio, television, internet and mobile phones are major contributors to extension advisory services especially in remote areas. For these to reach women effectively, Manfre (2011) suggested the need to account for women's lack of financial resources to pay for ICT and higher levels of technology and language illiteracy that discourage women from using the technology. Extension programmes are usually oriented towards men and extension officers lack the incentive and communication skills

[10] UNAID, 1994.
[11] IFAD, 1999.

needed to work with often illiterate women (FAO, 2009). Without training and storage technology, many women traders are unable to keep products fresh, and suffer considerable post-harvest losses.

4.5. Land ownership and access

Globally, women hold title to approximately two per cent of land and are frequently denied the right to inherit property (Steinzor, 2003). Women in JKP counties face several challenges, most importantly cultural restrictions in accessing land than men and the land they control is often of poorer quality and their tenure is insecure (FAO, 2010). Women's lower access to land has affected their ability to practice sustainable environmental management, thus impacting negatively on agriculture and biodiversity on their farms (Ardayfio- Schandorf and Awumbila, 2000). This "gender gap" hinders women's productivity and reduces their contributions to the agricultural sector and to the achievement of broader economic and social development goals. On average, women achieve much higher values of output per hectare than men, on much smaller plots (Alderman et al., 2003). In most rural societies, however, women can only access land through their male relatives. Insecurity of title often extends to the animals themselves. It is still common in some regions for a husband's family to take livestock from a woman at her husband's death. Secure land tenure, for example, is crucial to productivity increases: farmers who own land are more likely to make long-term investments and try new production technologies.

4.6. Labour

Women farmers mostly depend on their husbands for the available labour as most farms are owned by the men. They also have the problem of poor financing which does not allow them to hire labour extensively. They therefore depend on their own labour and that of their households. Thus, they spend more hours working on their farms since they cannot afford hired labour. Ram and Singh's study on farming in the Mossi Plateau of Burkina Faso found female labor to be six times more productive than male labor (Ram and Singh, 1988). Gender discrimination stems from the low value attached to women's work and is perpetuated in their limited access to credit, processing technology, storage facilities and training. The poorest fishmongers in the processing and sales chain have access to only low-quality fish and no access at all to market information or ice to use in fish preservation (FAO,2009). Cross-country comparisons show that in all regions, women perform the bulk of unpaid work in both agricultural production (Bread for the World Institute, 1995). If women had the same access to productive resources as men, they could increase yields on their farms by 20–30 per cent. This could raise total agricultural output in developing countries by 2.5–4 per cent, which could in turn reduce the number of hungry people in the world by 12–17 per cent (FAO, 2010).

4.7 Gender and Livestock production

The FAO-Kenya lays a lot of emphasis on the importance of integrating nutrition and gender issues into livestock development planning and the need to work closely with all the stakeholders engaging in nutrition and gender issues both at the national and county levels. The nutrition cause is not only lacking in the county livestock planning agenda, but many counties are not aware of its importance and relevance in livestock planning. Women play a crucial role in livestock development, and as such, they cannot be underestimated in livestock development initiatives. In pastoral and agro-pastoral communities, women are the ones involved in milking and feeding the livestock and ensuring that *Boma*[12] for the livestock is clean and as such are in the first position to notice the sick livestock. In as far as livestock products are concerned; it is usually the women who are involved in processing the products such as making of ghee, drying of milk, drying of the meat and processing of the hides and skins. Women therefore play a crucial role in livestock development and as such need to be involved in livestock development initiatives right from the start. Therefore, the counties should have gender sensitive programming in the livestock development initiatives they undertake. The counties recognize the importance of women in livestock development, but are yet to meaningfully involve women in the livestock development initiatives (FAO-Kenya, 2017).

Development programmes must take account of gender roles that shape the small-scale livestock sector. Males and females of all ages participate in small-scale animal production. Men usually own and manage large animals, such as cattle and buffalo, while women are almost always responsible for poultry and small ruminants, such as goats. In fact, their livestock is often one of the few sources of income over which women have complete control. But gender roles change. A study in Tanzania found that women do perform “men’s tasks” during labour shortages. The reverse rarely occurs, except when there is potential to gain control over assets – for example, when milk production becomes more profitable. Although all household members are involved in livestock production, gender discrimination denies women access to resources, rights and services.

4.8. Gender and fisheries

Capturing fish in coastal and deep-sea waters is almost always a male domain, and carries with it high occupational health and safety risks. Women in fishing households do perform preparatory work, such as mending nets, although their contribution is often “informal” and rarely remunerated. Women’s most prominent role – in small-scale and industrial fisheries – is in post-harvest, processing and marketing. In West Africa, as much as 80% of seafood is marketed by women. In fish processing factories surveyed in India, 60% of workers were young women. In Viet Nam, females make up 80% of the aquaculture workforce. Gender roles and responsibilities are

[12] Boma-Livestock shed

evolving. In parts of Cambodia and Thailand, women increasingly fish and own boats. In Bangladesh, women make up about 60% of fish farmers, and many are successful entrepreneurs. But much of women's contribution to fisheries is "invisible" (FAO,2009). Programmes for the mechanization of small-scale fisheries production risk displacing women from traditional sources of livelihoods. In India, the motorization of fishing vessels in one area led to bigger catches and the replacement of women fishmongers by male merchants. Studies conducted by FAO (2009) show that when improved fish preservation and processing facilities are made available, men engaged in capturing fish begin to compete with women for access. Gender discrimination follows women into the industrial processing sector. Women from fishing communities in India who became wage earners in the seafood export industry were found to be paid less than men, and were away from their homes for longer periods, making it more difficult for them to fulfill their domestic roles. Opportunities offered by aquaculture also need to be assessed from a gender perspective. If a woman knows she may lose a fish pond at the death of her husband, she may not invest in the enterprise. The introduction of cage culture may deprive women of water used for drinking, washing dishes or soaking cassava. If aquaculture reduces water levels in wells, women may have to look for other, more distant sources (ibid).

4.9. Policy framework on gender equality

The sustainable development goals confirm the importance of non-remunerated agricultural work performed by women in the rural areas and stresses the need to value their work and make it visible, to account for their contribution to national economies, and to design and implement equitable and supportive public policies. Kenya has adopted policies and laws that take particular account of women welfare. The willingness of county governments in the JKP region to design and implement public policies that contribute to overcoming the poverty conditions affecting rural women in the region has also been expressed. There are various national and international declarations and agreements that serve as a framework for efforts to define a gender sensitive food and nutrition security strategy for the JKP region and they include:

i. National Gender and Development Policy 2000-The overall objective of the policy is to facilitate the mainstreaming of the needs and concerns of women, men, girls and boys in all sectors of development initiatives and ensure that they participate and benefit from the development process.

ii. National Commission on Gender and Development Act, 2003 (No. 13 of 2003)- Provided for the creation of National Commission on Gender and Development.

iii. Sessional Paper No. 2 of 2006 on Gender Equality and Development- Provided for the operational framework for implementing the National Gender and Development Policy. The policy framework emphasized the need to focus on empowerment strategies that demonstrate essential linkages within different sectors.

iv. National Gender and Equality Commission Act, 2011- Established the National gender and equality commission.

v. National gender and equality commission-This commission was established by an Act of Parliament in August 2011, as a successor commission to the Kenya National Human Rights and Equality Commission pursuant to article 59 of the constitution. NGEC derives its mandate from articles 27, 43, and chapter fifteen of the constitution; and section 8 of NGEC Act (Cap. 15) of 2011, with the objectives of promoting gender equality and freedom from discrimination. The over-arching goal for NGEC is to contribute to the reduction of gender inequalities and the discrimination against all; women, men, persons with disabilities, the youth, children, the elderly, minorities and marginalized communities.

vi. The 1948 Universal Declaration of Human Rights, Articles 1 and 3.

vii. 1975 United Nations World Conference on the International Year of Women, Mexico. Call No. 4 to heads of state in chapter 21 on the condition of women in rural areas (1975).

viii. 1979 Convention on the elimination of all forms of discrimination against women, CEDAW. Article 14, paragraph 1, is highlighted.

ix. 1980 World Conference on the Decade for Women: Equity, Development and Peace. Copenhagen. Resolution 41 on women and nutritional self-sufficiency.

x. 1993 Action Program of the World Conference on Human Rights, article 18.

xi. 1994 Program of Action on the International Conference on Population and Development, Principles 2.

xii. 1995 Fourth World Conference on Women, Beijing. Articles 246, 247 and 248.

xiii. 2016 Sustainable Development Goals. Especially Goal 5: Achieve gender equality and empower all women and girls.

All these international instruments, along with Kenyan ones constitute the guiding framework that leads to the elaboration of a gender strategy that, aimed at achieving gender equality in the region, recognizes the importance of the role of women in food sovereignty and food and nutritional security.

And this is not only because of their participation in food production but also because of their fundamental role in raising and caring for their families.

5.0 OBJECTIVES OF THE JKP GENDER SENSITIVE FOOD AND NUTRITION SECURITY STRATEGY

This strategy includes measures to be put in place to ensure that gender equality is achieved. It will ensure that both men and women access benefits emanating from the implementation of JKP-GSFNSS. It provides for the empowerment of women by considering the different conditions under which hunger affects different segments of the population as well as the contribution by both women and men to food and nutrition security. The strategy seeks to:

i. Promote equality between women and men in the public policy cycle by contributing to the institutionalization of a culture of gender sensitive food and nutritional security within the JKP region.

ii. Entrench gender equality in the implementation of the JKP-GSFNSS with regard to eradication of poverty, hunger and malnutrition by guiding the institutions of member counties.

iii. Act as a link between the civil society organizations, public and private sectors involved in the implementation of the JKP-GSFNSS by providing a framework for dialogue, with focus on gender equality in each of the counties.

iv. Act as an operational/ technical guide for the design of national and county food and nutrition security plans with a focus on gender equality.

6.0 STRATEGIC MEASURES TO ACHIEVE THE OBJECTIVES

Strategic measures, defined as those required to ensure compliance with the proposed objectives and to promote their implementation within the framework of the JKP-GSFNSS and they include the following:

i. Design and implement mechanisms that allows women to make contribution to the achievement of goals set in SDG 2- "End Hunger, Achieve Food Security and Improve Nutrition, and Promote Sustainable Agriculture" by ensuring that they participate in the implementation process of this Strategy.

ii. Identify the opportunities and constraints faced in mainstreaming the gender equality approach and strengthening women's participation in the design and operation of public policies by carrying out an analysis of institutions concerned with food and nutrition security issues within JKP region.

iii. Conduct studies at different levels of the implementation of the JKP-GSFNSS to generate statistics and indicators disaggregated by sex and also provide information on access and differentiated conditions between men and women, taking into account the gender divisions of labour in different aspects related to food and nutrition security including; availability, access, utilization and stability. The generated statistics will allow for the designing of actions aimed at promoting gender equality and women's empowerment.

iv. Create a platform for gathering and sharing information on best practices, policies and programs with regards to women empowerment in food and nutrition security sector within the JKP region.

v. Promote opportunities for women to improve access to services and programmes for agricultural production other than the tasks of feeding and caring for the family, which reproduce inequalities and the traditional distribution of gender roles by adopting the services offered by institutions to a differentiated approach for women and men, with adequate and timely services aimed at reducing and eliminating barriers to equal participation in the goal for food and nutrition security for all.

vi. Design and promote the implementation of operation of policies that purposefully involve young women by taking into consideration their needs, interests and unique characteristics.

vii. Encourage women's participation in decision making by creating opportunities for them to play active role in organizations related to agri-food systems and in the processes of elaboration of public policies at all levels. The focus should be on personal development.

viii. Ensure the availability of training spaces and public education guaranteeing the right to consultation and free and informed consent, specifically taking into account rural women with more focus on women with disabilities. new initiatives that improve women's access to information, training and knowledge about food and nutrition security would be strengthened and promoted through support actions aimed at increasing women's literacy, training activities about rights, SDGs and, within the framework of this Strategy, access to documentation and management of information and communication technologies.

ix. Advise the counties to develop policies, legal frameworks and programmes which gives respect to the autonomy of people, their worldview and cultural identity while recognizing the specific needs of women farmers, and women with disabilities.

x. Promote the implementation of the gender equality approach, in response to both the complexity of the system and the multiple roles of women and the variety of their needs that must be met by fostering and strengthening alliances between local populations, women's organizations, state actors, social movements, the private sector and non -governmental organizations.

7.0 SPECIFIC MEASURES ACCORDING TO THE JKP-GSFNSS PLAN OF ACTION

Pillars	Activity	Specific measures
Pillar one: Sustainable access to safe food for	**Activity1: Conditional transfer programs**	i. Initiate and monitor intervention programmes that not only guarantee women protection in family food value chain but also

all populations.			provide long term and sustainable food and nutrition security solutions including women's access and ownership to productive assets such as land and water, linking women to financial service providers, transfer of inputs and promoting women's participation in rural organizations such as cooperatives and water users associations.
		ii.	Perform regular follow-up assessments on success of conditional transfers to ensures that all members of the participating households and especially women benefit from the programme.
		iii.	Ensure that vulnerable members of the society such as older women living with disabilities, lactating and pregnant women are given access to better healthcare clean drinking water and nutritious food.
		iv.	Ensure that priority is given to households which are headed by women such as widows and single mothers when channeling conditional transfer and that both men and women share responsibility of fulfilling the requirements of conditional transfers.
	Activity 2: Household farming	i.	Improve household food production by identifying knowledge gap for both men and women in line with the household food production priorities.
		ii.	Facilitate participation of women producers in local markets and put in place mechanisms to

	Activity 3: employment and labor		promote village based agro-processing for small and medium producers.
		iii.	Formulate and review policies that create opportunities and promote rural development. Policies on land inheritance and allocation and access to water and local seeds should favor women heads of households and young women to motivate them to play an active role in farming activities.
		i.	Facilitate the participation of both men and women in extension services, training and technical assistance required in production and handling of food to ensure safety, proper nutrition and value addition.
		ii.	Encourage women small scale farmers to form organizations and register those organizations with national government so that they qualify for bulk purchase of the farm produce by the state and other international agencies.
		iii.	Ensure that both men and women and especially the youthful populations have equal access to salary and self-employment in fisheries, livestock and agricultural sectors.
		iv.	Facilitate participation of young people and women in tertiary or technical education in agriculture, trade and farming which is necessary in promoting rural development. This will require mechanisms and policies that eliminate horizontal and vertical segregation in education sector to be put in place. These policies should encourage equal access to

			decent work for both men and women.
		v.	Facilitate the enactment of laws and formulation of policies that guarantees rural women's right to pension and access to decent work.
Pillar two: Coordinated policy and legal instruments	**Activity 1: Post-harvest lost and food wastage**	i.	Promote inclusivity of both men and women by designing programmes that aims to prevent food loss. Such programmes include provision of information and training of individual women and their social groups in sound post-harvest management practices, promotion of responsible food consumption, food conservation and use of by-products.
	Activity 2: Food distribution	i.	Promote women leadership and decision making at the societal level by designing interventions on supply and production programs based on gender analysis.
	Activity 3: facilitation of business and trade	i.	Develop policies and mechanisms that promote regional and national trade between groups, associations and organisations of rural family farmers and the community at large.
		ii.	Facilitate women's access to markets by developing policies which allow them to participate in public food purchases to make them self-reliance and autonomous.
		iii.	Promote women's participation in regional, national and international trade by strengthening their knowledge and capacity to deal with trade

			challenges associated with international trade.
	Activity 4: Enhancing food and nutrition security	i.	Allow the exchange of best practices and other experiences among counties to understand legal frameworks and policies issues that supports the implementation of economic JKP-GSFNSS in manner that promote gender equality.
		ii.	Ensure equal participation of both men and women by putting in place monitoring and evaluating systems to track the participation of men and women in formulation of public policies.
		iii.	Develop a baseline strategy to ensure the participation of men and women the implementation of JKP-GSFNSS with elaborate means of collecting qualitative and quantitative information.
		iv.	Develop policies that ensures equality for both men and women of different age groups and cultural backgrounds and especially access to land and the recognition of women's work for those women who are living with disability in the framework of social protection.
		v.	Evaluate the possibility of creating citizen oversight for the implementation of the JKP-GSFNSS.
		vi.	Ensure that rights and gender-based approaches are incorporated in the legal framework and policies linked to the sovereignty and right to food and a nutritional security at the county and national level.

