**MURANG'A COUNTY GOVERNEMNT**

# MURANG'A COUNTY AGRO-ECOLOGY POLICY

# 2022 -2032

FIRST EDITION

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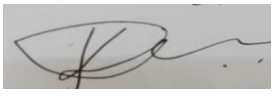
## PREFACE

The Constitution of Kenya, in its Fourth Schedule, provides for the county agricultural planning as a function of the County Government. It devolves key components of agriculture including crop and animal husbandry, fisheries development and control of plant and animal diseases to the county governments. More so, the Constitution upholds the right of every person to be free from hunger and to have food of acceptable quality.

Agriculture is the backbone to Murang'a County's economy and therefore, the need to continually seek to end hunger; achieve sustainable food security and improve nutrition in line with SDG 2. This calls for the county agriculture sector actors to develop suitable policies and strategies that will lead to sustainable food and nutrition security at their respective levels. The County department of Agriculture, Livestock and fisheries in collaboration with environment and climate change, private sector players, civil society and all other relevant stakeholders, has taken the initiative to develop the 8 Year Murang'a County Agroecology policy that contains various strategies as informed by the identified policy issues through public engagement processes widely carried out within the County. Over the 8 years of implementation of this agroecology policy, the County will work towards becoming the leading county in sustainable agricultural production, food safety, green products trade and marketing, infrastructural and social economic development. This shall be achieved through mobilizing and working with all stakeholders and development partners towards developing ecologically sustainable systems. This policy articulates sustainable agricultural strategies that are in line with county vision of a wealthy and food secure county. This policy will be implemented through the CIDP and ADPs within the county annual planning cycles. In addition, the County department will undertake midterm and terminal evaluation to gauge the achievement of set objectives against outcome indicators.

As a county lets join hands as we move forward to delivering our mission to develop and exploit agricultural resources; provide agricultural extension services and adoption of appropriate technologies sustainably. At this point, it is the collaboration, cooperation and hard work for all the actors that will make certain the delivery of the promise to the people of Murang'a that they will be free from hunger, lead healthier life's and have increase in their household incomes



*Deputy Governor*
*For:* His Excellency (Dr) Irungu Kang'ata
The Governor
**Murang'a County Government**

## FORWARD

The County governments have been assigned 14 functions under the fourth schedule of the constitution, including agriculture, County health and transport services, trade and tourism development and county planning. The Article 174 of the Constitution provides that one of the key objectives of devolution is economic development and to provide proximate, easily accessible services throughout Kenya.

This contributes not only food security but it has a role in carbon sinking that mitigate the effects of global warming. The agricultural sector still faces many challenges such as a steady reduction of agricultural land, low agricultural production and productivity, climate change, poor marketing, market uncertainties and low value addition to agricultural products, high post-harvest losses and unfavorable taxation.

This agro ecology policy shall be used as a pathway on agro ecology and inclusive practices within Murang'a County in all sector of agriculture. It shall be operational alongside the conventional production principles and policies that are operational and will focus more to ensure ecosystem conservation plays its role in sustainable production and in cleaning up the environments from the effects of pollutants while contributing to food security within the County. The agro ecology policy shall Not be construed as a replacement to other policies advocating conventional agriculture but a complementary effort in meeting food production needs in a sustainable environment that ensures conservation of diversity. This policy shall be applicable within Murang'a County and shall involve implementation within all departments in the agriculture and rural development sector and the partner organization involved in environmental conservation, climate change mitigation and adaptation. This Muranga County agro ecological policy will also provide a framework for progressive agricultural growth, development and transform agriculture into a green, sustainable and viable sector within Murang'a County

Hon (Dr) Kiringai Kamau
The County Executive Committee Member
Department of Agriculture, Livestock and Fisheries

## ACKNOWLEDMENT

Public participation is enshrined in various Articles of the Constitution of Kenya, 2010 among which is in the fourth schedule Part 2 (14) on the functions and powers of the County Government to coordinate and ensure the participation of communities in governance. In generating Murang'a County agroecology policy therefore public participation was given emphasis in coming out with community priorities and recommendations. To this end I wish to greatly acknowledge the CECM, Agricultures, who tirelessly found time to give her input. My sincere appreciation goes to core participants among who were Mr Albert Mwaniki and Mr. Peter Njangi, the field project coordinator from Institute for Culture and Ecology (ICE) Mr Elijah Kamau and his team, the Chairperson of Committee on Agriculture Hon Kahoro, Mr Kinyua,of Department of Environment, the technical committee working group comprising, Ms Nancy Nguru, Mr. James Nyaga, Peterson Mbui and Elijah Mbugua. Specifically, the core role of the ICE for facilitating both in logistics and finances and for funding partly the process of generating this policy document cannot be gain said alongside their partner PELUM Kenya. To this end our appreciation of the Director ICE Mr Martin Mwenda in person cannot be over emphasized. The Key role played by the expert on policy drafting Mr Daniel N. Gitahi, the Director then in charge of the Agricultural Value Chains and policy issues in Murang'a County for offering key consultancy services to the teams on matters of policy and for ensuring the public participation was done at the levels within the County and finally his hands on touch to the generation of the final document including the assistance offered by Mrs. Maria Mucheru and Lucy Ndambiri in logistics and organization. To all the farmers a great thanks to you for the engagement. A lot of appreciation to all the participants who could not be mentioned individually but who are all acknowledged for their valuable input and commitment. Finally, it is my wish that this policy document gets the final seal of authority through the legal notice in the Kenya gazette process so that it can finally see the light of day and get to the implementation phase. Regards to all and may God bless each one of you.

Daniel Gitahi
**Ag. Chief Officer, Department of Agriculture, Livestock and Fisheries**

## EXECUTIVE SUMMARY

Over 80 per cent of the households in the county depend on agriculture and related activities. The main challenges are limited agricultural land and irregular supply of farm inputs particularly for non-cash crop growers who are not members of cooperative societies. Prices of the inputs are high and the distribution network is limiting. Low land productivity, climate change factors and shortages of inputs among many others have led to low production in maize, beans, bananas, Irish potatoes and cabbages among others that form part of the food diet. These being the main staple food crops in the county there is need to improve on the mitigation measures and strategies not just to avoid food shortage in the future but produce safer food and sustainably. This therefore calls for a change of strategy to practices that encourages agroecosystem conservation as a gradual safety Net to the threat to life in all forms while guaranteeing sustainable production.

Agroecology is an applied science that studies ecology processes applied to agricultural production systems. Bringing agroecological principles to bear can suggest new management approaches in agroecosystems. It operates on a five-point principal of recycling of biomass, enhancement of biodiversity, provisions of favorable soil conditions for plant growth, minimization of losses. Others are diversification of species and genetic resources enhancement of beneficial biological species. Agroecology that embraces regenerative agriculture enhances carbon sequencing. Regenerative agriculture is a conservation and rehabilitation approach to food and farming systems. Regenerative agriculture is not a specific practice in itself as proponents of regenerative agriculture use a variety of sustainable agriculture techniques in combination. The four basic practices include soil fertility, biodiversity, water retention, and cleanliness and soil carbon sequencing. examples of regenerative agriculture are no/minimum tillage, permaculture, organic farming practices, composting, ecological aquaculture, silvo pasture, crop rotation among which have been included as intervention strategies necessary for a sustainable food system in this County. On the other hand, Organic agriculture is a holistic production management system which promotes and enhances agroecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. Murang'a County has to an extent tried to a small extent to align itself to organic practices that have long been in line with general direction not just in Kenya but the world over. The expansion of this approach will not only help in mitigation of concerns on food safety but in future reduce budgetary requirements on lifestyle diseases that have been indicated to be o the rise.

This agroecology policy is based a broader goal of supporting productivity and sustainability of agroecology production systems in Murang'a County and a five points objectives criteria that includes;

i. To support sustainable and participatory approaches to introduction of agroecology production systems and practices in the County.
ii. To support increased awareness on health benefits to life and environment, prioritize marketing strategies, data/information and consumption for agroecology products in Murang'a County
iii. To support increased productivity and incomes through collaboration with research, education institutions and technology integration of agroecology with conventional agriculture;
iv. To promote adoption of agroecological approaches for sustainable soil systems and agricultural practices in the county
v. To implement standards of production in the sub sector that is in line with both national and internationally set market standards

A number of policy options have been considered in line with the five objectives criteria along which the policy pronouncements, the government commitments and the various strategies have been generated to address the policy concerns diagnosed during public engagements. The options considered were

Objective i

1. Generation of a Murang'a County agroecology policy and an agroecology strategic plan
2. Accelerated implementation framework on agroecology for Murang'a
3. Create a legal frame work to regulate the agroecology in Murang'a County in line with the existing management structure and frame work to deliver more value to the farmers

Objective ii

1. Commercialization of agroecology sub sector through support by the County Special program funds voted for promotion of agroecology
2. Prioritization of sector and linkages with stakeholders in agroecology with possible quick wins
3. Peruse greening agriculture through linking agriculture and human health with safe food awareness and Champions appointed
4. Establishment of a County department dealing with agroecology
5. promotion/ and /or an agriculture agroecology development and marketing board to mainstreaming organic agriculture in government
6. Ensuring development, packaging and dissemination of appropriate
7. technical information and integration of information communication technology (ICT)

Objective iii

1. Strengthening research farmer extension linkages
2. Institute measures of making agroecology farm inputs affordable for increased productivity

Objective iv

1. Embrace a stakeholder platform that embraces all stakeholders and players and Government to take the lead in regulation and coordination of sub sector
2. Embrace soil and water conservation with a special consideration to ecosystem conservation in the agro ecosystem
3. Minimum tillage consideration, integrated pest management for vulnerable areas and an agri business approach to agriculture
4. Composting pits encouraged within households to control quality of manure

Objective v

1. Embrace set production and market standards that are currently operation.
2. Consider price stabilization including price guarantees' schemes that rewards embracing standards

The policy has proposed establishment of an agroecology development and marketing board to be responsible for agroecology other practices inclusive organic sub sector promotion and coordination. The policy will be established within an Act of Murang'a County Assembly to be developed in line with this policy pronouncement. The bill shall establish the board to which the secretariat shall be drawn from the department in charge of production and promotion of agroecology in Murang'a. Participatory Monitoring, Evaluation and Reporting (PM&ER) will be an integral component of this policy. Key indicators (objectives, process, output, outcome and impact indicators will be mainstreamed within the strategy and the implementation framework matrix) and will be developed and used in monitoring and evaluating the policy impact. The policy anticipates leveraging on resources from available sources including the County Government departments of agriculture, livestock, fisheries and environment and climate change, Development Partners, Private Sector, Public Benefits Organizations (PBOs) amongst others. It focuses on forging resource partnerships built on trust and mutual accountability to ensure delivery of the objectives. A communication plan is anchored on the overall County Government's communication strategy and will design a robust plan that will reach out to entrepreneurs in agroecology and all relevant stakeholders in the sector through different communication platforms and the established multi stakeholder forum.

The set span of the agroecology policy is set to be eight years from 2022 to 20230. The policy review process will therefore be conducted after every four to five years.

## ABBREVIATIONS AND ACRONYMES

| | |
|---|---|
| ASTGS | Agriculture Sector Transformation and Growth Strategy |
| BVAT | Bio-vision Africa Trust |
| CBOs | Community Based Organizations CU Control Union |
| EOAD- | Ecological Organic Agriculture Directorate |
| EOAI- | Ecological Organic Agriculture Initiative |
| GE | Genetic Engineering |
| GMOs | Genetically Modified Organisms |
| GDP | Gross Domestic Product |
| HELP | High Level Panel of Experts for Food Security and Nutrition |
| ICE | Institute for Culture and Ecology |
| IPM | Integrated Pest Management |
| KARLO | Kenya Agricultural Research and Livestock Organization |
| KIOF | Kenya Institute of Organic Farming |
| KOAN | Kenya Organic Agriculture Network |
| MCG | Murang'a County Government |
| MOA | Ministry of Agriculture |
| MOE &CC | Ministry of Environment and Climate Change |
| NWF | Nairobi Water Fund |
| NGOs | Non-Governmental Organizations |
| PELUM | Participatory Ecological Land Use Management |
| TNC | The Nature Conservancy |

## DEFINATION OF T ERMS

**Agriculture-**The cultivation of animals, plants, fungi, and other life forms for food, fiber and other products used to sustain life or the art and science of cultivating crops and raising livestock. It includes the preparation of plant and animal products for people to use and their distribution to markets.

**Agroecology**-An applied science that studies ecology processes applied to agricultural production systems. Bringing agroecological principles to bear can suggest new management approaches in agroecosystems. Agroecology operates on five-point principal of recycling of biomass, enhancement of biodiversity, provisions of favorable soil conditions for plant growth, minimization of losses. Others are diversification of species and genetic resources enhancement of beneficial biological species

Agroforestry- A land use management system in which trees or shrubs are grown around or among crops or pasture land.

**Biodiversity**-This is the biological variety and variability of live on earth, it is a measure of variation at the genetic, species and ecosystem level

**Carbon sequencing -**Carbon is sequestered in soil by plants through photosynthesis and can be stored as soil organic carbon

**Composting-** This is a mixture of ingredients used to fertilize and improve the soil. It is commonly prepared by decomposing plants and food waste and recycling organic materials.

**Crop rotation-** This is a practice of planting different crops sequentially on the same plot of land to improve soil health. It helps optimize nutrients in the soil and combat pests and weeds pressure.

**Ecology**-This is the study of relationships between plants, animals, people and their environment, and the balances between these relationships. When you talk about the ecology of a place you are referring to the patterns and balance of relationships between plants, animals, people and the environment in that place.

**E-cert basic**-This is an off-the-shelf version of "The Intact Platform" (formerly known as E-CERT), the leading end-to-end software built by INTACT for managing audits, certifications, and standards. E-cert basic gives you all its standard functionalities at a price that fits your budget.

**Fair Trade**-Fairtrade standards are designed to support the sustainable development of small producer organizations and agricultural workers in developing countries. They incorporate a holistic blend of social, economic and environmental criteria.

**Global GAP-**Good Agricultural Practices (GAP**)** and Good Handling Practices (GHP) are voluntary audits that verify that fruits and vegetables are produced, packed, handled, and stored to minimize risks of microbial food safety hazards.

**Gross Domestic Product** -It is the monetary value of all finished goods and services made within a country during a specific period. GDP provides an economic snapshot f a country and is used to estimate the size of an economy and growth rate.

**Integrated Pest Management (IPM)-** A broad based approach that integrates practices to economic control of pests. IPM aims to suppress pest populations below the economic injury level

**ISO certification-**"ISO 9001 Certified" means an organization has met the requirements in ISO 9001, which defines an ISO 9001 Quality Management System (QMS). Continuous improvement assures your customers benefit by receiving products/services that meet their requirement, and that you deliver consistent performance.

**IFOAM Accreditation-**It is the international verification of competence for certification bodies active in organic agriculture.

**JAS standard-**JAS is the organic standard in force in Japan. Operators who want to export their products to Japan and label them with JAS logo should be certified according to JAS Standard. European Standards (ENs) are documents that have been ratified by one of the three European Standardization organizations (ESOs), CEN, CENELEC or ETSI; recognized as competent in the area of voluntary technical standardization as for the EU Regulation 1025/2012.

**Minimum tillage-**A sol conservation system like strip till with the goal of minimum soil manipulating necessary for a successful crop production. A tillage method that does not turn the soil over in contrast to intensive tillage which changes the soil structure using ploughs

**NOP standard-**NOP is a federal regulatory program that develops and enforces consistent national standards for organically produced agricultural products sold in the United States. NOP also accredits third-party organizations to certify that farms and businesses meet the national organic standards.

**Organic EU-**Organic agriculture EU certification enables your organic products to be commercialized within the E-Union. The Organic agriculture Europe certification guarantees: climate and environment protection, conservation of soil fertility and preservation of biodiversity

**Organic Agriculture-**Organic agriculture is a holistic production management system which promotes and enhances agroecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. It is a production system that sustains the health of soils, ecosystem and people, relies on ecological processes, biodiversity and cycles adapted to local conditions rather than the use of inputs with adverse effects and combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.

**Organic certification -**It is **a** certification process for producers of organic food and other organic agricultural products.

