

COUNTY GOVERNMENT OF KAJIADO



DEPARTMENT OF AGRICULTURE, LIVESTOCK AND FISHERIES

KAJIADO COUNTY AGRICULTURAL MECHANIZATION SERVICES POLICY, 2019

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FOREWORD

The Constitution of Kenya (2010) Bill of Rights Part 2 (43) 1c states that 'Every person has the right to be free from hunger, and to have adequate food of acceptable quality', while Chapter Five Part 1 (60) 1c states that land in Kenya shall be held, used and managed in a 'sustainable and productive management of land resources.' Kenya Vision 2030 is the Country's development blue print covering the period 2008-2030 that aims at transforming Kenya into a newly industrializing, middle income country providing a high quality life to all its citizens by the year 2030. It is anchored on three pillars – economic, social and political. The economic pillar aims at improving the prosperity of all Kenyans through economic development covering all regions of the Country and achieving an average Gross Domestic Product (GDP) growth rate of 10% per annum beginning in 2012. Currently the Government is focusing on the 'Big Four' Agenda whose key outcomes in the Medium Term Plan III are programmes and projects aimed at addressing; Sustainable Development Goals (SDGs), Climate Change, Disaster Risk Management, and National Spatial Plan. It embraces enhancing Food and Nutrition Security (FNS) through construction of large-scale multi-purpose and smaller dams for irrigation projects, construction of food storage facilities and implementation of high impact nutritional interventions and other FNS initiatives.

To transform Kenya's agricultural sector and make it a regional powerhouse, the National Government has formulated the Agricultural Sector Transformation and Growth Strategy (ASTGS) 2019 – 2029. The strategy is anchored in the belief that food security requires a vibrant, commercial and modern agricultural sector that sustainably supports Kenya's economic development, national priorities, and commitments to the Malabo Declaration under the Comprehensive Africa Agriculture Development Programme (CAADP), and the United Nations Sustainable Development Goals (SDGs). Building on lessons learned from prior strategies, ASTGS takes an evidence-based approach, as well as a sharp focus on implementation and delivery with the Counties at the centre. This approach is the basis for addressing the effects of climate change and the challenges that constrain agricultural output, productivity and natural resource management in Kenya today.

Agriculture remains the backbone of the Kenyan economy. It is the single most important sector in the economy, contributing approximately 26 percent of the Gross Domestic Product (GDP), 60 percent of the export earnings and employing 75 percent of the national labour force. Over 80 percent of the Kenyan population lives in the rural areas and derive its livelihoods directly or indirectly from agriculture. Given its importance, the performance of the sector therefore directly impacts the performance of the whole economy. The growth of the

sector is therefore expected to have a greater impact on a larger section of the population than any other sector.

Agricultural mechanization is one of the major agricultural production inputs and a catalyst for rural development. Application of agricultural mechanization technology increases power to agriculture, largely therefore enhancing productivity of human labour. Despite agricultural mechanization being vital for agricultural production, most farming communities lack machines to undertake their operations efficiently and effectively.

The relatively low level of mechanization is due to a number of challenges facing the sub-sector. These include; low level of investments in mechanization services, poor extension and technology adoption, insufficient agricultural mechanization quality assurance weak institutional and legal framework. The cross-cutting issues affecting agricultural mechanization include matters related to vulnerable groups, gender and youth, negative effects of environment, inappropriate land use and climate change.

This policy aims at giving a clear direction for sustainable growth and development of the agricultural mechanization sub-sector. The proposed interventions herein will be supported by appropriate institutional and legal framework and stakeholders for successful implementation. The policy will thus result in an enabling environment for a vibrant agricultural mechanization industry in the County.

I am confident that the implementation of the outlined policy will not only lead to the realization of higher levels of agricultural mechanization but also increased productivity, food security, income and environmental sustainability.

HON. JACKLINE KOIN
COUNTY EXECUTIVE COMMITTEE MEMBER
DEPARTMENT OF AGRICULTURE, LIVESTOCK AND FISHERIES

PREFACE

Agriculture continues to play an important role in the socio-economic development of the county by ensuring food security, creating employment for the rural population, providing raw materials to the manufacturing sector and generating income through domestic and export trade. The sector has continued to play this role in the face of mounting challenges posed by environmental degradation and climate change

Agricultural mechanization plays a key role in increasing efficiency and effective utilization of the productive resources. However, a number of reasons have hindered enhanced adoption of the agricultural mechanization along the production value chain. The environment for agricultural mechanization has in the past been unfavourable for adoption. The promotion of agricultural mechanization for increased productivity and provision of quality assurance are broadly insufficient.

The objectives of the policy are creation of enabling environment for agricultural mechanization development, promoting agricultural mechanization for increased productivity and providing quality assurance. The policy sets out goals and directions for present and future development and management of agricultural mechanization in the County. The policy seeks to put in place the legal framework that will provide for the establishment of the Agricultural Mechanization Services in Kajiado County so as to accelerate the growth and development of agriculture and thus enhance food security and improve incomes of farmers.

It consists of measures and guidelines which the County Government shall undertake to achieve optimal development of the sub-sector and from which laws governing its administration and management shall be formulated.

The implementation of this policy will require the goodwill and commitment by all stakeholders to ensure smooth implementation of the recommendations. The County Government will provide an enabling policy environment through institutional and financial support.

Finally, we are confident that we will collectively achieve the overall objective of the Policy of sustainably raising the level of agricultural mechanization for increased productivity of the sector and income to our County.

MOSES MURUNYA
CHIEF OFFICER
DEPARTMENT OF AGRICULTURE AND FISHERIES

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Special thanks are due to the dedicated team that developed this policy, comprising of Eng. A. K. Mususi, Boniface Katumo, Athanus Chesire, Victoria N. Kyengo. Their commitment to the task is highly appreciated.

Reference to the National Agricultural Mechanization Policy is also acknowledged. The contribution of other individuals, groups and organizations not mentioned herein is highly appreciated. Their input will go a long way towards the realization of the objectives of the policy.