Pillar three : Sustainable food production during disaster and emergency	**Activity 1: mitigating impacts of disaster**	i.	Establish seed and farm input schemes managed by women at the county level to meet food production to deal with crisis caused by draught and other disasters.
		ii.	Ensure that women are involved in disaster management committee to ensure that they participate in making decisions regarding their health and nutrition requirements during emergency and recovery periods.
		iii.	Develop mechanisms of involving women in formulating measures which are linked to national and local plans for risk management and disaster prevention. Such measures should put into consideration the contribution of women and their role in food production and environmental sustainability, resilience and adaptation to climate change.
		iv.	Develop livestock and crop insurance policies to provide insurance cover to women's livestock and crops affected by disasters and climate change.
		v.	Organize trainings for women in family farming to ensure self-food reliance during disasters.
		vi.	Create national and local plans with a gender approach that ensures equal participation of women and men in disaster-response, risk management, disaster prevention, and adaptation to climate change committees.
Pillar four:	**Activity 1:**	i.	Establish school gardens to

Nutritional well-being and assurance for all populations	**School Feeding**		promote training on good agricultural practices, proper food utilization and a culture of clean production and sustainable use in the field by encouraging the practice of family farming, diversification in production and value for the native agricultural products that are nutrient rich, of each region. This will give children and teenagers in rural schools an opportunity to the consume healthy nutrient-dense pesticide-free food.
		ii.	Provide a platform through which the state through school management and parents share responsibility in promoting family health, especially of children, with special emphasis on reproductive and sexual rights of young women.
		iii.	Facilitate women's employment and working conditions by giving them greater involvement in national school feeding programs to improve living conditions of rural women.
		iv.	Develop mechanisms to promote equal benefit for both girls and boys in school feeding programmes. The mechanisms should respond to their nutritional needs and respects their cultural norms and acceptable health conditions and also prevent malnutrition cases such as diabetes and obesity, while contributing to the local economy through the purchase of food products by schools.
	Activity 2: Promote	i.	Facilitate dissemination of healthy diets information to all population

	healthy diets and lifestyles	groups through various communication channels.
		ii. Facilitate food utilization promotion at community level through practical training on food preparation, food hygiene, food preservation, Infant and young child feeding, Exclusive breastfeeding messaging etc.
		iii. Provide platform for discussion with private sector- all actors along the food systems- on production of nutrient dense food and food products for the consumers,
		iv. Facilitate capacity building & sensitization on all non-nutrition sectors on multi-sectoral planning for improved health and nutrition outcomes of the communities.
	Activity 3 Support implementation of the Food and Nutrition Security policy (and other related nutrition policies)	i. Develop and implement policies and programs to prevent or control malnutrition associated with food and nutrition security especially on adolescents, elderly people, young women and malnourished children of pre-school going age of under-five and the school going age above five years.

8.0. ORGANIZATION FOR THE EXECUTION OF THE STRATEGY

8.1. Institutional responsibility

1) JKP secretariat and project teams comprising a focal point in each county, will be the body responsible for advising, monitoring and evaluating the implementation of JKP-GSFNSS. FAO, will support counties in the implementation of the Strategy through policies and instruments resulting from the JKP-GSFNSS.
2) An Advisory Council comprised of a representative from each of the member county and Universities within JKP region will be convened at

the request of the secretariat to discuss matters relevant to the implementation of this Strategy.

3) In order to strengthen efforts for the empowerment of women in FNS, the secretariat will establish alliances and partnerships with other family farming and social rights working groups, among other relevant working groups within JKP region.
4) Both the secretariat and the advisory council will be supported by FAO and will be able to call on the United Nations and other regional organizations to assist in the implementation of this strategy. They will also promote the exchange of experiences and the smooth and on-going development within the region.

9.0 Monitoring and evaluation system

i. This Strategy will be implemented over a period of 13 years (until 2030). Upon completion of 6 years, an evaluation of the strategy will be carried out and adjustments made for the execution of a new 6-year period, coinciding with the end of the JKP-GSFNSS (in 2030).

ii. In line with the JKP-GSFNSS, a system for the regular monitoring and evaluation of the implementation of this gender strategy will be established with a view to identifying and incorporating proposals for improvement. This system will consider, when relevant, the indicators created under the Kenya vision 2030 Agenda for Sustainable Development.

iii. Depending on the situation in each county, quantitative and qualitative indicators will be defined and statistical databases will be used alongside techniques such as case studies, workshops and others. Interdisciplinary teams will be formed for the design and implementation of the system and especially for the analysis of information. These teams will have gender specialists, along with professionals in the specific FNS issues to be addressed. In the same way, the mechanisms of participation of other groups of actors in FNS, which also include women, will be established.

iv. The secretariat with technical support, will work on the definition of results indicators for each measure adopted in this strategy, according to the JKP-GSFNSS pillars and lines of action. In addition, a timetable will be established for action at the regional and county level, which will serve as a basis for monitoring and evaluation.

v. Both the secretariat and the focal points at the county level, as well as entities in charge of FNS, will provide information to the monitoring and evaluation system. In addition, the participation of women and men in the consultation processes will be promoted as appropriate.

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APPENDIX 1: PROCESS FOR THE FORMULATION OF THE JKP-GSFNSS

January 2014	***The Start-up Symposium on Jumuiya ya Kaunti Za Pwani "Integrated Transformational Development of Kenya's Coastal Region Economic Clusters by 2030"*** was held from October 22-24th, 2015 at the Jacaranda Indian Ocean Beach Resort – Kwale County Kenya. The Symposium brought together more than 150 participants drawn from county government policy makers, service and practice executives from different sectors, distinguished scholars and researchers from local Universities, professionals, the private sector, development partners, civil society, NGO's and international experts.
August 2014	Since its formation in 2014, the JKP has recorded a number of achievements which include: the setting up of a coast leaders forum and a Commonwealth of the Coast Counties (Social, Economic and Political); supporting universities to operationalize the County Innovation Economic Transformation Institute, supporting the formation of Pwani Foundation towards human capacity Development, authorizing the process of the setting up of Pwani Development Bank and Coast Tourism Development Board, establishing the organs of Jumuiya ya Kaunti za Pwani, signing of the MoI and MoU between the six counties, consultative meetings with all Speakers, Majority and Minority leaders, consultative meetings with professionals at the region, meeting with all County Executive Committees (CECs) and hosting of public rallies in Lamu and Voi to drum up support for the initiative. In addition, JKP has held meetings with development partners with the view to develop and implement an economic blue print for the region. This culminated in a symposium that brought together professionals, the academia, political leadership, civil society groups and other key stakeholders to develop a framework for the economic blue print.
May 2017	The secretariat requests technical assistance from FAO to support its efforts in the formulation and implementation of this Strategy.
June 2017	Work begins on the first draft of the Gender sensitive and nutrition security strategy with the technical assistance of FAO.
September 2017	A new draft of the Strategy is sent to participants through face-to-face consultation.

October 2017	Face-to-face consultation on the Strategy with the participation of the secretariat, County governments and Universities.
November 2017	Consultation and validation of the Strategy at the stakeholder meeting for all JKP
December 2018	The Strategy adopted at the JKP governors meeting

APPENDIX 2: SPECIFIC PROJECTS TO BE IMPLEMENTED

The JKP research team from the local universities supported by experts from FAOKE conducted research within the JKP region and identified specific projects to be implemented in order to achieve the objectives of JKP-GSFNSS.

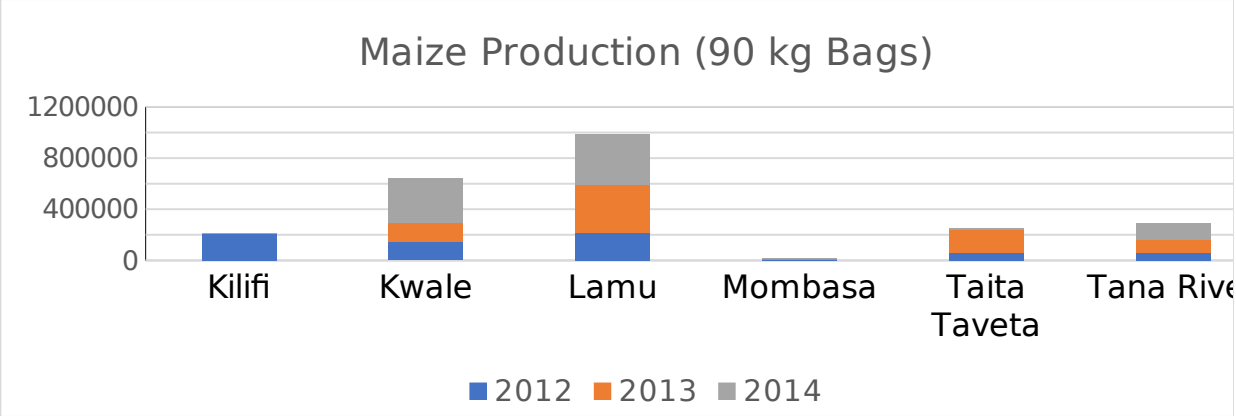
A. PROJECTS AND PROGRAMMES IN AGRICULTURE SECTOR

1. MAIZE PRODUCTION ENHANCEMENT PROGRAMME

Introduction
Maize is the most important staple food crop in the country and contributes significantly to food security. It is the principle staple food crop in the JKP region and ranks number one in the food crops list. It is also a major source of farm income for poor households and rural women particularly, green maize and sweet corn which trades well in the tourism industry. It grows fairly well in CL 2 to CL4. Both local landraces and improved varieties are grown. The common local landraces consist of *Mudzihana, Kanjerenjere, Mingawa, Hodi, Mwangongo, Gonjora and Chngacha-mosi* while the improved varieties for the coastal lowland region are Coast composite for the open pollinated and Pwani hybrids 1 and 4 respectively for the hybrids.
Current production in Kenya In 2014, the national maize production slightly decreased by 2.2 per cent from 39.9 million bags achieved in 2013 to 39.0 million 90 Kgs bags (MOA, 2015). In the coast region maize is predominantly grown under rain fed agriculture by small scale farmers in all counties. The crop is established under irrigation farming in Tana River and Taita Taveta counties. However, Kwale and Lamu are the leading and most stable maize producing counties in the region. Production in Kilifi and Taita Taveta is very unreliable while Tana River County had a steady increase in maize yields for the period 2012 to 2014. **Cereal requirements in JKP region** JKP is a food deficit region and requires 4 Million bags of cereals to feed herself against a production of 0.8 Million bags. Lamu and Kwale are

emerging maize producing counties while Kilifi could be the food basket for the region due to its irrigation potential. A strategic intervention in maize production will ensure that annual maize production in the region increases by 3.2 million to make the region food secure.

Fig 1: Trends in Maize production in JKP region (2012 – 2014)



Source: MOA, 2015

Challenges facing maize production	
1) High cost of recommended farm inputs including certified seeds and fertilizer 2) Over reliance on rain fed farming 3) Pests and diseases 4) Poor agronomic practices occasioned by limited extension services	
Proposed intervention	**Responsibility center**
1) Supply of quality inputs such as fertilizer and certified seeds	National/County government
2) Establishment of irrigation schemes	National/County government/ Private development partners.
3) Provide training to improve uptake of technology and climate smart practices	National/ County governments
4) Research on diseases and drought resistance and nutrient-dense varieties	KALRO/ Local Universities
5) Promote participation of women and youths in maize production, processing, consumption and sale.	National/ County governments
6) Provision of extension services and extension messaging through ICT	County government/ development partners
Mode of funding	**PPP**
Targeted counties 1) The focus will be on Lamu County	

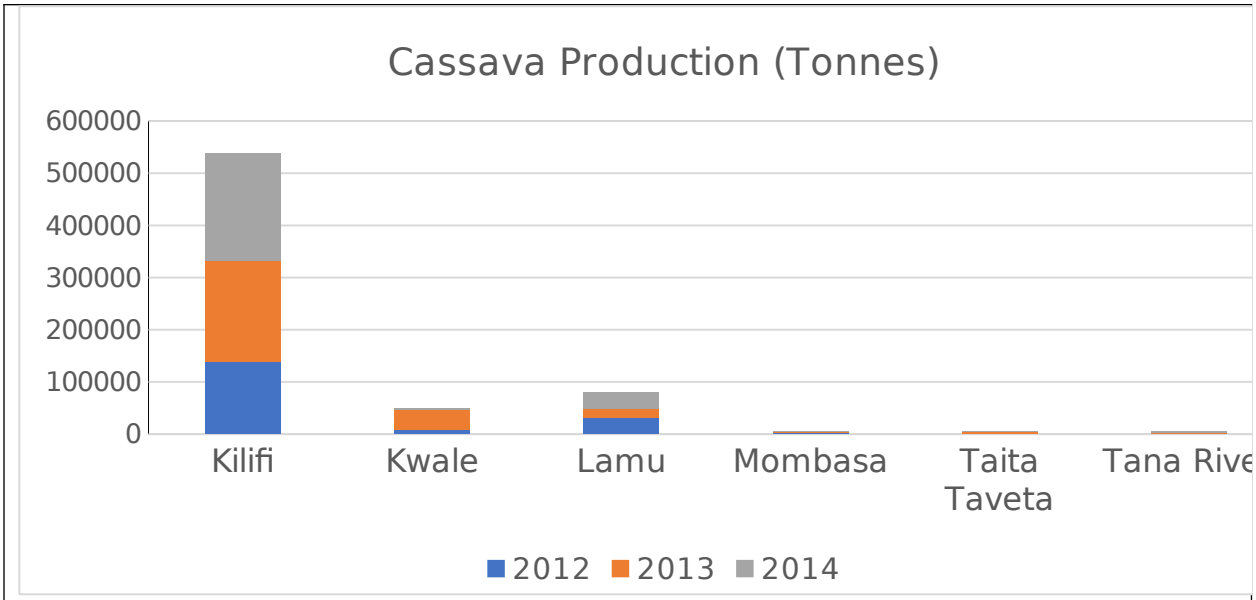
2. TRADITIONAL HIGH VALUE CROPS (CASSAVA AND SWEET POTATOES) PROMOTION PROGRAMME

Introduction

There has been a general increase in the production of traditional high value crops in the County particularly cassava and sweet potatoes. These crops are the panacea for food security under the unfolding circumstance of climate change. The production of sweet potatoes is limited to Taita Taveta county where it is mainly grown as a food crop, however there is potential for its growth in Kwale and Kilifi Counties. Cassava is grown in the coastal lowlands (ecological zones CL 2 to CL 5) that receive an average annual rainfall of 600 mm to 1,500 mm. Because of its wide range of adaptability, it is regarded as a drought tolerant crop. It's mostly grown in Kwale, Kilifi and some parts of Lamu County. Cassava can effectively reduce food insecurity in the JKP region because it is not susceptible to climate failure. Both local/ traditional varieties and improved varieties are grown by farmers. The local varieties include *Kibanda meno, Guzo and Kaleso* while the new improved varieties are *Karembo, Shibe, Tajirika and Nzala-uka*. The crop is a ready source of food (both leaves and tubers), a source of income for poor households and rural women and livestock feed.

