



Republic of Kenya

# Kenya National Dairy Master Plan

## Volume II: Action Plan and Implementation Strategy





*Hon. Mohamed Abdi Kuti, EGH, MP*

## FOREWORD

The National Dairy Master Plan (DMP) was first developed in 1991/1992, outlining the strategies for increasing efficiency and productivity in the dairy sub-sector. However the document was not implemented due to the liberation of the dairy industry in May 1992 immediately after the launch of the DMP. We have therefore been operating for nearly two decades without an accepted dairy master plan while the economic environment has changed substantially over that period. There is therefore the urgent need to develop a dairy master taking into account the objectives and strategies in the current national economic blue print, the Vision 2030.

The government, with the support from Land O'Lakes commissioned VEDAMAN Consultants to develop the National Dairy Master Plan with a focus on realizing the vision 2030. The overarching development goal is to make Kenya a globally competitive prosperous nation with a high quality life by the year 2030 through, strategies aimed at enhancing food security and sustainable economic development. To realize this vision, the revitalization of the agricultural sector remains a prerequisite condition for achieving food security, economic recovery, economic growth, employment and wealth creation. Within the agriculture sector, the dairy sub-sector is the single largest and fast growing sector. The Government of Kenya, through the Ministry of Livestock has developed the DMP which shows the situational analysis of the dairy subsector to integrate and align to this new development vision and economic opportunities.

This is against the backdrop that the dairy subsector has potential to improve the livelihoods of the majority smallholder family farmers and pastoral communities and transformation from subsistence farming to competitive, commercial and sustainable dairy industry for economic growth and wealth creation. The document contains (the past/present developments issues of the dairy sub-sectors, challenges, existing opportunities, vision, mission, strategic thrust, plan of action and intervention measures) that, the government will undertake to propel the dairy sub-sector developments in line with other new development visions. The (DMP) was compiled through the process of detailed literature reviews, consultation forums with all stakeholders in the dairy value chain. The (DMP) is consistent with the new vision and mission of the Kenyan government development goals as stipulated in: Kenya National strategic goals - Vision 2030, Millennium Development Goals (MDGs), Ministry of Livestock National Strategic Plan 2008-2012, Agricultural Sector Development Strategy 2010-2020 and contents of this Dairy Master Plan.

Dear Kenyans and all stakeholders involved in the dairy value chain links, it should be recognized and appreciated that: Kenya has one of the most developed dairy sub-sector in Sub-Saharan and

the single largest contributor to agricultural GDP of Kenya. The contribution of dairy sub-sector is about (Dairy K.shs 100 billion worth) higher than Tea (46.8), and Horticulture (65.2). Dairying is a life line for the majority smallholder family farmers and entire pastoral communities of Kenya (3 million households) as sources of: (food, employment, cash income, manure to support crop production, and financing cash needs for social status). In this regard, the dairy the DMP is a document showing how the government wants to reverse the poverty, hunger and unemployment problems through transformation and revitalization of the dairy subsector

The (DMP) contains the framework of how the huge potential of economic value of the dairy subsector can be tapped to drive development goals through transformation into a globally competitive dairy value chain that will provide high quality life and wealth creation. The document have developed strategies which will make the enterprise to increase, market orientation, value addition , use modern farming technologies and creating synergies at all levels. Finally, I wish to confirm that my ministry has been in the fore front in instituting policy, legal and regulatory frame work is place for the effective implementation of DMP. It's envisaged that the DMP will be used to revitalize the dairy sub-sector and guarantee the sustainability of dairying as a major socio and economic activity in Kenya, thereby improving the livelihood of the poor resource based communities and enhancing Kenyan leadership position in dairy industrialization in the regional and global market.

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## PREFACE



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The Ministry of Livestock Development has a strategic plan which has been harmonized with the Medium Term Plans (MTP) for implementation in line with vision 2030. The Strategic Plan envisages collaboration with the various stakeholders in private and public sectors. The plan with clear vision, mission and objectives also identified (external and internal) constraints limiting the implementation and use of the document in seeking funds to carry out activities of the ministry. The Dairy Master Plan was first developed in 1991/1992 though it was never implemented following the changing economic environment particularly the liberalization of milk marketing in May 1992. At that time there was only one main processor, the KCC.

Given the dairy sector's contribution to the national economy, the government with the support from Land O'Lakes, commissioned VADAMAN CONSULTANTS to develop a national dairy master plan in line with the current national economic blue print, the vision 2030. Currently, the dairy sub-sector experiencing one of the highest growth rates, estimated at 3 to 4 % annually and contributing 40% of the agricultural GDP and 4% of the national GDP. The development of the DMP is timely and necessary as it will help in realigning the development of the dairy sub-sector and enhance regional integration while helping in achieving the Millennium Development Goals (MDGs). .

The sub sector has massive economic potential to be tapped and targeted to achieve positive attributes is been faced by technical, social, economic, institutional and unfavourable environmental conditions. These are some of the challenges identified in the DMP and strategies developed to alleviate them. The DMP was developed in participatory approach with inputs from stakeholders in dairy value chain links and our staff. The document describes the status, constraints, potential opportunities, strategies and action plan to transform and revitalize the dairy sub sector. The ministry of Livestock development staffs are in the forefront in the documentation process and implementation framework.

Finally I wish to take this opportunity to thank everyone who was involved in the production of this Dairy Master Plan. In particular the efforts of the dairy task force members is highly recognized and appreciated. Indeed it will have not been possible to produce and launch the DMP without their efforts. The Role played by Marry Munene for her tireless effort and funding of the dairy Master Plan documentation through LANDO LAKES, Inc our international development partner is really recognized by the Ministry. It is my positive expectation that the DMP will be used as a road map to transform the dairy sub sector. I call upon all our ministry staff and other stakeholders to

work together in achieving the set objectives of the dairy sub sector contained in Our Strategic Plan and this DMP.