ACRONYMS AND ABBREVIATIONS

AFC	Agricultural Finance Corporation
AFFA	Agriculture Fisheries and Food Authority
AgGDP	Agriculture Gross Domestic Product
AIDS	Acquired Immuno Deficiency Syndrome
AMS	Agricultural Mechanization Services
ASDS	Agricultural Sector Development Strategy
ATDCs	Agricultural Technology Development Centers
AT&GS	Agricultural Transformation and Growth Strategy
ATN	Africa Tillage Network
CBOs	Community Based Organizations
CGA	Cereal Growers Association
CMA	Capital Markets Authority
CMC	Cooper Motors Corporation
DoALF	Department of Agriculture, Livestock and Fisheries
EAGC	East Africa Grain Council
FAO	Food and Agriculture Organization
FEUSHA	Farm Equipment Use in Small Holder Agriculture
GDP	Gross Domestic Product
HIV	Human Immuno-deficiency Virus
ILRI	International Livestock Research Institute
KALRO	Kenya Agricultural and Livestock Research Organization
KAM	Kenya Association of Manufacturers
KeBS	Kenya Bureau of Standards
KENAFF	Kenya National Farmers Federation
KEPSA	Kenya Private Sector Alliance
KIRDI	Kenya Industrial Research and Development Institute
KRA	Kenya Revenue Authority
MFIs	Micro Finance Institutions
MoE&P	Ministry of Energy and Petroleum
MOH	Ministry of Health
MoI&ED	Ministry of Industrialization and Enterprise Development
NACC	National AIDs Control Council
NACOSTI	National Commission for Science Technology & Innovation
NAMP	National Agricultural Mechanization Policy
NAMS	National Agricultural Mechanization Strategy
NARS	National Agricultural Research System
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
PHS	Plant Hire Services
RTDC	Rural Technology Development Centre
SCS	Soil Conservation Services
SDA	State Department of Agriculture
THS	Tractor Hire Services
VAT	Value Added Tax

DEFINITION OF TERMS

Agriculture mechanization	Means the application of tools, implements, and powered machinery as inputs to achieve agricultural production and covers the manufacture, distribution, maintenance, repair, management, and utilization of agricultural tools, implements, and machines for agricultural land development, crop and livestock production, harvesting, and preparation for storage, on-farm processing and rural transport.
Agriculture	Means the growing of crops and rearing of livestock
Farm mechanization	Refers to agricultural mechanization activities normally occurring inside the boundaries of the farm unit
Farm implements	Devices attached to, pulled or otherwise used with human, animal or mechanical power source to carry out an agricultural operation

EXECUTIVE SUMMARY

Agricultural sector is important in contributing to food security, production of agro-based raw materials, employment creation, income generation and earning of foreign exchange. The major factors that contribute to crops, livestock and fisheries growth and development include: suitable land, availability of moisture, favorable climatic conditions, availability of quality farm inputs and appropriate mechanization, reliable labour and functioning markets.

Agricultural mechanization is a key input in the agricultural sector production value chain. The main types of mechanization in the County include the use of human, animal-drawn and motorized machinery, implements and equipment. Development and promotion of these have been carried out by the Government in collaboration with the private sector. In line with the Kenya Vision 2030 agricultural mechanization is expected to play a critical role in putting more land into agricultural production.

The County has not operated with a clearly defined agricultural mechanization policy. This, together with the existing legislation framework has not sufficiently addressed agricultural mechanization challenges leading to low level of agricultural mechanization. The consequences have been, low agricultural production and under-utilization of agricultural land and environmental degradation

The past agricultural reforms coupled with the increase in population have generally resulted in diminishing size of farm units which have negatively impacted on agricultural mechanization. Furthermore, this trend is expected to continue in the foreseeable future and hence it is imperative that the mechanization activities take cognizance of this fact.

The need for agricultural mechanization has been brought to the fore by the decreasing availability of farm labour, lack of interest by the youth in farming activities, adverse change in climate. Coupled with these, there is need for more power for effective and efficient application in modern commercial agriculture.

The objective of this policy is to sustainably raise the level of agricultural mechanization in the County for increased productivity and income of agricultural producers. These will be achieved through investments in mechanization services, extension and technology adoption agricultural mechanization quality assurance, and improved institution and legal frameworks. The institutional and legal framework will be reformed to ensure participation by all stakeholders, representation and sustainability.

CHAPTER 1: INTRODUCTION

1.0 Background Information

The agricultural sector is the backbone of Kenya's economy and the means of livelihood for most of the rural population. Sustained and equitable agricultural growth is critical to uplifting the living standards of the people as well as generating rapid economic growth. Although agriculture is critical to the economy, levels of production and productivity are very low and the vast potential of the sector has scarcely been tapped. Some of the factors contributing to poor returns include low application of modern technologies as nearly 80 per cent of production is from smallholders with less than 2 ha, and gender inequalities that constrain resource access. Investing in agriculture is one of the most high-impact, cost-effective strategies available for reducing poverty and improving livelihoods.

The overall goal of the department of Agriculture is to transform agricultural sector into an innovative, commercially oriented, competitive and modern industry that will contribute to poverty reduction, improved food security and equity.

Its programmes will, through their activities, contribute to the realization of Kenya's wider development goals as expressed in the Sustainable Development Goals, Vision 2030, and the Constitution of Kenya, 2010.

To achieve what the Government envisages, the services of Agricultural Mechanization Stations are crucial. Mechanized agriculture is the process of using agricultural machinery to mechanize the work of agriculture, greatly increasing farm worker productivity. In modern times, powered machinery have replaced many jobs formerly carried out by manual labour or by working animals such as oxen, horses and mules.

Agricultural Mechanization is the use of tools, implements and machines for agricultural landdevelopment, crop production, harvesting, storage, and on-farm processing transport. It includes the manufacture, distribution, repair, maintenance, management and utilization of agricultural tools, implements and machines with regard to how to supply mechanization inputs to the farmer in an efficient and effective manner.

The original objective of a soil conservation station or agricultural mechanization was to convert wasteland to arable land in the 1930's. This was to allow planting of cash crops e.g. coffee, tea, sugarcane and even rearing livestock.

Kajiado County is predominantly semi-arid with Livestock rearing being the main economic activity. Crop farming is mainly in the Southern and Western parts of the County along rivers

and springs. In the county the introduction of heavy machinery for establishment of the soil and water conservation structures was then started. Mechanization then moved into the areas of pasture conservation. The Government came up with a proposal to establish the soil conservation stations to help the farmers achieve some of these goals. Agricultural Mechanization Services stations do the same for farmers today. This has contributed to enhancement of food security. It has contributed to expansion of the water storage capacity, farming land size, soil and water conservation, and pasture conservation improvement.