Boosting cassava production would also create employment opportunities for unemployed women and youth in the region because it is an emerging industrial crop for the production of starch and ethanol. Cassava production in Kilifi county has experienced a steady increase from 2012. On the other hand Mombasa, Taita Taveta and Tana River are marginal producers of the crop. Cassava processing project has been proposed to be established in Kaloleni Ward to aid in value addition and enable farmers reap maximum benefits.

Fig 2 Trends in cassava production in JKP region (2012 – 2014)



Source: MAO, 2015

Challenges	
1) Lack of certified planting materials 2) Pests and diseases 3) Lack of extension services 4) Poor utilization of the crop	
Proposed intervention	**Responsibility center**
1) Formulation of policies to promote cassava and sweet potato utilization	National/County government
2) Community level bulking and multiplication of cassava and sweet potato planting materials	County government
3) Research on diseases and drought resistance varieties	KALRO/ Local Universities
4) Provision of appropriate extension services	County government /development partners
5) Capacity building for household scale value addition and utilization of the crop	County government /development partners
6) Commercialization of cassava and sweet potato production	County government /development partners
7) Cross departmental initiatives linking cassava and sweet potato production to nutrition programmes.	County government /development partners
8) Market linkage	County government /development partners
9) Promotion on the utilization of cassava in local diets (including making of various foods from	National/ County government

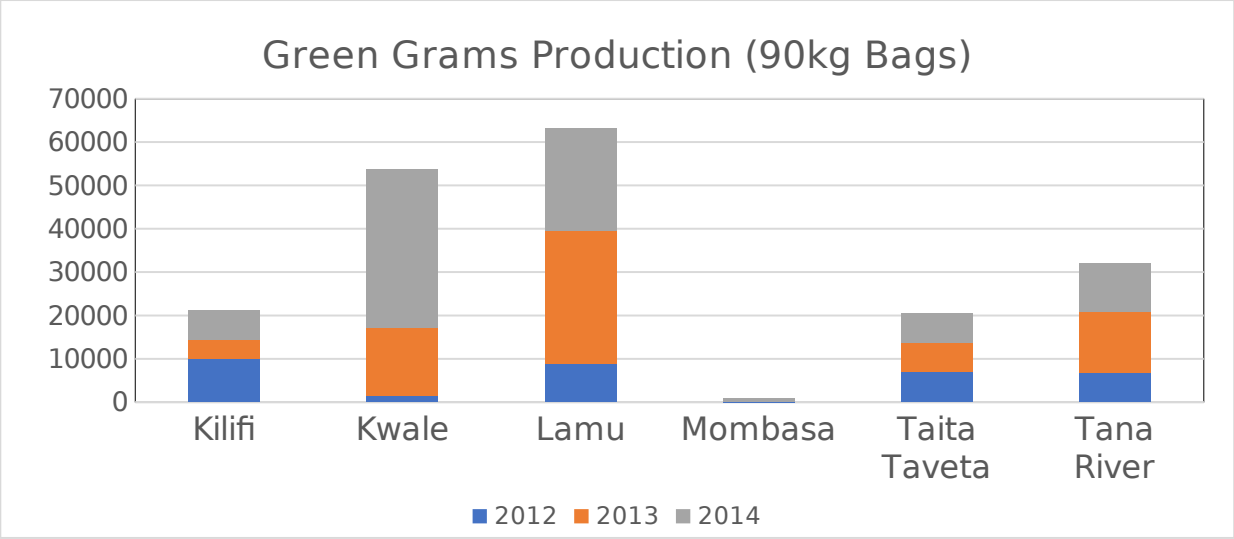
cassava).	
10) Promote participation of women and youths in cassava production, processing, consumption and sale.	National/ County governments
Mode of funding	**PPP**
Targeted counties 1) Kilifi 2) Lamu 3) Kwale	

3. PULSES AND LEAFY VEGETABLES ENHANCEMENT PROGRAMME

Introduction

The dominant pulses in coast region are green grams and cow peas while amaranth constitutes the most dominant leafy vegetable. Green Gram locally known as Pojo (Swahili) is largely grown for its seed which is used as food. On the other hand, cow peas are mainly produced for the local market for food (both grain and leaves). The production of cowpeas in the JKP region has not been consistent with leading producers being Lamu and Kwale counties. Amaranth is grown for its leaves which are used as high value vegetable while seeds are crushed to flour and fed to people who suffer from celiac disease due to their high protein levels. Lamu and Kwale are the leading producers of green grams in the JKP region. There have been efforts to improve the performance of the crop in Tana River, Kilifi, and Taita Taveta county. This is a potential crop to address the nutrition demands of communities in the JKP region.

Fig 3: Trends in green gram production in JKP (2012 – 2014)



Source: MOA, 2015	
Challenges	
1) High cost of certified seeds 2) Over reliance on rain fed farming 3) Pests and diseases 4) High cost of inorganic fertilizer 5) Limited extension services	
Proposed intervention	**Responsibility center**
1) Provision of affordable certified seeds	National/County government
2) Development of irrigation schemes	National/County government/ Private development partners.
3) Provision of subsidized inorganic fertilizer	National/ County governments
4) Research on diseases and drought resistance varieties	KALRO/ Local Universities
5) Provision of appropriate extension services	County government /development partners
6) Market linkage	County government /development partners
7) Nutrition Promotion on the local use of green grams in various community dishes	County government /development partners
8) Promote participation of women and youths in green gram production, processing, consumption and sale.	County governments/ National governments
Mode of funding	**PPP**
Targeted counties 1. Kwale 2. Lamu 3. Tana River 4. Taita Taveta 5. Mombasa 6. Kilifi	

4. INTEGRATED COCONUT SECTOR IMPROVEMENT PROJECT

Introduction
The coconut subsector is one of the key economic drivers in Kenya and supports over 150,000 households who directly rely on it for income. The sector also offers employment with majority being women and youths (KCDA, 2014). The crop is mainly grown in the JKP region of the country where it is deeply entrenched in the cultures and practices of coastal

communities. The crop mainly grows in agro-ecological coastal lowland zones of CL 2, CL 3, and CL4 and marginally in CL 5 along the rivers and valleys. This makes it an important crop in Kwale, Kilifi, Lamu, Tana River, Mombasa and Taita Taveta. The dominant variety of coconut in the JKP region is *the East African Tall*. Other varieties grown are *the hybrid varieties, and the Dwarf*. Kilifi and Kwale counties are the leading producers of the crop. Lamu, Mombasa and Tana River are characterized by smallholder production systems on small farms.

Current Production

JKP counties accounts for over 90 % of land under coconut production in Kenya. The region had approximately 10 million coconut trees with an annual production of over 245 million mature nuts by 2013. Kwale and Kilifi are the main producers of coconut with over 4 million trees each and an annual production of approximately 230 million mature nuts combined.

Table 3. Production level

County	Production in metric tonnes		Value in Millions (KES)	
Year	2015	2016	2015	2016
Kilifi	54,313	66,968	814,692,000	1,071,491,200
Kwale	30,821	48,390	462,318,000	774,240,000
Lamu	5,444	9,988	108,880,000	199,750,000
Mombasa	153	150	2,295,000	2,400,000
Taita Taveta	474	285	7,110,000	4,560,000
Tana River	389	631	5,835,000	12,620,000

Source: (AFA, 2017)

Potential

The overall estimated potential of coconut industry in Kenya stands at KES 13 billion annually, which represents 0.4% of the country's gross domestic product (GDP). The current exploited monetary value stands at Kenya shillings 3.2 billion, which is only 25% of the estimated potential. Coconut plant can also create up to 500,000 jobs annually for unemployed youths and women through establishment of coconut related industries to manufacture value added products which is a key step in dealing with the issue of radicalization and drug menace among JKP youths (AFA, 2016,

Kalro, 2016). This clearly implies that 75% of the coconut potential is untapped thus denying the country and the JKP region the much needed agro-based revenue which is critical to achieve sustainable development goals. There is need to exploit local resources such as the coconut as they have huge economic benefits which can only be realized through proper value addition intervention and linkages thus creating more employment, alleviating poverty and boosting Kenya's economic growth towards middle class industrialized nation as envisioned through Vision 2030 economic blueprint.

Challenges

1) Land tenure system that does not support/encourage establishment of orchards
2) Inadequate value addition and commercializing.
3) Low productivity owing to low yielding varieties, pests and diseases.
4) Policy gaps that have lowered stakeholder's confidence & income to industry players.
5) Limited access to quality planting materials,
6) Inadequate extension services and associated poor agronomic practices.
7) Limited access to credit,
8) Competition from imports
9) Negative publicity and stigmatization of some coconut products such as coconut oil, vinegar, toddy among the Coastal population.

Proposed intervention	**Responsibility center**
1) Multiplication and distribution of certified seeds	National/County government
2) Research on diseases and drought resistant varieties and first maturing varieties	KALRO/ Local Universities
3) Provision of extension services	County government/development partners
4) Establishment of an incubation center and coconut processing plant in Mombasa	County government/development partners
Priority areas	
1). Creating awareness on coconut utilization	JKP-secretariat/ County government
2). Creating local seed banks at ward levels to gradually increase the number of coconuts trees to 56 million over a period of 5 five years.	National/ County government/ private development partners
3). Absorption of produced coconut for	Private coconut processing

processing	companies
4). Legal provision to control import of crude coconut oil to protect local farmers and investors.	National/ County government
5. Market linkage	County government/development partners
6. Nutrition Promotion on the local use of coconut and coconut products in various community dishes.	National government/ County government
7. Promote participation of women and youths in coconut production, processing, consumption and sale.	National/ County Government
Mode of funding	**PPP**
Targeted counties 1) Kwale 2) Lamu 3) Kilifi 4) Mombasa 5) Tana river 6) Taita Taveta.	

5. CASHEWNUT PRODUCTION ENHANCEMENT PROGRAMME

Introduction

Cashewnut trees are grown primarily for their edible kernels, which are usually roasted. While the crop in an important contributor not only to nutrition and food security, its moderate labour requirement for production generates employment opportunities and income for rural women and youth. The crop is grown in Kilifi, Kwale, Lamu and Tana River counties in the coastal region.

Production trends

In 2013, Lamu County produced 5,854 Metric tons of Cashewnuts, Kilifi 5,922, Kwale 5,966, The quantity of cashew nuts produced in 2014 increased by 5% nationally from 2013. The production has declined in the recent years fluctuating at annual production of between 7,000 to 18,000 tons per year. The crop contributes 1% of the total Kenya agricultural

production. Since the introduction of cashewnut in the country, processing has revolved around the cashew kernels. The early processing was the pan roasting that is still existing to-date in all cashew growing areas. Lately, there has been the oil bath pan roasting. This processing technology is mainly dominated by small processors, farmer groups, women groups and self-help groups and individuals. The industrial processing has not developed since the collapse of the Kilifi Cashewnut processing factory that had an installed capacity of 15,000 tons per year. Other processors that came on board include the Kenya nut company based in Thika that has a capacity of processing 10,000 tons. The Wonder nut processors still operating at a capacity of 5,000 tons per year and Equatorial nut in Murang'a.

Table 4: Trends in cashewnut production 2013 – 2016.

County	Area (Ha)				Quantity (Mt)			
	2013	2014	2016	2015	2013	2014	2016	2015
Kilifi	7,191	7,191	13,536	13,896	5,922	5,922	6,585	6,463
Kwale	8,080	7,035	7,610	8,710	5,966	5,966	4,698	7,512
Lamu	3,832	4,832	-	6,013	5,854	5,854	-	4,810

Source: AFA, 2016

Nutritional and economic value of cashewnut

Cashew nut is quite rich in protein, fats, carbohydrates and fat-soluble vitamins A, D, E and K. It is also a source of minerals like calcium, magnesium, phosphorous, potassium, sodium, iron and other minerals, which help to prevent anemic and nervous ailments. It also has the advantage of zero percent cholesterol. This makes the crop ideal to address the problems of child malnutrition that is prevalent in Kwale and other JKP counties. The cashew sector can also generate employment for women and youth derived from a variety of industrial products from cashew processing. The industrial products range from kernels and cashew nut shell liquid, the cashew apple and tannin used in the hides industry. The dead branches and twigs are regularly collected for firewood.

Challenges

1) Lack of certified seeds
2) Pests and diseases

1) Lack of extension services 3) Land tenure/ lack of title deeds	
Proposed intervention	**Responsibility center**
1. Multiplication and distribution of certified cashew nut seeds	National/County government
2. Research on diseases resistant and first maturing varieties	KALRO/ Local Universities
3. Provision of extension services	County government
4. Creating awareness	JKP-secretariat/ County government
5. Creating local seed banks at ward levels to gradually increase the acreage under cashew nut by 100,000 hectares annually.	National/ County government/ private development partners
6. Market linkages	National/ County government/ private development partners
7. Nutrition Promotion on the local and market use of cashew nuts for nutrition improvement.	National/ County Governments
8. Promote participation of women and youths in cashew nut production, processing, consumption and sale.	National/ County governments
Mode of funding	**PPP**
Targeted counties 1) Kwale 2) Lamu 3) Kilifi 4) Tana River	

6. HIGH VALUE HORTICULTURAL CROPS PRODUCTION PROGRAMME

This will include tomatoes, onions, capsicums, chilli and water melon. Capsicums and chilies are significant as spices, food flavors. They are also

major sources of vitamins and income to consumers and households respectively.