P**ermaculture-**The growth of agricultural ecosystems in a self-sufficient and sustainable way. It draws inspiration from nature to develop synergetic farming systems based on crop diversity, resilience, natural productivity and sustainability.

**Policy** A course or principle of action by an organization or individual. It is a law, regulation, procedure, administrative action, incentive or voluntary practice of government and other institutions.

**Rain forest-**Rainforest alliance certification (RFA) seal means that the product (or a specified ingredient) was produced by farmers, foresters, and/or companies working together to create a world where people and nature thrive in harmony. RFA Certified farms are not required to be organic. For over 30 years, the Rainforest alliance has been working to promote sustainable agriculture farming that is environmentally sound, socially responsible, and profitable for farmer;

**Regenerative agriculture**- A conservation and rehabilitation approach to food and farming systems. Regenerative agriculture is not a specific practice in itself as proponents of regenerative agriculture use a variety of sustainable agriculture techniques in combination. The four basic practices include soil fertility, biodiversity, water retention, and cleanliness and soil carbon sequencing. examples of regenerative agriculture are no/minimum tillage, permaculture, organic farming practices, composting, ecological aquaculture, silvopasture, crop rotation

**Silvopasture-** This is a practice of integrating trees, forage and the grazing of domesticated animals in a mutually beneficial way. It is a distinct form of agroforestry.

**Structural adjustment programs-** A set of economic reforms that a country must adhere to in order to secure a loan from the international monetary fund and/or the World Bank

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## CHAPTER ONE: BACKGROUND

### *1.1 Introduction to the general agriculture sub sector*

The agricultural sector directly contributes about 25% of the country's gross domestic product (GDP) and a further 27% through manufacturing, distribution and service sectors and accounts for 65% of the total export earnings. The Sector employs over 80% of Kenya's rural work force and provides more than 18% of formal employment. The crops, livestock and fisheries subsectors are the main components of the agricultural sector contributing 77.6%, 19.6% and 2.0% of the agricultural GDP respectively. The Kenya Vision 2030 recognizes the significance of agriculture to its goals that aim at achieving an average gross domestic product growth rate of 10% per year up to the year 2030. The economies of most of the 47 counties depend on agriculture. A 2015 World Bank policy working paper indicates that the average agriculture GDP for all the 47 counties is 51% of the country GDP. Murang'a County average GDP stands at USD 3,455 and at number 13 out of 47 in a list headed by Nairobi County with an average GDP of USD of 27,798 measured as per purchasing power parity (PPP) (data World Bank, 2018). On the other hand the GDP *per capital* for Murang'a puts it at number 16 at per capita of USD 3,123 (data World bank 2017).

Kenyan agriculture is dualistic in nature, composed of a largely smallholder sub-sector and a relatively small number of large scale farmers and ranchers. The former is further sub-divided into subsistence farmers and pastoralists. Small-scale commercial farmers and ranchers are mainly found in the high and medium rainfall areas. In total, about 5 million small-scale farming families account for 75% of the total agricultural output and about 70% of marketed agricultural produce. Fisheries activities on the other hand are carried out in fresh inland water bodies, the Indian Ocean and in the growing aquaculture systems. Like in livestock and crop farming subsectors, small scale fishing account for 94% by volume of all the fish captured. Over the years, development of the agricultural sector has been guided by different plans, policies and strategies. The Swynnerton Plan of 1954 discouraged traditional land tenure and introduced title deeds that created security of tenure and ability to obtain credit. The sessional paper No. 10 of 1965 on African socialism and its application to planning in Kenya envisaged concentration of agricultural investment in high rainfall areas. Agricultural post-independence policy focused on three main areas; land transfer programs, smallholder development and promotion of cash crops by both smallholders and large-scale farmers (Jabara 1985,p. 612). The structural adjustment programmes (SAPs) of 1980s led to restructuring of agricultural institutions, liberalization of product prices and privatization of services. This to some extent has interfered with Government lead ecosystem conservation as a product of competition in constrained environment among predominant small scale agro enterprises as they differentiate with increasing technology access.

The integrated agricultural development programs were meant for the development of smallholder agriculture and aimed at establishing wholesome farming systems through provision

of agricultural inputs and strengthening of extension services and institutions. In 2000, the poverty reduction strategy paper (PRSP) was developed to address the twin objectives of driving economic growth and reducing poverty.

In 2003, the PRSP gave rise to the economic recovery strategy (ERS) for wealth and employment creation that focused on growth and macroeconomic stability; improved governance; social equity, poverty reduction and rehabilitation of infrastructure. Later, in 2004, the strategy for revitalizing agriculture (SRA) was launched. It represented the national policy for steering the revitalization and development of the agricultural sector over the period 2004 to 2014. Then, in 2010 the SRA – originally intended to run from 2004 to 2014 was superseded by the agricultural sector development strategy (ASDS) 2010-2020 and later the Agriculture sector transformation and growth strategy (ASTGS 2019-2029). A key focus on all these policies has been food security that is based on intensification and diversification which has constrained the production environment.

This agroecology policy therefore will provide a framework for progressive agricultural growth, development and transform agriculture into a green, sustainable and viable sector within Murang'a County. Agroecology is an applied science that studies ecology processes applied to agricultural production systems. Bringing agroecological principles to bear can suggest new management approaches in agroecosystems. It operates on a five-point principal of recycling of biomass, enhancement of biodiversity, provisions of favorable soil conditions for plant growth, minimization of losses. Others are diversification of species and genetic resources enhancement of beneficial biological species. Agroecology that embraces regenerative agriculture enhances carbon sequencing. Regenerative agriculture is a conservation and rehabilitation approach to food and farming systems. Regenerative agriculture is not a specific practice in itself as proponents of regenerative agriculture use a variety of sustainable agriculture techniques in combination. The four basic practices include soil fertility, biodiversity, water retention, and cleanliness and soil carbon sequencing. examples of regenerative agriculture are no/minimum tillage, permaculture, organic farming practices, composting, ecological aquaculture, silvopasture, crop rotation. The strategies proposed in this agroecology policy will be aligned to comply with agricultural organic standards and practices that conform to national and international norms.

In spite of recording marginal growth as a result of plans, policies and strategies earlier implemented, the agricultural sector still faces many challenges. The challenges include; a steady reduction of agricultural land, low agricultural production and productivity, climate change, poor marketing, market uncertainties and low value addition to agricultural products, high post-harvest losses and unfavorable taxation and tax regimes. Other key challenges are ineffective and

inefficient inter-sectoral linkages for development of agriculture, high cost of credit for investment in agriculture, poor governance in farmer organizations and farmer cooperatives, fewer adherences to demand-driven research for agricultural development, ineffective research-extension-farmer linkages and inadequate insurance facilities to cushion farmers and fisher folk from production uncertainties.

Murang'a County is predominantly a key agricultural county especially in cash crops, horticulture and food production. It is divided into six agro ecological zones. The agro ecological zone one consists of the highest potential zones where forestry, tea and tourism industry form the most important economic activities. Agro-ecological zones two and three are the lowlands east of Aberdares and are generally suitable for both coffee and dairy farming. The flatter area of Makuyu division of Maragwa constituency is characterized by arid and semi-arid conditions. This forms the agro ecological zones 4, 5, and 6. In these zones coffee and pineapple plantations thrive by irrigation. The county has a total area of 2,558.9Km2, of which 11.2Km2 is water mass. The arable land is, 2,135 Km2 while non-arable land is 163.3 Km2. The gazette forest covers an area of 254.4 Km2 while approximately 20 Km2 is urban area. Most farms are small-scale with the average farm size for most of the County's households being 1.4 acres. As a result of this, farmers produce food for their own consumption with little to store for the future at household level. The average large scale farm size is 16 acres which are commonly found in the lower parts of the County and in tea, coffee, pineapples, and mango and flower estates. Murang'a County is a host to key rivers that support the capital city of Nairobi with water. Despite this key agricultural activities are a cause for eutrophication of water bodies and pollution.

The land under soil conservation in Murang'a County is 33,254 acres; under farm forestry is 270,879 while area under organic farming is estimated to be 38,536.45 acres but which is however considered organically uncertified. The main land use activities in the County are: cash crop farming, subsistence farming, livestock keeping, fish farming, housing and forestry. The acreage under food crops and cash crops are 329,234 and 177,636 respectively with acreage under food crops being almost twice that of cash crops. Food crop farming is practiced in all parts of the County but cash crop farming is practiced in upper zones and in some lower zones of the county. By 2013, there were 2,380 households practicing fish farming with 2,520 fishponds covering an area of 714,000 m2. The main fish species reared are Tilapia and Catfish. Limited conservation activities have largely been a cause for under production in this County.

Over 80 per cent of the households in the county depend on agriculture and related activities. The main challenges are limited agricultural land and irregular supply of farm inputs particularly for non-cash crop growers who are not members of cooperative societies. Prices of the inputs are high and the distribution network is limiting. Shortages of inputs lead to low productivity in maize, beans, Irish potatoes and cabbages. These being the main staple food crops in the county there is need to improve on the inputs diversification and accessibility not just to avoid food

shortage in the future but produce safer food. This therefore calls for a change of strategy to practices that encourages agroecosystem conservation as a gradual safety Net to the threat to life in all forms while guaranteeing sustainable production.

### 1.1.2 Regenerative, organic agriculture, and agroecology sub sector

#### 1.1.2 (i) Regenerative agriculture

A conservation and rehabilitation approach to food and farming systems. Regenerative agriculture is not a specific practice in itself as proponents of regenerative agriculture use a variety of sustainable agriculture techniques in combination.

The four basic practices include soil fertility, biodiversity, water retention, and cleanliness and soil carbon sequencing. examples of regenerative agriculture are no/minimum tillage, permaculture, organic farming practices, composting, ecological aquaculture, silvopasture and crop rotation mong many others.

#### (ii) Organic agriculture

Organic farming is an agricultural system that seeks to provide you, the consumer, with fresh, tasty and authentic food while respecting natural life-cycle systems. There are many explanations and definitions for organic agriculture but all converge to state that it is a system that relies on ecosystem management rather than external agricultural inputs. It is a system that begins to consider potential environmental and social impacts by eliminating the use of synthetic inputs, such as synthetic fertilizers and pesticides, veterinary drugs, genetically modified seeds and breeds, preservatives, additives and irradiation. These are replaced with site-specific management practices that maintain and increase long-term soil fertility and prevent pest and diseases.

Organic agriculture is a holistic production management system which promotes and enhances agroecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. It is a production system that sustains the health of soils, ecosystem and people, relies on ecological processes, biodiversity and cycles adapted to local conditions rather than the use of inputs with adverse effects and combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.

Organic agriculture is guided by four principles. These are health, ecological balance, fairness and care providing a vision for agriculture that inspires environmentally friendly cultivation and

production. As such, all organic production aims to produce superior quality products, with high nutritional value and no chemicals with the purpose of good health. It aims to create sustainable system that conserves energy, soil and water, while at the same time providing general maintenance of the environment.

Agroecology on the other hand is a new approach which refers to an applied science that studies ecology processes applied to agricultural production systems. Bringing agroecological principles to bear can suggest new management approaches in agroecosystems. Agroecology however operates on a five point principal of recycling of biomass, enhancement of biodiversity, provisions of favorable soil conditions for plant growth, minimization of losses. Others are diversification of species and genetic resources enhancement of beneficial biological species. Organic agriculture could therefore be construed as a practice in agroecology.

The organic sub sector in Kenya is relatively small but fast growing especially in fruits and vegetable export components. Formal organic agriculture in Kenya dates back to the early eighties when the first pioneer agriculture training institutions were established. By 2011 the Kenya organic agriculture sub sector had grown to 151,371 Ha (378,427.5 Acres) of certified organic land. Demand currently is high and largely going unmet. There are companies now listed as producing organic products for local and international markets, large supermarkets outlets and restaurants are selling organic products and food. The organic sub sector in Kenya has gained increased importance in its contribution to food security, environmental conservation, gender empowerment and diversification of markets and premium prices. Organic agriculture provides a cheap means of replenishing depleted soils and soil nutrients. An enhanced health accruing due to reduced chemical residual intakes.

A proposed draft Kenya organic agriculture development policy is expected to promote the industry and give direction to the sub sector, enhance production and development of the local and export market leading to increased incomes earned by the organic stakeholders and improved standards of living. It will strengthen and raise the profile of the sub sector and hence more support from both the public and private sectors and ultimately contribute towards poverty eradication and improved food and nutrition security. The national organic agriculture policy development process began in year 2010. Key milestones on the policy cycle have been covered including policy concerns, policy analysis and policy options, draft policy formulation, and stakeholder dialogue. A number of programs and projects are being implemented by various stakeholders to promote organic agriculture as has always been known and referred to..

Policy concerns captured within the existing national organic agriculture policy draft and considered in this agroecology policy for Murang'a County included inadequate research and development, weak research and extension farmer linkages, lack of policy framework explicit on organic agriculture, low consumer awareness on organic products and their benefits, inadequate support of out growers in capacity building and organization with a view to strengthening their knowledge and skills in meeting market demands.

Policy analysis and options captured included mainstreaming of organic agriculture in government and programs, enhanced research and technology development, strengthening research, extension farmer linkages, instituting measures of making organic agriculture farm inputs affordable for increased productivity and ensuring development, packaging and dissemination of appropriate technical information.

Within the context of the progress made by 2020 in getting a national organic policy for Kenya the achievements so far include;

i) Draft policy formulation: Issues addressed in the draft policy document include research and technology development, extension and training, organic inputs, production, processing and value addition, markets and marketing and institutional framework.

ii) Stakeholders dialogue: Consultative meetings have been held by the Kenya Organic Agriculture Network (KOAN) and the Ministry of Agriculture and Fisheries to discuss the organic agriculture draft policy document

iii) Field visits supported by KOAN and the MOAF have been held already and followed by a KOAN members meeting to review the draft policy and technical committee retreats and finally

iv) National stakeholder's workshop has already been held.

The outstanding steps therefore to the policy completion include an action plan detailing the areas that need strengthening between organic stakeholders lead by KOAN and the MOA in the policy document has already been formulated, Wider stakeholder dialogue, consultation and Inco corporation into the policy particularly due to shift to County governance by the Constitution 2010. A technical committee consultative forums is also required to finally polish the draft, A cabinet memo is required to forward the draft policy and followed by lobbying and advocacy for council of governors, the members of the national cabinet and members of parliament. A strategy is required to be prepared after the session paper has been passed by the cabinet, and finally monitoring and evaluation of the implementation of the policy.

1.2.2 (iii) Agroecology as a science and its linkages to organic agriculture in Kenya

Agroecology is an applied science that studies ecology processes applied to agricultural production systems. Bringing agroecological principles to bear can suggest new management approaches in agroecosystems.

The high-level panel of experts for food security and nutrition (HLPE) is a science policy interface of the committee of experts on world food security (CFS) that is evidence based international and inter-governmental platform on food security and nutrition (FSN). The 2019 report of HLPE revealed that global food system is at a crossroads. A profound transformation is

needed at all scales in the face of demographic changes, increased pressure and competition over renewable resources, increasingly severe consequences of climate change and loss of biodiversity. Such a transformation in what is produced and how it is produced, processed, transported and consumed is required to achieve sustainable development goals 2 (SDG-2)" to end hunger and all forms of malnutrition by 2030", building on the four pillars of FSN. Sustainable food systems are needed to ensure appropriate food production and reduce losses and waste, while safeguarding human and environmental health, political stability and better livelihoods with less environmental consequences.

Agroecology and other innovative approaches are thus increasingly called upon to play a greater role in contributing to achieve FSN. They are becoming increasingly prominent in debates around sustainable development because of their ambition to connect environmental sustainability and social innovation, production and consumption, global concerns and local dynamics through the support to locally adopted solutions based upon participation and mobilization of the local knowledge.

The food and agriculture organization of the United Nations has also facilitated a study in 2019 focusing on how climate change impacts on food systems and how agroecology can be applied to address these challenges. The FAO 2019 report concludes that there is an urgent need for transformational change of our food systems towards more sustainability and resilience where Agroecology could play a vital role here.
Agroecology operates on thirteen number principles that include recycling, input reduction, soil health, animal health, biodiversity, synergy, economic diversification, co creation of knowledge, social values and diets, fairness, connectivity, land and natural resource governance, and participation.

