

# **Review of National Policies Affecting the Spread of Small Mechanization in Rural Kenya**

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## **Summary**

Agricultural sector in Kenya is a key source of food, employment, income and raw material for agro base production. The main source of farm power is human using traditional implement and this result into low production and productivity. The Government of Kenya has been working towards the development of the sector through different efforts including agricultural mechanization. The government started this by introducing tractor hire services immediately after independence. It also established machinery hire services and later on introduced the agricultural technology development centers. Some of the policies also cover issues of agricultural mechanization. With all this effort to promote agricultural mechanization for the last 50 years, the development of agricultural mechanization has been very slow. The major factors contributing to the slow development include low purchasing power of small scale farmers, low producer prices, high cost of agricultural machinery and poor technical know-how. There is an urgent need to fast track the agricultural mechanization development with special reference to small scale farmers to increase agricultural production and productivity. This could be done by compressively incorporating agricultural mechanization issues into the national policy. Some of the policies have attempted to promote mechanization but there is still some missing gaps .This could achieved through putting a comprehensive agricultural mechanization policy and strategy which fully covers extension services, research and training, financial services, manufacturing and supply of machineries and equipment that best-fit to the smallholders' context.

*Key words: Agricultural mechanization, policies, Kenya.*

## **1. Introduction**

In Kenya, agriculture is an important tool and vehicle for employment creation and reduction in poverty and it is still the backbone of the Kenyan economy. Agriculture directly contributes 26% of the Gross Domestic Product (GDP) and 60 % of the export earnings. The sector also indirectly contributes a further 27% to the GDP through linkages with manufacturing, distribution and service related sectors. It accounts for 60% of total national employment, with women providing 75% of labour force. Majority of the people who are poor in Kenya (80%) live in rural areas and derive their livelihood from agriculture. With 51% of Kenyan population being food insecure, agriculture is critical in the country's economic development and alleviation of poverty.

There is generally low level of agricultural mechanization in Kenya. It is mainly concentrated on the most productive part of the country. Commercial crops are high mechanized more than the food crops. Small holders' farmers still use manually operated and traditional farm tools while large scale farms use modern agricultural machines and equipment's. The tractor hire services initially introduced by the government is not currently sustainable both for the services provide and the farmers. Animal draft power was very popular ten years ago but now they are very expensive to maintain due to reduce land size as a result of land sub division.

One reason for low use of agricultural machine is because local manufacture is quite low and imported machines are very expensive. Currently most of the machines are imported from Asia and few from Europe. Only few artisan have the capacity to make agricultural machine.

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 equipment depends upon, operation, farm size and availability of traction power. Provision of agricultural mechanization services is offered by individual farmers, private contractors and the public sector including Agricultural Mechanization Stations (AMS) and Agricultural Technology Development Centres (ATDCs).

Table 1. Agricultural mechanization development stage

Activity	Stage 1	Stage 2	Currently/ Future
Ploughing	Manual/Animal powered	Large machine/tractor	Small, medium machine
Transplanting	Manual/Animal powered	Manual/Animal powered	Manual/Animal powered
Pumping	Small, medium machine	Small, medium machine	Small, medium machine
Pest control	Small, medium machine	Small, medium machine	Small, medium machine
Harvesting	Manual	Manual	Manual
Threshing	Manual	Manual/small machine	Manual/small machines
Drying	Manual	Manual	Manual

The ancient mechanization in Kenya started by the use of hand tools by farming communities. The European colonial farmers then introduced animal draft power in the white settler farmers in the early 1900. The white settler also used mechanically powered machines in their farm alongside with the draft animals.

Agricultural machinery services were established in the pre-independence Kenya in 1947. They were 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 levelling. 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). They mainly benefited the large scale farmers while the small scale farmers use the hand tools.

In 1959, the colonial government started Agricultural machinery testing unit in Nakuru. The unit was to oversee the testing of both agricultural machinery and equipment including

Tractor Testing (local or imported). The mandate included the testing and evaluating all agricultural machinery imported into the country and upon certification, issue certificates.

It was only after testing was done and a certificate issued by the Ministry that would any suppliers be allowed to import machinery and equipment. This unit was in charge of quality control after field tests. This program was discontinued after the market liberalization (SAPs 1986). The unit has since ceased to exist due to operational and funding challenges.