Tomatoes

Introduction

Tomato production in the region mainly rely on rain water although production can be increased, especially in drier areas, by use of irrigation. The crop is mainly mono-cropped with yield of 50–60 tons per ha (this is about 50% less than the nationwide yields). Varieties grown are mainly the processing types (Rome, San Marzano, Heinz 1350, Rutgers) although some fresh market types (Money maker, best of all) are also grown. The main production practices used include growing plants on ridges, mulching, pruning but not staking, rotation and fertilizing (using inorganic fertilizers and farmyard manure). The tomato is amongst the promising commodities in horticultural expansion and development in Kenya. Taita Taveta is a natural choice for an expanded tomato processing industry because the county is the 3rd largest producer of tomatoes in Kenya. Greenhouse growing of tomatoes guarantees higher returns (it is estimated at almost seven times the return from in-the-field growing at gross margin level) and ensures that the proposed processing plant to be established in Taita Taveta is able to access year-round supplies of raw materials thus avoiding the seasonal changes in supply. This project is therefore designed to boost farmer growing of tomatoes under greenhouse technology and create a profitable processing plant that provides a ready and reliable market all year round. The plant will also process tomatoes grown in the field by small holder farmers.

Table 5. Trends in tomato production in 2014

Count	Tomatoes yields in metric tonnes
Tana river	5,805.00
Lamu	11,216.66
Taita Taveta	5,024.80
Kilifi	4,088.00

Source: SDA,2014

Challenges

1. Lack of know-how,
2. Draught
3. Lack of capital for purchasing the necessary inputs
4. Unavailability of disease (funga, viral) resistant varieties.
5. Major diseases
6. Pests

Proposed intervention	Responsibility center
1) Distribution of certified seeds	National/County government
2) Development of irrigation	National/County government/ Private

projects	development partners.
3) Provision of subsidized fertilizer	National/ County governments
4) Research on diseases and drought resistant varieties	KALRO/ Local Universities
5) Provision of extension services	County government
6) Establishment of processing plants	Private development partners
7) Nutrition Promotion on the local use of tomatoes in various community dishes.	National/County Governments
8) Promote participation of women and youths in tomatoes production, processing, consumption and sale.	National/County governments
Mode of funding	**PPP**
Targeted counties 1) Taita Taveta 2) Kwale 3) Lamu 4) Kilifi 5) Tana River	

Onions

Introduction

China is the world's leading producer of bulb onion with over 21 million tons, while South Korea has the highest productivity per hectare at 67t/ha. The main producers of onions in Africa include Egypt, Morocco, Niger, Kenya, Tanzania and Ghana. Onion production in Kenya stood at 96,000 tons of bulb onion with a yield of 15t/ha - 60t/ha in 2010. The quality of bulb onion is an aspect that may hinder Kenya's produce getting better prices in times when the produce from Tanzania gets into the market as bulbs that are not only cured but are marketed by Kenyan farmers. Despite favorable local production conditions, Kenya imports onions mainly from Tanzania in order to meet local demand. Dry onion is the one most important vegetable source of income for small holder farmers and business community involved in onion trade in the country. Kenya has a market both for red and white bulb onions and green leaf onions across the country. In Tanzania, from where Kenya imports most of the imported onions, production costs are 20 - 50 time lower while yields are higher by between 45 - 100% more, making production of Tanzania onions more competitive. Addressing production

challenges at policy level is crucially important even as Tana river promotes production of the enterprise. Once these challenges have been addressed the benefits will eventually trickle down to small holder farmers who are main growers of the crop.

Nutritionally, onions are low in calories yet add abundant flavor to a variety of foods. Onion is an important spice for foods, soups, seasoning salads and stews. It is rich in vitamin E and has therapeutic properties. Onions have low levels of sodium, fat and cholesterol and provide dietary fibre, vitamin C, vitamin B6, Potassium and other nutrients.

They are grown in a wide range of agro-ecological zones, ranging from sea level to the upper highland areas below 2,000m above sea level. Common varieties cultivated in the country include Red Creole, Bombay Red and Texas Grano.

Table 6: Trends in onion production in Kenya (2013-2016)

Area (ha)				**Production quantities (MT)**			
2013	2014	2015	2016	2013	2014	2015	2016
63	58	36	53	1113	1055	528	904

Challenges

1. Lack of adequate extension services
2. High production cost
3. High production costs

Proposed intervention	**Responsibility center**
1. Development of irrigation projects	National/County government/ Private development partners.
2. Provision of subsidized fertilizer	National/ County governments
3. Research on diseases and drought resistant varieties	KALRO/ Local Universities
4. Provision of extension services	County government
5. Market linkages	National/ County government/ private development partners
6. Nutrition Promotion on the local use of onions in various community dishes	National/ County Government
7. Promote participation of women and youths in onions production, processing, consumption and sale	National/ County Governments
Mode of funding	**PPP**

Targeted counties

1. Tana River

Water melon

Introduction

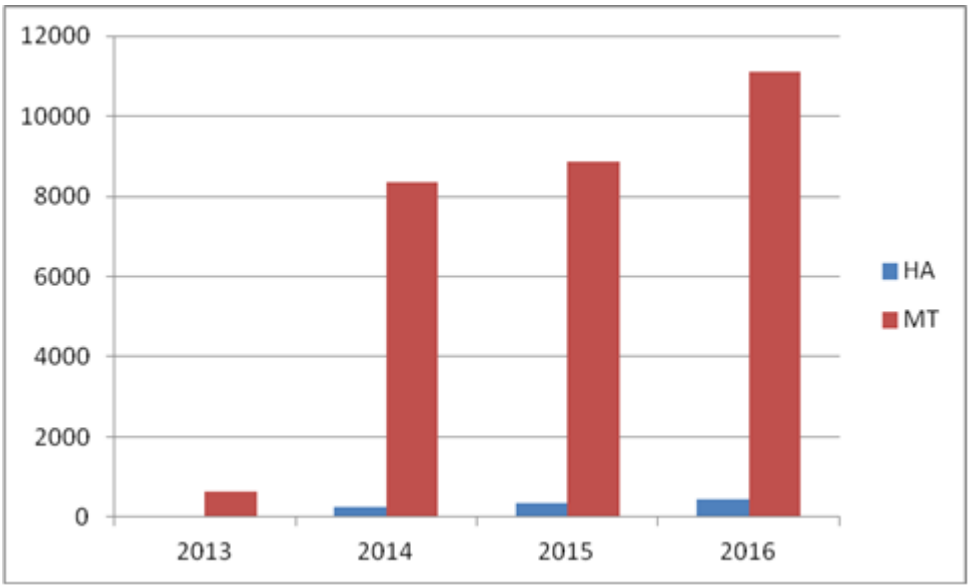
Water melon is an important cash crop that is grown in warm areas of Kenya. The crop is a warm season crop, which requires continuous warm temperatures during the entire growing period. It prefers hot, dry climate with mean daily temperatures of 22 to 30 degrees. The length of the growing period ranges from 80 to 110 days depending on climate, with shorter periods in relatively hotter areas. Water melon is highly nutritious and thirst quenching. It contains vitamin C and A in the form of disease fighting beta-carotene. Potassium is also available in the fruit and it is believed to help in the control of blood pressure and prevent stroke. It also contains lycopene which gives watermelon its rich, red colour and associated with reduced risk of developing some cancers including prostrate challenges. The area under water melon cultivation has grown by 121% within a period of five years from 3.6ha in 2013 to 438ha while production has also increased significantly from 648MT in 2013 to 11092MT. The Increase in both acreage and production levels is an indication of increasing popularity of the crop among farmers who are mainly smallholders. Main varieties grown include Sukari F1, Charleston grey and crimson sweet. Production is mainly under irrigation.

There are over 1,200 varieties of watermelon worldwide and quite a number of these varieties are also cultivated in Africa. Water melon production in Kenya can be done using two types of seeds: hybrids such as Sukari F1 and Zuri F1 are as a result of cross pollination. Hybrids such as Sweet Rose F1 and Daytona F1 varieties from the Kenya Seed Company give bigger yields and are more resistant to watermelon diseases. Watermelon farming in Kenya is best done in the hot regions of the country. Leading producers of the crop in the country include the Coastal areas, Machakos and Kajiado.

Table 7: Trends in water melon production in Kenya (2013-2016)

Area (ha)				**Production quantities (MT)**			
2013	2014	2015	2016	2013	2014	2015	2016
3.6	263	350	438	648	8362	8860	11092

Figure 4: ACREAGE (HA) AND PRODUCTION (MT)2013- 2016



Source: Ministry of Agriculture Tana River County Crops Report

Challenges
1. Pests and diseases 2. Draught 3. Lack of adequate extension service 4. Poor market access by individual farmers

Proposed intervention	**Responsibility center**
1. Development of irrigation projects	National/County government/ Private development partners.
2. Research on diseases and drought resistant varieties	KALRO/ Local Universities
3. Provision of extension services	County government
4. Market linkages	National/ County government/ private development partners
5. Nutrition Promotion on the local use of water melons in various community dishes	National/ County Governments
6. Promote participation of women and youths in water melons production, processing, consumption and sale	National/County governments
Mode of funding	**PPP**

Targeted counties

1. Tana River

7. BANANA PRODUCTION AND PROCESSING PROGRAMME

Introduction

Banana is an important source of income and food security among smallholders and large-scale farmers. Bananas are produced in low volumes within the coastal counties. According to KARI (2000), the potential of producing bananas is relatively low within the JKP counties. However, some parts of Kilifi, Taita Taveta and Kwale counties have moderate potential of producing bananas. The crop is produced under rain fed and irrigation farming. Taita Taveta is among the top three producers of bananas in the country. Banana growing is one of the opportunities in which Taita Taveta has distinguished itself in the past, producing the highest yields and getting some of the best prices for the crop in Kenya. The banana processing and value addition project will therefore be carried out in Taveta Sub County where there is currently high production of the crop but farmers don't get maximum profits from the produce due to poor market linkages, wastage and poor prices offered from the sales. The raw materials will also be sourced from other parts of the county especially from Mwatate, Voi and Taita Sub counties.

Table 8 .Trends in banana production in 2014

County/crop	Banana Yields in metric tonnes
Tana river	15,226.00
Kwale	2,110.00
Lamu	21,066.00
Taita Taveta	126,727.00
Kilifi	13,790.00

State Department of Agriculture (SDA,2014)

Challenges

1) High cost of certified seeds
2) Pests and diseases
3) Lack of extension services for banana production

Proposed intervention	Responsibility center
1) Provision of tissue culture banana seedlings	National/County government
1) Provision of extension services to promote good agronomic practices	County government
2) Development of irrigation infrastructure for banana	National/County government/ Private development partners.

production	
3) Research on diseases and drought resistant varieties	KALRO/ Local Universities
4) Setting up a cold storage warehouse	County government/ Private development partners.
5) Establishment of processing plant in Taveta	Private development partners
6) Market linkages	National/ County government/ private development partners
7) Nutrition Promotion on the local use banana and banana products in various community dishes	National/ County governments
8) Promote participation of women and youths in banana production, processing, consumption and sale	National/County governments
Mode of funding	**PPP**
Targeted counties 1) Taita Taveta	

8. MANGO VALUE CHAIN PROMOTION PROJECT

Introduction

JKP region has been identified by the national government as one of the regions to be prioritized in terms of investment in mango production and processing. The mango industry in Kenya has expanded considerably over recent years, not only in size but also in the geographical location of commercial and homestead plantings. Eastern Region has the largest mango trees population in the country standing at over 3 million planted in over 42,000 ha. The JKP region which was hitherto considered as the home of mango growing with a population of about 1.4 million trees stands a distant second. Both improved and indigenous varieties are grown in the region. These include Apple, Tommy, Kent, Ngowe, and indigenous varieties. Other varieties include Keitt, sensation, Boribo, Haden, Sabine and Van dyke among others. The economic importance of mangoes in the Country is quite significant with the fruit being consumed as fresh fruits; source of income; source of foreign exchange; source of employment and combats nutritional disorders.

Production trends

Mango production in the JKP region over the years has relied on traditional varieties mostly Ngowe and Apple whose market is the Middle East countries. Kilifi and Kwale are the leading mango producing counties in Kenya which together with Makueni contribute over 45 per cent of national production. There are two distinct major harvesting seasons for Mangoes.

Tana River harvest their Mangoes in August and September while Kwale, Kilifi, Taita Taveta supply their harvest in the month of April. Opportunities are available in value addition and processing of diversified products and will involve putting up a processing plant in Kilifi and storage infrastructure.

Table 9: Trends in mango production in 2014

County/crop	mangoes
Tana river	10,200.00
Kwale	43,196.00
Lamu	24,417.20
Taita Taveta	12,700.00
Kilifi	101,655.00

State Department of Agriculture (SDA,2014)

Challenges	
1) Lack of certified seeds 2) Pests and diseases 3) Lack of extension services 4) High post-harvest losses 5) Old orchards	
Proposed intervention	**Responsibility center**
1) Seed bulking and distribution	National/County government
2) Development of irrigation projects	National/County government/ Private development partners.
3) Research on diseases and drought resistant varieties	KALRO/ Local Universities
4) Provision of extension services	County government
5) Establishment of processing plant in Kilifi	Private development partners
6) Market linkages	National/ County government/ private development partners
7) Nutrition Promotion on the local use mangoes in various community dishes	National/ County government
8) Promote participation of women and youths in mangoes production, processing, sale and consumption	National/ County governments
Mode of funding	**PPP**
Targeted counties	

1) Taita Taveta
2) Kwale
3) Lamu
4) Kilifi
5) Tana River

9. OIL CROP PROMOTION PROJECT

Introduction

The region has potential for oil crops such as cotton, sunflower, groundnuts, Macadamia and sim sim. Lamu County produces the best quality sim sim in the region and has also tried on cotton. Sunflower is one of the major oil crops with potential for being grown in Kwale and Kilifi. Within the JKP regions, Macadamia is grown in Taita Taveta particularly in Kidaya, Ngerenyi, Mghambonyi, Werugha, Chawia, Mghange, Wundanyi and Mwanda. By 2015 the county realized production of 240 metric tons.

Challenges

1) High cost of the available good quality planting materials.
2) Over reliance on rain fed farming
3) Insect Pests and diseases
4) Inadequate extension services
5) Lack of modern equipment for production and processing

Proposed intervention	**Responsibility center**
1) Provision of affordable inputs	National/County government
2) Establishment of produce bulking and collection centres	National/County government/ Private development partners.
3) Research on diseases and drought resistance varieties	KALRO/ Local Universities
4) Provision of appropriate extension services	County government /development partners
5) Establishment of oil processing plants	County government /development partners
6) Market linkages	National/ County government/ private development partners
7) Nutrition Promotion on the local use of crop oils in various community dishes	National/ County governments
8) Promote participation of women and youths in oil crops production, processing, sale and consumption	
Mode of funding	**PPP**

Targeted counties

1. Kwale
2. Lamu
3. Tana River
4. Kilifi

10. INTEGRATED SCHOOL FEEDING AND NUTRITION SECURITY PROGRAMME

Introduction

This project entails establishment of green houses, school gardens, dairy goat farming, indigenous chicken, dairy cattle, solar powered irrigation pumps and underground reservoirs to tap rooftop and surface run-off water.