Agroecology also has elements which are ten in number and include

a) Diversity
b) Co creation and sharing of knowledge
c) Synergy
d) Efficiency
e) Recycling
f) Resilience
g) Human and social values
h) Culture and food traditions
i) Responsible governance
j) Circular and solidarity economy

Organic agriculture as has been known and referred to in the various circles in Kenya is a

practice and part and parcel of agroecology. The policy proposals should therefore aim to give guidelines on the integration of agroecology as a science among framers known to be practicing organic agriculture among other practices and give it a deeper understanding towards ecosystem conservation not just in agroecosystem perspective, but to include forest ecosystem, terrestrial, grassland, fresh water among other ecosystems within Murang'a County

*1.2 Justification*

Food security in Kenya and elsewhere in the world remains a national security issue. Food security, food safety and nutrition is closely linked to the national health concerns. Towards realization of a health nation as outlined in the National Food Safety Policy, 2013, producers should follow the required production standards as outlined in the Kenya Standards (KS)- 1758:2 to ensure safe food production. Contaminants at farm include insects and pests, bacteria such as E-coli and Salmonera arising from use of untreated animal waste or contaminated irrigation water, chemical contamination such as pesticides residues and heavy metals due to, improper use of organic fertilizers or pesticides plus failure to observe periods for active ingredients in pesticides to break down before harvesting,

These contaminants are harmful when consumed by humans (NCBI, 1999). Food safety stakeholders have recently adopted a campaign on one health policy approach to contain the threat posed also by zoonotic diseases. Food safety starts from the source whereby safe production practices ensure safe produce. Organically grown foods under the agroecology principles is set to help producers reduce effects brought about by conventional production practices.

Murang'a County has the bulk of its land under food and to some extent cash crop being under heavy investment in farm forestry. The benefit of this to ecosystem conservation will require to be evaluated. This probably being done in terms of contribution not only to food security but in its role in carbon sinking that mitigate the effects of global warming. The county unparalleled wealth also in rivers, wetlands and natural resources including forest ecosystems that includes previous investments and polices undertaken with reference Eucalyptus plantations as an example including the county's role as a water catchment and the need to act a bigger role in agroecology and its integration in changing the approach to sustainable food security.

Among other reasons therefore for this policy are

i) A weakening and general population health situation.

Murang'a County has 272 health facilities serving a population of 959,701 persons. It has one County referral hospitals and six sub-county hospitals, three missions and one private hospital.

There are 26 public health centers, 114 dispensaries (89 public and 25 mission/NGO) and 137 private clinics.

The County has 1,250 medical personnel working in government health facilities with 650 nurses, 39 doctors, 54 clinical officers, 138 public health officers and 38 laboratory technicians and technologists among others. Medical personnel and health facilities in the county are inadequate and there is need to improve the situation.

The most prevalent diseases in the County were: malaria/fever (2 per cent), flu (20.64 per cent) diarrhea (11.45 per cent), respiratory tract infections (10.86 per cent) and stomach-ache (6.54 per cent). The health personnel have been spearheading campaigns to reduce the prevalence of the diseases especially for children below than five years. Morbidity (deaths) stands at 29.96% for males, 36.53 % for females and 33.51% is the County average.

Five per cent of children under five years are stunted and wasted. However, the medical personnel have been intensifying their effort to ensure that the figure comes down

The immunization coverage stands at 92 per cent. Efforts are being made to ensure that all children are immunized against preventive diseases. The medical personnel have now changed the strategy of waiting for children to be brought to health centers, by moving from house to house to ensure that no child is left out.

HIV and AIDS pandemic poses a serious threat to the development of the County as the prevalence rate stands at 3.7 per cent. The scourge is on the increase virtually in all the constituencies of the County. AIDS related deaths are common and those mainly affected are those within the productive age group of 15-49 years of age. Also, the number of HIV/AIDS orphans is on the increase.

Poverty is viewed as a major cause and consequence of HIV/AIDS. Poverty increases vulnerability of people with HIV, hence there is need to redirect resources towards support services to poor households. The situation is further aggravated by the fact that HIV/AIDS mostly affects people in the productive age leaving minors and the elderly people to take care of households. Progressive gains on poverty reduction may be reversed if concerted efforts are not urgently put in place to bring the HIV/AIDS pandemic under control.

Data on management of lifestyle diseases as diabetes and blood pressure related illnesses was not captured though the rate of increase is expected to be high in the County. Non curable diseases as cancer among females and males are also expected to be on the increase with urbanization as numbers of children culprits start being recorded. The underlying causes of this lifestyle diseases remain an area of concern to policy makers and the need to bring food safety to bear. Control pollution is also of concern. The status of preventable conditions is on the increase as processed foods become more available and diets change to consumption of more starches, sugars and fatty

food and oils. Nutritional food security has become more elusive with an increase in poverty level that currently stands at 36.3% and nutritional food poverty above 50%. Life expectancy stands at 59.7 for males and 67.2 for females. Achievement of acceptable nutritional food security would work to reduce the preference rates of some of these conditions if well-coordinated with preventive medicine.

ii) There is currently no regulatory framework to define standards for organic agriculture practices in Kenya and the roll out of agroecology as a science at the County level.;
iii) Deteriorating human and livestock health situation both nationally and in the County and especially involving terminal illnesses
iv) Increased pollution by farm chemicals in the various county ecosystems especially water, agro and terrestrial ecosystems.;
v) Increased consumption of farm inputs pollutants in food chains in the region;
vi) Environmental degradation of the county agroecosystems including soils and water;
vii) Effects of climate change on food production systems threatening human existence;
viii) Increased food security threats and food demands with increasing population;
ix) Increase in demand for organic food markets nationally;
i) Better prices for suppliers of organic food products;
ii) High costs of alternative farm (crops, livestock and fisheries) inputs;
iii) General global shifts in market demands to safer food exports;
iv) Increase in pollution to the environment from industrialization;
v) and the need to either sink and/or reduce gas and chemical emissions to thee environment.

*Linkages with stakeholders in the sub sector*

### 1.3.1 The National Government

The national Ministry of Agriculture, livestock and fisheries in collaboration with Kenya Organic Agriculture Network (KOAN) has been in the process of drafting a national organic agriculture policy framework. The County Government will endeavor to engage the players in this national policy process through the Ministry within the policy directorate at the Ministry headquarters. A lot shall be borrowed from the ideas generated from the national policy draft document to ensure it is in harmony with what shall be proposed by the Murang'a County Government. The continuous collaboration shall be established with both the national government and its agencies in promotion of the agro ecology as a science and the policy roll out within the Murang'a county.

### 1.3.2 Murang'a County Government

Murang'a County endeavors to develop a policy position in agroecology through the standard

process involving all stakeholders. The County commits to engage as many stakeholders as possible to get consensus on the draft document and shall use it to give direction and promote agroecology within the County.

### 1.3.3 Kenya Agriculture and Livestock Organization (KARLO)

Research and development is core to growth of any sector. KARLO hold the national mandate in agriculture research. Murang'a is lucky to host one national research organization under KARLO at Thika high level in Kandara sub County. KARLO and by extension the Thika station shall be engaged in the agroecology policy development process and in development of key innovations in the sectors.

### 1.3.4 Kenya Organic Agriculture Network

The Kenya Organic Agriculture Network (KOAN) is the national co coordinating body for organic agriculture practices in Kenya. KOAN emerged from a consultative process where organic practitioners agreed to come together to achieve the synergy required to develop organic sub sector. KOAN has also played a key role in the draft national organic agriculture policy so far. Murang'a County agro ecology policy framework will recognize the role to be played by KOAN in mobilization of stakeholders in partnership with the directorate in charge of agro ecology of Murang'a County Government towards coming up with a County agro ecology policy for Murang'a.

### 1.3.5 Farmers in Organic Agriculture in Murang'a

Farmer practitioners in organic agriculture in Murang'a County have walked a lonely journey with little support so far from previous Governments. Although they are very few so far from the information gathered from data available from the KOAN contacts a few are actually certified as organic farmers or input suppliers. The practicing farmers will be actively involved in determining the pathway in this new County policy development process. The County Government will also work to expand the list of practitioners through available contacts and introduce the agroecology concepts to all.

### 1.3.6 Accredited organic certifying bodies

At least three to four certifying bodies in Kenya have been documented so far from information available to us and they include *e Cert, En Cert and Nesvax and control union (CU)*. These certifying bodies among others will be deeply engaged not just in the agroecology policy development process in Murang'a County but for the proposed producer certification through County Government support. A working collaboration will be established.

### 1.3.7 Local and export market outlets and players

Local organic agriculture markets can be generated though collaboration with supermarket chains and specific food outlets. Similarly, export market linkages through exporters will be pursued. To ensure optimization the players will be sensitized to provide forums for agriculture marketing and a collaboration platform created on agroecology concepts.

### 1.3.8 Institute for culture and ecology (ICE)

The organization has presence within the County in at least two sub counties of Maragua and Kiharu currently. As a partner collaboration in implementation of the agroecology policy shall be sought among others in joint activities and support system to achieve sustainable production.

### 1.3.9 Participatory ecological and land use intensification (PELUM) Kenya

PELUM operates in a number of sub counties in Murang'a and has been a key player in promotion of agro ecology. Partnership shall be maintained while seeking joint activities especially in promotion on activity implementation.

### 1.3.10 Other value Chain Actors

All value chain actors shall be mobilized at this stage of the agroecology policy development process and in strengthening the agriculture sub sector value chain from farm input supply, production, transport, handling and packaging, marketing and sales to end users/consumers. All civil society organizations operational in the \county in the subsector shall equally be mobilized and includes but not limited to Nairobi Water Fund, The nature Conservancy, Kenya Institute of organic Farming among others.

### *1.3.11 Scope of the agroecology policy for Murang'a County*

This agroecology policy shall be used as a guide on agroecology and inclusive practices within Murang'a County in all sector of agriculture. It shall be operational alongside the conventional production principles and policies that are operational and will focus more to ensure ecosystem conservation plays its role in sustainable production and in cleaning up the environments from the effects of pollutants while contributing to food security within the County. The agroecology policy shall Not be construed as a replacement to other policies advocating conventional agriculture but a complementary effort in meeting food production needs in a sustainable environment that ensures conservation of diversity. This policy shall be applicable within Murang'a County and shall involve implementation within all departments in the agriculture and rural development sector and the partner organization involved in environment conservation. And climate change mitigation and adaptation.

## CHAPTER TWO: SITUATIONAL ANALYSIS

*2.1 Situational analysis and institutional framework*

2.1.1 Local scenario review

2.1.1 (i) Crops sector and agroforestry developments in Murang'a County

Crop production in the county is largely done by small scale farmers. The main cash crops are tea, coffee, avocadoes, mangoes and banana. Of keen interest is the fact that cotton production has ceased in the County. The food crops are maize, sorghum, rice, sweet potatoes Irish potatoes, arrow roots, cassava; legume grains such as bean, pigeon peas, green grams and cow peas which are largely under rain fed production. Limited irrigation is carried out by small scale farmers on horticultural crops such as green beans, kales, cabbages, tomatoes and snow peas. Large scale farming is done by a few companies on coffee, pineapple and tea. The crops subsector is characterized by low productivity and occasional threats of crop failure due to drought. Pre and post-harvest losses are high due to inadequate storage and limited value addition. All these factors make the county food insecure with low to moderate farm incomes. There is unconfirmed and estimated 15,415.38 (38,538.45 acres) hectares of organic agriculture land in Murang'a County. This figure requires to be authenticated through a crops census but it is assumed this is covered by either tea, avocado, bananas and very little of horticulture as these are the main crop that rarely attracts farm inputs within the County. Of the crops mentioned most are organically being produced by default and not intentional. There is therefore need to isolate and intentionally target organic technologies practices for purposes of developing safe methods of food production and integration of agro ecology as a science. Land under crops production has heavily been inter cropped with agroforest trees with emphasis on grevillea species. The role this trees play in enhancing food security and environmental and climate change adaption and mitigation to food security requires more interrogation in designing a better co-existence of species that serves the original intended purpose.

(ii) Livestock sector**:**

The main livestock enterprises in the county include; dairy production, beef production, poultry rearing, pig production, sheep production, goat production, bee keeping and rabbit keeping. Dairy production is the leading livestock enterprise. The dairy value chain is taken as a flagship project by the county government leading to major investments in the dairy sub sector. The livestock production figures for the county as at 2017 are; Livestock Enterprise Population (2017) Dairy 239,196, Beef 21,881, Poultry 943,579, Bee keeping 11,962, Pig 35,510, Rabbits 85,210, Sheep 13,959, Goat 51,116, Dogs 37,755, Cats 22,725, Donkeys 764 and emerging livestock 26,477. It is not actually documented whether there are any organic livestock production practicing farms or enterprises within Murang'a County. Possibilities and markets however exist for organically produced livestock products. This will however require

technologies and a lot of innovation as inputs for this sector are rare. The roles the livestock sub sector is expected to play in the agroecology practices as shall be recommended by the science are huge. Livestock by itself is a major source of gasses that contribute to global warming in form of methane. Smart technologies such as biogas capture that are in line with agroecology practices for sinking methane shall come in handy.

(iii) Fisheries sector;

In terms of aquaculture, presently, over 2,392 fish farmers owning over 2,511 fish ponds covering approximately 700,833 m (70.8 ha) operate within the seven sub counties. A total of 1,619 kg of catfish worth Kshs. 566,650 and 2,7856kg of tilapia worth Kshs. 9,749,600.00 were harvested by the fish farmers. However, there is a great potential in aquaculture, given the county's vast water resources and high demand for some of the indigenous fish species in both local and international markets. The potential for green aquaculture is equally high given the awareness created on food safety and standards. To achieve the same however all water sources shall require protection from pollution for fish and other life survival. Water conservation practices in agriculture shall have to be integrated into farm practices being the scarce resource it is becoming with the advent of climate change and global change in temperatures.

2.1.1 (iv) the status of general ecosystem conservancy

There exist different ecosystems within Murang'a County that include agroecosystems within farmed lands, forest ecosystem in our natural forests as in Gatare forest which is part of aberdare, fresh water ecosystem which exists within the environment created by the many rivers spotting the County landscape among others.

The agroforestry practices within Murang'a County for example has so developed to levels which has not captured the attention of government on controls to avoid excess that seem to threaten food security by taking over large tracks of farmlands but while being of great use in climate mitigation. through generating climate sinks. This climate sinks have however not attracted any known compensation in the carbon trade. The County equally has seen over exploitation of natural resources in the built environment that seems to threaten ecosystem stability. All this needs serious review and provision in policy. Others areas that may require attention are the diverse wetlands spotting the landscape, the management of rivers and water ways and the general water resources.

Ecosystem conservation is a comprehensive plan that seeks to maintain all species of plants and animals in a geographic area through the management of natural resources. The main function of ecosystem conservation is protecting or restoring the structure, function and species compilation within the system. This may appear hard initially, because everything in an ecosystem affects everything else. The best way to conserve an ecosystem is to approach it

from a large-scale view. There is always something that which can be done to protect and conserve biodiversity in the ecosystems within the County that includes Government legislation., nature preservation, reducing invasive species, habitat restoration, captive breeding and seed banks, research, reducing climate change and purchasing sustainable products. The current approach to ecosystem conservation in the County has focused on separate and independent approaches under different levels of Government, Examples are wildlife under Kenya wildlife services, Forests under Kenya Forest Services, Water under Water Resource Authority and Marine under Fisheries and which has pushed to re organize also to an authority. All this authority are under different legislations in Kenya and therefore have little connecting platforms as relates to the activities of County Governments as per schedule four of the Kenya Constitution 2010. The resultant effect is division of labour that does not look at the totality of conservation and especially to agricultural lands with less focus on conservation.

### 2.1.1 (v) Biodiversity

Biodiversity is a term used to describe the enormous variety of life on earth. It can be used more specifically to refer to all of the species in one region or ecosystem. Biodiversity refers to every living thing, including plants, bacteria, animals, and humans. Biodiversity includes three main types that are diversity within species (genetic diversity), between species (species diversity) and between ecosystems (ecosystem diversity). Biodiversity boosts ecosystem productivity where each species, no matter how small, all have an important role to play. For example, a larger number of plant species means a greater variety of crops. Greater species diversity ensures natural sustainability for all life forms. Murang'a County has suffered loss of biodiversity arising from many years of forest destruction and commercialization of farming activities which have over period reduced productivity and resulted to climate change and food security threats. Within the agro forestry approach to conservation, there can be observed loss of biodiversity as grevillea dominates most agro ecosystem. The impact of this could be impactful to nature and sustainability and requires deeper understanding to prevent future system imbalances.