**Kenneth .M. Lusaka, EBS**

**Permanent Secretary, Ministry of Livestock Development**

## **ACKNOWLEDGEMENT**

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Many thanks are due to the Permanent Secretary Ministry of Livestock Development, the Director of Livestock Production, Mr. Julius Kiptarus, the Director of Veterinary Services, Dr. Peter Ithondeka, Mr. Machira Gichohi Managing Director, Kenya Dairy Board and his staff, for their active contribution in the entire process, active participation at various presentation stages and during the launch of the Dairy Master Plan at Kenya Agricultural Research Institute.

The Ministry wishes to acknowledge the efforts and valuable comments made by the Dairy Task Force members. Indeed, they have made compiling the document a success. We cannot possibly mention all of them; we will however mention a few. Mr. Samuel O Matoko, chief of Dairy and Beef Production branch in the Ministry of Livestock and his technical staff, for the helpful review, comments and suggestions which led to further improvements throughout the document. Their technical contribution and complete review of the final version of the document is highly lauded and appreciated.

Finally the Ministry is indebted to VEDAMAN CONSULTANTS LTD for steering the whole process of documentation, presentation at every stage of the write up and taking time to incorporate the views and comments of all the stakeholders'.

## EXECUTIVE SUMMARY

A master plan is a strategic policy document that indicates the general framework for planning the development of a sector, sub-sector or a region. A master plan provides the necessary framework to guide the progressive development of future investments. It also gives some level of certainty and predictability for possible interventions and investments in the short, medium and long-term scenarios. A master plan gives direction for positive changes, indicates how much and what kind of interventions are possible in terms of policy, programmes or projects.

A national dairy master-plan is therefore an action plan guide to dairy stakeholders who include dairy farmers, milk processors, input and service providers, retailers, planners and policy makers. The plan, which takes the value chain approach in examining the dairy sector, focuses on opportunities, constraints, future possibilities and also risks and external factors that impact on the sector.

In 1991 Kenya developed a 20 year National Dairy Masterplan (DMP) which outlined strategies for improving efficiency and productivity in the dairy sub-sector. The implementation of the masterplan was however overtaken by rapid events that led to the liberalization of milk marketing in 1992. Besides, the implementation timeframe of that masterplan is soon expiring in 2011, at a time when the country is focusing on realising the vision 2030 overarching development goal of having Kenya become a globally competitive and prosperous nation with a high quality of life by 2030.

The dairy subsector is important in attaining the development goal of vision 2030. It is dominated by smallholders who produce over 80% of the domestic milk and sale raw milk directly to consumers. Milk marketing system is characterised by low compliance with safety and quality standards, diffuse market structure consisting of many small-scale market agents, low value products limited in diversity and weak participation of producer in policy formulation. Dairy subsector supports a large population of rural poor households. It is the single largest component within the agricultural sector, which in 2007 was larger in value (K.Shs. 100 billion) than horticulture (K.Shs. 65.2 billion) or tea (K.Shs. 46.8 billion) and has had high growth rate estimated at 3 to 4 % annually.

The government attaches importance to the dairy subsector and has developed a policy aimed at: improving the productivity and competitiveness of dairy products, increasing domestic consumption of milk and milk products, transforming the dairy industry into a net exporter to the regional and global markets and re-orienting milk processing towards long life dairy products. The growing need to realise these policy goals necessitates transformation of the subsector into a

globally competitive dairy value chain, which is possible through increased market-orientation, increased value addition and greater use of modern farming practices and be able to attract private investments that will provide gainful employment to Kenyan citizens and a pathway to wealth creation.

Responding to this growing need for transformation of the dairy subsector, a new masterplan is developed to guide the desired transformation process for the next 20 years. The development of this masterplan is a two stage process. Firstly, a situational analysis of the dairy subsector covering the period between 1991 and 2010, representing the period when the firsts and second dairy masterplan development were undertaken because of there have been dramatic changes over the period, mostly due to liberalization of milk marketing effected in 1992. Situational analysis involved consultative engagement with broad representative stakeholders in the dairy industry including value chain operators, enablers and supporters through farm and field visits, regional workshops and dialogue sessions.

The 2009 Kenya population is 38.6 million people and is estimated to hit 58 million in the next 20 years. The current per capita milk consumption is estimated at 110 litres, which is projected to increase to 220 litres by 2030 due to envisaged better incomes and better marketing. This will translate into an increase from the current annual production of 4.5 billion litres to 12.76 billion litres of milk. This amount of milk representing the demand by 2030 cannot be achieved at the current national average productivity levels of 5 litres of milk per cow per day as the number of animals required would be too many. The path to meeting this increased demand in milk consumption is greater increases in animal productivity levels accompanied with some increases in the population of dairy cattle, dairy goats and camels.

The master plan implementation strategy matrix specifies who are responsible, gives implementation timeframe and the Monitoring and Evaluation indicators for the progress towards achievement of the plan action goals classified under four action plans:

Action plan one is improving productivity and competitiveness in the dairy value chain operations with the objectives of:

- enabling milk producers to appropriately/adequately feed their cows for increased and efficient milk production
- enabling milk producers manage seasonality of feed supply
- enabling milk producers and traders to improve competitiveness and profits in milk enterprises
- managing seasonal milk gluts

- developing breeding objectives and selection criteria for smallholder producers' to embrace commercial approach to milk production

Action plan two is on efficient delivery of demand driven research, extension, finance and market information services by public, private and NGOs to chain operators with the objectives of:

- building capacity for efficient service delivery
- improving prevention and control of animal diseases
- enhancing efficiency in milk collection and transportation system
- reducing post harvest milk losses along the value addition chain
- increasing milk value addition and branding
- expanding domestic milk consumption
- exporting more milk and milk products in the regional and global markets

Action plan three is on policy and regulation frameworks, infrastructure and enforcement that beneficially work for all dairy value chain stakeholders with the objectives of:

- increasing quantity and quality of concentrates in the market
- reviewing and harmonize policies, regulations and control
- designing enabling policy and regulation frameworks
- expanding export market for milk and milk products

Action plan four is on mainstreaming cross cutting issues in the dairy value chain to sustain high productivity and competitiveness with the objectives of:

- mainstreaming gender in the dairy value chain support
- improving security to encourage investments in the dairy industry in Kenya
- improving better understanding of climate change implications for and adaptation in the dairy industry in Kenya
- enhancing mitigation and adaptation to climate change variability and change in the dairy industry
- improving environmental quality, conservation and management in the dairy value chain
- enabling milk producers to improve water use efficiency milk production

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## 1: NATIONAL DEVELOPMENT GOALS

### 1.1. Policies and Strategies Context

Kenya is reorienting development programs to align policies and strategies with the overarching goal of becoming a globally competitive and prosperous nation with a high quality of life by 2030. This will be attained through a sustained GDP growth rate of 10% on average annually to create wealth and employment. This reorientation is a response to the need to attain goals and targets set in vision 2030 development blueprint, Millennium Development Goals (MDGs), Comprehensive African Agricultural Development Programme (CAADP) and to make gains in the regional food markets opened with the common regional market integration. Feeding on these multi sartorial policies and strategies are several agriculture sector development policies for Livestock, Dairy, National Agricultural Research System and National Food Security and Nutrition among others.

The development vision of agriculture sector is transformation into innovative, commercially-oriented, competitive and modern sector with a growth rate of 7% annually to generate an additional K.shs. 90 billion increase in the country's GDP. Within the agriculture sector, dairy sub sector valued at over K.Shs. 100 billion worth by 2007 is the single largest component, larger in value than horticulture (K.Shs. 65.2 billion) or tea (K.Shs. 46.8 billion). Dairy sub sector is the agricultural sub-sector experiencing one of the highest growths, estimated at 3 to 4 % annually with contribution to the national GDP estimated at 4%, this being part of 10 to 12% livestock contributes and of 40% agriculture contributes.

Milk based enterprises are attractive in Kenya, supporting over 1.8 million smallholder households engaged in dairy production. Building on the huge economic prospects of dairy production and trade, the dairy policy envisions a competitive dairy industry regionally and globally that will develop and promote an efficient and self-sustaining industry. The overarching goal of dairy policy is to improve standards of living of Kenyans by ensuring for farmers food security and increasing real incomes and productivity. The policy specific objectives for economic growth in the 21<sup>st</sup> century and beyond are:

- i. To improve the productivity and competitiveness of Kenya's dairy and dairy products;
- ii. To positively contribute to the livelihoods of milk producing households;
- iii. To increase domestic consumption of milk and milk products;
- iv. To contribute to national food and nutrition security
- v. To transform the dairy industry into a net exporter of dairy animals and products;
- vi. To maximize dairy exports in the regional and global markets

vii. To re-orient milk processing towards long life dairy products.

### **1.2. Strategic Goals for the Dairy Master Plan**

The timing of this dairy master plan comes at the expiry of implementation timeframe for 1991 dairy master plan; at reorientation of country's development programmes and strategies to attain development goals set in the vision 2030 development blueprint and in the Millennium Development Goals (MDGs); and at the entry into common regional market integration. These present new challenges and opportunities in the dairy sub sector, necessitating aligning dairy development programmes and strategies with the new development aspirations and responding to the emerging challenges in order to steer further development in the sub sector.

The masterplan proposes action plans necessary for the transformations, policy changes and development strategies needed to further steer dairy development in line with the other national development aspirations. The action plans are proposed while remaining aware of, and responsive to the emerging challenges. The specific objectives of the analysis are:

- i. To formulate relevant strategies and programs for the development of the dairy industry and design a mechanism for their implementation, monitoring and evaluation by all stakeholders while leaving room for the introduction and adoption of new technologies.
- ii. Provide the government with sound justification for a more efficient allocation of the development and recurrent budget to the sector based on analysis and projections.
- iii. Provide a roadmap for public private partnerships and promote such partnerships in order to private sector investment in the dairy sector nationally.
- iv. Produce simple and clear pragmatic framework and identify tools for implementing interventions for impacts in all components of the dairy value chain.
- v. Address cross-cutting and cross-sectoral thematic issues of importance in dairy value chain development.

## **2: THE DAIRY MASTER PLAN DEVELOPMENT PROCESS**

The development of dairy master plan went through processes of desktop literature review study, ground-truthing field survey, information synthesis of and scenario analyses of transformation options and consultation with stakeholders in the dairy value chain. These processes informed the benchmarking of Kenyan dairy industry transformation and SWOT analysis.

### **2.1. The Development Processes**

The development of dairy master plan went through four major processes. Firstly, desktop study, reviewing the literature and sourcing relevant data from diverse sources, mainly the Ministry of Livestock Development and Kenya Dairy Board. Secondly, ground-truthing field survey in major dairy producing areas. Thirdly, synthesis of information obtained from the literature and ground-truthing field surveys and scenario analyses of transformation options. Fourthly, consultation with stakeholders in the dairy value chain about the synthesised information and scenario analyses for transformation options. Stakeholders' consultation were organised at regional levels in Eldoret, Nakuru, Nyeri and Mombasa and national level in Nairobi. Two national forums were organized to chart the transformation pathway.

Finally the consulting team prepared the dairy master plan strategic actions and implementation framework to steer dairy sub sector development to 2030. The strategic action plan is informed by the industry situation at national and regional levels and stakeholders' concerns. The reports of dairy sub sector situational analysis and stakeholder consultation forums form first volume of this dairy master plan.

### **2.2. Benchmarking Kenyan Dairy Industry Transformation**

The transformation of Kenyan dairy industry into a globally competitive dairy value chain envisaged in the national development goals can be benchmarked to dairy industries in China, India and Australia. All these countries have in common with Kenya a low cost, rainfed pasture dairy production system. China and India have in common with Kenya dairy sub sector dominated by smallholders, strong tradition for dairy consumption and production that is integral part of farming systems, growth rate of about 3% annually, rapidly rising per capita milk consumption at a doubling rate and increasing milk production through increases in cattle population rather than numbers. Australia has in common with Kenya dairy industry contributing significantly to the country's economy.