In 1986 the Government established rural technology development Centre. The mandate of the center was to promote small scale mechanization. In 2006 as part of the Ministry strategy to revitalize agriculture, they were rebranded ATDC. Their mandate of ATDCs included; agricultural mechanization; agro-processing, renewable energy and storage.

Agricultural mechanization is a major agricultural production input and a catalyst for rural development. It is the application of mechanical technology and increased power to agriculture, largely as a means to enhance the productivity of human labour and often to achieve results well beyond the capacity of 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; reduce drudgery in farming activities, thereby enhancing lifestyles. 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 in the country include human power, animal power, mechanical power, electrical power, and renewable energy. Inherent drudgery and limited capacities are major disadvantages for operations where timeliness is paramount. There is also a disadvantage where high precision and repeatability are desired.

The purpose of this paper is to Identify policy environments that have potentially facilitate the wider expansion of smallholder farm mechanization in Kenya and Identify key policy gaps, constraints and opportunities related to the expansion of farm mechanization. We hope this will facilitate dialogue among policymakers, the private sector, and academia .The objective of this study is therefore to take stock or review the existing body of knowledge, distil the main policy issues and findings, and to identify the gaps. The findings and lessons from research will feed into the ongoing debates and policy formulation, and the identified knowledge gaps will help formulate the immediate and long term agricultural policy research

agenda. The inventory and the identified gaps will also assist the government in identifying policy research areas to support the implementation of the improved agricultural mechanization.

## **2. Analytical Framework**

From the above background, Agricultural mechanization is fundamental for improved agricultural production and productivity. Within this process policy reforms play the most critical role. It is in this context that this paper reviews the role of the policy in improvement of agricultural mechanization in Kenya. Improving agricultural mechanization is based on policy issues such as land tenure, skill and education, research and development, infrastructure as well fiscal and monetary regulations. We will not be able to separate the impact of each policy on agricultural mechanization but will identify the salient section of the national policy that encourage or discourage agricultural mechanization in Kenya. The overall output of this paper is most prominent features of this national policy that can facilitate or constrains small scale agricultural mechanization.

We look at Policies affecting border crossing machinery and related trades. This will encourage or discourage importation of the machine. The development of the local manufacturing is also related to the enabling environment created by the government we the go further to review policies affecting the transfer of machineries along the supply chain. Policies affecting the utilization of small mechanization, this determines whether the farmers will buy the machine or hire it. Ownership of land and the capacity for them to fully utilize the benefits of their labour are two of the primary conditions for farmers to invest in land and use it as collateral. Polices that affect off farm employment such as labor laws will also determine cost of farm labor and hence investment in farm machinery. These include policies that affect investment on public goods. The issue of after sales services and training of service provides are also important at this level. Finally we came up with policy interactions and their aggregated effects on small mechanization. The above discuss leads as to think about the missing policy elements and how they could enhance small mechanization expansion.

## **3. National Policies and Agricultural Mechanization**

The distribution of the agricultural machinery is affected by the socio-economic condition, policy of the government and the will of the farmers for agricultural

mechanization. The shortage of labor force in rural area and wage hike of rural labor eventually raised the necessity of agricultural mechanization and calls for the supply of agricultural machinery. However, for the farmers who actually purchased the agricultural machinery would have economic surplus enough to purchase the agricultural machinery, economic feasibility by purchasing and utilization of agricultural machinery, and the capability and the will to handle the agricultural machinery. Especially, if purchasing power of the agricultural machinery is weak due to a lack in the economic condition with small farm structure, the finance support by government policy becomes an important factor in the supply of the agricultural machinery. Below are the national policies that affect agricultural mechanization.

### **3.1. Land tenure**

Most of the land has customary title giving the user the full right. Youth and women have no ownership right but they are free to the usage of land. The old believe that by giving the youth the right of ownership they can sell the land. This has highly discourage the youth from investing in agricultural production and hence most of the have decided to go-off farm employment. Most of the land has no title deeds hence cannot be used as collaterals accessing credit facilities that could be used to acquire farm.

This is because the process of acquiring title deeds is expensive and tedious hence discouraging to the mainly resource poor households. According to the land policy all the citizen have the opportunity to own land but it does not specify on the youth and women. The policy also does no cover on how to encourage more people to own land title deeds by reducing the cost of acquiring land deeds.