### 2.1.1 (vi) Integrated Pest Management (IPM) practices

Integrated pest management (IPM) is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Little if any IPM practices are under wide implementation or in use within Murang'a county other than efforts by local civil societies to re-introduce its principals as a mitigation measures against market demands and especially for export produce on increasing maximum residue levels. Where IPM practices are in use there is lack of persistence and patience for it to bear results. This agroecology policy is intended to emphasis biodiversity on both fauna and flora in the spirit of integrating IPM promotion among other approaches.

### 2.1.1 (vii) Soil and water Conservation as part of agricultural ecosystems conservation

Soil and water Conservation (SWC) are activities that maintain or enhance the productive capacity of land in areas affected by or prone to soil erosion. Soil erosion, on the other hand, is the movement of soil from one part of the land to another through the action of wind or water. Soil is important to society because it supports plants that supply food, fibers, life-saving drugs and other essentials and because it filters water and recycles wastes. Improved cropping, fertilization, and management including reduced tillage, crop rotation, cover crops, and sustainable grazing practices, are important to maintaining and achieving healthy soils. The other basic methods of soil conservation include contour ploughing, terrace farming, key line design, perimeter runoff control, windbreaks, soil-conservation farming and salinity management. For a long time since pre independent Kenya, soil and water conservation had attracted a lot of focus in not just in enforcement but in government resource allocation. The effect of this is still what is being felt to date. As of current events within the devolved Governments activities indications are that little attention to government planning and subsequently to activities being carried out on farms are an indication of intention to go back to conservation as earlier practiced. The effect is however being felt with serious implications as productivity goes down and threat to life becomes real with annual landslides. Soil and water conservation will be key in the future mitigation of ecosystems conservation and especially on farm lands with an ever increasing annual human and animal population.

### 2.1.1 (viii) Fresh water ecosystems

Murang'a County is endowed with water bodies emanating from river Maragua which originates from the heart of the aberdares, river Mathioya, river Kayahwe, Irati and river Muriurio among many other small tributaries. Conservation of these water ecosystems is meant to be an emphasis while advocating for agroecology practices within other ecosystems. Water is at the core of life and conservation cannot over emphasis water ecosystem conservation. Environmental review within existing policies indicate a lot of degradation among our rivers with high levels of siltation occurring during floods. The resultant effects is siltation and declining water levels both within the rivers and dams that would otherwise support aquatic live.

### 2.1.1 (ix) Forest ecosystems

There are a number of forests in Murang'a County and especially along the abandare ranges. These forests are a key water catchment for all the rivers emanating from the ridges and from Mount Kenya. To succeed in conservation efforts and in enhancement of biodiversity especially of fauna. then conservation of forests will be crucial. The emerging threat within Murang'a county being caused by velvet monkeys on farm lands is a clear indication of forest ecosystems interference by human activity. The diversity within natural forests have been interfered with so much such that animals cannot access fruit and natural foods as they require to live within their natural ecosystems.

2.1.1 (x) Inorganic and agro chemical use in Kenya and linkages to human health

According to research on import, disposal and health impacts of pesticides in the East African rift zone; A review of management and policy by Kumelachew Mulu Loha, Pesticides import and registration; Crop pro; 2018**,** Pesticides import policies so far have not been properly implemented. Pesticide imports for EAR Countries increase every year, obsolete pesticides have been sent to develop Countries for disposal and lack of proper management and application caused health problems**.** Pesticides are important to local farmers for the control of pest and diseases as well as for the control of Malaria vectors. Chemical pesticides used for the control of vectors diseases have negative impact on human and wildlife. Kenya demand for agro chemicals has been increasing as a result of a rapid expansion of the agriculture sector. According to the Kenya National Implementation Plan (KNIP) in 2007 the Country does not have pesticide manufacturing facilities hence pesticide active ingredients are imported and formulated locally by more than eleven companies so far. Misuse and abuse of pesticides are common as well as the use of un registered, burned and smuggled products (Rhoda et al 2006). In 2005 alone 7,708 tons of pesticides were imported into Kenya and additional 2,960 tons for commercial use. Tsimbiri et al 2015, testified that the main health impacts of pesticides on residents and workers at lake Naivasha in Kenya were a headache and miserableness followed by respiratory problems. Strong et al 2016, determined the concentration and distribution and sources of organ halogenated contaminants in soils from Kenya and performed a risk assessment. Twelve organo chlorine pesticides were found in the samples. Human risk assessment indicated that PCBs based chemicals were the most prominent chemical category contributing contaminants in the area studied. Some older pesticides including organochlorines (eg Aldrin, Chlordane, DDT, Diedrin), lead arsenate, Creosonate and sulfallate are carcinogenic in animal studies. (Rates 98,152,153 and 225 respectively) and many of these pesticides continue to be used in developing Countries. Pesticide formulations have also included carcinogenic solvents. In humans, occupational exposure in spraying and application of non arsenic insecticides group have been classified as probable human carcinogens by the IRC. Non Hodgkins lymphoma (NHL) is among the most widely studied cancers in relation to pesticide use. Blair and Zahm reported that NHL has been linked with Phenoxy acetic acid herbicides, organochlorine pesticides and organophosphate pesticides in analytical epidemiology studies. Many but not all studies have found an association between herbicide uses and soft tissue Sarcoma. Gerabrandt et al observed a significantly elevated risk of pancreatic cancer among DDT manufacturing workers. Lung cancer risk is casually associated with exposure to arsenic compounds and an excess risk of lung cancer was observed among vine yard workers and arsenic manufacturers. Two Italian control studies suggested a possible role in the etiology of ovarian cancer to triazine herbicides, atrazine, simazine, and cynazine. Several other cancers including cancer of the breast, testes, kidney, rectum and brain and hogkins disease have been relatively associated with pesticides exposures on the farm or in the pesticides manufacturing operations in some studies

2.1.1 (xi) The gender and youth perspective in the proposed agroecology policy roll out

Women form the bulk of the labor force in agriculture especially food production. Conservation activities are equally carried out with larger biased on the women gender. To succeed in ecosystem conservation therefore there is need to consider the gender angle. Agroecology practices are meant to address sustainable production and economic restitution in the production system and involvement of both women and youth will ensure greater empowerment of this cohort. The conservation of water masses will impact more on women who are the once engaged in agriculture and sanitation activities in household. Labor required for this conservation works on both soil and water shall require deployment of the youth who are more energetic and capable of undertaking some of the labor intensive activities in soil conservation.

2.1.1 (xii) Climate change in Murang'a county and its role in the agro ecology policy

Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer. Global warming refers to the recent and ongoing rise in global average temperature near Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. However, global warming itself represents only one aspect of climate change. Changes in ozone, greenhouse gases and climate change affect agricultural producers greatly because agriculture and fisheries depend on specific climate conditions. Temperature changes can cause habitat ranges and crop planting dates to shift and droughts and floods due to climate change may hinder farming practices.

Murang'a County has exhibited its own share on effects of climate change as a result of climate change impacts over longer periods. This is experienced in reducing productivity in crops, livestock yields and fisheries production as a common feature. The agroecology policy roll out and its implementation should therefore be able to address some of these shortcomings if well planned, purposed and executed.

2.1.2 The global scenario on agroecology successes

2.1.2 (i). Sample agroecology and organic advancement scenarios in the global arena

This policy has explored key case studies of successful agroecology policies implementation around the world and carefully evaluated the lessons that can be replicated within the Murang'a county for effective roll out of successful practices for adoption purposes. Among them are

### 2.1.2 (i**a)-**India's' Sikkim State

In January 2016, Sikkim became India's first "100 per cent organic" state. Today, all farming in Sikkim is carried out without the use of synthetic fertilizers and pesticides, providing access to safer food choices and making agriculture a more environment-friendly activity. From 2003, the state began reducing the subsidy on chemical pesticides and fertilizers by 10 per cent every year and banned them completely in 2014. Their sale and use were made punishable by law with an imprisonment of up to three months or a fine of up to Rs 1 lakh or both. "Initially, there was apprehension among farmers and, in some villages; they refused to take up organic farming. But with continuous training and education, there was a shift in their mindset. Some 6,526 rural compost pits and 3,877 vermicompost pits have been constructed so far as part of the strategy for farmers to access manure. The state's organic farming policy also prioritizes the training of farmers in composting methods and non-pesticide management of pests

### 2.1.2 (ib)-Cuba

The Cuban government launched a national effort to convert the nation's agricultural sector from high input agriculture to low input, self-reliant farming practices on an unprecedented scale following the crumbling of the Soviet in 1989-90.. Because of the drastically reduced availability of chemical inputs, the state hurried to replace them with locally produced, and in most cases biological, substitutes. This has meant bio pesticides (microbial products) and natural enemies to combat insect pests, resistant plant varieties, crop rotations and microbial antagonists to combat plant pathogens, and better rotations, and cover cropping to suppress weeds. Synthetic fertilizers have been replaced by bio fertilizers, earthworms, compost, other organic fertilizers, natural rock phosphate, animal and green manures, and the integration of grazing animals. In place of tractors, for which fuel, tires, and spare parts were largely unavailable, there has been a sweeping return to animal traction

### 2.1.2 (ic)-Ireland

In Ireland approximately 60% (29,999 ha total land under organic) or 17,985 ha are in conversion with 12,014 ha fully organic. Of the 1,083 registered producers 65% are in meat production with 40% in beef and 25% in sheep meat production. Vegetable production accounts for a further 13%, with cereals, milk, poultry and fruit making up the remainder. The number of registered organic producers in Ireland grew rapidly during the 1990's albeit from a very low base. In 1993 there were 238 organic producers farming 5,800 ha and by 2001 there were 1,083 producers farming approximately 30,000 ha. Total land under organic production in 2001 accounted for 0.7% of utilized agricultural area, which is only one third of the EU average. Approximately 60% or 17,985 ha are in conversion with 12,014 ha fully organic. Of the 1,083 registered producers 65% are in meat production, 40% in beef and 25% in sheep meat production. Vegetable production accounts for a further 13% with cereals, milk, poultry and fruit

making up the remainder. The increased grant payment under the government Rural Environmental Protection Scheme has encouraged many new entrants into organic production. The market for organic food in Ireland is currently very small with a value of about €25 m. This represents only 0.4% of the total Irish food market compared to the EU average of 2%. However, there has been steady growth and it is expected to reach €86 m by 2006. Fruit, vegetables and meat account for most sales with dairy products accounting for 10% of all organic sales.

### 2.1.2 (id)-Thailand

In 2012, the National Organic Agriculture Committee of Thailand was established. It was responsible for setting up policies and strategies for Thailand's organic agriculture and to integrate all related plans and measures. The main actors in that committee were the Ministry of Agriculture and Cooperatives, the Ministry of Commerce, and the Ministry of Science and Technology. The National Organic Agriculture Committee was to implement the new strategies within three years for developing Thailand's organic agriculture industry from 2014 to 2016 to become a focal point Country in the production trade as well as consumption of organic agricultural products (The Government Public Relations Department, 2014).

There are four strategies in implementing the development of Thailand's organic agriculture were

to focus on knowledge and innovation management and the creation of a database for organic agriculture;

to develop the production of organic agriculture and to have a strong link network;

to access strong markets and upgrade the standards of Thailand's organic agricultural products; and

to develop the sector of organic agriculture by cooperating with all the actors concerning Thailand's organic agriculture (The Government Public Relations Department, 2014)

The major organic agricultural export products are rice, black tiger prawn, beef, milk, and fish. The market size is still small although there is a high demand for organic products in the international market. The major export countries for organic products include the United States and the European Union, followed by Japan and Australia. At the national level, however, the strategies used in organic agriculture are not yet considered successful (The Government Public Relations Department, 2014).

### 2.1.3 Organic agriculture categorization

Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking

into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system." (FAO/WHO Codex Alimentarius Commission, 1999)

Three different driving forces can be identified for organic agriculture:

2.1.3(**a)** ***Consumer or market-driven organic agriculture*****.**

Products are clearly identified through certification and labelling. Consumers take a conscious decision on how their food is produced, processed, handled and marketed. The consumer therefore has a strong influence over organic production.

2.1.3(**b)** ***Service-driven organic agriculture.***

In countries such as in the European Union (EU), subsidies for organic agriculture are available to generate environmental goods and services, such as reducing groundwater pollution or creating a more biologically diverse landscape.

2.1.3(**c)** ***Farmer-driven organic agriculture.***

Some farmers believe that conventional agriculture is unsustainable and have developed alternative modes of production to improve their family health through production of safe foods, farm economies and/or self-reliance.

Why organic among other systems in the attempt at introducing agro ecology?

> Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions rather than the use of inputs with adverse effects. It combines, tradition, innovation and science to benefit the shared environment and promote fair relationship and a good quality of life for all involved. (Ecological organic agriculture Directorate 2016)

Organic food is good for healthy living, our environment and for the future generations.

It is safe, does not contain poisonous chemical residuals that result from spraying of farm produce with toxic synthetic pesticides and application of chemical fertilizers in conventional farms.

Organic food is healthy. It contains more vitamins, minerals, enzymes and other nutrients which are not found in conventional food. This improves the health of both animals and human beings. Organic therefore means healthy community.

Organic food is tastier. Fruits and vegetables that are grown organically contain a lot of juice and natural flavors and are more nutritious. Organic foods undergo a verification system that

guarantees the intrinsic quality of the products. When farmers comply with organic standards the quality of products is guaranteed.

Organic food excludes genetically engineered and genetically modified foods which have been found to be toxic to human beings,

2.1.5 Organic farming as proposed in Murang'a County agro ecology policy

Organic farming in Kenya is a form of agriculture that relies on techniques such as crop rotation, green manure, compost and biological pest control. Organic farming uses fertilizers and pesticides but excludes or strictly limits the use of manufactured (synthetic) fertilizers, pesticides (which include herbicides, insecticides and fungicides), plant growth regulators such as hormones, livestock antibiotics, food additives, genetically modified organisms, human sewage sludge, and non-material. Murang'a county intends to introduce organic agriculture as among other practices in the broader understanding of the agroecology science practice that embraces all the principals of agroecology to deliver acceptable organic standards. World over while doing so sustainably. The scope shall borrow from best practices worldwide while evaluating the shortcomings of the current practices. Other examples of regenerative agriculture other than organic that the county will embrace gradually in the rollout of the agroecology policy are No and minimum tillage, permaculture, composting, ecological aquaculture, silvo pasture and crop rotation among others.

**Certified products;** Products which have been produced, stored, processed, handled and marketed in accordance with precise technical specifications (Standards) and certified as organic by accredited certification bodies. Once certified organic products are issued with a certification label. The label indicates that a product has been certified against specific organic standards and carries the name of the certifying body and the standard with which it complies. Certifying bodies evaluate operations according to different organic standards and can be formally recognized by more than one authoritative body. The label of a given certifying body therefore informs the consumer on the type of standards complied with during production and processing as well as on the type of recognition granted to the certification body.

**Levels of organic standards.**

2.1.6(i) International voluntary standards**;**

at the international level the international voluntary standards by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) Codex Alimentarius Commission (the intergovernmental body that sets standards for all foods- a collection of international food standards) has produced international guidelines for production, processing, labelling and marketing of organically produced foods to guide producers and to protect consumers against deception and fraud.

**(ii) National mandatory standards;** nationally there are mandatory standards. The Codex

Alimentarius and the international federation of organic agriculture movement (IFOAM) guidelines are the minimum standards for organic agriculture, intended to guide governments and private certification bodies in standards setting. Government can use these to develop national organic agriculture programs which are often more detailed as they respond to specific country needs. Most national standards (eg the EU countries, Japan, Argentina, India, Tunisia, USA) are specified in regulations which are legally binding.

2.1.6(iii) local voluntary standards

In some countries like Germany there exists local voluntary standards where individual certification bodies may produce their own standards, which can be more stringent than the regulations in force, usually in response to specific consumer demands. Although these are not legally enforceable, private certifiers may be more restrictive than is required by law.