The projected likely level of growths to occur in per capita milk consumption in China and India under "Livestock Revolution" phenomenon against realised growth changes in Kenyan and Australian dairy industries are illustrated in Table 1. For a time of 20 year period, the per capita

milk consumption in China and India will grow by a factor of 1.7 to 2.0 comparable to Kenyan growth rate by a factor 1.7. Over the same length of time period, Australia doubled animal milk productivity from 2850 to 5750 litres a year, a growth Kenya can set to achieve. India with dominant smallholder milk production and trade do process 38% of total milk produced, comparable to 32% in Kenya, but with potential to transform progressively towards the 75% in Australian. India has 40 to 50% of total milk produced processed into value added products including dairy sweets, ghee and soured milk.

Table 1: Comparative dairy sub sector situation in Australia, China, India and Kenya

Country	Year	Dairy pop (000)	Milk prod (000 Litres)	Per capita milk (Litres/year)	Productivity (litres/cow/year)	Milk processed (% production)
Australia	1990	1,654	6,262	244	2,850	
	2009	1,600	9,388	301	5,750	75
	% change	-3.3	49.9	23.4	101.7	
China	1997			8		
	2020			16		
	% change			100		
India	1997			62		
	2020			104	1000	38
	% change			67.7		
Kenya	1990	2,369	2,450	64	1440	
	2009	3,403	4,200	110	1800	32
	% change	43.6	71.4	71.9	25.0	

Growth in milk consumption demand over a 20 year period doubles in India and China, which translated for Kenya would be doubling of present 111 litres milk per capita consumption to 220 litres by 2030. With human population projected to reach 58 million by 2030, the total milk demand projects to 12.76 billion litres. With this milk demand, the balance in milk demand and supply projected for 2010 to 2030 is illustrated in Figure 1.

Domestic milk supply at medium growth rate (3.5%) and high growth rate (4.2%) suggest that demand will continue to outstrip supply by 31.8 to 43.5% for medium growth rate and 16.8 to 32.8% for high growth rate. Satisfying the 220 litres per capita milk consumption by 2030 requires strategic actions to more than double milk productivity if the country is to satisfy the growing milk demands from domestic production without unsustainable explosion in population of milking animals kept.

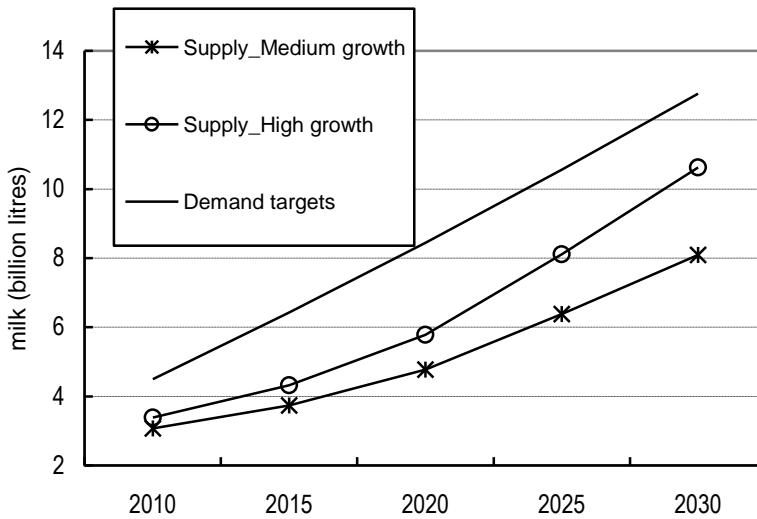


Figure 1: The demand and supply milk balance projections from 2010 to 2030

Table 2 presents the projected milk productivity increases needed. Greatest productivity increases will be needed in dairy cattle by 150% and in dairy goats by 115.5% relative to 64% in the zebu cattle and 29.9% in camels. These corresponds to an average annual growth rate of 4.71% in dairy cattle, 3.83% in dairy goats, 2.50% in zebu cattle and 1.32% in camels. These will be realised with annual population growth rates of 2.48% for dairy cattle from 3,403,000 to 5,551,388, 8.85% for dairy goats from 175,000 to 936,268, 2.55% in camels from 1,132,000 to 1,872,967 and 1.21% for zebu cattle from 10,119,000 to 12,881,958.

Table 2: The projected growths needed between 2010 and 2030 in animal milk productivity in litres per year and (litres/day) for attaining per capita milk consumption of 220 litres by 2030

Year and growth rate	Dairy cattle		Dairy goats		Camels		Zebu cattle	
2010	1800	(4.9)	225	(0.6)	1440	(4.0)	250	(0.7)
2030	4500	(12.3)	476	(1.3)	1870	(5.1)	410	(1.1)
Growth rate (%/year)	4.71		3.83		1.32		2.50	
Percentage change (%)	150.0	(151.0)	111.5	(116.7)	29.9	(27.5)	64.0	(57.1%)

Presently achieved milk productivity in some herds better managed herds utilizing innovations adequately, appropriately and efficiently in feeding, health and breeding suggest the productivity levels needed are achievable with a transformation in production and trade. There are annual milk productivity of 5,285 litres in Friesian, 4,617 litres in Ayrshire, 3402 litres in Guernsey and

3159 litres in Jersey. A wide range in individual animal productivity of 7 to 45 litres for dairy cows, 4 to 12 litres for camels and 0.35 to 4 litres for dairy goats indicate room for improvement.

### **2.3. SWOT Analysis**

The SWOT analysis conducted with stakeholders identified opportunities that can be exploited in the dairy value chain as well as the challenges that limit exploitation of those opportunities.