However, the level of mechanization in the country is still at low levels that cannot address the national needs to meet the optimum agriculture productivity.

1.2 Production Systems

Agricultural production systems in crops, livestock and fisheries require mechanization to increase productivity and tap the enormous existing potential. The level of mechanization in the County is low. An estimated 10% of the farmers employ some form of mechanization with about 8% using draft animal power (DAP) and another 2% using tractors. This is a major factor contributing to low levels of production, productivity, commercialization and value addition.

Crop Production Systems

Crop production systems consist of small, medium and large-scale farms averaging 2 to 5, 5 to 49 and over 50 hectares respectively. Use of machinery on small-scale systems is very low in relation to the medium and large-scale agricultural production systems.

1.1.2. Livestock Production Systems

Most of the livestock in Kajiado County is raised in extensive systems with communal grazing and free ranging of rain-fed rangelands. Use of mechanized livestock production systems is very low in the county. However, potential for mechanization is high to meet the growing demand for livestock and livestock products.

1.1.3. Fisheries Production Systems

Fisheries production systems include capture which takes place in the marine waters, inland waters and aquaculture which can be land based in ponds or water based in cages. Production systems in capture fisheries are categorized into artisanal fishing and semi-industrial fishing. Aquaculture systems are categorized as semi-intensive, intensive and extensive depending on the inputs and production system. The Fisheries sector in Kajiado County is an underutilized sector, but one which has a lot of potential. The County has begun

exploring opportunities which can have significant economic impact for those who engage in fisheries. In the past year, the County has provided liners for building ponds as well as provide the fingerlings to stock them. As these preliminary sites prove to be a success and generate income for the local communities, the County plans to expand its efforts and create a brand new sector of the economy. However adoption of mechanized production e.g. pelletizer for fish feeds system is low.

1.2 Agricultural Policy Framework

The Constitution of Kenya (2010) Bill of Rights Part 2 (43) 1c states that 'Every person has the right to be free from hunger, and to have adequate food of acceptable quality', while Chapter Five Part 1 (60) 1c states that land in Kenya shall be held, used and managed in a 'sustainable and productive management of land resources.'

Kenya Vision 2030 is the Country's development blue print covering the period 2008-2030 that aims at transforming Kenya into a newly industrializing, middle income country providing a high quality life to all its citizens by the year 2030. It is anchored on three pillars – economic, social and political. The economic pillar aims at improving the prosperity of all Kenyans through an economic development covering all regions of the Country and achieving an average Gross Domestic Product (GDP) growth rate of 10% per annum beginning in 2012. Currently the Government is focusing on the 'Big Four' Agenda whose key outcomes in the Medium Term Plan III are programmes and projects aimed at addressing; Sustainable Development Goals (SDGs), Africa's Agenda 2063, Climate Change, Disaster Risk Management, and National Spatial Plan. It embraces enhancing Food and Nutrition Security (FNS) through construction of large-scale multi-purpose and smaller dams for irrigation projects, construction of food storage facilities and implementation of high impact nutritional interventions and other FNS initiatives.

Kenya's agriculture system has undergone tremendous evolution over the last nine decades. In the colonial era (1920-1960), commercial agriculture was limited to white settler farmers. With political independence in 1963, the policy focus shifted to increased participation of indigenous Africans in commercial agriculture. The large scale farms were highly mechanized in comparison with indigenous African farms. Post-independence policies emphasized on broad self-sufficiency in agricultural products and gradual reduction of government control in the production process.

Upon economic liberalization, both the input and output markets were opened to forces of demand and supply thus affecting most agriculture commodities. Generally, liberalization led to increased input sources and output market channels; wide variations in both input and

output prices including agricultural machinery and wide fluctuations in seasonal commodity production.

To transform Kenya's agricultural sector the Government has formulated the Agricultural Sector Transformation and Growth Strategy (ASTGS), 2019 – 2029. The strategy is anchored in the belief that food security requires a vibrant, commercial and modern agricultural sector that sustainably supports Kenya's economic development, national priorities, and commitments to the Malabo Declaration under the Comprehensive Africa Agriculture Development Programme (CAADP), and the United Nations Sustainable Development Goals (SDGs).

1.3 Legislation Affecting Agricultural Mechanization

The Ministry has embarked on a number of legislation and regulatory reforms in order to create an enabling environment for all the players in the sub-sector. The enactment of the Agriculture and Food Authority (AFA) Act, 2013, the Crops Act, 2013 and the Kenya Agricultural and Livestock Research (KALR) Act, 2013 consolidated the numerous pieces of legislations within the Agriculture Sector to address the overlap of functions, obsolete legislations and to benefit from economies of scale. The Acts provided for the establishment of Agriculture Fisheries and Food Authority (AFFA) and Kenya Agricultural and Livestock Research Organization (KALRO). Other relevant existing legislation include the Land Act, Standards Act Cap 496, Dairy Act, Fisheries Act, Water Act 2002, National Cereals and Produce Board Act, Micro and Small Enterprises Act, Environmental Management and Coordination Act (1999), Devolution Act, Intergovernmental Relations Act, 2012. However, the Acts do not sufficiently address legislation affecting agricultural mechanization

1.4 Agricultural Mechanization in Kenya

Agricultural mechanization is a major agricultural production input that encompasses application of mechanical technology and increased power to agriculture, largely as a means to enhance the productivity of land and human labour. Agricultural mechanization aims at increasing the power inputs to farming activities hence intensified production and enhanced value addition resulting to decreased cost of production and reduction of drudgery in farming activities. It also improves the timeliness and efficiency of farm operations; accomplish tasks that are difficult to perform without mechanical aids; improve the quality and value of work produced and processed products; provide employment, sustainable rural livelihoods; provide agriculture-led industrialization and markets for rural economic growth among others.

The different sources of agricultural mechanization power available include human power, animal power, mechanical power, electrical power, and renewable energy. Currently the use of motorized power stands at 30 percent, hand and animal draught (ADP) is 50 percent and 20 percent respectively.

Use of farm machinery and equipments depends on production system; farm size and availability of power. Provision of agricultural mechanization services is offered by individual farmers, private service providers and the public sector including Agricultural Mechanization Stations (AMS) and Agricultural Technology Development Centers (ATDCs). For successful agricultural mechanization planning and implementation, a holistic approach should be used that should specifically include private sector involvement, economic profitability and creation of an enabling environment with clear roles for both public and private sector stakeholders.