### **3.2. Importation and manufacturing**

All the farmers should be able to access appropriate machinery. This can be achieved through direct import or local manufacture. There should be policy guidelines on the right choice of the machinery to be made available to the farmers. Subsidies and duty exemption need to be worked out systematically.

### **3.3. Rural infrastructure**

Poor infrastructure affects the movement of machinery inputs like fuel and spare parts. There is also damage to machinery while being transport. The lengthy time it takes to cover long

distance in poor roads could also increase the cost of the machinery use. Policy promoting rural infrastructure can greatly improve agricultural mechanization in the rural areas where over 80% of small scale farmers are. Rural electrification could also encourage machinery maintenance workshops.

### **3.4. Financial services**

The private sector should take a leading role in the facilitating the supply of the machinery to the farmers. The commercial banks however shy away from giving small scale farmers loan. Policy makers can up with ways to encourage the banks to give loans to the small scale farmers. This may be in form of price guarantees or facilitating group loaning systems.

### **3.5. Tax and duty relief for agricultural machinery and raw materials.**

In most cases tractor and farm machinery are imported free of tax and duty. However spares and raw materials for machinery attract tax and duty .This makes locally manufactured agriculture machines very expensive as compared to imported machines. To promote local manufacture of agricultural machines, the policy makes should provide a tax exemption for the materials used for manufacture of machines for small scale farmers.

### **3.6. Measure for responding to the challenges faced by Agricultural mechanization**

The Constitution of Kenya (CoK) 2010 marks a critical stage in the country's devolution process. It assures Kenyans of the right to be free from hunger and to have adequate food of acceptable quality (Article 43(c).This right can only be realised by improving land production and productivity and this can easily be achieved by agricultural mechanization.

There are several initiatives/policies that are aimed at improving or regulating various aspects of agricultural mechanization. Some of these initiatives are outlined below.

#### **3.1. Development Plan (1979-83)**

The Government of Kenya recognized the problem of low labour productivity and spelled out in the 1979-83 Development Plan that *"low labour productivity, a major bottleneck in smallholder development, will be dealt with by appropriate mechanization to fully mobilize the ample labour capacities in rural areas."* (Government of Kenya, 1979, p. 258)

#### **3.2. The National Food and Nutrition Policy (1981)**

The National Food and Nutrition Policy document also emphasizes the point about increased production, provision of basic needs, and alleviation of poverty (Government of Kenya, 1981). Wider use of more appropriate technology and reduction of imported capital-intensive equipment are needed. With the ongoing structural changes on farms, such a call is timely; but one need to determine what levels of mechanization should be promoted.

### **3.3. Strategy for Revitalising Agriculture (2004-14)**

The strategy covers very basic areas of agricultural mechanization which include;

- Promote private sector hires services
- Provide finances for mechanization research
- Incentives for local manufacturing
- Tax incentives to international company to set up local assembly

This gave the frame work for agricultural mechanization promotion in Kenya.

### **3.4. Economic Recovery Strategy for Wealth and Employment Creation (2003-2007)**

This national policy document that covers all sectors but mainly concentrated on structural reforms.

- Mention generally on research and extension.
- Credit availability to farmers and reviving the financial institution supporting farmers.
- Value addition is also emphasis.

However it does not mention of mechanization as a way to create wealth and employment.

### **3.5. National Land Policy (2007)**

The overall objective of the National Land Policy is to secure rights over land and provide for sustainable growth, investment and poverty alleviation in line with the Government's overall development objectives. The land policy seeks to address the challenges of rapid urbanisation, inadequate land use planning, unsustainable production, poor environmental management, and inappropriate ecosystem protection and management.

The land policy emphasis the following issue

- provides all citizens with the opportunity to access and beneficially occupy and use land

- provides for economically, socially equitable and environmentally sustainable allocation and use of land
- promotes the efficient, effective and economical operation of the land market

The document remains silent on facilitating the use of land as collateral to secure credit especially for the small scale farmers. There is a need for efficient land market to stimulate investment in the sector and to improve the value of land as a collateral .Policy measure should be put in place to ensure that all land are allocated title deeds as soon as possible and at affordable cost. It should also include measures to transform land use for better and sustainable use , creating a consolidated geographic information system (GIS) based land registry, developing and implementing a land use master plan, investing in institutions and infrastructure, and settling the landless poor.

### **3.6. National trade Policy (2009)**

The policy covers the following two areas in relation to Agricultural mechanization.