#### **2.3.1. Opportunities to Exploit in the Dairy Value Chain**

- i. A large population of people with long strong tradition for dairy production and consumption
- ii. A large population of producers and traders investing in dairy, goat and camel milk enterprises
- iii. A large population of dairy herd
- iv. Large feed processing capacity under utilised
- v. Increasing investment in feed processing
- vi. Established public and private veterinary delivery services
- vii. Established breeding services delivery
- viii. Research strong on production and productivity
- ix. Expanding financial services
- x. Well trained extension staff
- xi. Functional milk collection systems in some milk producing areas by co-operatives, processors and private transporters
- xii. Liberalised milk market
- xiii. Political support and goodwill
- xiv. Expanding domestic and regional market for milk and high value products

#### **2.3.2. Challenges to Exploiting the Opportunities in the Dairy Value Chain**

- i. Low market orientation in milk production and trade
- ii. Low uptake of productivity and market led innovations
- iii. Ineffective and inefficient knowledge, information and communication systems needed to link knowledge and information from diverse providers and users.
- iv. Heavy dependence on donor funding to research in the dairy value chain
- v. Inadequate disease diagnostics and surveillance laboratories and equipment facilities
- vi. Research is weak on demand and market driven opportunities and emerging challenges.
- vii. Weak research linkages with extension and farmers
- viii. Inadequate extension staff deployment in post

- ix. Limited facilities for and inefficiency in collection of quality milk
- x. Low processing capacities to absorb glut milk
- xi. Weak regulatory service to enforce compliant with quality and safety requirements
- xii. Dominance of informal raw fresh milk marketing

### 3: GUIDING PRINCIPLES, VISION AND MISSION

#### 3.1. Guiding Principles

The national development goals have high priority on transforming subsistence and informal dairy production and trading into a sustainable and globally competitive dairy value chain for wealth creation and high quality life and in compliant with requirements for high standards of public and environmental health.

Priority national development goal is developing efficient and competitive dairy value chain depicted in Figure 2.

VC Roles	Producers	Processors	Retailers	Consumers	Products
Value Chain Operators	Pastoralists Smallholders  Market-oriented smallholders Medium and large farmers	Milk bars Cooperatives  Processors	Mobile hawkers Middlemen  Milk bars/shops  Cooperatives  Supermarkets	Rural households Hotels  Urban households Hotels/Tourists  Export markets Specialised demands	Raw milk Pasteurised milk Fermented milk Flavoured and cream Long life High value  Specialised products
Value Chain Supporters	Public, Private and NGO service providers offering demand driven services Research, Extension, Market information, Transport, Finance				
Value Chain Enablers	Framework conditions at regional, national and farm levels enabling private sector and value chain development Infrastructure, legal and administrative framework conditions, enforcement, political will				

Figure 2: Dairy value chain system for competitiveness

The national development goal priorities for dairy value chain operators are:

- Orientation to profitable dairy business development
- Linking smallholder producers and traders to markets and enabling them become commercial entrepreneurs
- Production of quality and safe products
- More value addition and product branding

- Competitiveness in dairy production and trade
- Greater application of market led science, technology and innovations
- More exported dairy and milk products
- Wealth and employment generation
- Reformed policy and rules

The national development goal priorities for dairy value chain supporters are:

- Efficient delivery of demand driven Research, Extension, Finance and Market information services by public, private and NGOs to chain operators.

The national development goal priorities for dairy value chain enablers are:

- Policy and regulation frameworks, infrastructure and enforcement that beneficially work for all dairy value chain stakeholders.

### **3.2. Vision and mission**

#### **Vision**

The strategic vision of the Dairy Master Plan of 2010 is:

To transform milk production and trade into an innovative, commercially oriented and globally competitive dairy value chain by 2030.

#### **Mission**

The mission of the Dairy Master Plan of 2010 is:

To enable the development of sustainable milk production and trade for wealth creation and high quality life compliant with high standards of public and environmental health

### **3.3. Impact Indicators for the Action Plan Objectives**

- Increased productivity and competitiveness
- Increased incomes
- Increased employment
- Greater compliance with requirements for food quality and safety
- Greater use of market led innovations
- Increased share in the regional milk markets
- Reformed policy and regulations
- Greater sensitivity to environmental management, conservation and quality

## 4: ACTION PLANS

The master plan will address the challenges in the dairy industry through strategic interventions under four action plans:

1. Improved productivity and competitiveness in dairy value chain operations
2. Efficient delivery of demand driven Research, Extension, Finance and Market information services by public, private and NGOs to chain operators
3. Policy and regulation frameworks, infrastructure and enforcement that beneficially work for all dairy value chain stakeholders.
4. Mainstreamed cross cutting issues in the dairy value chain to sustain high productivity and competitiveness

### **4. 1. Action Plan 1: Improving Productivity and Competitiveness in the Dairy Value Chain Operations**

#### **4.1.1. Plan objective 1: Enable milk producers to appropriately/adequately feed their cows for increased and efficient milk production**

##### **Actions**

1. Train farmers on feeding strategies for improved productivity
2. Advice farmers to increase acreage of adaptable high yielding and quality pasture and fodder varieties
3. Promote increased utilisation of root and tuber crops in dairy feeding to remain insensitive to global price increases in cereal based feeds
4. Increase bulking of planting materials of Napier grass varieties resistant to head smut and stunted diseases
5. Train farmers, millers and extension staff on feed standard requirements
6. Train farmers on quality assessment and ration formulation from local feed resources
7. Popularise to farmers and extension staff on use of local and non conventional quality feed resources in TMR formulation
8. Engage high level lobbying for subsidized fertilizer for farms

#### **4.1.2. Plan objective 2: Enable milk producers manage seasonality of feed supply**

##### **Actions**

1. Train farmers in simple methods of feed storage and conservation innovations
2. Train farmers on efficient use of industrial by-products to cover deficits
3. Popularise small and large scale entrepreneurship in fodder production and trade

4. Revive and expand cotton industry and growing of sunflower and soya bean to increase animal feed resources
5. Research and extension training on better feeding strategies with crop residues
6. Expand use of meat processing by-products in livestock feeds
7. Set national strategic animal feed reserves
8. Provide to farmers early warning on drought and feed pricing indicators

**4.1.3. Plan objective 3: Enable milk producers and traders to improve competitiveness and profits in milk enterprises**