There are a number of registered farms in Kenya that produces and supplies certified organic foods. Twenty-five groups were already registered in Murang'a by 2017 as certified organic with at least five groups out of the twenty-five registered being listed in the eco organic agriculture directorate for 2016. Accreditation is a procedure by which an authoritative body evaluates and gives formal recognition that a certification program is in accordance with the standards of the authoritative body.

2.1.7 Key institutions engaged in coordination, promotion and/or certification processes

**The Kenya Organic Agriculture Network** (KOAN) is the national Co coordinating body for organic agriculture activities in Kenya. KOAN emerged from a consultative process where organic practitioners agreed to come together to achieve the synergy required to develop organic sub sector. This policy framework recognizes the role played by KOAN in mobilization of stakeholders in partnership with the National Ministry of Agriculture in Kenya towards coming up with a national organic agriculture policy for Kenya.

**The Kenya institute of organic farming** (KIOF) is a nongovernmental organization operating throughout Kenya and the Eastern Africa region. It is not operated for profit or other commercial purposes, but exists solely for the benefit of the public at large by promoting rural development and education in organic agriculture and related marketing services. It was officially established in 1986 to train and promote organic farming methods, mainly among smallholder Kenyan farmers. Initial programs carried out in the former central and Eastern provinces in Kenya proved successful as they encouraged low cost farming. As a result organic farming became exceedingly popular, leading to rising demand for general information and training on organic agriculture from all over east Africa. Currently KIOF promotes practical training to farmers groups, KSCE level students and other rural youth.

**En-Cert** is a Kenyan certification body which offers organic certification services to individual producers as well as producer groups. Organic certification is a procedure by which an independent party gives a written assurance that a production process is in conformity with organic standards. It is a marketing instrument that enables access to a special market. It confers a positive statement that a producer follows the rules of organic production. In countries with regulated organic markets, certification is mandatory.

**a-Cert** has been accredited as a certification body of organic agriculture products with an official scope of

Unprocessed agricultural crop products, livestock and unprocessed livestock products

Processed agricultural, plants and livestock products for human consumption and consisting mainly of one or more ingredients of plant or animal origin

Animal feed, compound feed and feed raw materials

Farm inputs and organic fertilizers

a- Cert certifies for various markets as European Union, USDA NOP standards, and JAS standard for Japan organic market certification. These includes

**v). Nesvax** is also a certifying body within Kenya in organic products

**vi). Control union** (CU) certifications is accredited by national accreditation bodies including the Dutch RvA or the Sri lanka SLAB. CU is operational as an accreditation body in Kenya for a number of standards including several organic standards.

**vii). Other sector players include**

Lead organizations/agencies as Bio vision Africa, participatory ecological land use management Kenya (PELUM), ICE and others

And the endless list of bio/organic restaurants, Food stores, Input suppliers, Processors/traders/Exporters, Producer /farms and groups, NGOs/CBOs, Organic technical services providers, Organic markets, Consumer bodies like organic consumer alliance etc

**An overview of the sector challenges and impediments**

*2.2 (i) Crop production sector*

Challenges under crops subsector includes the effect of climate change. Such may include inadequate and unreliable rainfall for crop production., low soil fertility for crop production,

Others are unreliable marketing systems, poor road network, high input prices, high incidences of pests and diseases, inadequate extension services, inadequate pre and postharvest management and value addition investments. Others are aged farmers, farmers averse to farming credit. land subdivision into non -economical units and conversion into real estates. Poor access to quality planting materials and poor coordination of value chain actors and information dissemination are also included. Specific challenges expected in the crops sector in the practice of agroecology include

Low awareness among the citizenly in agroecology;

Poor access and supply/demand for organically produced foods;

Low self-awareness on the benefits and role of safe foods in human health;

High costs of production and especially foods produced under agroecology;

Low knowledge on agro ecology as a science;

Low knowledge among extension workers in agro ecology;

Poor service provision by extensions service providers in area of agro ecology;

High poverty levels among farmers and

Low food security status among rural folks

*2.2 (ii) Livestock production sector*

Challenges under livestock includes the high cost of farm inputs/services, inadequate and poor quality fodder, low quality /sub-standard inputs, inadequate knowledge and skills among farmers, weak and inadequately organized marketing systems, low and inadequately organized marketing systems and variability of weather patterns, Others include small land sizes, inadequate extension service, poor quality breeds in livestock, high cost of credit, low awareness of livestock insurance, inconsistent market and fluctuating livestock products prices and limited value addition and poor linkages amongst actors in the value chain. Pollution resulting from dung manure arising from expansion of the sub sector represents one big challenge that this agro ecology policy will need to address in an effort to reduce the global warming impact from the industry.

*2.2 (iii) Veterinary services sector*

Within the veterinary subsector there are inadequate capacity to carry out animal welfare and food safety services, lack of regular facilitation to continuous professional development, few training opportunities for existing staff, low animal productivity due to high cost of inputs especially feeds, poor genetics, inadequate uptake of modern technology and animal disease burden, inadequate extension services. And minimal processing and little value addition of animals and animal products. Others are inadequate regulatory framework for veterinary medicines leading to misuse thus posing risk to human., trans boundary animal disease outbreaks e.g. foot and mouth disease and lumpy Skin disease, emerging livestock diseases, e.g. African swine fever in pigs and governance and institutional structures related to chain of command arising from devolution of veterinary services. There are shortage of human, physical and financial resources for successful execution of veterinary services, emerging and existing zoonotic diseases of anthrax, rabies and rift valley fever, limited land size and poor land terrain, average herd size that produce marginal returns on investment, lack of record keeping data and information management at farm and county level and poor traceability of animal and animal products. The outbreaks of animal diseases related to climate variations in one challenge that he veterinary curative and control sector will need to address under the policy.

**2.2 (iv) Fisheries production sector**

There is lack of legislation at County level to regulate fisheries, low number of financial institutions currently offering credit facilities to support fisheries subsector, effect of climate change effects caused by drought, high cost of inputs/equipment, lack of organized marketing system, lack of financial support to the fisheries subsector and lack of value addition investments.

The impediments in the fisheries sub sector are

Lack of an active policy framework on agroecology at the national level

Poor food policy implementation and commitment at both National and County level

Guard against vested and sectarian interests in the food and chemical industry

High competition on the shelves by other conventional food products

The effects created by rising surface water temperatures arising from global warming is set to change the way aquaculture and capture fisheries are to be practiced moving forward if

adaptation strategies are not adopted. This is so given the reductions witnessed on volumes of fish productivity under natural climatic conditions.

*2.3 Problem analysis*

An in-depth analysis from a desk study perspective has revealed that among the public concerns captured from previous appraisals included inadequate research and development on agro ecology, weak research, farmer, extension linkages that seems to hamper technology mobility and adoption products from agroecology, food safety and their benefits, inadequate support to out growers in capacity and organization with a view to strengthening their knowledge and skills in meeting market demands. The development of agro ecology in Murang'a County therefore remains a mileage and where practiced it still results to uncertified production which cannot appeal to consumers in destination market. The producers therefore have to struggle to justify the value of their products as prime as opposed to convectional products.

The big question therefore has been and still is on how to ring-fence the little gains and accelerate the adoption for the policy objectives to be meet for the common good.

## CHAPTER THREE: PRINCIPLES AND POLICY OBJECTIVES

*3.1 Goal of the agro ecology policy*

To sustainably produce, increase farmers' incomes and enable access to safe and healthy foods in Murang'a County

*3.2 Vision*

To be a leading County in supplying safe and healthy quality food products from agro ecology production systems and serving all nitch local, national and export markets segments in Kenya

*3.3 Mission*

To increase production of both quality and volumes of organically produced foods, beverages and animal products by encouraging use of safe chemicals and fertilizers including organic products, integrated pest managements practices and sustainable farming and tillage systems that also promotes value addition and inclusive, responsive and participatory human health awareness and governance systems within existing farming structures for a more sustainable and equitable environment within Murang'a County.

*3.4 Objectives of the agro ecology policy*

**3**.4.1 Broad objectives

To support productivity and sustainability of agro ecology production systems in Murang'a County

3.4.2 Specific objectives

To support sustainable and participatory approaches to introduction of agro ecology production systems and practices in the County.

To support increased awareness on health benefits to life and environment, prioritize marketing strategies, data/information and consumption for agro ecology products in Murang'a County

To support increased productivity and incomes through collaboration with research, education institutions and technology integration of agro ecology with conventional agriculture;

To promote adoption of agro ecological approaches for sustainable soil systems and agricultural practices in the county

To implement standards of production in the sub sector that is in line with both national and internationally set market standards

*3.5 Guiding principles*

*Principle on right to development:* The right to food and right to development under the Bill of rights chapter six of the Kenya Constitution 2010 will be exercised while taking into consideration the harnessing of not only the specific County's economic and social needs but also enhancement of conservation of fragile zones within the County.

*Sustainability principle:* The constitution of Kenya Article 69 obligates the Government to ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources. Ensure the equitable sharing of benefits, exploit the environment and the natural resources for the benefit of the people of Kenya.

*Principle of inter and intra-generational equity:* The constitution of Kenya 2010 Article 42 guarantees that every person has the right to a clean and healthy environment which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and to have obligations relating to the environment fulfilled under Article 70**.** Decision regarding the use of natural resources will be based on long term views where present generations in the County make choices that benefit them without compromising the ability of future generations to meet their own needs.

*Public participation and inclusivity principle:* Article 69 of the Constitution of Kenya, 2010 Sub section (d) encourages public participation in the management, protection and conservation of the environment. The Kenyan parliament has also enacted the public participation law. Therefore, a coordinated and participatory approach to organic agriculture and agroecology intervention will be enhanced to ensure that the County Government agencies, private sector, civil society and communities are involved in the planning, implementation and decision making processes.

*Principle of good governance:* The principles of rule of law, effective institutions, transparency and acceptability, respect for human rights and the meaningful participation of civil population will be integrated in the target resources management initiatives.

*Coordination principle:* To promote sustainable management and conservation, the County government shall ensure effective coordination of different sectors, agencies and actors as well as implementation of different policies and laws that have a bearing on the targeted resources.

*Ecosystem Based Management Approach:* An integrated ecosystem approach to conserving environmental resources will be adopted and enhanced to ensure that all ecosystems are managed in an integrated manner while also providing a range of benefits to the people.

*Devolution principle:* For sustainability of production resources the County Government shall cooperate and consult with National Governments in the management and conservation of all natural resources in accordance with the Constitution

*Wise use principle:* Wise use of natural production resources is the maintenance of the ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development.

# CHAPTER FOUR: LEGAL, POLICY OPTIONS REVIEW AND PROPOSED POLICIES AND STRATEGIES

## *4.1 POLICY, LEGAL AND INSTITUTIONAL REVIEW*

### 4.1.1 Sustainable development goals (SDGs);

The Agriculture sector key mandate is primarily covered by SDG goal number 2 which is to end hunger, achieve food security and improve nutrition and promote sustainable agriculture. Specifically, the Murang'a county agro ecology sub sector policy seeks to ensure access to safe food by all people and nutritious and sufficient food for all. The policy will advocate for initiatives to ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems and which will strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

The united nations SDG target 2.4 and 2.5 estimates that by 2020, the world should maintain the genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species. This includes materials developed through soundly managed and diversified seed and plant banks at the national, regional and international levels. Those that promote access to fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed and also that by 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, help maintain ecosystems, strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

### CAADP and Malabo declaration;

The resolutions of the African union joint conference of ministers of agriculture, rural development, fisheries and aquaculture, held in Addis Ababa, Ethiopia from 1$^{st}$ to 2$^{nd,}$ May 2014, endorsed by the executive council, and in particular their recommendations calling for African union assembly to consider adopting commitments along specific and concrete priorities. Some of the declaration that the county seeks to pursue in this policy include

The pursuit of agriculture-led growth as a main strategy to achieve targets on food and nutrition security and shared prosperity; The use of partnerships and alliances including farmers, agribusiness, and civil society; Commitment to uphold the commitment to allocate at least 10% of public expenditure to agriculture, and to ensure its efficiency and effectiveness; Establish and/or strengthen inclusive public-private partnerships for at least five priority agricultural

commodity value chains with strong linkage to smallholder agriculture; Create job opportunities for at least 30% of the youth in agricultural value chains; Support and facilitate preferential entry and participation for women and youth in gainful and attractive agri-business opportunities; To ensure that, by the year 2025, at least 30% of our farm, pastoral, and fisher households are resilient to climate and weather related risks; Creating and enhancing policies and institutional conditions and support systems to strengthen and streamline the coordination mechanism that will facilitate the promotion of African common position on agriculture-related international trade negotiations and partnership agreements; Conducting a biennial Agricultural Review Process that involves tracking, monitoring and reporting on progress. The County agro ecology policy objectives will be geared towards achieving the CAADP commitments as stated above.

4.1.3 Constitution of Kenya 2010.

The Constitution stipulates the distribution of functions between the national and the county governments whereby among the functions and powers of the county is; agriculture, including - crop and animal husbandry, livestock sale yards, county abattoirs, plant and animal disease control; and fisheries. In section 43 (c) under the bill of rights, the Constitution stipulates that "every person has the right to be free from hunger and to have adequate food of acceptable quality".

4.1.4 Vision 2030

This is the national policy economic development blueprint that entrenches Kenya Vision 2030 as the long term strategy for Kenya. The Kenya Vision 2030 aims to transform Kenya into a modern, globally competitive, middle income country providing a high quality of life to all its citizens. In the Vision 2030, agriculture is envisioned as a key sector that will contribute overall development agenda under the economic pillar. Kenya seeks to raise incomes in agriculture, livestock and fisheries through processing and thereby adding value to her products before they reach the market. Kenya will increase incomes in agriculture, livestock and fisheries. Specifically, the organic sector policy is anchored on the vision that seeks to: a) Increase incomes in agriculture, livestock and fisheries. b) Processing/adding value, modernizing; institutions to promote household and private sector agricultural growth and productivity. c) Land use policies and strategic irrigation in arid and semi-arid lands for crops and livestock. d) Market access to small holders through better marketing.

4.1.5 National agriculture policies review;

After independence the key policy that guided the sector was Sessional Paper No. 10 of 1965 on African socialism and its application to planning in Kenya and other policies that have been used over the years including the district focus for rural development (DFRD), the structural adjustment programs (SAPs), Intergraded agricultural development programme (IADP) and the Poverty reduction strategy paper(PRSP). The Swynnerton plan of 1954 discouraged traditional land tenure and introduced title deeds that created security of tenure and ability to obtain credit.

The sessional paper No. 10 of 1965 envisaged concentration of agricultural investment in high rainfall areas. Agricultural post-independence policy focused on three main areas: land transfer programs, smallholder development and promotion of cash crops by both smallholders and large-scale farmers (Jabara 1985,p. 612). The structural adjustment programmes (SAPs) of 1980s led to restructuring of agricultural institutions, liberalization of product prices and privatization of services.

The integrated agricultural development programmes were meant for the development of smallholder agriculture and aimed at establishing wholesome farming systems through provision of agricultural inputs and strengthening of extension services and institutions. In 2000, the poverty reduction strategy paper (PRSP) was developed to address the twin objectives of driving economic growth and reducing poverty. In 2003, the PRSP gave rise to the economic recovery strategy (ERS) for wealth and employment creation that focused on growth and macroeconomic stability; improved governance; social equity, poverty reduction and rehabilitation of infrastructure. Later, in 2004, the strategy for revitalizing agriculture (SRA) was launched. It represented the national policy for steering the revitalization and development of the agricultural sector over the period 2004 to 2014. Then, in 2010 the SRA – originally intended to run from 2004 to 2014 – was superseded by the agricultural sector development strategy (ASDS) 2010-2020. Subsequently the Agriculture Sector Transformation and Growth strategy (ASTGS-2019-2029) has been formulated to drive Kenya over the next ten years and is anchored in three outcomes of

Increasing small scale farmers' incomes,

Increasing agricultural outputs and value addition

Boosting household food resilience.

The ASTGS has a greening strategy whose objectives are to provide technical support and share knowledge on green indicators applicable for greening the agriculture sector. Efforts shall be made to review and green the ASTGS examples being providing funds, addressing issues of environment sustainability and climate change, need to undertake strategic environmental assessment before commencement of mega irrigation and the hubs proposed should aim at providing green jobs for the youth and women.