- The Kenya Bureau of Standards (KEBS), standardization and testing of goods. But there is no specific reference of testing of agricultural machinery.
- Export processing zone scheme-Free importation of machines.

### **3.7. National Horticulture Policy (2010)**

The policy Identifies low usage of mechanization technology as one of the course of low performance of the horticultural sector. It then goes further to propose partner with private sector to enable farmers afford farm equipment.

### **3.8. Kenya National Industrialization Policy Framework (2010)**

This policy focus on some salient aspect of agricultural mechanization

- Promote the usage of farm machinery
- Provide tax exemptions on imported farm machines and implements
- Promote local manufacture of agro-processing machinery and equipment
- Provide incentives for investment in high value processing

However there is no strategy for the implementation of these issues.

### **3.9. National Agribusiness Strategy (2012)**

The aim of the policy is transforming subsistence farming to innovate commercially oriented modern agriculture. It mentions farm Machinery as key drivers of agribusiness and Emphasis on market as a centre for processing.

Finally it suggest that for turning agriculture to agribusiness improving range of financial and non-financial services is very necessary. All these are very important for improving agricultural mechanization.

### **3.10. National Agricultural Research System Policy (July 2012)**

National agricultural research system policy under the agricultural sector development strategy(ASDS) for the period 2010-2020 ,aims to create, guide and coordinate a diverse set of entities engaged in agricultural technology development and deployment.

The policy is to achieve the following among others;

- Establish an integrated national agricultural research system that guides and supports the development of an innovative, commercially oriented, and modern agricultural sector;
- Harness the best science, technology and indigenous knowledge in accordance with professional ethics and scientific judgment, for implementing the agreed research agenda;
- Promote an effective delivery system that facilitates prompt application of agricultural research results and services;
- Institutionalize participatory planning, priority setting, programming, and monitoring and evaluation for an agreed national research agenda;
- Design a novel funding mechanism for agricultural research that ensures adequacy, predictability and sustainability of research;
- Formulate a comprehensive framework for partnership building and consultation with stakeholder.

The policy created a national coordinating body called KALRO which is to work together with the following;

- Parastatal research institutes
- State corporations research institutes
- Public and private universities

The institutional support for research is vested in the National Agricultural and livestock Research organization (KALRO) which is mandated to undertake research activities aimed at increasing the production of crops and livestock for national food self-sufficiency and exports. The research institutes are organised along the commodity lines food crop, horticultural, industrial crops, Livestock, forestry, environment and fisheries.

KALRO has put in place platforms to handle the following areas, agribusiness and market systems, socio-economic, bioethics, ecosystems resilience, integrated natural resources management and climate change, mechanization and energy, and health and nutrition.

In view of the above there is lack of emphasis on mechanization and in particular targeting small scale farmers. Mechanisation is only mentioned as a platform and not main research agenda. Specific policy measures are needed to address mechanization research issues. In particular, the policy should create a specific institution to handle mechanisation research.

### **3.11. Industrial Policy**

The industrial policy should encourage establishment of the local industries and export market hence movement of labour from farms to the industries. This result into labour shortage and farm wages will go up and this necessitates the use of farm machinery.

Encouraging international company to set up local assembly would drastically improve the supply of machinery at national level.

Systematic and active support of the agricultural machinery manufacturing sector.