**Actions**

1. Promote farmer groups and cooperatives formation and strengthen governance
2. Up scale and out scale successful models of Dairy Business Development Services in the value chain
3. Facilitate expansion in medium and large scale commercial milk production for economies of scale
4. Assist Cooperative Societies to adopt Dairy Hub Business Development Service models in low market access milk producing areas
5. Train milk producers and traders on safety and quality milk requirements
6. Facilitate entrepreneurial knowledge and business linkages by dairy value chain operators
7. Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to generate off-farm remunerative options
8. Support off-farm investments that will raise rural wages to subsequently remove some producers and traders out of subsistence livelihood dairy production and trade
9. Lobby processors to introduce premium pricing for milk quality
10. Publicise safety and quality requirements in milk and milk products
11. Register all milk producers to be members
12. Establish, revitalise and strengthen vocational training facilities for competitive dairy production and trade
13. Introduce outreach training programmes to spread dissemination of innovations

#### **4.1.4. Plan objective 4: Manage seasonal milk gluts**

##### **Actions**

1. Support private entrepreneurs to invest in expanding milk processing capacity for long life and high value products
2. Process surplus milk into milk powder for re-constitution during dry periods
3. Establish national milk strategic reserve through public-private partnership contractual arrangements to absorb glut milk and stabilise milk prices
4. Actively assist entrepreneurs to gain access to profitable regional and global milk markets
5. Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to ease distribution of milk products to deficit areas in the country
6. Advocate for inclusion of milk supply in public and NGO food security programmes in vulnerable areas through public-private partnership contractual arrangements.

#### **4.1.5. Plan objective 5: Develop breeding objectives and selection criteria for smallholder producers' to embrace commercial approach to milk production**

##### **Actions**

1. Train smallholder producers on simple herd recording, book keeping and financial planning
2. Popularise livestock registration and performance recording through Dairy Hub Business
3. Revitalise the national dairy database platform and processing to improve data quality for planning and decision making
4. Initiate performance recording and genetic improvement in camels
5. Expand AI processing and distribution infrastructure for efficient delivery of genetics –AI, embryo or proven bulls
6. Promote conservation of indigenous livestock species
7. Launch incentive rewards to best performing smallholder dairy farms to promote herd recording, application of breeding objectives
8. Implement the animal breeding policy
9. Strengthen the KLBO roles and functions

## **4.2. Action Plan 2: Efficient Delivery of Demand Driven Research, Extension, Finance and Market Information Services by Public, Private and NGOs to Chain Operators**

### **4.2.1. Plan objective 1: Building capacity for efficient service delivery**

#### **Actions**

1. Institutionalize dairy research funding and prioritization partly from the from the dairy value chain in order to ensure sustained, targeted and demand driven research
2. Conduct regularly capacity needs of the in post human resource
3. Accredit research, training and consulting institutions and firms in areas of strengths for contracting required services
4. Expand capacities and quality in vocational training facilities and programmes
5. Expand outreach programmes
6. Build capacity in information sharing along the value chain
7. Engage private sector in designing innovatively flexible financial services for dairy producers and traders
8. Mainstream the dairy master plan actions into departmental performance contracting for fast racking implementation and progress
9. Establish a nation dairy information network desk to build national database
10. Produce Kenya Dairy Bulletin with two issues yearly reporting research on topical issues and informing stakeholders of the industry situation

### **4.2.2. Plan objective 2: Improve prevention and control of animal diseases**

#### **Actions**

1. Intensify training on effective on-farm bio safety management of diseases of Tick-borne, Tran boundary and Intensification
2. Strengthen control, diagnostic and surveillance facilities for diseases
3. Rehabilitate, improve and equip laboratory facilities
4. Facilitate setting up of private laboratories in strategic milk producing regions
5. Establish satellite laboratories in the dairy productive areas
6. Enforce animal disease control regulations for movement and product sales
7. Popularise ethics in drug use quality and safety requirements in marketed milk
8. Promote private sector participation in animal health delivery services
9. Recruit appropriate and adequate manpower
10. Increase funding to public veterinary regulatory services

#### **4.2.3. Plan objective 3: Enhance efficiency in milk collection and transportation system**

##### **Actions**

1. Revitalise dormant milk co-operative societies.
2. Promote formation of farmer groups and Co-operative societies to ease logistics in milk collection from smallholder farms.
3. Scale up and out adoption of Dairy Hub Business Development Services Centres in milk producing areas with low market access
4. Introduce standard milk safety and quality tests and certification
5. Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to attract private investments in milk collection and transportation facilities
6. Offer regular training in safety and quality requirements in milk collection and transportation
7. Enforce registration and compliance with safety and quality requirements in milk collection and transportation

#### **4.2.4. Plan objective 4: Reduction of post harvest milk losses along the value addition chain**

##### **Actions**

1. Launch regular training for stakeholders on standard milk safety and quality tests and certification procedures
2. Launch regular mandatory training on Good Manufacturing Practice (GMP) for small and large scale processors, milk collection and transportation providers
3. Popularise the application of code of hygienic practice in milk production, handling, and distribution, industry regulatory services, milk and milk products standards
4. Enforce the dairy industry regulations and standards
5. Regularly report in the Kenya Dairy Bulletin evaluation reports on the rate of compliance to standards and regulations by the industry stakeholders' classification
6. Enforce mandatory record keeping of the quality of milk received, materials used, new product development activities and all inspection reports in milk processing plants.
7. Promote and encourage processors to attain ISO certification
8. Engage private and public institutions with laboratories to carry out quality control tests on milk
9. Implement payment based on quality and wholesomeness of milk as incentive to produce safe and pure milk.

#### **4.2.5. Plan objective 5: Increase milk value addition and branding**

##### **Actions**

1. Assist camel and goat milk producers to brand milk on nutritional health attributes and adaptation to climate change for high value specialised markets
2. Assist producers to brand milk from indigenous cattle and Jersey breed built on unique attributes and adaptation to climate change for high value specialised markets
3. Market promotions of Kenya branded milk in niche markets
4. Facilitate both small and large processing on basis of compliance with safety and quality, GMP and certification requirements
5. Scale up and out adoption of Dairy Hub Business Development Services Centres in milk producing areas with low market access
6. Introduce standard milk safety and quality tests and certification
7. Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to attract private investments in milk processing facilities
8. Establish efficient milk manufacturing plants for processing surplus milk in wet season into long life and high value products.
9. Lobby for policy shift from strategic grain reserve to strategic food reserve programme inclusive of milk.
10. Expand training of small processors on milk value addition and a range of high value products
11. Introduce milk and milk product festivals similar to those cheese festivals ESADA organizes to promote consumption.