### 4.1.6 The Climate Change Act No 11 of 2016

This is an ACT of Parliament to provide for a regulatory framework for enhanced response to climate change; to provide for mechanism and measures to achieve low carbon climate development, and for connected purposes

This Act shall be applied in all sectors of the economy by the national and county governments to among others mainstream the principle of sustainable development into the planning for and

decision making on climate change response; integrate climate change into the exercise of power and functions of all levels of governance, and to enhance cooperative climate change governance between the national government and county governments and promote low carbon technologies, improve efficiency and reduce emissions intensity by facilitating approaches and uptake of technologies that support low carbon, and climate resilient development

This agroecology policy will be mainstreamed to afford communities the benefits outlined in the Climate Change Act number 11 of 2016. It shall aim at promoting sustainable development and planning, integrate climate change acceptable practices and promote low carbon pathways whenever applicable

### 4.1.7 Environmental Management and Coordination Act (EMCA) 1999 (Rev 2015)

The Environmental Management and Co Ordination Act (EMCA) 1999 (revised 2015) is the framework for environmental management and conservation in Kenya. Among other things, EMCA provides a legal framework for the establishment of various institutions that are pertinent to environmental governance in Kenya. The Act also acknowledges that every Kenyan has the right of a clean and safe environment and they have a duty to safeguard it. It is explicit on the conservation of water resources in Kenya in section 42 and 43 and that development in these areas is only possible after an Environmental Impact Assessment, In line with EMCA 1999(Rev 2015) therefore, the Agro ecology policy for Murang'a County shall aim at affording the residents of this Murang'a County that right to a clean and safe environment through conservation activities.

4.1.8 Water Act, 2016

The purpose of the Water Act 2016 is to provide for the regulation, management and development of water resources and water and sewerage services in line with the Constitution of Kenya 2010. The agro ecology policy shall aim to promote the object of the water Act 2016 though ecosystem conservation approach that shall enable development of non-polluted water discharge to water bodies that may be accessed for animal and human usage.

4.1.9 Food security and nutrition policy, 2017-2022

It is the policy of the Government of Kenya that all Kenyans, throughout their life cycle enjoy at all times safe food in sufficient quantity and quality to satisfy their nutritional needs for optimal health. The broad objectives of the Food Security and Nutrition Policy are To achieve good nutrition for optimal health of all Kenyans, To increase the quantity and quality of food available, accessible and affordable to all Kenyans at all times, To protect vulnerable populations using innovative and cost effective safety nets and emergency relief programs linked to long term development and To develop implementation arrangements that would achieve the objectives of the policy.

### 4.1.10 The draft National organic agriculture policy, 2010

Despite still being under consideration, the aspirations of the measures contained in the draft national organic agriculture policy 2010, have been put into consideration while drafting this agroecology policy for Murang'a County. The door for monitoring and evaluation set up therein in the policy shall therefore ensure continued compliance with any changes introduced at the National level as envisaged in the Kenya Constitution 2010.

### 4.1.11 Horticulture policy, 2012

Horticultural Policy 2012 emphasizes development of the domestic market with regard to production, food safety and post-harvest handling. The horticulture industry in Kenya plays an important role in food security, employment creation, and poverty alleviation. Sustainable farming approaches have emerged as a priority for world leaders towards achieving sustainable development (FAO, 2011). Agricultural sustainability centers on the need to develop agricultural technologies and practices that are accessible to and effective for farmers, and that lead to both improvements in food productivity and positive side effects on environmental goods and services (National Research Council of the National Academies, USA, 2010). Sustainability is emphasized to be a necessary basis for efforts aimed at building lasting prosperity and the adoption of sustainable farming practices is one of the targets of the new global development agenda for the period beyond 2015 which is currently being shaped (FAO, IFAD and WFP, 2013

### 4.1.12 The crops Act, (No 16) of 2013

This Act seeks to accelerate the growth and development of agriculture, enhance productivity and incomes of farmers and the rural population, improve investment climate and efficiency of agribusiness and develop agricultural crops as export crops. The Act introduces, among other things promotion of competitiveness in the crops subsector and development of diversified crop products and market outlets; and also establishes a Commodities Fund and provides for incentives to growers and the registration of growers' associations. The agroecology policy shall therefore aim at conforming to the Crops Act in promotion of competitiveness in the crops subsector and development of diversified crop products and market outlet

### 4.1.13 The Consumer Protection Act No 46, 2012

An Act of parliament to provide for the protection of the consumers and prevent unfair trade practices. This is an Act to protect consumer transactions and to provide for matters connected with and incident thereto. It protects the rights of consumers, addresses their interests and needs and creates the steps to discourage unfair trading practices. The rights quoted in this Act on consumer needs is among issues addressed by the agro ecology policy as it tries to set practices to encourage safe food production.

4.1.14 The Kenya standards (KS)-1758

KS 1758 is Government standard, under Kenya Bureau of Standards (KEBS). It covers issues of food safety, environmental sustainability, and social accountability. All industry value chain players are expected to follow laid down procedures to ensure that horticultural crops are produced and handled in a responsible way at every point. Compliance is key and is about what we must do. KS1758 harmonizes with existing International Codes on good agricultural practices and guidelines and enhances farm assurance systems, compliance to the relevant Laws of Kenya and strict adherence to safe use of chemicals. In furthering the spirit of KS 1758 the agro ecology policy for Murang'a County shall aim at ensuring production f food and related products in ways that are safe to life.

4.1.15 The public health Act (Food handling) 1986 (Rev 2012)

This Act concerns the protection of public health in Kenya and lays down rules relative to, among other things, food hygiene and protection of foodstuffs, the keeping of animals, protection of public water supplies, the prevention and destruction of mosquitos and the abatement of nuisances including nuisances arising from sewerage.

Other relevant legislations related to food safety are the food safety (the National Biosafety Authority) and the Food, drugs and chemical substance Act (Cap 254) on provisions of food safety measures. It is imperative that the Agroecology policy is keen on food safety within production systems to deliver safer food for a healthy living

*4.2 Institutional review*

4.2.1 Organizational structure review

Murang'a County government has a department in charge of crops production, livestock, fisheries, animal health and agricultural policy matters. It addressing food safety the department has created a unit equivalent of a directorate o deal with matters promotion of organic agriculture, its development and generally agroecology. Despite the development of this agroecology policy, at least three officers have been deployed to run this unit. To strengthen this structure therefore the policy proposes the development of an *agroecology regulatory board* to help steer and promote food safety production and marketing strategies. The board shall be constituted through appointments from the sector players and shall be required to carry out the role of policy advisory. On gazettement of this policy the department shall come up with an implementation framework, lead the generation of the necessary legislation and develop a

strategic plan to guide the board and the directorate and enable forward planning and budgetary provisions. In line with the County Governments structure the policy will have to be gazetted after adequate public participation and stakeholder's consultations. On the contrary proposals on polices spearheaded from external sources and not originating from and not having been taken up by the government may be introduced through the County assembly as bills to generate a policy paper

**County level agriculture policies and sector plans**

Murang'a County has produced two drafts plans being the Murang'a county agriculture sector policy and a Murang'a county agriculture sector plan. Both of these documents are yet to be enacted and validated. The vision of the department of agriculture in Murang'a County is the provision of a wealthy and food secure County and the mission being the development and exploitation of agricultural resources; provide agricultural extension services and adoption of appropriate technologies sustainably. Murang'a County Government recognizes the need to provide an agroecology policy direction for the County. In doing so, there is need to recognize institutional and capacity limitations in the agricultural sector and allow for functional linkages between the Ministry and respective institutions whose domains have potential impacts on agricultural value chains. The County government policies takes cognizance of the need for inter county, cross-sectoral and cross-cutting issues such as disaster preparedness, climate change; youth, gender and People Living with Disabilities and People Living with HIV/AIDS in Agriculture. In addition, it considers private sector participation and management of shared natural resources which significantly impacts on agricultural development. The policy emphasizes the need for Murang'a County Government to commit adequate resources to enable sustainable agricultural production and productivity for food security and increased incomes among the people of Murang'a which is in conformity with this agroecology policy.

*POLICY OPTIONS WITHIN THE MURANG'A COUNTY GOVERNMENT*

***4.3.1** Objective One**:***

To support sustainable and participatory approaches to introduction of management practices for agroecology;

**4.3.1.1** Policy options I**:**

*Generation of a Murang'a County agro ecology policy and an agro ecology strategic plan that also considers mainstreaming gender and youth energy.*

Generation of the technical draft for Murang'a County agro ecology policy has been in progress. The policy shall be ready for distribution and engagement of stakeholders. The strategic plan on the other hand will be done after approval of the policy. *Murang'a County Government shall in collaboration with other stakeholders support the process by provision of financial and other resources required to undertake the stakeholder consultation exercise and engagement of the relevant departments*. It shall process the document with the necessary institutions at the County Executive Committee level for the approval process and equally engage the County Assembly of Murang'a for the legislation of any necessary legal provisions and engagement in public participation. The County Government also commits itself to the implementation and enforcement of the policy once approved.

Policy option II**:**

*Accelerated implementation framework on agro ecology for Murang'a*

The framework is yet to be put in place as the process will be dictated by the approval of the policy process. The County Government of Murang'a endeavors to mobilize the resources required for the initiation and the completion of the implementation framework at the appropriate time after approval of the policy.

**4.3.1.3.** Policy option III**:**

*Create a legal framework to regulate the agro ecology production approach in Murang'a County in line with the existing management structure and framework to deliver more value to the farmers*

There is currently no legal framework to guide policy implementation as this is more of a new approach to food security and the policy process is also currently being undertaken. The County Government of Murang'a commits itself to the process of development of a policy and an

accompanying legal framework to regulate the agro ecology activities for the benefit of the stakeholder welfare.

*4.3.2 Objective two**:***

To support increased awareness on health benefits to life and environment, prioritize marketing strategies, data/information and consumption for agro ecology products in Murang'a County

Policy option I**:**

*Commercialization of agro ecology production sub sector through support by the County Special program funds voted for promotion of agro ecology practices*

No funds have been voted in the previous financial years towards the implementation of the policy as it is still to be finalized and approved. However, the County Government of Murang'a will endeavor to allocate adequate resources on the program based on priority and availability. The program will be in cooperated into the MTEF budgeting process.

**4.3.2.2** Policy option II**:**

*Prioritization of sector and linkages with stakeholders in agro ecology with possible quick wins*

The process of mapping of stakeholders is in the process with the setting up of a fully-fledged department addressing the concerns of farmers practicing agro ecology. The County Government of Murang'a recognizes the importance of a healthy working population and the need of management of lifestyle disease through food safety adherence within food chains. The County Government shall mobilize the stakeholder and create a forum for their voice to be heard. The County Government will work with all stakeholders in the sector including the National Stakeholders

**4.3.2.3** Policy option III**:**

*Pursue a greening agriculture approach through linking agriculture and human health with food safety awareness and appointment of agro ecology system Champions*

The linkages between the County department of Agriculture and that of health are currently not as strong due to lack of a working framework. There are also no champion's currently in this field. The County department of agriculture responsible for promotion of agro ecology will work strategically with the sister department in public health and nutrition departments to ensure maximum impact on preventive measure of lifestyle disease that can be reduced or managed through improved nutrition and safe livelihoods. To achieve the above the department will lobby to have champions appointed in each sector.

Policy option IV**:**

*Establishment of a County department dealing with agro ecology*

*promotion/ and /or an agro ecology development board to mainstreaming agro ecology in government*

Murang'a County Government has already put in place a directorate dealing with agro ecology mainstreaming, policy and strategic issues in the agriculture sector with an added mandate of regulation and cottage promotion and climate smart agriculture. The department is headed by a Director and has two staff already deployed. The County Government shall continue to support this initiative and allocate funds to the unit in order to deliver on the mandate in the agro ecology sub sector. The idea of the agro ecology development board shall equally be explored as a policy option;

Policy option V**:**

*Ensuring development, packaging and dissemination of appropriate technical information and integration of information communication technology (ICT)*

Management of information has not only been a challenge to conventional agriculture sector in Murang'a County but also at the National level for years. Agro ecology and related organic production has previously received no focus in this information management and generation field. However, the ongoing inventory of agro ecology farmers under the new directorate should enable the farmers now receive some attention. The County Government shall endeavor to generate information for the educations of farmers practicing agroecology and for use in extension services provision. The necessary financial support to source, generate and document information in agro ecology will be supported for posterity of the sector while being integrated with ICT.

***4.3.3.*** *Objective Three**:***

To support increased productivity and incomes through research education and technology integration of agro ecology with conventional agriculture

**4.3.3.1** Policy option I**:**

*Strengthening research farmer extension linkages*

The current linkages between the farmers with research and extension services remain weak. Research remains a national mandate under Kenya Agriculture and Livestock Research Organization (KARLO) within the Ministry of Agriculture Livestock and Fisheries. The engagement of KARLO with County Government also remains weak currently. These linkages are even weaker in regard to *agroecology* promotion due to lack of a national policy and legal framework to regulate the sector. Murang'a County Government shall endeavor to create clear

working modalities with the regional and National research institutions and other public or private research and centers of innovations.

Policy option II**:**

*Institute measures of making farm inputs for use in agro ecology production affordable for increased productivity*

The access and availability of farm inputs for use in advancing agro ecology remains a millage to those wishing to pursue this line of farming. There are few if any outlets dealing with supply of agro ecology farm inputs within Murang'a County. The demand for these products is also equally low. However, Murang'a County Government has had a policy of supporting its farmers with affordable farm inputs in an effort to support food security initiative and promotion of cash crop agriculture. However, this policy has yet to benefit farmers in agro ecology especially since there has no policy focus towards such farm inputs. The County Government commits itself moving forward to include agro ecology in the farm input subsidy program while endeavoring to create a agro ecology development board through a legislation and in within this policy framework to spearhead the vision

***4.3.4*** *Objective Four;*

To encourage adoption of holistic, complementary, and sustainable soil and farm production systems within the sub sector that embraces agroecology conservation;

Policy option I**:**

*Embrace a multiplatform that embraces all stakeholders and players and Government to take the lead in regulation and coordination of sub sector*

There is currently no platform where stakeholders can engage at the County level however at the national level the Kenya Organic Agriculture Network (KOAN) has worked hard in collaboration with the state ministry of agriculture, livestock and fisheries development to have the envisaged platform created. This would be a good approach to embrace. The role of the County Government therefore would be to coordinate and regulate the sector in accordance with a set legal and policy framework.

Policy option II:

*Embrace soil and water conservation with a special consideration to ecosystem conservation within agroecosystem, agroforestry practices review, wastelands, wetlands and riparian areas conservation and other existent ecosystems*

Deterioration of soil and water conservation efforts is one reason why the threat to food security is becoming more real. Impacts from climate change would only call for more concerted efforts towards soil and water conservation effort by both levels county Government;

Policy option III:

*Minimum tillage consideration, integrated pest management for vulnerable areas and an agri business approach to agriculture*

Minimum tillage allows soils to rest without much disturbance and would help much in areas with a fragile ecosystem. Integrated pest management is a technology that would assist farmers reduce their costs of production and use of farm inputs greatly. Its equally important to embrace agriculture as business in agro ecology practice

**4.3.4.4.** Policy option IV:

*Composting pits encouraged within households to control quality of manure*

The supply of natural quality manure would require that it be produced in the farm household to qualify for reduced contaminations and pollution issues. The best way therefore is encouragement of increasing adoption in composting pits as was captured in the Sikkim state of India review.

***4.3.5** Objective Five**:***

To establish and implement standards of production in the sub sector that is in line with both national and internationally set market standards

Policy option I**:**

*Embrace set production and market standards that are currently operation.*

There are various standards as reviewed in the literature which can be adopted including Kenya's' KS-1758 standards for local production which aims at providing rules for safe and sustainable production in supply of fruits and vegetables in Kenya. It is imperative therefore to

consider the consumer demands while producing. This policy should therefore provide for establishment of specific production standards which are in live with provisions of other national and international market standards.

**4.3.5.2** Policy option II:

*Consider price stabilization including price guarantees' schemes that rewards embracing standards*

Price stabilization and an assurance for returns is a compromised agroecology producers make to supply heath foods to the market. Price guarantees and market organization therefore becomes a mandatory criterion to boost production and adoption of practices.