The project will make use of the available idle land within public schools in the rural areas which are normally underutilized. Community extension workers (CEW) shall be deployed to manage the integrated school feeding programmes. The programmes shall also serve as farmer field schools where local communities shall acquire modern farming technologies. The CEW shall be supported by the enterprise management committee composed of local stakeholders. This model is being piloted in Kiambu County.

School children need a good diet in order to develop and grow well, be protected from disease and have the energy to study, learn and be physically active. They also need knowledge and skills to make good food choices and develop eating habits that will help keep them healthy throughout their lives. Through activities such as school gardens, school meals and education in food and nutrition, children, adolescents, and their families, can improve their nutritional well-being and develop good, life-long eating habits. In a survey by the Kenya National Bureau of Statistics (KNBS, 2013) and Society for International Development (SID), Lamu, Tana River, Kwale and Kilifi counties lead in the poverty index with the residents experiencing problems of low income, expenditure and immense inequality. The report shows that the counties are the poorest in terms of general poverty, income disparity, and access to education, sanitation, water, lighting and housing. In an effort to transition toward a more sustainable and nationally integrated alternative, the Kenyan government introduced the Homegrown School Feeding Program (HGSFP) in 2009 to improve the nutrition status of children in school. Kenya's school-aged population is among the groups most negatively impacted. To alleviate the health and developmental consequences of childhood malnutrition,

increase primary school enrollment, and combat social pressures that limit educational opportunities for girls, the Kenyan government began a school-feeding program in 1980 (Regnault De La Mothe 2008). The World Food Programme (WFP) will stop funding the school feeding programme in two years. This will leave over 1.5 million children who benefit from the programme in arid and semi-arid regions at risk of dropping out of school. FAO recognizes school children as a priority for nutrition interventions and views the school as an ideal setting for teaching basic skills in food, nutrition and health. In many communities, schools may be the only place where children acquire these important life skills.

Schools reach children at an age when food and health habits are being formed; they also reach families, the school community and can be a channel for wider community participation. Promoting nutrition through schools can create benefits that extend beyond the classroom and playground to improve the health and nutritional well-being of households and communities. FAO promotes a “whole school” approach to nutrition education, in which classroom learning is linked with practical activities, reinforced by a nutrition and health friendly school environment and involves the participation of all school personnel, families and the community. Educational activities that complement each other, including classroom lessons, hands-on opportunities for students to experience and practice and be actively involved in learning about food, diets and health, are integral parts of effective school-based nutrition education. This comprehensive approach helps create positive attitudes and skills and helps pave the way for carrying healthy habits beyond school and into adulthood. FAO encourages and supports schools to create gardens as learning platforms to promote better nutrition and good diets, develop life skills and increase environmental awareness. “Learning” gardens that produce a variety of nutritious foods and include educational goals can help students, school staff and families make the connection between growing food and good diets. Gardening activities, combined with eating the foods produced and learning about healthy dietary practices, can help promote better nutrition. With a focus on both practical activities and classroom learning, school gardens can contribute to nutrition and food security. Providing healthy meals and snacks in schools improves children’s health and nutritional well-being, enabling them to grow well and learn well. In food insecure communities, school feeding programmes help fight malnutrition and help keep children in school. They can also improve incomes and food security when locally produced foods are supplied to the school. FAO supports schools to ensure that all foods, meals and snacks available at school are nutritionally adequate and appropriate for the school-age child. It also supports education and training for all those involved in providing school foods.

Components

1) Green houses
2) Water harvesting

3) Solar power
4) Dairy
5) Poultry
6) Farmer field school centers
7) Community extension Workers field stations
8) Enterprise management committee

Proposed intervention	Responsibility center
1) Set up of school gardens	National and county government
2) Training on diversified crop & animal production	National and county government
3) Training on nutrition- (food preparation, hygiene)	National and county government
4) Support in awareness creation of healthy diets in schools through information sharing through various channels; and support to curriculum integration of nutrition actions.	National and county government
5) Support set up and implementation of school feeding programs (including support to school milk activities)	National and county government
Mode of funding	**PPP**

Targeted counties

1) Taita Taveta
2) Kwale
3) Lamu
4) Kilifi
5) Tana River
6) Mombasa

11. URBAN AND PERI-URBAN AGRICULTURE PROJECT

Introduction

Urban and peri-urban agriculture has beneficial effects towards the provision of better nutrition, poverty alleviation and employment creation in urban counties such as Mombasa. Besides promoting household nutrition, this type of agriculture is instrumental in waste management considering that most of the waste is organic. With application of appropriate technologies, urban agriculture has higher productivity than rural agriculture.

Challenges

1) Inadequate institutional/legal frameworks
2) Limited access to agricultural inputs and post production services
3) Inadequate technical knowledge of urban agricultural practices
4) Lack of physical security
5) Poor rating of urban agriculture as an authentic urban land use

6) Lack of access to land	
Proposed intervention	**Responsibility center**
1) Promote extension services to all settlements	National/County government
2) Capacity building of women and youth in appropriate technologies for urban agriculture	National/County government/ Private development partners.
3) Provision of inputs such as seed for production of vegetables	National/ County governments
4) Recognition of urban agriculture as a form of urban land use	County governments
5) Promote food and nutrition security by promoting use of food items produced through urban farming in the local dishes	National/ County government
Mode of funding	**PPP**
Targeted counties 1. All urban and peri-urban areas in all JKP-Counties	

12. promotion of healthy diets (comprehensive nutrition promotion program)

Introduction
The changing lifestyles and feeding patterns in Kenya have been greatly influenced by westernization of diets, leading to more availability and consumption of fatty, salty, sugary, more processed, less nutritious foods; contrary to the more locally available nutritious foods which on the other hand, are exported instead of being consumed locally. Moreover, people are more and more sedentary and engaging in less physical activity contributing to overweight and obesity. The lack of food consumption information aggravates the situation, as

policy makers & programmers do not have evidence of what their populations are feeding on and thus, no focus when it comes to public nutrition education on healthy diets.

The proposed program will contribute towards improved nutritional status of communities in JKP. It envisages to improve knowledge, and practices towards healthy diets among different population groups in through:

- Supporting the implementation of the Healthy Diets guidelines by training the relevant agriculture, health, education county officials based on the healthy diets training packages that uses behavioral based and culturally appropriate strategies; undertake nutrition education campaigns and promotion of healthy diet consumption, undertake community based practical training on food utilization; document locally consumed recipes and foods; engage the private sector on production of healthy foods.

This project is going to support the national & county governments to promote healthy diets/ nutrition messaging for healthy living. The project will enhance discussions with the different nutrition and agriculture networks on promoting nutrition dense food products for the markets.

Proposed intervention	**Responsibility center**
Capacity building of relevant officials on healthy diets.	National and county government
Nutrition education campaigns, using various channels.	National and county government
Undertake community based practical training on food utilization	National and county government
Document locally consumed recipes and foods	National and county government
Engage the private sector on production of healthy foods	National and county government
Mode of funding	**PPP**

Targeted counties

1) Taita Taveta
2) Kwale
3) Lamu
4) Kilifi
5) Tana River
6) Mombasa

13. MOMBASA INTERNATIONAL FRESH PRODUCE MARKET

Introduction
The region experiences un-coordinated efforts and activities in marketing of fresh agricultural produce. The market destination for most of the fresh

agricultural produce is in Kongowea of Mombasa county. In view of this the market should be upgraded to international standards with state of the art facilities including coolers and packaging equipment. This will be the central destination to market products from the JKP region.
Challenges
1.Lack of funds 2. Disjointed marketing infrastructure

Proposed intervention	**Responsibility center**
1. Designate Kongowea exclusively for fresh produce	National/County government/development partners
2. Upgrade facilities at the market to international standards	National/County government/development partners
Mode of funding	**PPP**
Targeted counties 1. Mombasa	

14. TROPICAL INSTITUTE OF AGRICULTURE, livestock and fisheries development

Introduction
This premier institution will address the inadequate provision of extension services that has been identified as the major contribution of food and nutrition insecurity in the JKP region. It will also be useful in building a critical mass of farmers and young people who are knowledgeable in agriculture. Currently, the region is served by Mtwapa Agricultural Training Center in Kilifi County. Taita Taveta University has converted the former Ngerenyi ATC into an agricultural Campus. In Kwale County a model agricultural training centre is being constructed at Mkongani. Tana River and Lamu counties do not have an agriculture training centre and are expected to be served by Mtwapa ATC. The Institutions of higher education in the region are increasing placing emphasis on non-agriculture courses thereby creating a gap in manpower development in agriculture. The proposed regional centre once completed should be able to train 1,000 women and 1,000 male extension officers annually to be posted in every sub location within the JKP region to work as community extension workers (CEW) and support nutrition and food security programmes in the region.
Challenges
1) Lack of funds 2) Lack of capacity

Proposed intervention	**Responsibility center**
1) Support to construction of the Tropical Institute in Mombasa	National/County government / development partners

2) Development of appropriate short courses in agricultural value chains	National/County government / development partners
Mode of funding	**PPP**
Targeted counties Institute to be located in Mombasa to serve all counties in the region	

B. PROJECTS AND PROGRAMMES IN IRRIGATION SECTOR

Proposed projects

1. Integrated smallholder irrigation development projects

Introduction

This project entails the development of smallholder irrigation schemes using river flows, small dams, ground water and pan dams. One irrigation project with ability to irrigate 100 acres of land shall be developed annually in each of the constituencies within the JKP region. The project shall also provide water for domestic consumption and livestock keeping. These projects shall be implemented in conformity with the National Water Harvesting and Ground Water Exploitation Programme (NWHGWEP).

NWHGWEP is a 1.3 billion national project which is already providing water to 600,000 people and one million animals across the country. It has also increased food supply, created employment and reduced distance that people and their animals travelled to water points. The water projects which also support irrigation, are spread in 88 constituencies in the counties. Under this programme, the national government has already implemented five small holder irrigation projects in five different constituencies within the JKP region.

The programme has created a very big impact on local communities. The water is used for general consumption in nearby communities and institutions, as well as by livestock. Each of the constituency has a dam or water pan. Food security has improved due to production of food through irrigation, previously, the communities experienced acute food shortages. The programme has also impacted girls positively, enabling them to stay in school instead of spending time fetching water and food for their families. Over 10,000 acres are already under irrigation, creating thousands of jobs in the process. More jobs are expected from livestock sector that is also projected to flourish. Previously, herders were forced to travel long distances in search of water.

The National Water harvesting and Ground water exploitation programme was informed by the fact that 80 per cent of the country is dry. There are

more than four million pastoralists, who constitute 10 per cent of Kenya's population. According to the common programme framework for sustainable livelihoods, Kenya's arid and semi-arid lands cover 48 million hectares. Of this, 9.6 million hectares support marginal agriculture. Almost 15 million hectares are suitable for largely sedentary livestock production, and the remaining 24 million are dry suitable only for nomadic pastoralism. The arid and semi-arid lands are among the least developed areas in Kenya and have the highest poverty levels. More than 60 per cent of the population subsists on less than one dollar a day. ASAL counties display many of the characteristics of remote rural areas caught in chronic poverty, experiencing multiple and interlocking forms of disadvantages. However, despite high poverty, the ASALS are also endowed with immense natural resources, with 70 per cent of the country's livestock, 90 per cent of its wild game and unexploited minerals. It is this potential of a thriving livestock industry and food production through irrigation that the state department of irrigation is targeting. (The standard Tuesday, September 12, 2017 pp. 23 Thousand benefit from Kshs.1.3 billion water projects.).

Proposed intervention	**Responsibility center**
1. Provision of funds	National/County government / development partners
Mode of funding	**PPP**

Targeted counties

1) Kwale
2) Kilifi
3) Tana river
4) Taita Taveta
5) Lamu
6) Mombasa

2. Development of irrigation dams

Introduction

The region has potential for irrigation for high value crops for both domestic and export market. During the plan period, the following dams will be constructed to provide water for domestic, irrigation, livestock and fisheries. The dams identified include Rare Dam in Kilifi County, Dembwa Dam in Taita Taveta County and Umba River Dam in Kwale County. These proposed dams have the capacity to store water to irrigate over 2,000 ha of land each. This will be the game changer for the ASAL areas of Kilifi, Kwale and Taita Taveta Counties. The goal is to improve the living standards of Taita Taveta residents through sustainable exploitation of the Dembwa River water resources.

The specific objectives:

- To provide water supply for domestic and industrial use.
- To provide water for irrigation.
- To supply water for livestock and fisheries activities.
- To generate hydropower.
- To provide energy for industrial development
- To conserve and manage the environment in the catchment area.

The expected outputs:

- A 100m high dam
- A reservoir capacity of 180 million cubic meters.
- Clean water for domestic use to serve 600, 000 people and 600,000 livestock
- 9000 ha irrigation land for improved food security
- Generation of 9 MW of Hydroelectric power
- Conserve and manage 900 square kilometers of the catchment area.

Proposed intervention	**Responsibility center**
1. Provision of funds	National/County government / development partners
Mode of funding	**PPP**
Targeted counties 1. Taita Taveta 2. Kwale 3. Kilifi	

3.Lake Jipe Irrigation scheme

Introduction	
This project has a principal objective to rehabilitate the irrigation infrastructure of the major canals and place it on a sustainable footing in terms of operation and maintenance going forward through metering and user charges. The total acreage potentially covered by the project is 128,000 acres for which farmers would pay largely on the basis of acreage.	
Proposed intervention	**Responsibility center**

1. Provision of funds	National/County government / development partners
Mode of funding	**PPP**
Targeted counties 1. Taita Taveta	

4. Tana Delta Irrigation Rehabilitation and Expansion project

Introduction	
The project involves: Expansion of irrigation scheme from 1,763Ha to 5,000Ha to increase rice production. The estimated cost of the project is USD 12 Million.	
Proposed intervention	**Responsibility center**
3. Provision of funds	National/County government / development partners
Mode of funding	**PPP**
Targeted counties 1. Tana River	

On-going donor funded irrigation projects with JKP region

4. Mwache dam project

Introduction	
This is a 35 billion project to be implemented in seven years funded by the World Bank through Kenya Water Security and climate resilient project is expected to provide 138 million CM^3 water for domestic, irrigation and livestock use to Kwale County and supply water for domestic use to Mombasa County. flagship project has a major irrigation component that is expected to produce enough food to deal with the famine problem in the JKP region.	
Proposed intervention	**Responsibility center**
1. Provision of funds	National/County government / development partners
Mode of funding	**PPP**
Targeted counties 1. Kwale	

6.Galana Kulalu food security project

Introduction

The project is jointly funded by the Governments of Kenya and Israel. Galana/Kulalu ranch which is located in the counties of Kilifi and Tana River counties was identified as having the potential to irrigate 1million acres of land. The ranch which covers an area of 1.78 million acres is strategically located between Rivers Galana and Tana which have adequate flow to supply the irrigation water. The soils have also been qualified to be suitable for irrigated agriculture. When appropriately developed, the ranch has the potential of being a major contributor to the nation's economy, provide jobs for millions of people and trigger a multiplier effect on local commerce, industry and services as envisaged in the Kenya Vision 2030.