#### **4.2.6. Plan objective 6: Expand domestic milk consumption**

##### **Actions**

1. Run promotional milk consumption campaigns
2. Popularise use of low cost packages and pouches for packaging of pasteurized milk.
3. Diversify products range
4. Advocate for inclusion of milk supply in public and NGO food security programmes in vulnerable areas through public-private partnership contractual arrangements.

**4.2.7. Plan objective 7: Export more milk and milk products in the regional and global markets**

**Actions**

1. Expand milk processing capacities in low market access high milk producing areas
2. To re-orient milk processing towards long life and high value dairy products
3. Engage high level policy negotiations to open regional market for Kenyan milk and milk products
4. Launch regular mandatory training on Good Manufacturing Practice (GMP) for small and large scale processors, milk collection and transportation providers
5. Popularise the application of code of hygienic practice in milk production, handling, and distribution, industry regulatory services, milk and milk products standards

**4.3. Action Plan 3: Policy and regulation frameworks, infrastructure and enforcement that beneficially work for all dairy value chain stakeholders.**

**4.3.1. Plan objective 1: Increase quantity and quality of concentrates in the market**

**Actions**

1. Strengthen existing regulatory services on feed testing at retail level
2. Impose heavy penalties and sanctions on trade malpractices
3. Create animal feeds inspectorate unit with legal authority to enforce standard of both raw materials and finished product
4. Enact the Animal Feedstuff Act to strengthen the monitoring of feed quality at the point of sale.
5. Strengthen Association of Kenya Feed Manufacturers (AKEFEMA) and other stakeholders in the feed industry for self-regulation in the feed industry
6. Facilitate private investors to set up private feed testing labs
7. Test regularly commercial feeds at factory and stockist levels

**4.3.2. Plan objective 2: Review and harmonize policies, regulations and control**

**Actions**

1. Revise and strengthen new policies for delivery system: Veterinary Surgeon Act CAP 366, Cattle cleansing Act CAP 358, Pharmacy and Poisons Act CAP244
2. Establish stakeholders driven ethics/standards committee

3. Formalise field practice by Community Animal Health Workers on common simple attendance cases

#### **4.3.3. Plan objective 3: Design enabling policy and regulation frameworks**

##### **Actions**

1. Raise funding to support regular tailor made training for filling skills needs in the dairy value chain
2. Accredit and contract institutions with the technical capacity to offer training on the gap skills
3. Launch Kenya Dairy Bulleting with two issues yearly reporting on topical issues in the dairy value chain
4. Engage public and private organisations with capacity on special dairy technical skills in outreach programmes to dairy value chain operators.
5. Develop policies to guard against monopolistic and oligopoly tendencies
6. Enhance research funding through formalized public and private sector partnerships

#### **4.3.4. Plan objective 4: Expand export market for milk and milk products**

##### **Actions**

1. Expand processing capacities for long life and high value products
2. Offer regular trainings on safety and quality requirements for marketed milk and products
3. Diversify dairy products
4. Assist processors brand milk and milk products
5. Enforce compliance with requirements for safety, quality, GMP and code of hygienic practice in the dairy value chain
6. Conduct market research and surveillance in the EAC and COMESA markets
7. Lobby at high policy levels for removal of non tariff trade barriers

#### **4.4. Action Plan 4: Mainstreaming Cross cutting Issues in the Dairy Value Chain to Sustain High Productivity and Competitiveness**

##### **4.4.1. Plan objective 1: Mainstream gender in the dairy value chain support**

##### **Actions**

1. Develop gender sensitive extension packages
2. Adopt gender sensitive extension approaches

3. Develop gender sensitive financial services
4. Develop gender sensitive technologies

**4.4.2. Plan objective 2: Improve security to encourage investments in the dairy industry in Kenya**

**Actions**

1. Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to generate off-farm remunerative options
2. Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in building police posts where insecurity is high
3. Popularise in community policing

**4.4.3. Plan objective 3: Improve better understanding of climate change implications for and adaptation in the dairy industry in Kenya**

**Actions**

1. Engage stakeholders in climate risks workshops for awareness
2. Develop regional information sheets on climate change and adaptation strategies
3. Incorporate climate change issues in extension services
4. Target climate change workshops to the most vulnerable

**4.4.4. Plan objective 4: Enhance mitigation and adaptation to climate change variability and change in the dairy industry**

**Actions**

1. Conduct vulnerability and adaptation of dairy production systems to climate variability and change
2. Conduct feed base audit and systems resilience analysis
3. Conduct scenario planning analysis to explore options
4. Inventory of management technologies and practices for dissemination
5. Promote increased adoption of agro-forestry systems for intensifying, diversifying and buffering farm systems
6. Design and lobby at high policy levels for implementation of insurance buffering

#### **4.4.5. Plan objective 5: Improve environmental quality, conservation and management in the dairy value chain**

##### **Actions**

1. Sensitise dairy producers and traders on maintenance of environmental quality, conservation and management
2. Design incentives for low energy use technologies
3. Promote mixed dairy-crop production systems
4. provide extension training on better management of pastures and soils
5. Promote uptake of biogas plants for cooking, lighting and heating and for manure fertilising of pastures and crops
6. Lobby for incentives in low energy use technologies
7. Promote mixed dairy-crop production systems
8. provide extension training on better management of pastures and soils
9. Provide extension training on feeding for improved productivity
10. Support research and extension training on better feeding strategies of non cereals feeds for improved productivity
11. Promote uptake of biogas plants for cooking, lighting and heating and for manure fertilising of pastures and crops

#### **4.4.6. Plan objective 6: Enable milk producers to improve water use efficiency milk production**

##### **Actions**

1. Provide training on water harvesting, storage and conservation
2. Offer training on water use efficiency in drinking and service water use in the dairy value chain
3. Sensitize farmers on water requirements for animals to maximize productivity
4. Training on importance of quality water for livestock
5. Popularise water harvesting and water use efficiency in the dairy value chain
6. Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in water supply services including borehole drilling, dam construction and piped water.