***PROPOSED AGRO ECOLOGY POLICIES AND STRATEGIES***

*Policy objective one**;***

To support sustainable and participatory approaches to introduction of management practices for agroecology.

### *4.4.1.1 Development of a policy framework to guide agroecology in Murang'a County*

***Status***

There is no written policy developed and in place on agroecology or related organic agriculture for Murang'a County. Currently the national policy status on *organic agriculture* in Kenya is in its developmental stage.

***Murang'a County government policy commitments***

Murang'a County Government is committed to fully support the process of generation of an agro ecology policy;

The County Government shall ensure implementation of the agro ecology policy once gazetted;

It shall commit available resource towards support to development and implementation while ensuring gender and youth aspects are mainstreamed;

Effort shall be applied in lobbying stakeholders and partners for collaboration in resource mobilization towards this end while creating an enabling environment;

The County Government shall endure that the developed County agroecology policy is in line with any existing or proposed policy framework at the national level

***Proposed strategies***

The County Government shall allocate resources in its annual development plan and budget for development and implementation;

Develop memorandum of understanding with stakeholders and partners for additional support on costs and capacity

Consult all sectors of the population including women and youth.

### 4.4.1.2 *Development of a legal framework to guide agroecology in Murang'a County*

***Status***

There is no written law developed and in place on agroecology or organic agriculture for Murang'a County. Currently there is no legal framework on regulation agroecology in Kenya. There may be efforts in amendments of current statutes in Kenya to introduce changes within mandates in registration of bio products by PCPB and control movement of genetic material declared as organic under KEPHIS

***Murang'a County government policy commitments***

The County Government of Murang'a commits itself to the process of

Development a Murang'a County agroecology legal framework in areas where need has been identified for purposes of regulating the sub sector.

The executive arm of the County Government will engage efforts to draft a law on agroecology with an emphasis on setting up an agroecology regulatory board

The County assembly shall be engaged during the policy development process to bring out other areas that needs their intervention for legislation

*It shall commit available resource towards support to development and implementation of the legal framework and follow up with approval by the County assembly*

***Proposed strategies***

*The County Government shall allocate resources in its annual development plan and budget for development and implementation;*

*Mobilize capacity for development of the legal framework where necessary;*

*Engage all stakeholders during public participation processes.*

### 4.4.1.3 *The policy and regulatory enabling environment for growth of agroecology*

***Status:***

The policy and legal environment in Murang'a County is conducive based on the existence of the institutions necessary for enactment of laws and policies. The county assembly is receptive and has a good working relationship with the executive. The County also has an attorney office who does advisory services. The capacity of the technical department in formulation of laws and policies is however considered low.

***Murang'a County government policy commitments***

The County Government shall ensure continued good working relationship and structures for enhancement of delivery of policy and regulatory services

The technical capacity of departments and staff dealing with policy and legal matters shall be enhanced though continuous training

***Proposed strategies***

The County executive shall through the annual development planning and budgeting reserve resources for outsourcing of legal experts for purposes of developing capacity in policy and legal matters for key departments.

It shall build linkages with partners with the capacity to support development and implementation of the policies while collaborating with other partners on the same.

### 4.4.1.4 *Aligning Murang'a County Government policy with existing National policies*

***Status***

There has been some effort by the National state Ministry of Agriculture in collaboration with the organic agriculture stakeholder as represented by the Kenya Organic Agriculture Network (KOAN) to steer the process of coming up with the first ever organic agriculture sector policy framework. This has however taken quite some time to get legislated and the document remains at the draft stage. The department in charge of agriculture policy in Murang'a County has remained focused on the need to have harmony at both levels of Government in terms of policy framework.

***Murang'a County government policy commitments***

The County Government commits to respect the need for consultations and collaboration as provided for within the Kenya Constitution 2010.

*iii. **Proposed strategies***

Although Murang'a County Government has made efforts to draw experiences on efforts by the National Ministry of coming up with a draft organic agriculture policy, it commits to continue engaging all the partners in its own effort of drafting a County based agroecology policy to ensure congruency,

To ensure compliance therefore the monitoring and evaluation structures within this policy shall allow for review after every 5 years to enable for re-alignment.

***4.4.2** Policy objective two*

To support increased awareness on health benefits to life and environment, prioritize marketing strategies, data/information and consumption for agro ecology products in Murang'a County

**4.4.2.1 *Awareness on agro ecology and organic agriculture***

**Status**

The level of awareness among members of the public within Murang'a County on the benefits of engaging in agro ecology and related organic products consumption is very low. This could be attributed to some extent on low capacity by both service providers and producers. Most of extension packages disseminated are on conventional farming practices. This has resulted to high adoption of conventional farming practices.

**Murang'a County government policy commitments**

The County Government of Murang'a shall

Allocate resources in annual budgetary cycles for carrying out the core mandate of capacity development among the agro ecology practitioners.

Facilitate consolidation, development and dissemination of agro ecology packages.

**Proposed strategies**

The county government shall promote agro ecological practices and benefits (eg IPM, Zero Tillage, Ecosystem Conservation practices and any others as they emerge.

Establish centers of excellence in agro ecology (FFS, KATC, Model Farms etc).

*Research, extension and farmer linkages*

**Status**

There is low level of research on agro ecology in both public and private institutions. This research is not well linked to the needs and priorities of Murang'a County. The current structure of extension is limited by skills, mobility and coverage. There are no platforms currently that could be used to address the gap in flow of technology and information to farmers from research through extension.

**Murang'a County government policy commitments**

The County Government will engage and collaborate with research institutions for development of agro ecology research within Murang'a County.

**Proposed strategies**

Murang'a County Government to facilitate research needs assessment on agro ecology in collaboration with research institutions and local universities.

Enhancement of extension infrastructure to effectively address agro ecology.

Enhance research - extension - farmer linkages.

### **4.4.2**.2 *Establishment of either a Murang'a agroecology department or Board and anchor it in law*

**Status**

There exist a County department whose mandate among which is promotion of organic production development. However formalization process to enable it get funded within the CIDP process is yet to be realized. There is a proposal to form an agro ecology development board but this requires a policy and legal framework to be in place. Both the options of creation of a department a board are considered as acceptable.

**Murang'a County government policy commitments**

The County Government shall facilitate establishment of a legal framework to give effect to the formation of an agroecology development board. The agroecology promotion department shall be strengthened to effectively operate as the technical arm of the board.

**Proposed strategies**

The County Government shall initiate a Government bill to regulate agroecology subsector and give way to the formation of a regulatory board.

County Government shall develop a special budgetary provision to enable the board operate a line of funding independent from the department program.

Program generated by the agroecology department shall be mainstreamed in the subsequence CIDP planning cycle.

*Marketing of products from agroecology sub sector*

**Status**

The demand for organically produced items under agro ecology is high but the supply is low. The information gap has been wide resulting to low adoption of agro ecology despite the high marginal price for such products. Marketing infrastructure for the products in Murang'a is undeveloped. Aggregation of agro ecology produced items for ease of marketing is hampered by scattered nature of geographical location of farmers. Post-harvest handling is poor, little value addition and none of the practicing farmers is certified. Adoption of e-marketing is minimally applied limiting the outreach to niche markets. The potential in local, export, emerging and special markets is underutilized.

**Murang'a County government policy commitments**

The County Government is committed to develop the necessary local and electronic marketing infrastructures for handling the agro ecologically produced raw and final products .

**Proposed strategies**

Mobilize institutions capable of promotion of production and marketing of agro ecological products

Facilitate capacity development of institutions

*Sector approach to greening agriculture*

A number of short to medium term strategies will be used during the introduction and promotion of agro ecology within Murang'a County. These includes enhancing agro ecology sub sectors and agro ecology practices inclusive of crop, animal and fisheries production by addressing issues related to access and costs of seed, farm inputs, and food production technologies.

**Status**

The County government commits to develop favorable policies that will spur growth in greening agriculture subsector. This may include but not limited to bio farm input subsidies, support to cooperatives to distribute the agro ecology related farm inputs and or direct importation of the inputs to reduce costs to agro ecology farmer practise. This will enable families to not only grow their own safe foods in light of the high input costs that hamper adoption but also as well reduce their dependence on conventionally grown food for their household food needs.

**Murang'a County government policy commitments**

The County Government of Murang'a shall work to ensure affordable and accessible bio farm input supply chain through engagement of all stakeholders in the supply chain. Support shall be afforded to innovations in production and supply of bio farm inputs sector. The role of stakeholders shall be enhanced within the farm input supply chain.

**Proposed strategies**

Empower the proposed agro ecology development board to approval bio pesticides for use within the Murang'a County;

Promote local innovations for production of bio inputs.

Embrace a subsidy policy in the agro ecology and organic agriculture sub sector.

Education and awareness on food safety and health in collaboration with department of health of Murang'a County.

*Promotion of domestic consumption and value addition*

**Status**

Demand for and domestic consumption of organically produced foods and products from agroecology remains low within Murang'a County. This can be partly contributed by low awareness of the benefits accruing and/or no placement of products in major retail outlets and wholesale markets. Costs of production may also be a factor for those who are aware as prices of these products are higher than conventional foods. Little or no promotional work and value addition has been taking place through the County Government due to absence of a solid plan. A number of other private players have continued to do promotional work despite lack of a policy guidance. This only reaches a small population.

**Murang'a County government policy commitments**

There shall be enhanced actions by the departments concerned to address awareness as per proposals in the policy framework. Value addition shall equally be promoted among actors in collaboration with the private sector players. To achieve the above Murang'a County Government shall allocate resources within its budgetary allocation under crops development in the annual budgetary process for promotion and value addition. To achieve a higher effectiveness, the County government shall mobilize resources from all partners in agroecology.

***Proposed strategies***

Train workers on key messages while aiming to have a standard manual developed jointly with the existing actors and the departments of health, livestock, fisheries and environment.

Source technologies and conduct trainings and demonstrations on value addition practices

Carry out campaigns on consumption of safe foods produced organically through agro ecology to entice population on increased usage especially among vulnerable members of population living at a higher risk of lifestyle diseases.

*Voting of a special fund for promotion of agroecology*

***Status***

In the current medium term plan no funds are available specifically set out in the annual budget for development of agro ecology. The lack of a policy, a sub sector strategy and inclusion in the County development plan is among reasons that agro ecology has received little attention.

***Murang'a County government policy commitments***

The County Government shall ensure through the department that funds are allocated and partners are mobilized to support this initiative

***Proposed strategies***

In doing so, the County shall integrate agro ecology in the mainstream agriculture in all productive sector departments that shall include but not limited to crops, livestock, fisheries, and environment to integrate the approach in their programs

Build capacity of management staff in these departments to act as gate keepers during annual budgetary cycles

Generate allocation for support to the proposed County agro ecology board

*Enforce a marketing strategy for organic agriculture products*

***Status***

The County Government in 2014 came up with a department that was to be responsible for agro marketing. Subsequently a directorate was set up under department of cooperatives and trade. Although these were meant to address marketing generally there has not been any focus on food safety as such and hence no attempt to address agro ecology then. A lot of focus was on horticulture export and coffee. This department lacked a clear strategy and policy on how to handle marketing and has since progressed very slowly.

***Murang'a County government policy commitments***

The County Government shall ensure marketing becomes a priority in rolling out the market pull economy strategy to agroecology. The current agribusiness department shall be strengthened to come up with strategies to assist farmers get reliable markets for organically produced food products

***Proposed strategies***

Revamp the agribusiness department to effectively handle organically produced marketing end products alongside other agro-marketing approaches.

Ensure a clear marketing strategy is in place

Sensitize food products marketing outlets especially retails centers are able and willing to place value added and organically produced foods locally

Create a marketing platform that draws all stakeholders on board.

***4.4.2.9*** *Ensuring development and packaging plus dissemination of appropriate technical information and technology including embracing indigenous technical knowledge*

***Status***

Indigenous technical knowledge (ITK) has been part of innovative approaches for communities within the Mount Kenya Forests reserves. Herbs have been popular health solutions as a fall back among the communities in dealing with health challenges. Some of the technologies that were earlier on underutilization have failed the sustainability test especially due to proper lack of succession among generations. It is also very clear that such knowledge has stayed within families that practiced traditional medicine for long with little dissemination, A lot of knowledge therefore been kept as secrets among families.

***Murang'a County government policy commitments***

The County Government proposes to document, archive and disseminate the indigenous technical knowledge available that involves practices emanating from agroecology sub sector.

***Proposed strategies***

The County shall open an ITK registry and ensure thorough innovation management approached are applied

The County shall also promote development of and dissemination through trainings, demonstrations and farmers field school approaches.

Support practices that packages and also utilizes adoption of agroecology innovations.

**Policy objective three;** To support increased productivity and incomes through participatory research approaches, training and technology integration of agro ecology with conventional agriculture;

#### *4.4.3.1 increased productivity and incomes*

*Status*

The agro ecology sub sectror in Murang'a County is not organized as to be robust enough to attract the market competitiveness. As such most organic producers go through a lot of struggles to get their produce marketed competitively. This in effect means the produce rarely attracts premium prices as it should actually do. Part of the reasons for farmers facing these difficulties is because of lack of organization and failure to unite to create a platform for their voice to be heard and the bargaining power that comes with numbers.

***Murang'a County government policy commitments***

The County Government of Murang'a shall endeavor to mobilize agro ecology practisioners to form cooperatives and assist them get registered. This will ensure that the Government will also find it easy to offer the support for their enhancement. Any funding emanating from the County shall be directed through this cooperative grouping. The county shall also engage the stakeholders to ensure agro ecology grows in strides and shall seek and negotiate for contract supply agreements by both local and international consumers.

***Proposed strategies***

*Promote farmer grouping into common interest groups*

*Promote contractual engagement between producers and retail outlets as a start*

*Mobilise an agroecology cooperative for farmers*

*Introduce training modules in agroecology in TVET, higher education and in extension services*

*Validation of new and existing indigenous technical knowledge*

*Develop training modules for TVE, higher education and extension sector.*

*Promote research, education and technology, information and data management through Information communication technologies (ICT)*

***Status***

Agroecology is barely establishing in Murang'a County while little research is being done and limited to within the research institutions. Fewer demonstrations are being carried out both at the farmer level or at the farmers training center in Kenyatta Agriculture Training Centre (ATC) farm (in Mariira) on the use of innovations such as integrated pest management. It is expected that the skills level on IPM issues for example may be low as there have been low levels of staff re-training with the advent of devolution. Agroecology is also not mainstreamed in regular extension services provision neither in Murang'a County nor at the National level from data available. The uptake of agroecology as a farming practice is therefore relatively low within the County.

***Murang'a County government policy commitments***

The County government of Murang'a proposes to ensure mainstreaming of agro ecology in both normal extension and within the training curricular for both trainings to farmers and staff. Training materials shall be developed and distributed for use at all levels to ensure farmers and extension workers get more aware about the effects to environment on non-sustainable agriculture. Production will be enhanced as part of result demonstrations to the benefits accruing. Research collaboration with local research centers at Kenya Agricultural Research and Livestock Organization (KARLO) Kandara shall be formalized to address local needs assessed,

***Proposed strategies***

Partner with KARLO Kandara on agro ecology research

Develop a curriculum and training manual for training purposes at KATC for farmers and extension workers

Continuously look for promising technology both local and foreign which ensuring proper documentation.

*Ensuring an Agri business approach is adopted along the value chain at the onset with clear benefits spelt out*

***Status***

The benefits accruing from engaging in agro ecology within Murang'a County and other destinations may be high for some value chain actors but it definitely is not trickling down to the bottom of the value chain and especially to those who lack access to market information that is relevant. Within Murang'a County there are a limited and certified organic production which is partly driven by low market demand, awareness and proper linkages with producers.

***Murang'a County government policy commitments***

The County Government of Murang'a will endeavor to promote alongside other stakeholders an agribusiness approach in the promotion of the agro ecology sub sector to ensure the producers reap benefits of investments in production and processing. To achieve this stakeholder shall be engaged in creation of awareness and market linkages within the value chain actors. Contractual farming shall be encouraged and clear terms of reference spelt out for every contract signed between parties. Alternatively, media and long-term strategies will also be followed up to promote agro ecology.