Project plan

Sixty-seven per cent of the total project area (1.21 million acres) is suitable for irrigated agriculture with adequate water and appropriate irrigation technologies. The available flow from the two rivers is able to command a total of 900,000 acres with appropriate storage structures. The priority has been given to the use of Galana River due to its location. Tana River is also expected to be used to irrigate the areas close to it. Two mega dams are to be constructed along Galana river for water storage purposes. Three major cities are also proposed with transport network linking the cities to the Lamu Port-South Sudan-Ethiopia-Transport (LAPSSET) and other major towns.

A phased approach has been adopted due to complexity and expansiveness of the project.

Phase 1: Development of a 10,000-acre model farm
Phase 2: Development of 200,000 -acre pilot farm and 1 mega dam
Phase 3: Implementation of the remaining recommended enterprises

Land use plans:

1) Beef and game ranching 49085 acres
2) Green areas 198,653 acres
3) Horticulture 42817 acres
4) Orchads 74,646 acres
5) Sugarcane 177,136 acres
6) Maize 93,540 acres
7) Fish 9577
8) Dairy 4703
9) Apiculture 4611
10) Agro-processing 5334

Airstrips

Two have been rehabilitated. These are:

1) Danisa
2) Galana River Lodge

Proposed intervention	Responsibility center
1. Provision of funds	National/County government / development partners
Mode of funding	**PPP**
Targeted counties 1.Tana River 2. Kilifi	

C. PROJECTS AND PROGRAMMES IN LIVESTOCK SECTOR

1. Commercial ranching and livestock multiplication project

Introduction

The project entails establishment of feedlots consisting of confined yard areas with watering and feeding facilities. This will include breeding, fattening, range rehabilitation (re-seeding, water, grazing plans, soil conservation, etc), financing and marketing that will integrate large commercial producers and household-based producers. The ranches will more quickly fatten animals for added value sale. The livestock multiplication centres in the region will be improved to provide livestock for the ranches. Some ranches shall also be improved to provide livestock multiplication services.

Livestock multiplication centers

Table 10: Beef and goat populations 2016

S/ No	**County**	Beef cattle	Meat goats
1.	Taita Taveta	144,700	182,200
2.	Kwale	201,006	334,013
3.	Kilifi	273,722	279,993
4.	Tana River	529,300	587,700
5.	Lamu	194,854	160,696
	Total	** Expression is faulty **	** Expression is faulty **

Source: (Ministry of Agriculture, livestock and Fisheries, 2016)

Livestock multiplication is done in several areas in the region, in National and county institutions and individual farms. These are Mwatate Animal

Production Farm, Bachuma Sheep and Goats Station, Bachuma Livestock Multiplication Center, Matuga Sheep and Goats Station, Teita Estate, Gicheha Farm, Kutim Ranch, Kilifi Plantation, Hussein Dairy. The county government and the national government is expected to improve these centers by providing modern equipment and skilled manpower in public centers. This will increase livestock populations in the region. The National and county governments shall maintain an enabling environment by providing extension services, Water / Boreholes and security. The number of ranches in the region which are targeted under this project are presented in table 10 below.

Table 10 : Ranches

County	Ranches
Kilifi	The county has 12 ranches with a land carrying capacity of 3 livestocks per hectare in dairy zones and 0.25 livestocks per hectare in the rangelands. The ranches include: Birya, Girya, Ndigiria/mapote, Mnagoni, Dola and Kilifi among others.
Kwale	There are 13 ranches in the county with an average size of 15,055 Hectares. Out of these five are company ranches and eight group ranches most of which are in Kinango Sub-county.
Taita Taveta	Land available for household farming activities is reduced drastically due to the presence of a total of 28 ranches which combined, cover an approximate area of 773.5 Km2. Eight of these belong to the Kenya Government, nine to group ranches and 11 are privately owned. The average size of the ranches is 2,762.5 Ha.
Lamu	Three private ranches
Tana River	There are about seven ranches in the whole county namely Wachu-30,725ha, Kibusu-25,000ha, Haganda-12,000ha, Kitangale-20,000ha, Idasa Godana-51,000ha, Giritu-43,340ha and Kondertu-20,000ha. Out of the seven ranches only Idasa Godana ranch is active with about ten per cent area being exploited.

Challenges

1. Lack of extension services
2. Lack of legal land ownership.
5. Inadequate farmer technical skills in modern farming methods linked to poor access to technologies.
6. Poor access to financial resources especially for women
7. Diseases and pests especially Tsetse flies and Trypanosomosis in most counties.
8. Frequent drought accompanied by low sales and prices.

Proposed intervention	Modes of implementation
1. Provision of extension services	National/County government
2. Facilitating local people to obtain title deeds.	National/County government/ Private development partners.
3. Research to develop draught and disease resistant and early maturing breeds.	KALRO/ local universities
4. Provision of financial resources especially for women.	Linkage with financial institutions
5. Investing in Diseases and pests control especially Tsetse flies and Trypanosomosis in most counties.	KALRO/ Local Universities
6. Provision of underground and water harvesting to check drought	Provision of water by county government/ National government / development partners/ private investors
7. Facilitate nutrition training and implementation of activities that strongly link livestock products and human nutrition especially for young child feeding.	National and county government
8. Promote participation of women and youth in livestock production, processing and marketing.	National County/ governments
Mode of funding	**PPP**
Targeted counties 1) Taita Taveta 2) Kwale 3) Lamu 4) Kilifi 5) Tana River	

2.Establishment of three disease free zones and integrated livestock holding facilities

Introduction
Vision 2030 envisioned the planning and development of between 4 to 5 disease free zones across the country. The purpose of the project is to quarantine and provide sanitation as well as export processing facilities to prevent international transmission of trade-sensitive diseases by especially live animals and meat. This will meet international sanitary and phyto-

sanitary (SPS) standards.

The JKP region has the potential to host three of the proposed disease-free zones in Kwale Kilifi and Taita Taveta due to the region's strategic positioning with respect to standard gauge railway that passes through Taita Taveta, LAPSET corridor from Lamu, Moi international Airport in Mombasa and Port of Mombasa and Lamu which will serve as export exit points. The region all receives livestock destined for export from other parts of the country. The establishment of a disease-free zone in the counties as envisioned in the Vision 2030 will play a crucial role in ensuring high quality livestock products both for the local and export markets. There are currently six holding grounds in the region as indicated below:

1. Bachuma holding ground in Taita Taveta hosts the National disease-free livestock export processing facility.
2. KMC holding ground at McKinnon in Kwale belongs to the Kenya Meat Commission and is used to hold their slaughter animals, currently drought off-take animals for slaughter in Kibarani.
3. Miritini holding ground in Mombasa was meant and has been used to hold animals destined for Kilindini Port but it has no infrastructure and parts of it has been invaded by squatters.
4. Sabaki holding ground in Kilifi.
5. Kurawa and Wenje holding grounds in Tana River
6. Bargoni and Bodhei holding grounds in Lamu.

Challenges

1. Lack of extension services
2. Lack of legal land ownership
3. Poor access to financial resources especially for women
4. Diseases and pests especially Tsetse flies and Trypanosomosis in most counties
5. Frequent droughts

Proposed intervention	Responsibility center
1. Provision of extension services	National/County government
2. Facilitating local people to obtain title deeds.	National/County government/ Private development partners
3. Provision of financial resources especially for women.	Linkage with financial institutions
4. Investing in Diseases and pests control especially Tsetse flies and Trypanosomosis in most counties.	KALRO/ Local Universities
5. Provision of underground and water	Provision of water by county

harvesting to check drought	government/ National government / development partners/ private investors
Mode of funding	**PPP**
Targeted counties 1. Taita Taveta 2. Kwale 3. Kilifi	

3.Livestock processing and marketing project

Introduction

This project entails the establishment of modern abattoirs capable of slaughtering enough animals to serve local and international markets. The modern abattoirs shall be integrated with a tannery for hides and skins processing. the demand for beef in particular is high and increasing and selling prices are increasing by 14% annually. There is also an increasing and unmet demand in international markets from as close as Tanzania and all the way to Europe and the Middle East. Modern abattoirs are expected to work in tandem with commercial feedlot projects and diseases free zones and livestock holding grounds to help ensure a steady supply of animals. Currently, live animals are exported to the Middle East from the JKP regions. The modern slaughter houses will upscale the value of exports. The facilities shall be built to proper KEBS specifications and will be fully HACCP compliant. The project will also include the rehabilitation and construction of standard (with proper human and animal welfare facilities) existing livestock markets within the region.

Slaughter houses within JKP region

1. Kenya Meat Commission at Kibarani, is the largest slaughterhouse in the JKP region. It is currently operating at below capacity, slaughtering only once per month for drought off-take animals which are held in their McKinnon holding ground. The facility should be upgraded to international standard and should serve as the major livestock product processing facility for the JKP region. There is also need to create both local and market linkages to boost the sale of finished products from the facility. The National Government is currently making efforts to attract investors to rehabilitate and operate the KMC plant.
2. Bachuma holding ground in Taita Taveta should be equipped with modern abattoirs with ability to process livestock products for export.
3. Other slaughter houses in Kilifi include; Mariakani, Rabai, Uwanja wa ndege, Vipingo, Malindi, and Kilifi town.

Challenges

1. Poor access to financial resources especially for women
2. Diseases and pests especially Tsetse flies and Trypanosomosis in most counties
3. Inadequate livestock populations
4. Frequent drought accompanied by low sales and prices

Proposed intervention	Responsibility center
1. Provision of financial resources especially for women.	Linkage with financial institutions
2. Investing in Diseases and pests control especially Tsetse flies and	KALRO, Local Universities, National and county governments.

Trypanosomosis in most counties.	
3. Provision of underground and water harvesting to check drought	Provision of water by county government/ National government / development partners/ private investors
4. Boosting livestock populations	Private investors
5. Provision of skills on livestock products processing for home consumption and markets.	National/ county government
6. Promote participation of women and youths in livestock processing and marketing	National/ County government
Mode of funding	**PPP**
Targeted counties 1) Taita Taveta 2) Mombasa 3) Kilifi	

4. Integrated Dairy Value Chain project

Introduction

Project Description:

Investment opportunities include: technologies for mechanization in dairy, fertilizer production, pasture irrigation and seed production; investment in value addition, preservation and processing of milk and milk products consumption for households, capacity building in livestock genetics production technologies and manufacture of feed additives from local raw materials.

Table 11: Current dairy goat and cattle population 2016

S/ No	**County**	Dairy cattle	Dairy goats
	Taita Taveta	27,310	2,755
	Mombasa	1,606	181
	Kwale	5,324	3,971

	Kilifi	53,745	1,470
	Tana River	89	4,900
	Lamu	8,679	6,154
	Total	**** Expression is faulty ****	**** Expression is faulty ****

Source: (Ministry of Agriculture, livestock and Fisheries, 2016)

Table 12: Milk production in 2016

S/ No	**County**	Milk production (Kg)
1.	Taita Taveta	14,182,200
2.	Mombasa	1,197,209
3.	Kwale	11,700,000
4.	Kilifi	25,960,982
5.	Tana River	12,004,524
6.	Lamu	6,551,910
	Total	** Expression is faulty **

Source: (Ministry of Agriculture, livestock and Fisheries, 2016)

Milk processing facilities within the JKP region

1. KCC Miritini plant which is operational, but only handles powder milk.
2. Brookside cooling plant in Wundanyi, Taita Taveta.
3. Mariakani milk scheme plant- This is a large facility that has been neglected over the years. It used to be a large regional plant and an important institution of learning for students coming from the region and beyond. The plant has a wide catchment area stretching into Taita Taveta and Tana River counties. It is strongly recommended that the JKP should take initiatives to revive the plant and solve the ownership wrangles between Kwale and Kilifi counties.
4. Other facilities include; milk processing into yoghurt and mala

refining in Kwale, milk collection and cooling in Kilifi; milk cooling and honey refining in Lamu.	
Challenges	
1. Lack of extension services 2. Lack of legal land ownership 3. Inadequate farmer technical skills in modern farming methods linked to poor access to technologies. 4. Poor access to financial resources especially for women 5. Diseases and pests especially Tsetse flies and Trypanosomosis in most counties. 6. Frequent drought accompanied by low sales and prices. 7. Low dairy animal populations 8. Low milk production	
Proposed intervention	**Responsibility center**
1. Provision of extension services	National/County government
2. Facilitating local people to obtain title deeds.	National/County government/ Private development partners.
3. Research to develop draught and disease resistant, early maturing breeds and high yielding breeds	KALRO/ local universities
4. Provision of financial resources especially for women.	Linkage with financial institutions
5. Investing in Diseases and pests control especially Tsetse flies and Trypanosomosis in most counties.	KALRO/ Local Universities
6. Provision of underground and water harvesting to check drought	Provision of water by county government/ National government / development partners/ private investors
7. Improvement and developing of modern milk processing plants and improving access to these products by poor households	Private development partners
8. Nutrition promotion on the local consumption of milk and milk products to enhance family nutrition (especially for young children)	National/ county government
9. Promote the participation of women and youth in milk production, processing and marketing	National/ County governments
Mode of funding	**PPP**
Targeted counties	

1) Taita Taveta
2) Kwale
3) Lamu
4) Kilifi
5) Tana River
6) Mombasa

4.Integrated household goat and poultry project

Introduction

This project aims to boost nutrition conditions of women and children by promoting and supporting poultry and goat keeping at household level. Goat and poultry are normally considered women's livestock and should be promoted in all households in the rural area. Goat milk is nutritious as well as chicken eggs. Goat and chicken meat can also boost household food security apart from generating income and employment for both women and youths.

Household food and nutrition security initiatives in the JKP region

1) Some groups in Taita Taveta are facilitated to use electronic media such as radio and mobile phone platforms for marketing networks, dairy, and poultry production skills.
2) World Vision Poultry development and bee keeping and meat goat project
3) German Foundation for World Population supports empowerment of caregivers of orphans by donating goats and poultry to the affected households in Rabai, Kaloleni and Kilifi South.
4) National Government Supported re-introduction of A.I. services; disease control and drought relief; and indigenous poultry improvement.
5) Catholic Relief Services support training on indigenous poultry, beekeeping and goat production.
6) The region has identified sustainability of the dairy goats and indigenous poultry programs as their priority together with modern processing and market facilities for goats and chicken.
7) Training of farmers on indigenous chicken breeding A.I. were identified as the priority projects in Kwale.
8) Most counties have given free improved breeding stock especially dairy goats, and indigenous chicken or dairy cattle, beef bulls and rabbits.
9) World Vision galla goat and indigenous chicken improvement; fodder conservation; dam desilting project.
10) National Drought Management Authority supported purchase

and distribution of Galla goats and dairy bucks.