1.5 Agricultural Mechanization in Kajiado County

Public sector institutions offering agricultural machinery services in Kajiado County include Agricultural Machinery Services station and Kajiado Demonstration Farm. These institutions offer a range of agricultural machinery services which includes: land preparation, water harvesting, hay harvesting and baling.

Agriculture Mechanization Services is one of the 24 AMS stations that were set up by the Government of Kenya and later devolved to the counties of location. It is located in Kitengela on a 12.5 acres (5 Ha) piece of land formerly owned in Trust through OlKejuado County Council.

The Kajiado Agricultural Mechanization Services (AMS) Station was started in the early 1978 in Mbagathi, Rongai as an off-shoot of Ruiru Station. It then moved to Isinya before settling at Kitengela around 1988 on land that was then held by the Livestock Marketing Division.

The overall objective of the AMS is to develop and protect natural resources base for farming and promote appropriate land use practices that enhance productivity and farm incomes contributing to food security poverty reduction and improvement of rural livelihoods. It is to accelerate the growth and development of agriculture in general, enhance productivity and incomes for farmers through a combination of strategies that include access to affordable appropriate agricultural technologies and mechanization of agriculture.

1.6 Past Agricultural Mechanization Programmes

1.6.1 Agricultural Mechanization Services

Established in the pre-independence Kenya in 1947 the service formerly known as Soil Conservation Services (SCS) which involved use of heavy earth moving machinery (the plant hire service (PHS)) which was used to open up land for agricultural development in the former White Highlands. Its main functions included construction of soil conservation and water harvesting structures, bush clearing and land leveling. Through this, more land was brought into agricultural production.

In 1965 the Government established Tractor Hire Service (THS) whose broad objectives were to open new land for wheat production, to introduce modern farming practices, to stimulate and encourage private ownership of farm tractors and machinery, and to train the farming community on the general techniques for good seedbed preparation. The amalgamation of THS and PHS in 1981 resulted to the creation of Agricultural Mechanization Services (AMS).

1.6.2 Agricultural Machinery Testing Unit

The unit was established in 1959 at Nakuru, with responsibility of testing and evaluating both local and imported agricultural machinery and equipments for the purpose of authorizing firms to sell their products in the country. Further, the unit was charged with continuous monitoring and evaluation for quality assurance. Its operations were discontinued during the implementation of Structural Adjustments programme (SAPs).

1.6.3 Agricultural Technology Development Centres

They were initially established as Rural Technology Demonstration Units with mandate of demonstrating agricultural mechanization technologies. Later the units were transformed into Rural Technology Development Centers (RTDCs) with additional mandate of adaptive research, design and fabrication of agricultural engineering technologies.

In 2006 as part of the Ministry's strategy to revitalize agriculture, ATDC were rebranded with broad mandate that included; agricultural mechanization; agro-processing, renewable energy and storage. Following devolution, the mandate of ATDCs will be to assist the National Government in influencing policy development, applications of quality assurance and standards, monitoring and evaluation of agricultural engineering technologies in agriculture sector. Further the centers will ensure quality assurance through machinery, equipment and implements testing and evaluation. The distribution of the 10 regional centers across the country is based on ecological zones to address agricultural engineering oriented challenges to agricultural productivity.

1.6.4 Farm Equipment Use in Smallholder Agriculture

It was realized that the small scale farmers (up to 10 acres) mainly used hand tools. For them to increase their production and have value addition in their production system, the Ministry formulated the Farm Equipment Use in Smallholder Agriculture (FEUSHA) project to address the mechanization needs for the small scale farmers including the production of wheat maize, rice, beans etc.

1.6.5 Soil and Water Conservation Programme

The Soil Conservation Service in Kenya was started during the 1930s with broad objective of combating declining soil fertility and productivity in cultivated and overgrazed areas. The situation on soil degradation was studied by the Government and it became compulsory to practice soil conservation from 1937 to the end of the colonial era in 1963.

The decade that followed independence was marked by low soil conservation activities that resulted in erosion accelerating to alarming levels with signs of decline in soil fertility. The country developed the National Soil Conservation Project supported by SIDA. The project revived the activities of the Soil Conservation Service up to 1993 when the project ended. Agricultural land has reverted back to serious degradation due to lack of an institutional framework to take over activities implemented by National Soil Conservation Service (colonial era) and National Soil Conservation Project (Post-Colonial).

1.7 Current Situation

Production costs within the sector are still high due to high costs of inputs, poor and long marketing chains, low level of mechanization and high transport costs.

The use of agricultural machinery has generally declined, the purchase of new machinery declined from an annual average of 1500 pieces 20 years ago to about 300 per year in the last 3 years. This has been due to the high costs arising from taxation and maintenance. The use of animal-drawn equipment such as ox-ploughs has also remained low due to their technological inappropriateness. Most of the farm equipment, machinery and spare parts are imported. Further, the increased reduction in farm size through sub-division makes the use of large machinery and mechanization of farming generally uneconomical.

In Kajiado county the major constraints identified are poor access of farmers to mechanization technologies, lack of skilled agricultural machinery operators, poor commercialization of the agricultural sector (no guaranteed markets, low market prices etc), poor availability of spare parts among others.

Much of the available cropland remains under-utilized with smallholders using only 60 per cent of their land for agricultural production.

To increase agricultural productivity and improve farming as a business, farmers need capital investment in infrastructure, value-addition technologies and general farm development.

CHAPTER 2: TOWARDS THE AGRICULTURAL MECHANIZATION POLICY

Currently there is no policy on agricultural mechanization in Kajiado County. For agricultural mechanization to make a contribution to agricultural development and effectively contribute to increased food security there is need to promote the development and adoption of modern, appropriate, cost effective and environmentally safe mechanization technologies for crops, livestock and fisheries production. Furthermore, the County has an enormous potential for crops, livestock and fisheries production that remains largely untapped. This policy aims at giving a clear direction for sustainable growth and development of agricultural mechanization in the County.

2.0 Rationale and Objectives of the Policy

2.1 Policy Rationale

The Constitution of Kenya, 2010 assures Kenyans of the right to be free from hunger and to have adequate food of acceptable quality (Article 43 (c)). The provisions related to agricultural mechanization at the national government include: protection of the environment and natural resources with a view of establishing a durable and sustainable system of development, construction of dams, agricultural policy, capacity building, technical assistance to the counties and public investment.