#### 4. Policy Interactions and their Aggregated Effects on Small Mechanization

Table 2. Summary table on policy assessment in relation to small mechanization

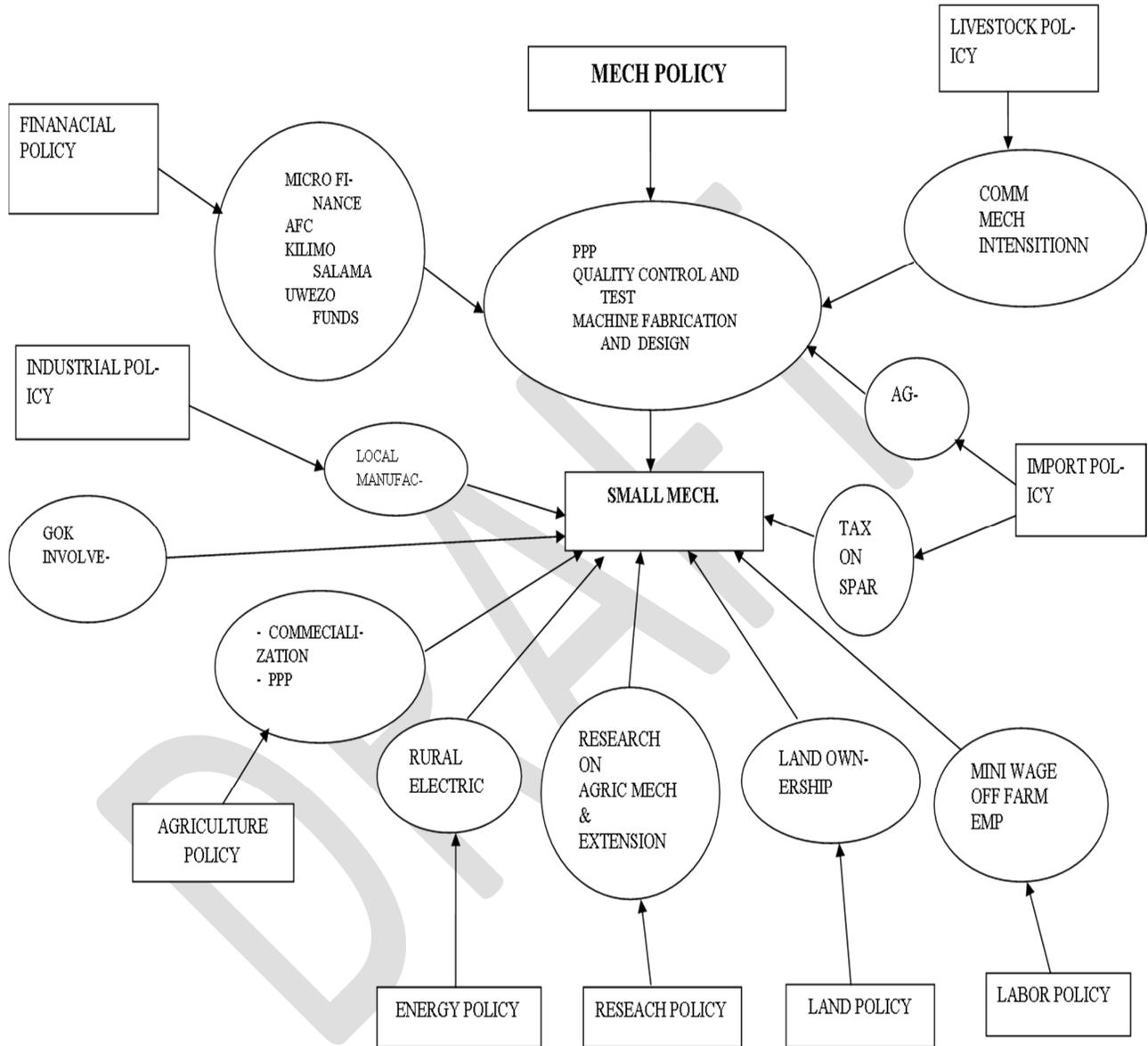
<b>Policy areas affecting agricultural mechanization expansion</b>	<b>Does it exist? Yes/No</b>	<b>Elements encouraging small mechanization as stated in the policy</b>	<b>Elements discouraging small mechanization expansion as stated in the policy</b>	<b>What element(s) is (are) missing?</b>
National Agricultural Mechanization policy (2016)	No	N/A	N/A	<ul style="list-style-type: none"> <li>• Use of agricultural machinery to off farm activities</li> <li>• Machinery hire services</li> <li>• Group own ship</li> <li>• Establishing new supply chain for agricultural machineries.</li> <li>• Shift away from direct ownership of agricultural machineries.</li> <li>• Quality control and product testing.</li> <li>• Institutions and legal frameworks</li> </ul>
National Agriculture policy  Agricultural intensification (transformation, etc.)	Yes	Commercialization ,Private sector involvement, Agro processing, Agribusiness Demand driven Farmer Credit facilities, Value addition and agro-processing	<ul style="list-style-type: none"> <li>• Creation of marketing Authority that concentrate on the traditional cash crops</li> </ul>	<ul style="list-style-type: none"> <li>• Extension on Conservation agriculture</li> <li>• Agricultural mechanization</li> <li>• Encourage private extension services</li> </ul>
Livestock Policy (intensification)	Yes	Commercialization, Mechanization		<ul style="list-style-type: none"> <li>• Reduction of use of animal draft power</li> </ul>