Table 13: Goat and chicken population 2016

S/ No	County	Dairy goats	Meat goats	Poultry, broilers	Poultry, layers	Poultry
1.	Taita Taveta	2,755	182,200	16,440	21,000	374,230
2.	Mombasa	181	13,642	81,750	10,120	40,018
3.	Kwale	3,971	334,013	11,764	21,152	668,179
4.	Kilifi	1,470	279,993	132,328	97,130	753,603
5.	Tana River	4,900	587,700	0	0	138,768
6.	Lamu	6,154	160,696	6,065	6,113	320,044
	Total	** Expression is faulty **	** Expression is faulty **	** Expression is faulty **	** Expression is faulty **	** Expression is faulty **

Source: (Ministry of Agriculture, livestock and Fisheries, 2016)

Table 14: Goat and poultry products 2016

S/ No	**County**	Goat meat (Kg)	Poultry meat (Kg)	Eggs (trays)
1.	**Taita Taveta**	378,300	474,229	265,420
2.	**Mombasa**	28,560	583,609	123,616
3.	**Kwale**	687,120	585,702	294,243
4.	**Kilifi**	374,160	53,238	1,749,184
5.	**Tana**	2,350,800	208,152	98,897

	River			
6.	**Lamu**	99,000	57,108	62,022
	Total	** Expression is faulty **	** Expression is faulty **	** Expression is faulty **

Source:(Ministry of Agriculture, livestock and Fisheries, 2016)

Challenges

1. Lack of extension services
2. Lack of legal land ownership
3. Inadequate farmer technical skills in modern farming methods linked to poor access to technologies.
4. Poor access to financial resources especially for women
5. Diseases and pests especially Tsetse flies and Trypanosomosis in most counties.
6. Frequent drought accompanied by low sales and prices.

Proposed intervention	**Responsibility center**
1. Provision of extension services	National/County government
2. Facilitating local people to obtain title deeds.	National/County government/ Private development partners.
3. Provision of financial resources especially for women.	Linkage with financial institutions
4. Investing in Diseases and pests control especially Tsetse flies and Trypanosomosis in most counties.	KALRO/ Local Universities
5. Provision of underground and water harvesting to check drought	County government/ National government / development partners/ private investors
6. Provision of goat milk and chicken products processing & packaging factories,	National and county government
7. Nutrition promotion to enhance consumption of goat and chicken & their products for improved family nutrition.	National/ county government
8. Promote participation of women and youths in chicken and got keeping	National/ County government
Mode of funding	**PPP**

Targeted counties

1) Taita Taveta
2) Kwale
3) Lamu

4) Kilifi
5) Tana River
6) Mombasa

5. Camel milk enhancement and marketing project

Introduction

The project comprises supporting camel milk production, storage and cooling equipment, hygiene, transportation and market linkages. The E.U. supported camel milk project in Bangale, Tana River is likely to be a game-changer as it has been found that a lot of camel milk marketed in Nairobi comes from Tana River and Isiolo counties and the demand for camel milk is higher than its supply. The full potential of camel milk production and marketing in Tana River has not been tapped and the value chain is not organized. Camel milk is mostly sold by women to generate income for household requirements. An organized camel milk market is likely to boost the income of women at household level and free the children who sometimes miss school learning hours to hawk milk by the roadside and at market centers. Camel milk is also highly nutritious and can be processed and distributed to school children or households to prevent malnutrition and boost the nutritional status of those affected by malnutrition.

Table :15 Camel population 2016

S/ No	**County**	Camels
1.	Taita Taveta	2,603
2.	Mombasa	16
3.	Kwale	110
4.	Kilifi	33
5.	Tana River	61,100
6.	Lamu	3
	Total	** Expression is faulty **

Source:(Ministry of Agriculture, livestock and Fisheries, 2016)

Challenges

1 Lack of extension services
2. Lack of legal land ownership.

3. Inadequate farmer technical skills in modern farming methods linked to poor access to technologies. 4. Poor access to financial resources especially for women 5. Diseases and pests especially Tsetse flies and Trypanosomosis in most counties. 6. Frequent drought accompanied by low sales and prices.	
Proposed intervention	**Responsibility center**
1. Provision of extension services	National/County government
2. Facilitating local people to obtain title deeds	National/County government/ Private development partners
3. Provision of financial resources especially for women	Linkage with financial institutions
4. Provision of underground and water harvesting to check drought	Provision of water by county government/ National government / development partners/ private investors
5. Provision of camel milk processing & packaging factories,	National and county government
6. Nutrition promotion to enhance consumption of goat and chicken & their products for improved family nutrition.	National/ county government
7. Promote participation of women and youth in camel milk processing and sale	National/ County governments
Mode of funding	**PPP**
Targeted counties 1. Tana River	

6.Tsetse fly control programme in Kwale

Introduction	
Tsetse fly is a continuous challenge to livestock production especially in Kwale county. This project aims to mainstream tse-tse fly control within the JKP region. The national government is implementing – (Tsetse and Trypanosomiasis Eradication and other Vector Control Programmes in the region.	
Proposed intervention	**Responsibility center**
Destruction of breeding sites	National /County government /local population
Provision of	National government/ county government / development

pesticides	partners
Mode of funding	**PPP**
Targeted counties 1. Kwale	

D. PROJECTS AND PROGRAMMES IN FISHERIES SECTOR

1. Captured fish enhancement programme

Introduction

This project entails increasing the volume of fish captured within the JKP region from the current 8,015 metric tons to full potential of 125,000 metric tons. This involves, investing in modern fishing equipment and technology and also encouraging more youths and women to engage in fishing activities.

Statistics

The mean annual fish landing for the coast region based on 15 years data (1998 to 2015) is 8,167 metric tons (Mt) valued at USD 6,778,357 (Figure 1). These landings are mainly composed of: bottom dwelling fishes (demersals), surface dwelling fishes (pelagics), sharks and rays, crustaceans (lobsters, prawns and crabs), mollusks (sea cucumber, octopus and squids), and freshwater fishes (tilapia, catfish and lungfish). Under this period of review, Kwale County recorded the highest mean annual landings followed closely by Lamu and Kilifi counties. Tana River and Taita Taveta contributed the least landings. The contribution from Taita Taveta County is exclusively on freshwater fishes. In terms of annual mean economic value, Kilifi County recorded the highest followed by Kwale and Mombasa counties respectively. This disparity in economic value could be attributed to differences in quality of landings as well as well as better market access in Kilifi. It is evident that high economic value of landings from Kilifi County is mainly from pelagic fishes with higher economic value compared to demersal reef-associated fishes that are mostly targeted in the other counties. Great potential exists in the exploitation of the Kenyan Exclusive Economic Zone (EEZ) for capture fisheries, where estimates done in 1975-1980 indicate potential of 100,000 to 150,000 metric tons annually (FAO,

1980). More recent estimates indicate potential of 42,000 metric tons from inshore coastal fisheries, and another potential of 83,000 metric tons for offshore marine fisheries giving a total potential of 125,000 metric tons annually (De Souza, 1988). Fish is also a highly nutritious food, being a source of protein and many micronutrients. Fish, if consumed frequently, can contribute to the prevention of various forms of malnutrition.

Table 16. The potential in terms of quantities of the coastal and marine fisheries resources in Kenya

Inshore Fisheries	**Annual Potential (mt)**
Types	
Reef Fish – Shallow Water	15,000
Reef Fish – Deep Water	1,500
North Kenya Bank	2,000
Inshore Prawn	500
Inshore Prawn By-Catch	800
Other Inshore	2,000
Lobster	200
Crabs	200
Octopus	300
Other Crustaceans	300
Squid	300
Beche-de Mer	100
Other Inshore	600
Inshore Small Pelagic	20,200
Sub-Total	42,000
Offshore Fisheries	
Demersal Trawl	10,000
Demersal Line	16,000
Demersal Prawns	600
Demersal Lobster	400
Small Vessel Tuna	10,000

Small Vessel Marlin	5,000
Small Vessel (Other Species)	5,000
Large Vessel Tuna Purse-Seine	36,000
Sub-Total	**83,000**
Grand Total	**125,000**

Source: (De Souza, 1988).

Production Levels per County Capture Fisheries in JKP region

Tana River County

The overall annual fish capture production for Tana River County is 656 Mt valued at USD 386,108. Freshwater fishes dominate the capture fisheries in the county attributed to the presence of Tana River and associated ox-bow lakes. This is followed by demersal and pelagic fishes. In this county, mollusks contribute the least to the total capture fisheries production.

Table 17. Production levels and value by major taxa from captured fisheries based on 2001 and 2015 landings data for Tana River County

Taxa	Mean weight (Mt)	Contribution by weight (%)	Mean value (USD)
Freshwater fishes	382	63	187,713
Demersal fishes	81	13	48,258
Pelagic fishes	62	10	28,237
Crustaceans	42	7	117,208
Sharks and rays	27	4	20,842
Mollusks	12	2	7,821

Source :(State Department of Fisheries, Fish Landings Statistics, 2016)

Taita Taveta County

The overall annual fish production from capture fisheries for Taita Taveta County is 102 Mt valued at USD 59,514. In this county, capture fisheries production is only from freshwater fishes mainly from Lake Jipe composed of Tilapia and African. catfish.

Kilifi County

The annual fish production for Kilifi from capture fisheries is 1,944 Mt

valued at USD 1,972,363. In this county, pelagic and demersal fishes contribute the highest in total landings. Sharks and rays contribute the least while the contribution of freshwater fishes in total landings for this county is not commercially important.

Table 18. Production levels and value by major taxa from captured fisheries based on 2001 and 2015 landings data for Kilifi County

Taxa	Mean weight (Mt)	Contribution by weight (%)	Mean value (USD)
Freshwater fishes	Nil	Nil	Nil
Pelagic fishes	6766	40	703,807
Demersal fishes	6156	36	670,550
Mollusks	2027	12	95,601
Crustaceans	1699	10	294,712
Sharks and rays	353	2	72,616

Source: (State Department of Fisheries, Fish Landings Statistics, 2016)

Kwale County

The annual fish production for Kwale County from captured fisheries is 2,188 Mt valued at USD 1,536,957. In this county, demersal fishes contribute the highest in total production. Pelagic fishes come far much second. Sharks and rays contribute the least and freshwater fish production is commercially least important in this county.

Table 19. Production levels and value by major taxa from captured fisheries based on 2001 and 2012 landings data for Kwale County

Taxa	Mean weight (Mt)	Contribution by weight (%)	Mean value (USD)
Freshwater fishes	Nil	Nil	Nil
Demersal fishes	3918	78	531,750
Pelagic fishes	689	14	460,032
Mollusks	273	5	228,466
Crustaceans	80	2	187,763
Sharks and rays	42	1	293,79

Source: (State Department of Fisheries, Fish Landings Statistics,2016)

Lamu County

Lamu County has an annual production from capture fisheries of 2,041 Mt valued at USD 1,406,517. In this county, demersal fishes contribute the highest in total production followed by freshwater and pelagic fishes respectively (. Mollusks, and sharks and rays are the least in terms of contribution to total production in the county.

Table 20: Production levels and value by major taxa from captured fisheries based on 2001 and 2015 landings data for Lamu County

Taxa	Mean weight (Mt)	Contribution by weight (%)	Mean value (USD)
Demersal fishes	1,259	64	619,568
Freshwater fishes	267	14	101,625
Pelagic fishes	251	13	147,589
Crustaceans	131	7	483,930
Mollusks	36	2	81,735
Sharks and rays	34	2	20,979

Source : (State Department of Fisheries, Fish Landings Statistics, 2016)

Mombasa County

The annual mean landing in Mombasa County from captured fisheries is 1,236 Mt valued at USD 1,416,898. In this county, the highest contributors in total production are the demersal fishes and crustaceans (Table 5). Mollusks contribute the least in total landings while contribution in total production from freshwater fishes is not commercially important.

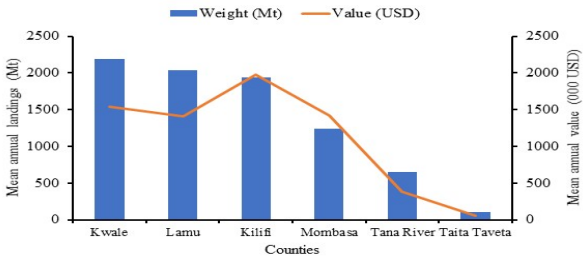
Table 21. Production levels and value by major taxa from captured fisheries based on 2001 and 2015 landings data for Mombasa County

Taxa	**Mean weight (Mt)**	**Contribution by weight (%)**	**Mean value (USD)**
Freshwater fishes	Nil	Nil	Nil
Demersal	289	38	357,098

fishes			
Crustaceans	245	32	451,164
Pelagic fishes	128	17	149,500
Sharks and rays	58	8	91,936
Mollusks	41	5	41,216

Source: (State Department of Fisheries, Fish Landings Statistics)

Figure 5. Annual landings and economic value in JKP regions (1988-2015)



Source: (State Department of Fisheries, Fish landings Statistics, 2016)

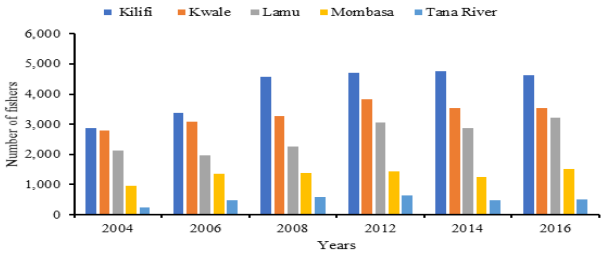
Shortfalls

Assuming that the mean annual marine food fish production is currently at 8,015 metric tons (6.4%) and a potential production of 125,000 metric tons, the shortfall is 116,985 metric tons (93.6%). If the full potential in marine fisheries capture production is realized, fish exports to external market destinations will significantly increase from the annual mean of 14,681 metric tons which included both food and non-food fish such as shells realized between 2004 and 2011.

Number of fishers

The number of fishers has been increasing over time especially for Kilifi, Kwale and Lamu counties whereas for Mombasa and Tana River the numbers have been stable and low. The overall mean number of fishers across the five riparian countries is 11,898 and out of this. Kilifi County has the highest number of fishers with a mean of 4,156. This is followed by Kwale (3,345), Lamu (2,588) and Mombasa with 1,317. Tana River County has the lowest mean number of fishers with only 492. Across the counties, female fishers are present but at lowest numbers. Kwale has the highest number of female fishers with a mean of 54. This is followed by Kilifi and Lamu with a mean of 52 each, and Mombasa follows closely with a mean of 50. Tana River has the lowest mean of female fishers at only 3.

Figure 6. Distribution of number of fishers across the riparian counties



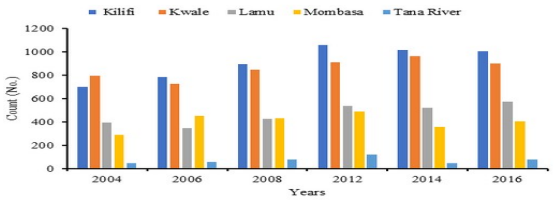
Source: (Marine Artisanal Fisheries Frame Survey, 2016)

Fishing crafts

11,898 and out of this 1,877 (16%) do not have access to fishing crafts (foot fishers). Five types of fishing crafts are in use and these are: mashua, outrigger, hori, dugout and dau. The use of these fishing crafts depends on the target species and the fishing ground. Dugout are the most common representing 54% followed by mashua with 21%. The hori follows with 11% while outrigger and dau make 7% each. The number of fishing crafts has been increasing over time for Kilifi, Kwale and Lamu counties (Figure 3). In Mombasa County, the number of fishing crafts has been decreasing between 2012 and 2016. In Tana River County, the number of fish crafts has remained lowest throughout the years under investigation. Kilifi County has the highest mean number of 911 fishing crafts followed closely by Kwale County with a mean of 858. Lamu and Mombasa counties follow with a mean of 468 and 406 respectively. Tana River has the lowest mean of

only 72 fishing crafts.