***Proposed strategies***

Farm business planning model adopted in agro ecology enterprises

Strict records kept by practitioners and gross margins established and documented.

Proper packaging and branding adopted and supported to encourage consumers appeal

*Creating special organic product markets within whole sale and retail outlets*

***Status***

From statistics available there may be close to none, established organic markets within Murang'a County. There is need however to ensure nitch markets are established not only locally but focusing beyond the County boundaries. The way to achieve the above is to ensure continuous promotional and marketing strategies are laid in place.

***Murang'a County government policy commitments***

The County government commits to promote use of local wholesale markets as the first step in ensuring consumption of products generated under agro ecology. Technology will be harnessed in an effort to market local organically produced items within and outside the boundaries of the County.

***Proposed strategies***

Recruit influencers and promoters within the existing food dispensing outlets

Develop a reward system by recognition of agro ecology food producers and consumers

*Introduction of innovative product marketing strategies in line with global consumption trends*

***Status***

Marketing remains a weak link in agriculture products development. This is not only true in organic products but also in local conventional crop and animal products industry.

***Murang'a County government policy commitments***

Innovative marketing will be key to generation of new ideas in marketing within agro ecology. This should form the core of the drive to get agro ecology successful.

***Proposed strategies***

Reward innovators by recognizing them for their efforts consistently

Ensure cooperatives or farmer grouping are seized of the concept

**Policy objective four;** To promote adoption of agro ecological approaches for sustainable soil systems and agricultural practices in the county

*Soil and water conservation*

***Status***

The soil and water conservation work has received little attention since the advent of devolution in 2013. As a result little or no specific soil and water activities have been going on. This has had major repercussions on the status of these natural resources within the farm lands. A lot of soil erosion has occurred and hence the resultant landslides within the County. Most of the farmland conserved in Murang'a County was done under projects and programs before 2013. In 2017 however a Ministry was created to deal with environment and climate Change in Murang'a County. It is not yet very clear whether its mandate covers soil and water conservation issues at the farm level as this has previously been a mandate of the Ministry of Agriculture.

***Murang'a County government policy commitments***

The County will prioritize soil and water conservation under this policy framework once more to get it back to the previous standards. The County will also engage stakeholders and donors in funding of natural resource conservation and management under the various projects and programs approved to operate in the sector.

***Proposed strategies***

Re engineer the engineering department within crops development to work alongsige irrigation and environment to handle conservation engineering while mainstreaming general soil and water conservation extension in normal extension.

Mobilize resources from all partners to fund conservation activities

*Review agro forestry practices, wastelands, wetlands and riparian areas conservation and its roles in both conservation and climate mitigation.*

*Promotion of minimum tillage systems*

***Status***

Promotion of minimum tillage practices has received little attention even in the low rainfall and marginal areas of Murang'a County. This has had major repercussions on the farm lands in soil quality status and its nutrition. A lot of soil erosion has also occurred and hence the resultant landslides within the County.

***Murang'a County government policy commitments***

The County Government will prioritize minimum tillage practices especially for the marginal areas as part of both soil and water conservation and sustainable soil management under this policy framework in an effort to improve on food security in these marginal areas.

***Proposed strategies***

mainstream minimum tillage practices as part of resource conservation in agriculture for the marginal areas in lower part of the County

Extensively retrain staff and farmers on these practices

#### *4.4.4.3 Promotion of integrated pest management practices (IPM)*

***Status***

Integrated Pest Management (IPM) as a pest management practice is rarely utilized by most farmers. This is due to lack of knowledge and the attendant skills within Murang'a County. Part of the reason for this status is the unavailability of bio inputs and their costs.

*Murang'a County government policy commitments*

The County Government shall direct support to farmers and staff trainings on IPM and avail subsidized bio inputs to farmers in order to promote integrated pest management as an alternative to conventional practices

***Proposed strategies***

Work collaboratively with partners promoting IPM in testing technologies available

Train staff and farmers on IPM practices while ensuring IPM demonstrations are mainstreamed

Source, develop and promote IPM technologies

Embrace farmer field schools methodology (FFS) in IPM promotion

*Embracing of composting pits*

***Status***

As illustrated in the Indian Sikkim state the achievement of high adoption results was partly due to accessing manure for use by farmers. This was made possible through support to composting by the state. In Kenya this technology has really not been taken up and within the County it is even worse as the bulk of the farmers don't utilize livestock for manure and neither do they utilize alternative technologies through composting. The County Government has spent lot of money since 2013 in buying manure for coffee farmers as an example. Adoption of composting is among the smart technologies to mitigate against greenhouse gasses that the County shall recommend.

***Murang'a County government policy commitments***

The County government will carry out intense farmer education on technologies in composting to encourage reduction in use of conventional fertilizers and help rejuvenate soils for increased productivity.

***Proposed strategies***

Require as a long run measure that each farm household keep a composting pit and ensures good utilization of bio wastes

Continuously support demonstrations on composting to reduce the need of County Government buying manures for farmers in future and establish benefits of such interventions

*Establishment of a stakeholder platform on agro ecology to spearhead greening process for Murang'a County*

***Status***

There has not been any formal agroecology stakeholder forum in Murang'a County either for the conventional agriculture sector or specifically in organic agriculture sub sector. There are however disjointed forum who are convened on adhoc basis by sub sectors and on need basis. An inventory of all stakeholders in conventional agriculture sector is however available,

***Murang'a County government policy commitments***

The County will support formation of a formal agroecology stakeholder forum and make it operational for purpose of driving the vision of this policy through its framework.

***Proposed strategies***

Establish a formal agroecology stakeholders platform as a start through the relevant directorate

Assist in resource mobilization for self-actualization of the stakeholders platform internally

*Integrating agroecology approach in select farms on a pilot and drawing a curriculum for sustainable integration with the extension system*

***Status***

There are a few agro ecology practitioners in Murang'a County not exceeding ten in number and who may lay a claim to producing organic products. A survey conducted however shows these producers are not certified but are able to access markets through aligning themselves with certified outlets especially within Nairobi through the efforts of the civil society organizations operational in the County.

***Murang'a County government policy commitments***

The County Government shall through partnerships with the civil societies encourage these farmers to participate in joint promotional activities to promote the agroecology sub sector activities by selecting them as model farms to launch the joint efforts,

***Proposed strategies***

Pilot the available technologies using existing agroecology practitioners

Work in partnership with civil society to have a curriculum and practice manual drawn

Mainstream the manual and curriculum in public extension alongside conventional agriculture

*Persueing ecosystem conservation to target other ecosystems outside of agro ecosystems and to include crops, livestock and fisheries sub sector*

***Status***

There are conservation activities being carried out in other ecosystems such as in forestry, wildlife sanctuaries and on water bodies including riparian areas, however in specific sub sectors such as fisheries and livestock farms little efforts seem to be put for conservation and practice of ecological principles,

***Murang'a County government policy commitments***

The county Governments shall ensure there are joint efforts in all sub sectors and that all personnel are made aware of the requirements of the agroecology policy during the formulation process and after gazzetment of the policy.

***Proposed strategies***

Intentionally target all ecosystems in a win win situational approach to conservation

Include other subsector strategies in embracing agro ecology during drawing up of the curriculum and operation manual for use by frontline workers

Ensure all animals(Livestock) and fisheries programs are included in agro ecology

*Address the various policy, technical, institutional and economic constraints that hinder introduction of agro ecology through a stakeholder dialogue on the draft policy, legal framework and strategic plan*

***Status***

There are currently no policy or legal frameworks in existence at both the County and the National levels of Government in either agroecology and/or organic agriculture regulation and specifically in regulation of bio pesticides. Similarly, technical capacity in this sector is low while economic support has been at rock bottom. All this concerns need to be addressed at the stakeholder level in the spirit of public participation in order to be well grounded from the start.

***Murang'a County government policy commitments***

Murang'a County Government intends to mobilize the agroecology and/or organic agriculture value chain actors widely in coming up with the proposed policy position that will drive the agroecology sub sector. A concerted stakeholder dialogue is the only likely way out in solving some of these concerns. A stakeholder action platform shall therefore be made a priority.

***Proposed strategies***

Establish a strong stakeholder action platform for Murang'a County

Build technical capacity of stakeholders

Ensure the widest possible participation on the development and implementation of the agro ecology policy

**4.4.4.9** *Persueing regenerative agriculture practices that includes among others*

i. agroforestry

ii. carbon sequencing practices

iii Crop rotation

iv Permaculture

v. Silvoculture

**Policy objective 5**: To implement standards of production in the sub sector that is in line with both national and internationally set market standards

*Standards compliance and certification processes*

***Status***

There are a number of local, national and international standards as required by the organic markets world over. Organically produced products are only able to secure markets under very strict certification programs. Among standards existent in the markets are the ISO 9001 Certified" which means an organization has met the requirements in ISO 9001, which defines an ISO 9001 Quality Management System (QMS), The Good Agricultural Practices (GAP**)** and Good Handling Practices (GHP) are voluntary audits that verify that fruits and vegetables are produced, packed, handled, and stored to minimize risks of microbial food safety hazards, Fairtrade Standards are designed to support the sustainable development of small producer organizations and agricultural workers in developing countries. The rainforest alliance certification (RA) seal means that the product (or a specified ingredient) was produced by farmers, foresters, and/or companies working together to create a world where people and nature thrive in harmony. RA Certified farms are not required to be organic. The organic agriculture Europe certification (EU organic) enables your organic products to be commercialized within the European Union. The NOP is a federal regulatory program that develops and enforces consistent national standards for organically produced agricultural products sold in the United States. The Japanese accreditation society (JAS) is the organic standard in force in Japan. Operators who want to export their products to Japan and label them with JAS logo should be certified according to JAS Standard. The European Standards (ENs) are documents that have been ratified by one of the three European Standardization Organizations (ESOs), CEN, CENELEC or ETSI; recognized as competent in the area of voluntary technical standardization as for the EU Regulation 1025/2012. IFOAM Accreditation is the international verification of competence for certification bodies active in organic agriculture. Locally the E cert Basic is an off-the-shelf version of "The Intact Platform" (formerly known as ECERT), the leading end-to-end software built by INTACT for managing audits, certifications, and standards. E cert Basic gives you all its standard

functionalities at a price that fits your budget. As earlier mentioned there are no known certified producers in Murang'a County.

***Murang'a County Government commitment on standards***

To ensure compliance with market standards the County shall make effort while working closely with other stakeholders to support its farmers get certified with the minimum standards requirement to enter any of the available markets locally and globally.

**Strategies on standards compliance**

Mobilize agro ecology practitioners into farmer's groups and cooperatives and get them registered to take advantage of benefits of numbers and enable certification process.

Ensure producers get continuous training on certification standard as is a requirement for compliance

*Price stabilization/ guarantee scheme*

***Status***

The concept of pricing strategy is based on the product quality and presentation, the market placement based on competing products, the production costs and consumers appeal. Organic products seems to appeal to those who either have adequate product information or have health status actualization as a consumers. In essence organic products are likely to be outcompeted based on price and production costs alone in normal markets but have an edge in specific niche markets despite higher pricing. This niche markets in most cases are a small portion of the population and mainly among middle class earners or/and above. To be able to quickly expand the market segment for organic products therefore a lot of support is required from the County Government in terms of marketing strategy. Among the many strategies that can be adopted are price hedging, price stabilization or price subsidy in the medium term.

***Murang'a County government policy commitments***

To ensure that farmers in agro ecology engaged in commercial organic production are able to gain, secure and retain some market segments therefore the County Government shall attempt to offer either advice or support on price hedging or price guarantees for bulk and consistent production in the medium term, attempt to secure markets for the producers through supply contracts or alternatively offer production subsidies that will help reduce costs of production for this farmers.

***Proposed strategies***

Design competitive price guarantee schemes strategy

Register all organic producers into a register and all their contracts engagements

Promote local markets development through promotional activities

#### *4.4.5.3 Establish local set production and market standards in conformity with existing standards*

***Status***

Attempts have been made in Kenya before to have a local standard on conventional production that was finally gazzeted , the KS-1758 that is in conformity with the global Gap standards. The only drawback has been lack of strict enforcement and ownership, The result of this therefore is that producers in conventional production only adhere to it in regard to export markets but not for local market. The KS-1758 does not however address agro ecology and/or organic production standards. In these regard no standards have been developed to support organic production to date.

***Murang'a County government policy commitments***

Within the context of this agro ecology poolicy therefore, Murang'a County shall front the only effort in collaboration with all stakeholders to customize a local organic production standards or production process drawn from the existing international standards that can be embraced and understood better by the local producers.

***Proposed strategies***

Engineer the process of customizing a local organic production process standard to be locally gazette for use in Murang'a County

Set the infrastructure to assist producers to comply with the customized standard

## CHAPTER FIVE: INSTITUTIONAL FRAMEWORK

### *5.1 Policies coordination*

The proposed board to be responsible for agro ecology and organic sub sector promotion and coordination will be established within an Act of Murang'a County Assembly to be developed in line with this policy pronouncement and to be introduced as a Bill for agro ecology promotion and regulation in Murang'a County. The bill shall establish the board to which the secretariat shall be drawn from the department in charge of production and promotion of agro ecology in Murang'a, The secretary to the board shall be the director in charge of organic agriculture and it shall report to the County Executive in charge of agriculture (CEC-agriculture).

The CEC in consultation with the Governor shall recommend for gazzetement the board members who shall be not be less than five and not more than eleven and who shall be drawn from personalities and professional in the agricultural sector who have some experience in the sub sector drawn outside of government. The role of the board shall be to advise the County Government on measures and strategies to undertake to remain relevant in pursuit of the goal of development of this unique sub sector.

The department in charge shall be responsible for implementation of this policy, the development of strategies, projects and programs for promotion of agro ecology and the coordination of all players in line with setting up a conducive environment for all actors to operate. Funds shall require to be set aside through the CIDP programs, the subsequent manual development planning and budgetary process to ensure smooth running of all organs developed within the agro ecology policy framework. Each of the production departments shall require to appoint a champion in charge of conservation activities that shall form the blocks for planning, budgeting and resource allocation.

### *5.2 Monitoring and evaluation*

Participatory Monitoring, Evaluation and Reporting (PM&ER) will be an integral component of this policy. Key indicators (objectives, process, output, outcome and impact indicators will be mainstreamed within the strategy and the implementation framework matrix) and will be developed and used in monitoring and evaluating the policy impact. The PM&ER will involve use of baseline data in the strategy to monitor against indicators and prepare quarterly reports as required. Regular planned assessments of the PM&ER system are required in order to ensure that

indicators are measuring what they are meant to, that data are generated according to standards, that data analysis and communication of results give the information needed by decision-makers, and that data management includes an assessment of overall data quality.

The PM&ER component of the strategy shall identify county institutions and stakeholders that will be involved in M&E and in the reviews. Roles and responsibilities will be defined for both the county government and the stakeholders and cover data collection, analysis, synthesis and use. Transparency – a prerequisite for effective planning and managing accountability – is essential in all steps. There is a need for a clear process for capacity building for all partners in all aspects of M&E, including collection, analysis, synthesis

### *5.3 Resource mobilization and financing*

The policy anticipates leveraging on resources from available sources including the County Government departments of agriculture, livestock, fisheries and environment and climate change, Development Partners, Private Sector, Public Benefits Organizations (PBOs) amongst others. It focuses on forging resource partnerships built on trust and mutual accountability to ensure delivery of the objectives. The Malabo Declaration of 2015 on Food and Agriculture where African Union Heads of State and Government upheld commitment to allocate at least 10% of the budgetary resources to agriculture and rural development is yet to be achieved by most countries Kenya included. Within Murang'a County allocation to agriculture is however much enhanced and this policy will be seeking to leverage on this gains

### *5.4 Communication*

This communication plan is anchored on the overall County Government's communication strategy and will design a robust plan that will reach out to entrepreneurs in agro ecology and all relevant stakeholders in the sector through different communication platforms and the established multi stakeholder forum. The strategy will employ guiding principles including openness, quality, embrace a culture of knowledge sharing and learning, foster partnership to sustain productive relationships, partnerships and networks.

### *5.5 Policy review*

The set span of the agro ecology policy is set to be eight years from 2021 to 2032. The policy review process will therefore be conducted after every five years.