At the County government level the functions assigned by the Fourth Schedule and Kenya Gazette Supplement (No. 116 of 9th August 2013) include: Agricultural extension and farmer advisory services, Development of programmes to intervene on soil and water management and conservation of the natural resource base for agriculture; land development services such as construction of earth dams and water pans for agricultural production for food security.

The agricultural mechanization policy takes cognizance of the obligations of the County government with regard to its development and implementation respectively. The policy recognizes and upholds the participation of all the relevant stakeholders including farmers and the communities in its implementation, as a national value and principle of governance.

The implementation of this agricultural mechanization policy will require active stakeholder participation. It will be complemented by institutional and legal frameworks and sectoral strategies which will provide an enabling environment for orderly and rapid development of the mechanization sub-sector. The policy will further seek to stimulate and guide agricultural mechanization development through targeted technical support, intensified investment, extension services and capacity building for both staff and farmer organizations, to ensure development and sustainability of the sub-sector.

The Vision and Guiding Principles of this policy are aligned to Vision 2030 and other relevant policies and strategies in the sector including Agricultural Transformation and Growth Strategy (AT&GS), Agriculture Policy (under development) and National Land Policy 2007. This policy further makes reference to various and relevant Acts including Agriculture and Food Authority (AFA) Act 2013, Crops Act 2013, Kenya Agriculture Livestock Research Organization (KALRO) Act 2013, Water Act 2002, Environmental Management and Coordination (EMCA) Act 1999. The policy takes into account the relevant and emerging issues that affect or are affected by the sub-sector at the international, regional, national and county levels.

Expansion in farming coupled with campaigns to attract the youth to agriculture explains the need to further promote agricultural mechanization and more so anchoring it in policy. Further, there is need to bring on board the private sector players who are the drivers of the economy.

2.2 Policy Objectives

2.2.1 Overall Objective

The overall objective is to sustainably raise the level of mechanization of the agricultural sector in Kajiado county for increased productivity and incomes.

2.2.2 Specific objectives

The specific objectives of the policy are to:

- i. Promote acquisition and utilization of agricultural technologies to enhance adoption of sustainable agricultural land management practices.
- ii. Strengthen County Agricultural Mechanization Services stations capacity for generating technical information, training machinery operators and provision of referral workshop services for testing/evaluating agricultural machinery.
- iii. Promote climate smart agricultural mechanization measures to mitigate the adverse effects of climate change.
- iv. Promote and regulate agricultural mechanization quality and standards.
- v. Promote agricultural mechanization technologies that are gender and youth responsive in agricultural activities through agricultural mechanization.
- vi. Formulate and implement incentive frameworks for acquisition and financing of labour saving technologies and stimulate mobilization of resources for investment in agricultural mechanization.
- vii. Establish an effective and efficient institutional framework for development of agricultural mechanization.
- viii. Promote Public-Private-Partnership in agricultural mechanization service delivery.
- ix. To refocus mechanization extension and technology repackaging for enhanced adoption by stakeholders in agricultural mechanization for increased productivity.

CHAPTER 3: CHALLENGES AND POLICY INTERVENTIONS

3.1 Investments in Agricultural Mechanization

Mechanized agriculture in primary production and postharvest handling is still low in Kajiado County mainly because of the limited awareness of the scope of mechanized agriculture among farmers and pastoralists. This is a major factor contributing to low levels of production, productivity, commercialization and value addition. Agricultural mechanization in the County requires major investment to industrialize. In addition, mechanization involves other processes along agriculture value chains. As the County endeavors to increase productivity, more investment is required to meet these demands. Investments in mechanization are majorly public-private-partnership driven with the government providing appropriate environment while private sector manufactures and distributes. Despite this fact the industry has not attracted sufficient investment for its growth.

Challenges

- High investment costs and expensive financial services contributing to un-favorable investment climate
- Inadequate knowledge on investment in agricultural mechanization
- Multiple taxation in agricultural mechanization value chain and unfavourable taxation regime
- Inadequate dealership for agricultural machinery and equipment.
- Low production due to a combination of high cost of agricultural mechanization and financial services for investment.

Interventions

- Refurbish and equip the Agricultural Mechanization Services stations in the County for training machinery operators, generating technical information and provision of referral workshop services for testing and evaluating agricultural machinery
- Increase the existing pool by additional tractors that are fully equipped with requisite accessories for primary and secondary farm operations.
- Promote and support mechanization for both dairy and beef subsectors.
- Support the development of linkages/partnerships that encourage and promote access, use and uptake of appropriate agricultural mechanization packages.
- Facilitate access to financial products including credit, leasing and hire services through PPPs.
- Provide incentives for financing agricultural mechanization investment
- Provide enabling environment and promote after sales service and spare parts network.

3.2 Extension and Technology Adoption

Agricultural mechanization technology requires extension services to create awareness and demand. Skilled human resource is critical in agricultural mechanization extension. The critical skills are required by artisans, operators, and farmers, other end-users, service providers (mechanics, engineers), suppliers and extension agents. The agents delivering mechanization extension have inadequate specialized skills due to insufficient training opportunities and institutions.

Challenges

- Weak research-extension-industry linkages, networking and collaboration in technology development
- Inadequate technical skills and human resource for agricultural mechanization extension
- Low accessibility and adoption of agricultural mechanization technologies
- Inadequate agricultural information and data management
- Inadequate private sector participation in agricultural mechanization services delivery

Interventions

- Develop capacity for agricultural mechanization extension services
- Building and strengthening the capacity of public and private extension workers to provide quality extension services in agricultural mechanization.
- Strengthen research-extension-industry linkages
- Promote progressive agricultural mechanization technologies
- Support individuals, community based organizations and co-operatives to provide contracted agricultural mechanization services for improved technology accessibility and adoption
- Collaborate and network with stakeholders to enhance agricultural mechanization technology transfer and adoption.

3.3 Soil and Water Conservation, Environment and Climate Change

The current farming practices in the county have resulted to degradation through erosion, excessive mining of soils, and deforestation. On the other hand, climate change has been associated with frequent, severe and prolonged droughts and flash floods thereby resulting to further degradation, low productivity and loss of livelihood.

Environmental conservation is key to agricultural development as it assures sustainability of natural resource base for use by future generations. Adopting more resilient and sustainable agricultural systems will mitigate effects of climate change while feeding the growing

population. Mechanized soil and water conservation is one form of mitigation in proper land development measures and use of conservation agriculture techniques.