Labor productivity vs displacement	Yes	<ul style="list-style-type: none"> <li>• Rising of the minimum wages</li> <li>• Labor unions</li> </ul>		<ul style="list-style-type: none"> <li>• Off farm employment opportunities</li> </ul>
National Energy Policy(2012) (relative to labor market)	Yes			<ul style="list-style-type: none"> <li>• Promotion of renewable energy</li> <li>• Subsidies on fuel use on farm machinery</li> </ul>
National Land policy (ownership, tenure, etc.)	Yes	<ul style="list-style-type: none"> <li>• Land ownership</li> <li>• secure rights over land</li> <li>• investment and the reduction of poverty</li> <li>• An efficient and effective utilization of land and land-based resources.</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction of taxes</li> <li>• Cost of valuation and survey</li> </ul>	<ul style="list-style-type: none"> <li>• Land registration</li> <li>• Establishment secure land transaction system</li> <li>• Encourage youth and women to be given land deeds.</li> </ul>
Import policy (taxes, subsidies)	Yes	<ul style="list-style-type: none"> <li>• No taxes on importation of agricultural machinery</li> </ul>	<ul style="list-style-type: none"> <li>• Taxes on machinery spares and materials</li> </ul>	<ul style="list-style-type: none"> <li>• Free importation of agricultural machinery spares and materials.</li> </ul>
Kenya national industrialization policy framework (2010)  Industrial Policy (incentives for local manufacturing, absorbing labor to industrial sector)	Yes	<ul style="list-style-type: none"> <li>• Incentive for international company to set local Plants</li> <li>• Promote the usage of farm machinery</li> <li>• Provide tax exemptions on imported farm machines and implements</li> <li>• Promote local manufacture of agro-processing machinery and equipment</li> <li>• Provide incentives for investment in high value processing</li> </ul>	<ul style="list-style-type: none"> <li>• Public involvement on industries</li> </ul>	<ul style="list-style-type: none"> <li>• development of local industries for the production of machinery and implements,</li> <li>• Rising of real wages</li> <li>• Promote the setting up of rural industry</li> </ul>
Subsidies on machinery (with	NO			

view of phasing them out)				
Environmental policy		<ul style="list-style-type: none"> <li>• contribute to sustainable land use through soil, water and biodiversity conservation</li> <li>• Emphasis on conservation agriculture</li> <li>• Creation of NEMA</li> </ul>		
National agricultural research system policy(2012), National Agricultural sector extension policy (2012)	Yes	<ul style="list-style-type: none"> <li>• Partnership and collaboration</li> <li>• Link research to end user</li> <li>• Human resource development</li> <li>• Private sector to take up extension</li> <li>• Decentralisation/empowering farmers organization</li> <li>• Technology development is demand driven, market oriented and covers entire value chain</li> <li>• Creation of KALRO(Kenya agriculture and livestock research organization)</li> </ul>		<ul style="list-style-type: none"> <li>• Research on agricultural mechanization</li> <li>• Training and extension covering agricultural mechanization.</li> <li>• Establish and upgrade training facilities</li> <li>• Vocational training</li> <li>• Public-private partnership in research</li> <li>• Creation of Regional networks on agricultural mechanization</li> </ul>
Business environment (PPP, etc.)				<ul style="list-style-type: none"> <li>• Technical support and business advisory services.</li> <li>• Support the development of partnerships and alliances</li> <li>• Establishment of market information system</li> </ul>

				<ul style="list-style-type: none"> <li>• Development of one stop shop</li> </ul>
Regulation and enforcement (mobility, quality etc.)		<ul style="list-style-type: none"> <li>• Standardization and testing</li> </ul>		<ul style="list-style-type: none"> <li>• Free movement of agricultural machinery</li> </ul>
Infrastructure (national and local roads, electricity, etc.)		<ul style="list-style-type: none"> <li>• Rural Electrification</li> <li>• Rural road network</li> <li>• Irrigation infrastructure</li> <li>• Creation of rural road development Authority</li> </ul>		
Finance, credit, insurance	Yes	<ul style="list-style-type: none"> <li>• credit for agricultural machinery</li> <li>• Creation of Agricultural</li> <li>• Finance cooperation</li> <li>• <i>Kilimo Salama-</i></li> <li>• <i>Uwezo</i> funds</li> </ul>		<ul style="list-style-type: none"> <li>• Credit targeting mall scale farmers.</li> <li>• Establishing credit guarantees</li> </ul>
Pricing policy on agricultural commodities	Yes	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Setting of price of major commodities.</li> <li>• Production cost of maize is 500 yet Kenya it is 2000</li> </ul>	

## 5. Interaction effect of policies on Agricultural Mechanization



## **6. Missing policy elements and how they could enhance small mechanization expansion**

Access to credit at the right time and in sufficient quantities are necessary conditions for success for farmers and agribusiness entrepreneurs along agricultural value chain in Africa. However, over the last 3 decades, these conditions were never met in the Kenya.