Figure 7 . Distribution and number of fishing crafts across the riparian counties



Source: (Marine Artisanal Fisheries Frame Survey, 2016)

Challenges	
1. Inadequate modern fishing skills 2. Inadequate modern fishing equipment 3. Poor access to financial resources especially for women 4. Low number of youths and women taking up fishing activities	
Proposed intervention	**Responsibility center**
1. Training in modern fishing skills	National/County government/ Private development partners.
2. Provision of modern fishing equipment	National /County government/development partners
3. Creating linkages and access to financial resources especially for women and youth	Linkage with financial institutions
4. Modern fish freezing, processing and packaging industries	National/ county government
5. Nutrition promotion on utilization of fish and fish products in community diets.	National/ county government
Creating awareness for youths and women to take up fishing activities	JKP/secretariat / County government
Mode of funding	**PPP**

Targeted counties

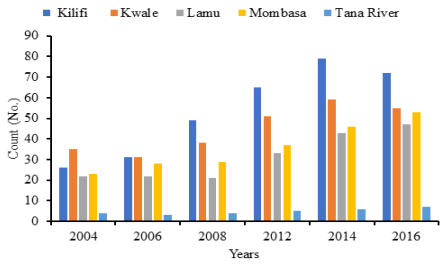
1) Mombasa
2) Kwale
3) Lamu
4) Kilifi
5) Tana River

2. Landing site improvement project

Introduction

This project involves establishment of modern fish landing sites with storage facilities including freezers and coolers, and ice boxes. This will ensure that landed fish are preserved for processing and marketing. Over the time since 2004, the number of gazetted fish landing sites have been increasing with a current total of 234 by the year 2016 (Figure 4). An increasing trend of the landing sites is evident for majority of the riparian counties, except for Tana River where the increasing trend in number of landing sites is lowest. Kilifi County has the highest number of landing sites with a total of 72 followed by Kwale, Mombasa and Lamu with 55, 53 and 47 respectively. Tana River has the lowest number of fish landing sites with a total of 7 by the year 2016.

Figure: 8 Figure 4. Distribution of number of gazetted fish landing sites for the five riparian counties



Source: (Marine Artisanal Fisheries Frame Survey, 2016)

Challenges	
1. Lack of proper planning 2. Land grabbing 3. Lack of funds	
Proposed intervention	**Responsibility center**
1. Planning of landing sites	National/County government
2. Securing title deeds for landing sites	National /County government
3. Provision of funds	County government/ National government / development partners
Mode of funding	**PPP**
Targeted counties 1) Mombasa 2) Kwale 3) Lamu 4) Kilifi 5) Tana River	

3.Fish processing and export promotion project

Introduction

The project involves establishing of fish processing factories in Lamu, Mombasa and Kilifi for value addition. The project also includes export promotion of processed fish product. A great potential for export market exists for the coastal and marine fisheries products in the coastal counties of Kenya. The main market destinations include: Italy, Spain, India, Japan, Greece, United Kingdom, Hong Kong, Seychelles, Netherlands, Portugal, France, United Arab Emirates, South Africa, Singapore and Lebanon (Aloo et al., 2014). A total of 17 different fisheries products were exported between 2004 and 2011 (Table 1). The most commonly exported products during this time were tuna loins, lobsters, prawns and octopus. A total of 8 aquarium fish companies were licensed to export aquarium fish in the year 2005 alone. The most exported aquarium fish species are surgeonfishes, angelfishes, blennies, butterflyfishes and wrasses (Aloo et al., 2014). During this time a total of 102,000 pieces of fin fish, 81,000 assorted invertebrates, and 98,074 assorted shells were exported and earned Kenya a total of USD 281,106. The main markets for the marine ornamental fishes were the EU, USA, China and Japan.

Table 22. Production and export of marine fisheries products in Kenya 2008-2011

	2008		2009		2010		2011	
Fishery	**Mt**	**Million**	**Mt**	**Millio**	**Mt**	**Millio**	**Mt**	**Million USD**

product		**USD**		**n USD**		**n USD**		
Tuna lions	15,069	7826.2	7,392	5251.2	9,207	5917.6	9,821	7012.3
Lobsters	47	516.3	23	199.9	4	35.3	23	285.1
Live Lobsters	8	44.4	0	0.0	13	90.6	22	169.7
Prawns	68	232.6	0	0.0	0	0.0	0	0.0
Octopus	487	1227.9	530	1358.4	690	1835.6	903	3269.7
Cuttlefish	1	3.2	0	0.0	0	0.0	2	4.0
Swordfish	159	182.4	44	41.6	153	172.4	9	11.2
Squids	0	0.0	0	0.0	0	0.0	1	1.6
Bech-der-mer	0	0.0	0	0.0	16	61.3	11	47.1
Sharks	462	232.6	135	63.8	0	0.0	55	73.5
Shark fins	34	13.9	0	0.0	15	61.1	5	10.0
Big eye	14	11.2	0	0.0	0	0.0	0	0.0
Marine shells	0	0.0	0	0.0	172	55.5	113	48.2
Crabs	45	56.2	24	30.6	43	87.5	23	47.8
Mackerels	0	0.0	0	0.0	15	3.4	0	0.0
Sardines	0	0.0	0	0.0	36	6.8	0	0.0
Sea weed	0	0.0	0	0.0	2	0.3	0	0.0
Total	**16,394**	**10,347.0**	**8,148**	**6,945.5**	**10,366**	**8,327.4**	**10,988**	**10,980.2**

Challenges	
1) Lack of funds 2) Lack of market information	
Proposed intervention	**Responsibility center**
1) Investment capital	Private development partners
2) Market information	Ministry of trade and industrial development
4. Nutrition promotional activities to increase consumption of fish and its products	National/ county government
5. Promote participation of	National/ County governments

women and youth in fish processing, marketing and export	
Mode of funding	**PPP**
Targeted counties 1) Mombasa 2) Lamu 3) Kilifi	

4. Fish farming nutrition security project

Introduction

The project involves establishment of fish ponds, breeding and distribution of fingerlings, processing fish feeds, extension services, post-harvest storage facilities and market linkages. Fish farming has the potential to improve the food and nutrition security of households. Women owns the majority of fish ponds in the coastal region. Fish farming can be promoted as source of income for poor rural households but also as a source of employment for the youths.

Production from culture fisheries (aquaculture and mariculture) in the JKP region is still at its infancy despite the efforts made by the national government. Between 2009 and 2012, the increase on fisheries production throughout Kenya focused on the development of culture fisheries through the Economic Stimulus Program (ESP) towards attaining long term solutions to the challenges of food insecurity in fulfilling the Vision 2030 blue print. Until now the growth of capture fisheries in JKP region has been minimal. Currently Kilifi County has a total of 223 fish ponds with a total area of 66,900 m^2. Tana River follows with a total of 43 fish ponds with an area of 12,900 m^2. Lamu County has a total of 20 fish ponds measuring 6,000 m^2. The number of fish ponds in Mombasa, Kwale and Taita Taveta counties is currently not known. The Kenya Government invested on a 60-hectare shrimp farm at Ngomeni (Kilifi County) in 1987 with a production capacity of 525 kg/ha/yr (Government of Kenya, 2009). The shrimp farm is currently not functional. At the moment mariculture projects are mostly community-based. A community-based oyster mariculture project at Shirazi (Kwale County) in the late 1990s failed to pick-up due to lack of market access for the product (Government of Kenya, 2009). Other community-based mariculture trials spread along the riparian counties have focused on the production of mud crabs, milkfish, mullet, *Artemia*, and sea weed.

Production Potential for Culture Fisheries

Sustainable mariculture can be done on land behind mangroves. Due to hydrologic conditions, only 7.3% of the total mangrove area (3,950 ha out of 54,000 ha) are suitable for pond culture of shrimps. A great potential exists across the coastal counties for freshwater aquaculture for tilapia and

catfish production. In the six counties, the preferred freshwater fish species are the African catfish (*Clarias gariepinus*) and the Nile tilapia (*Oreochromis niloticus*). The preferred marine species for mariculture include mullets (*Mugil cephalus*), milkfish (*Chanos chanos*), shrimps (*Peneaus monodon* and *Ferropeneaus indicus*), rabbitfishes (*Siganus sutor*), mud crabs (*Scylla serrata*), seaweed (*Kappaphycus alvarezii*), and *Artemia franciscana.* Aquaculture suitability for the region indicate a total land area of 972,716 hectares being high potential area for fish culture (Karangi et al., unpublished data). Sea weed production is active among communities in south coast (Kwale County) with a high potential for foreign market.

Challenges

1. Lack of extension services
2. Lack of legal land ownership especially women
3. Inadequate farmer technical skills in modern farming methods linked to poor access to technologies.
4. Poor access to financial resources especially for women
5. Frequent drought

Proposed intervention	**Responsibility center**
1. Provision of extension services	Fisheries/Kenya Marine and Fisheries Research Institute (KEMFRI)
2. Facilitating local people to obtain title deeds.	National/County government/ Private development partners.
3. Provision of financial resources especially for women.	Linkage with financial institutions
4. Provision of underground and water harvesting to check drought	Provision of water by county government/ National government / development partners/ private investors
5. Nutrition promotional activities to increase consumption of fish and its products	National/ county government
6. Promote participation of women and youths in fish farming	National/ County governments
Mode of funding	**PPP**

Targeted counties

1) Taita Taveta
2) Kwale
3) Lamu
4) Kilifi
5) Tana River

5.Integrated coastal sea weed harvesting, farming and processing project

Introduction	
Kenya is currently a net importer of agar and alginate yet it has the potential to be self-sufficient or even an exporter of the seaweed products. Seaweed extracts such as alginate and agar are used as thickeners and homogenizers in pharmaceutical, food and cosmetic industries. Seaweed products are also used in soaps, shampoos, animal food and as fertilizer. Fifteen (15) sites along the Kenyan coast have been evaluated and found to have the potential for harvesting seaweeds and for establishing seaweed farms. Other opportunities exist in establishing sea weed processing plants. FAO is currently piloting sea weed farming in Kwale to boost the income of rural women in Kwale county. The project is meant to provide employment opportunities for the youths and women. The project should be upscaled to other sites to provide more employment opportunities to the youths and women.	
Challenges	
1. Lack of extension services 2. Inadequate farmer technical skills in modern farming methods linked to poor access to technologies. 3. Poor access to financial resources especially for women	
Proposed intervention	**Modes of implementation**
1. Provision of extension services	Fisheries/Kenya Marine and Fisheries Research Institute (KEMFRI)
2. Inadequate farmer technical skills in modern farming methods linked to poor access to technologies.	Fisheries/Kenya Marine and Fisheries Research Institute (KEMFRI)
3. Financial resources	Financial institutions
Mode of funding	**PPP**
Targeted counties 1) Mombasa 2) Kwale 3) Lamu 4) Kilifi 5) Tana River	

6.Economic stimulus program (ESP) for provision of modern fishing equipment

Introduction
Artisanal fisheries along the Kenya coast is limited by low level of vessel-gear technology. As a result, fishing pressure is more pronounced in the near shore fishing grounds that has resulted to overfishing and degradation of the coastal and marine habitats. To solve this problem there is a need to reduce the fishing pressure from inshore fishing grounds to offshore to specifically target the high-quality catches of pelagic fishes which are currently under-exploited. This is only possible through modern and improved fishing equipment which are expensive for fishers to acquire. Therefore, a comprehensive ESP for fishing equipment through revolving fund is proposed.
Challenges
1. Lack of funds 2. Disorganized BMUs 3. Untrained/unskilled fishers

Proposed intervention	**Responsibility center**
1. Provision of funds 2. Convert BMUs into cooperatives 3. Training of fishers on modern fishing equipment	National/County government / development partners
Mode of funding	**PPP**
Targeted counties 1. Kwale 2. Mombasa 3. Kilifi 4. Tana River 5. Lamu	

7.Development of integrated fish ports

Introduction
The level of fish post-harvest technology is still low for the artisanal fishery. This has made the artisanal fishery production to record high post-harvest losses. Vanga (Kwale County), Old Port (Mombasa County), Ngomeni (Kilifi County), and Lamu are designated fish ports. These should be developed to cater for fish storage, processing, value addition, and as fish markets and export centres.

Challenges	
1. Lack of funds 2. Lack of land 3. Untrained personnel	
Proposed intervention	**Responsibility center**
1. Provision of funds 2. Provision of land 3. Training of personnel	National/County government / development partners
Mode of funding	**PPP**
Targeted counties 1. Kwale 2. Mombasa 3. Kilifi 4. Lamu	

8.Development of hatchery for freshwater and marine species

Introduction	
Lack of quality seed is one of the challenges in culture fisheries production. Two hatchery units to cater for fresh water and marine species are proposed to be established in Taita Taveta and Kilifi counties respectively. These will serve as the centres for distribution of fish seed for the entire JKP region. The project will also include setting up of hatcheries in mariculture for fish and crustaceans to alleviate this bottleneck.	
Challenges	
1. Lack of funds 2. Lack of appropriate technology 3. Lack of land 4. Lack of trained staff	
Proposed intervention	**Responsibility center**
1. Provision of funds 2. Acquisition of land 3. Training of staff	National/County government / development partners

Mode of funding	Private investor
Targeted counties 1. Taita Taveta 2. Kilifi	

9.Development of JKP fish feed industry

Introduction	
Lack of quality feed is one of the challenges in culture fisheries production. Two fish feed production units to cater for fresh water and marine species are proposed to be situated in Taita Taveta and Mombasa counties respectively. These will serve as centres for fish feed distribution to the entire JKP region.	
Challenges	
1. Lack of funds 2. Lack of adequate raw materials 3. Lack of appropriate technology 4. Untrained staff	
Proposed intervention	**Responsibility center**
1. Provision of funds 2. Provision of raw materials 3. Provision of trainings	National/County government / development partners
Mode of funding	**Private investor**
Targeted counties 1. Taita Taveta 2. Mombasa	

10.Development of JKP deep sea fishing company

Introduction	
In order to achieve the current fisheries production potential of 125,000 metric tons annually, there is need for JKP to develop a deep-sea fishing fleet. This is a proposed joint venture between JKP and a distant water fishing nation (DWFN) such as Spain, France, Japan etc.	
Challenges	
1. Lack of funds 2. Lack of appropriate investment structure for JKP 3. Lack of appropriate technology 4. Untrained staff	
Proposed intervention	**Responsibility center**
1. Provision of funds 2. Provision of JKP investment structure 3. Provision of trainings	JKP secretariat
Mode of funding	**JKP and Private investor**