Challenges

- Inadequate investment and development in soil and water conservation
- Poor land use and management practices
- Underdeveloped alternative energy for mechanization
- Lack of agricultural machinery inspection regulations to enforce emission controls
- Insufficient knowledge on appropriate mechanization technology that respond to climate change
- Declining agricultural land productivity due to climate change, uncontrolled subdivision and improper land use
- Spread of soil-borne vectors through uncontrolled movement of machinery

Interventions

- Promote soil and water conservation initiatives
- Promote climate smart agriculture
- Develop land-use Master plan for sustainable land management
- Put in place measures to ensure machinery are sterilized against soil-borne vectors before they are moved to a different area/farm.
- Deliberate efforts should be made to encourage water harvesting and improvement in soil moisture content
- Put in place a legal framework for management of soil and water conservation

3.4 Agricultural Mechanization Quality Assurance

Imported agricultural machinery and equipment are not necessarily designed to operate in the various Kenyan agro-ecological conditions Kajiado included. They are imported without any standardized testing and evaluation. In addition, some locally manufactured agricultural implements are reported to be of substandard quality. This low quality machinery leads to financial losses and is also unsafe for operation in the fields, hence the need for standardization and testing. Quality assurance ensures adherence to high standards and provides a significant benefit by guaranteeing safety and smooth operations for product users.

Challenges

- Insufficient performance data and information on different agricultural machinery and technology
- Inadequate standards and testing procedures
- Poor quality of both locally manufactured and some imported machinery and equipment

- Poor quality post-harvest machinery, farm structures and practices
- Inappropriate designs and layouts of processing facilities leading to poor quality of the processed products
- Poor quality of some raw materials for manufacture
- Lack of capacity (trained personnel, infrastructure, equipment) for testing and evaluation of agricultural machinery and equipment for quality assurance.

Interventions

- Establish a County data bank for agricultural mechanization technologies and machinery
- Support skills development for artisans, technicians and mechanics
- Identify land support local private engineering fabrication enterprises/artisan groups with adequate capacity and skills to handle fabrication of selected equipment prototypes
- Enforce standards for locally manufactured and imported machinery and equipment.
- Enhance the quality of post-harvest machinery and practices

3.5 CROSS CUTTING ISSUES IN AGRICULTURAL MECHANISATION

The main cross cutting issues in agricultural mechanization include matters related to vulnerable groups, gender and Youth in agriculture.

3.5.1 Vulnerable Groups and Agricultural Mechanization

The vulnerable groups include, People Living with HIV/AIDS, differently abled People, alcohol and drugs dependent persons, resource poor, orphans and the aged and rely on agriculture for their livelihoods. The groups lack employment, capital and in some cases, skills necessary to enhance agricultural productivity. Agricultural mechanization is a key factor identified to address the condition.

Challenges

- Lack of skills, experience and source of earnings
- Stigmatization and withdrawal
- Lack of mechanization technologies tailored for the vulnerable groups

Interventions

- Promote and support initiatives that will address challenges facing the vulnerable groups
- Enhance economic empowerment to the vulnerable

3.5.2 Gender in Agricultural Mechanization

Gender roles and responsibilities are dynamic and they respond to changing economic circumstances. Different gender have specific role in agricultural mechanization. Generally the males are involved in manufacturing, sales and operation while females and youth have limited roles other than learning basic skills and technology. In agricultural development, men, women and youth are recognized as equally important players, but women and young farmers generally face more socio-cultural and socio-economic constraints than men.

There is a decreasing number of young people involved in agriculture as an occupation. This is an undesirable signal of distress in the agricultural sector that is already negatively impacting on the national economy. As farm power mechanization directly relate to agricultural labour, gender dimensions need to be addressed as an integral part of mechanization interventions. There is need to encourage and promote application of agricultural mechanization in all farming systems for effectiveness and efficiency and to remove drudgery associated with manual labour.

There is a shortage of gender friendly technologies geared towards addressing the issues specifically for women, youth and people with disabilities.

Challenges

- Lack of information and appropriate protective kits in agricultural mechanization predisposes them to more occupational hazards
- Income insecurity
- Inadequate gender sensitive mechanization technologies
- Negative cultural practices

Interventions

- Promote availability and appropriate gender friendly mechanization technologies
- Create awareness on use of appropriate mechanization technologies
- Develop capacity to counter negative cultural practices

3.5.3 Youth and Agricultural Mechanization

In the County, young people in the community are mostly the herders of the family wealth and it is normal practice for them to move around even for miles in search of pastures. The nature of pastoralism affects the lives of families who relocate for months. School going children in the families are withdrawn leading to delay in completing school or dropping out altogether. Pasture production and management are given prominence in the County because of the demand from the farmers who face shortage of animal feed. This shortage has

escalated to occasional conflicts during dry seasons with neighboring Counties. Pastures in Kajiado County are shrinking due to land division, long droughts, and in the recent past the invasive Ipomea weed that is limiting the pasture that grows in the range lands.

Challenges

- The drudgery nature of agriculture.
- Negative attitude towards agricultural activities by the youth.
- Lack of ownership and access to land by majority of the youth acts as a dis-incentive.
- Limited opportunities for the youth to participate in value chains.
- Lack of collateral.
- Low commercialization of agriculture.

Interventions

- Train a critical mass of rural youth in fabrication, operation and maintenance of agricultural machinery and tools.
- Promote youth friendly agricultural mechanization technologies and innovative initiatives.
- Promote customized, affordable and innovative credit products and packages for the youth in agricultural mechanization.
- Develop capacity to counter negative attitude of the youth about agriculture.

CHAPTER 4: INSTITUTIONAL AND LEGAL FRAMEWORK

4.1 Institutions

There are various institutions that are involved either directly or indirectly in the agricultural mechanization sub-sector. These institutions are classified as public, private and development agencies and are interlinked by different mandates and responsibilities along the mechanization value chain. At the County level, the institution dealing with agricultural mechanization in the public sector is the AMSs. Others include farmer/pastoralist/fisherfolk organizations, processors, research institutions, private sector and Non-Governmental Organizations.