The interest rates being charged by the various financial institutions especially commercial banks have been on the high side. Most of the farmers find it unaffordable to access agricultural credits in the continents. Land available for agriculture is another potential factor that should decide the magnitude of agricultural credit in the continents. Land available for agriculture has positive significant impact on agricultural credit in Kenya. Overall governance issues are crucial to addressing the challenges of low and dwindling agricultural credit in Africa.

The policy implications of our findings must be stressed. The agricultural banks in the Kenya (AFC) should ensure a reduction in lending rate. Formation of Cooperative Societies, Thrift and Credit societies among the farmers in the continents should be encouraged in order solve the problem of credit denial by banks on the account of collateral securities. Institutions should be strengthened to enhance reduction in corruption and enforce accountability across the continent. Efforts towards poverty reduction and implementation of the MDG policy should be intensified. Provision of agriculture based infrastructural facilities like good roads, tractors and others will complement and enhance judicious use of agricultural credit in Africa.

From the above policy review there is frustration associated with acquiring land title deeds. The processing is time consuming and very costly. The land policy is well document but there is lack of a strategy document which will create incentives targeting the small scale farmers to acquire land title deeds.

Table3 . Agricultural mechanization issues and gaps

<b>Agricultural mechanization issues</b>	<b>What has been done</b>	<b>What is missing</b>
Research and training	Several institutions established .Universities, KALRO	<ul style="list-style-type: none"> <li>• Little coordination among the institutions,</li> <li>• Financing, limited human capacity</li> </ul>
Extension services	Done by Ministry of Agriculture, NGOs	Extension research linkage
Financial services	Commercial banks, Agricultural finance cooperation, <i>Uweza</i> funds.	Financial services targeting small mechanization
Regulatory and legal frame work	Certification by Kenya Bureau of standards	<ul style="list-style-type: none"> <li>• Organization charged with testing of Agricultural machinery</li> <li>• No policy making testing mandatory.</li> </ul>
Support system for distribution of agricultural machinery	Tax exemption on agricultural machinery	<ul style="list-style-type: none"> <li>• Subsidies on Agricultural machinery</li> <li>• Tax exemption on spares and material for agricultural machinery</li> <li>• Pricing policy of agricultural machinery</li> </ul>
Development of joint use of agricultural machinery	Cooperative society already registered	Capacity building of the society on agricultural mechanization

## 7. Conclusions and Implications

From the above review, it can be seen that since independence, little in terms of policy guidelines have been formulated to achieve the objective of agricultural mechanization development. However, there have been several projects and programs undertaken by the government and the international communities. This has not improved the level of mechanization in Kenya because they were not pegged on any policy framework. These different initiatives have not benefited the farmers especially small scale farmers. Some of policies have incentives for mechanization but the benefit for small scale mechanization is minimal. Where the policy may benefit small mechanization there exist a policy implementation gaps. This is due poor communication or dissemination at local level. Policy incentives that could promote the adoption of small mechanization include; Tax free, duty free and subsidies. This can have immediate impact on mechanization but the state need to create an enabling environment for the private sector to lead in the promotion of small

mechanization .this will make it more sustainable. Subsidies is impotent at the beginning but the may be counterproductive in the long run if there is no phase out strategy.

Focusing on the indirect enabling incentive like agricultural mechanization extension services, Land ownership and market development for farm produce will act as motivating factor to adoption of small scale mechanization. Therefore , mechanization can only benefit small scale , if a deliberate effort is put in place by implementing policy that encourage small mechanization and at the same time coming up with agricultural mechanization policy for Kenya.

It is therefore time to review these shortcoming .The approach on mechanization development should be all inclusive ,tailored to the local needs and integrated into agricultural policy .The private sector to be give opportunity to play a leading role while the government create an enabling environment.

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