Institutional Challenges

- Limited coordination resulting in low effectiveness and efficiency
- Inadequate funds to support mechanization initiatives
- Lack of agricultural machinery field testing and training institutions
- Inadequate institutional and legal framework

Intervention

- Create an Agricultural Mechanization Services Fund
- Oversee and coordinate agricultural mechanization sub-sector entities and agencies;
- Collaborate and liaise with other agencies involved in agricultural mechanization development at local, regional and international levels;
- Jointly formulate County projects and programmes in collaboration with other stakeholders.
- Mobilize resources and finances for the sub-sector;
- Establish a County Agricultural Mechanization Data Management Information System (AMDMIS);
- Conduct monitoring and evaluation of agricultural mechanization policy implementation;
- Support capacity building for agricultural mechanization contracting service providers.

4.1.1 Agricultural Mechanization Services Fund

A County Agricultural Mechanization Development Services Fund (AMSF) shall be established to facilitate the development of agricultural mechanization sub-sector. The funds for the AMSF will be drawn from the County government, development partners and other stakeholders for the following purposes:

- Support development, repairs, maintenance, improvement and rehabilitation of agricultural mechanization services within the public sector institutions.
- Provide grants and loans for development of agricultural mechanization in the County

4.2 LEGAL FRAMEWORK

The County Governments in consultation with the National Government and other sectoral agencies and development agencies shall formulate legal framework for the implementation of this policy. The envisaged framework will provide for the establishment of an administrative mechanism to operationalize this policy. The framework shall feed into the wider establishment of new institutions, review and re-organize the existing institutions and other mechanisms to operationalize this policy.

CHAPTER 5: MONITORING AND EVALUATION

In order to track the implementation of this policy, it will be essential to record and measure progress, changes as well as the overall performance of the agricultural mechanization sub-sector. Monitoring and evaluation (M&E) will provide reliable and timely data to inform the decision makers, stakeholders and the public on progress, results and shortcomings of the policy implementation.

A highly consultative and participatory monitoring and evaluation process will be adopted to facilitate periodic reviews of the Agricultural mechanization Policy and its contribution to the County economy. An M&E Committee with representatives of County government, farmers and various stakeholders will be established within the Agricultural Mechanization Services to ensure M&E provides reliable and timely data for planning purposes.

The Committee in collaboration with other stakeholders will be responsible for monitoring the implementation of the Policy through the various institutions that have been created by this policy with support of the relevant stakeholders. Participatory M&E will be encouraged and supported through appropriate fora at all levels. The County Government, in collaboration with other stakeholders will build capacity to formulate and implement an appropriate monitoring and evaluation system in all development within the sub-sector.

Annex 1: Stakeholder Analysis

Stakeholder	Role
Agriculture sector departments	Collaboration in programme development and implementation, coordination and policy guidelines,
Infrastructure sector ministries	Provision and development of power, roads, telecommunication,
Research and Training institutions in agricultural mechanization	Provision of expertise, capacity building, provision of science technology and innovation, collaboration and coordination of partnership in research programmes in mechanization,
Machinery and equipment manufacturers	Up scaling of Machinery and equipment
Machinery and equipment supplies/dealers	Provision of Machinery and equipment supplies
Regulatory bodies	Provision of quality, advisory services setting of standards, and regulatory services
Farmers and Farmer organizations	Empowerment, awareness creation, capacity building, resource mobilization, networking, advocacy and Technology/ information dissemination, support for production and marketing, technology adoption and uptake
Private Sector organizations	Provide partnership in research, extension, resource mobilization, entrepreneurship development
Financial Institutions	Provision of financial facilities, saving and credit, investment in capacity building and purchasing of Machinery and equipment
Development Partners	Provision of Technical support , financial assistance , capacity development
Regional and international organizations	Cooperation in areas of mechanization. Resource mobilization, technical support
NGOs,	Community empowerment, capacity building, resource mobilization, networking, advocacy and Technology/ information dissemination, technology adoption and uptake
Agro-Processors,	Provision of agro-processing machinery and equipment, capacity building, dissemination of this technologies

Annex 2: Implementation Framework

Thematic Area	Challenges	Intervention	Responsibility
Local Manufacturing and Distribution	High cost of production due to expensive raw materials, energy, labour and transport	Institute measures to reduce cost of local manufacture of agricultural machinery and equipment	DoALF, Trade Department, Ministry of Mining, The County Treasury, KRA, private sector, KAM, Ministry of Energy & Petroleum (MoE&P)
	Inadequate capacity for the local manufacturing of agricultural machinery and equipment	Develop and encourage capacity for the local manufacturing and processing	DoALF, Department of Trade, MoE&P, KAM, KEPSA, County Treasury, KRA
		Stimulate participation of local investors in manufacture and distribution of agricultural mechanization technologies.	
		Enforce minimum percent local content of im To transform Kenya's agricultural sector the Government has formulated the Agricultural Sector Transformation and Growth Strategy (ASTGS), 2019 - 2029. The strategy is anchored in the belief that food security requires a vibrant, commercial and modern agricultural sector that sustainably supports Kenya's economic development, national priorities, and commitments to the Malabo Declaration under the Comprehensive Africa Agriculture Development	

		Programme (CAADP), and the United Nations Sustainable Development Goals (SDGs). ported and locally manufactured machinery and equipment	
	Insufficient management system for repair, maintenance and replacement parts	Enhance provision of after sales service and maintenance of agricultural machinery and equipment	DoALF, Trade Department, Private sector including jua kali, KAM
	Inadequate testing capacity for locally manufactured and imported agricultural machinery and equipments	Establish an agricultural machinery and equipment testing center	DoALF, private sector, KIRDI, KEBS
Agricultural Mechanization Quality Assurance	Insufficient performance data and information on different agricultural machinery and technology	Conduct machinery census and establish data bank for agricultural mechanization technologies and machinery	DoALF, private sector, KEBS, other extension service providers
	Lack of capacity (trained personnel, infrastructure, equipment) for testing and evaluation of agricultural machinery and equipment for quality assurance	Develop capacity for testing and evaluation of agricultural machinery and equipment	DoALF, private sector, universities, KEBS, KIRDI and other extension service providers
	Poor quality of both locally manufactured and imported machinery and equipment	Enforcement of standards for locally manufactured and imported machinery and equipment through legislation	DoALF, Trade Department, universities, KEBS, KIRDI, private sector, KRA, KAM, KEPSA
	Poor quality post-harvest machinery, farm structures and practices	Enhance the quality of post-harvest machinery and practices to reduce losses and improve quality of products	DoALF, Trade Department, universities, KEBS, KIRDI, private sector, KRA, KAM, KEPSA

	Inappropriate designs and layouts of processing facilities leading to poor quality of the processed products	Develop standards for designs and layouts of processing facilities and structures to improve quality of processed products	DoALF, Trade Department, universities, KEBS, KIRDI, private sector, KRA, KAM, KEPSA
	Poor quality of raw materials for manufacture	Enforcement of standards for raw materials	DoALF, Trade Department, universities, KEBS, KIRDI, private sector, KRA, KAM, KEPSA
Investments in Agricultural Mechanization	High investment costs and expensive financial services contributing to unfavorable investment climate	Promote incentives for financing agricultural investment	DoALF, Cooperatives department, Trade Department, Social services department, KAM, KEPSA, County Treasury, KRA, KenInvest
		Encourage farmers to invest in groups or cooperatives	
	Inadequate knowledge on investment in agricultural mechanization	Capacity building on financial management for actors in the subsector	DoALF, KRA, KenInvest, Huduma Kenya
	Inadequate dealership for agricultural machinery and equipment	promote after sales service and spare parts network	DoALF, Trade Department, KRA, KEPSA, private sector
	Multiple taxation in agricultural mechanization value chain and unfavourable taxation regime	Streamline taxation regime to support local manufacturing and also to increase demand of agricultural mechanization.	DoALF, Trade Department, KAM, KEPSA, KRA, KenInvest, County Treasury
	Low production due to a combination of high cost of agricultural mechanization and financial services for investment.	Provide incentives to farmers through the proposed agricultural machinery fund	County Treasury, Roads and Infrastructure, KRA, KENAFF, MoALF, private sector
		Encourage farmers to invest in groups or cooperatives	DoALF, Cooperatives department, Trade Department, Social services department, KAM, KEPSA, County Treasury, KRA, KenInvest

Extension and Technology adoption	Weak research-extension-industry linkages, networking and collaboration in technology development	Strengthen research-extension-industry linkages	DoALF, Research & Training Institutions, KALRO, private sector, KENAFF, manufacturers,
	Inadequate technical skills and human resource for agricultural mechanization extension	Develop capacity for agricultural mechanization extension	DoALF, Training Institutions, KALRO, private sector
	Low accessibility and adoption of agricultural mechanization technologies	Promote progressive agricultural mechanization technologies	DoALF, Training Institutions, Universities, private sector, Public Service Commission
	Ineffective research-extension-farmer linkages in agricultural mechanization development	Create systems for effective stakeholders linkages in agricultural mechanization development	DoAL&F, KALRO, KIRDI Universities, International Research Institutions, private sector (jua kali) and farmer/farmer organizations
	Inadequate agricultural information and data management	Strengthen local organizations, create networks and information exchange.	DoALF, Training Institutions, Universities, private sector
	Inadequate private sector participation in agricultural mechanization services delivery	Collaborate and network with stakeholders to enhance agricultural mechanization technology transfer and adoption.	DoALF, County Government, private sector
Soil and Water conservation, Environment and Climate Change	Inadequate investment and development in soil and water conservation	Promote soil and water conservation initiatives	DoALF, KEBS, KIRDI, private sector, KRA, KAM, KENAFF, NEMA
	Lack of institutional framework for management of soil and water conservation	Enact a County Soil and Water Conservation Act	DoALF, County Assembly

	Poor land use and management practices, uncontrolled subdivision and improper land use	Develop land-use Master plan for sustainable land management	County Lands and physical planning, NLC, NGOs
Insufficient knowledge on appropriate mechanization technology that respond to climate change	Underdeveloped alternative energy for mechanization	Develop and deploy technologies that use alternative energy sources	DoAL&F, KALRO, KIRDI, NACOSTI, Universities, International Research Institutions, Private Sector, farmer/farmer organizations
	Lack of agricultural machinery inspection regulations to enforce emission controls	Pass regulations on machinery inspection and emission control	DoAL&F, County Assembly, NEMA, KeBS, KIRDI, farmers, KALRO, departments of Water, Environment & Natural Resources
	Declining agricultural land productivity due to climate change	promote climate smart agriculture	DoAL&F, NEMA, farmers, KALRO, departments of Water & Irrigation, Environment & Natural Resources
	Spread of soil-borne vectors through uncontrolled movement of machinery	Put in place measures to ensure machinery are sterilized against soil-borne vectors before they are moved to a different area/farm.	DoAL&F, NEMA, farmers, KALRO, Environment & Natural Resources
Vulnerable Groups and Agricultural Mechanization	Lack of skills, experience and source of earnings	promote and support initiatives that will address challenges facing the vulnerable groups	DoALF, departments of Health and social services NACC, NGOs
	Stigmatization and withdrawal	Sensitization of the public against stigmatization	
	Lack of mechanization technologies tailored for the vulnerable groups	Promote agricultural mechanization technologies appropriate for the vulnerable target group	DoALF, KALRO, Training Institutions
Gender in Agricultural Mechanization	Lack of information and appropriate protective kits in agricultural mechanization	Create awareness on use of appropriate mechanization technologies	DoALF, National Gender & Equality Commission, private sector, NGOs.

	predisposes them to more occupational hazards		
	Income insecurity	Enhance economic empowerment to the vulnerable	
	Inadequate gender sensitive mechanization technologies	Promote appropriate gender friendly mechanization technologies	
	Negative cultural practices	Develop capacity to counter negative cultural practices	
Youth and Agricultural Mechanization	The drudgery nature of agriculture and low rate and duration of returns	Promote youth friendly agricultural mechanization technologies and innovative initiatives	DoALF, Ministry of Internal Security and Coordination of National Government, ICT, private sector, NGOs.
	Low commercialization of agriculture	Develop capacity to counter negative cultural practices and believes	
	Negative attitude towards agricultural activities	Introduce and promote agro-based technology uptake by the youths	
	Lack of ownership and access to land by majority of the youth acts as a dis-incentive	Promote customized, affordable and innovative credit products and packages for the youth in agricultural mechanization	DoALF, Financial Institutions, Private Sector, Youth organizations
	Limited opportunities for the youth to participate in value chains		
	Lack of collateral		
Institutional and Legal Framework	Inadequate funds to support mechanization initiatives	Establish an agricultural mechanization fund	DoALF, County Assembly
	Inadequate legal framework	Revise and formulate necessary regulations as per this policy	