## 5: DAIRY MASTERPLAN IMPLEMENTATION STRATEGY MATRIX

The master plan implementation strategy matrix specifies who are responsible, gives implementation timeframe and the Monitoring and Evaluation indicators for the progress towards achievement of the plan action goals. The four action plans:

1. Improved productivity and competitiveness in dairy value chain operations
2. Efficient delivery of demand driven Research, Extension, Finance and Market information services by public, private and NGOs to chain operators
3. Policy and regulation frameworks, infrastructure and enforcement that beneficially work for all dairy value chain stakeholders.
4. Mainstreamed cross cutting issues in the dairy value chain to sustain high productivity and competitiveness

### 5. 1. ACTION PLANS FOR IMPROVING PRODUCTIVITY AND COMPETITIVENESS IN THE DAIRY VALUE CHAIN OPERATIONS

#### 5.1.1. Plan objective 1: Enable milk producers to feed animals for increased milk productivity

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
1. Train farmers on feeding strategies for improved productivity	MoLD, Colleges, Universities, NGO, Farmer groups, KARI				Productivity Incomes Employments
2. Advice farmers to increase acreage of adaptable high yielding and quality pasture and fodder varieties	MoLD, Colleges, Universities, NGO, Farmer groups, KARI				Productivity Incomes Employments
3. Promote increased utilisation of root and tuber crops in dairy feeding to remain insensitive to global price increases in cereal based feeds	MoLD, Colleges, Universities, NGO, Farmer groups, AKEFEMA, KARI				Productivity Incomes Employments
4. Increase bulking of planting materials of Napier grass varieties resistant to head smut and stunted diseases	Farmers, MoLD, Colleges, Universities, NGO, Farmer groups, KARI				Productivity Incomes Employments
5. Train farmers, millers and extension staff on feed standard requirements	MoLD, Colleges, Universities, NGO, Farmer groups, AKEFEMA, KEBS				Productivity Incomes Employments
6. Train farmers on quality assessment and ration formulation from local feed resources	MoLD, Colleges, Universities, NGO, Farmer groups, AKEFEMA, KEBS				Productivity Incomes Employments
7. Popularise to farmers and extension staff the use of local and non conventional quality feed resources in TMR formulation	MoLD, Colleges, Universities, NGO, Farmer groups, KARI				Productivity Incomes Employments
8. Engage high level lobbying for subsidized fertilizer for farms	MoA, MoLD				Productivity Incomes Employments

### 5.1.2. Plan objective 2: Enable milk producers manage seasonality of feed supply

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
1. Train farmers in simple methods of feed storage and conservation innovations	MoLD, Colleges, Universities, NGO, Farmer groups, KARI				Productivity Incomes Employments
2. Train farmers on efficient use of industrial by-products to cover deficits	MoLD, Colleges, Universities, NGO, Farmer groups, KARI				Productivity Incomes Employments
3. Popularise small and large scale entrepreneurship in fodder production and trade	MoLD, NGO, Farmer groups, KARI, Coops				Productivity Incomes Employments
4. Revive and expand cotton industry and growing of sunflower and soya bean to increase animal feed resources	MoA, Cotton Board, MoLD, NGO, Farmer groups, Coops				Productivity Incomes Employments
5. Research and extension training on better feeding strategies with crop residues	KARI, MoLD, NGO, Farmer groups, Coops				Productivity incomes
6. Expand use of meat processing by-products in livestock feeds	Farmers, MoLD, AKEFEMA, KEBS				Productivity Incomes Employments
7. Set national strategic animal feed reserves	MoLD, KDB				Productivity Incomes Employments
8. Provide to farmers early warning on drought and feed pricing indicators	MoA KARI, MoLD, NGO				Productivity Incomes Employments

### 5.1.3. Plan objective 3: Enable milk producers and traders to improve competitiveness and profits in milk enterprises

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Promote farmer groups and cooperatives formation and strengthen governance	MoCD, MoLD, NGO				Productivity Incomes Employments
Up scale and out scale successful models of Dairy Business Development Services in the value chain	MoCD, MoLD, NGO, KDB, Farmer groups, Coops				Productivity Incomes Employments Milk quality and safety market led innovations
Facilitate expansion in medium and large scale commercial milk production for economies of scale	MoCD, MoLD, NGO, KDB				Productivity Incomes Employments Milk quality and safety market led innovations
Assist Cooperative Societies to adopt Dairy Hub Business Development Service models in low market access milk producing areas	MoCD, MoLD, NGO, KDB				Productivity Incomes Employments Milk quality and safety market led innovations
Train milk producers and traders on safety and quality milk requirements	MoLD, NGO, KDB, Colleges, KARI Universities, NGO, Farmer groups,				Productivity Incomes Employments Milk quality and safety market led innovations
Facilitate entrepreneurial knowledge and business linkages by dairy value chain operators	All dairy value chain actors,				Productivity Incomes Employments Milk quality and safety market led innovations

Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to generate off-farm remunerative options	MoCD, , MoLD, NGO, KDB, Farmer groups, Coops				Productivity Incomes Employments Milk quality and safety market led innovations
Support off-farm investments that will raise rural wages to subsequently remove some producers and traders out of subsistence livelihood dairy production and trade	MoCD, MoLD, NGO, KDB, Farmer groups, Coops				Productivity Incomes Employments Milk quality and safety market led innovations
Lobby processors to introduce premium pricing for milk quality	MoCD, , MoLD, NGO, KDB, Farmer groups, Coops				Productivity Incomes Employments
Publicise safety and quality requirements in milk and milk products	MoCD, , MoLD, NGO, KDB, Farmer groups, Coops, Colleges, KARI, Universities,				Productivity Incomes Employments Milk quality and safety market led innovations
Register all milk producers to be members	MoLD, KDB, Farmer groups, Coops,				Productivity Incomes Employments Milk quality and safety
Establish, revitalise and strengthen vocational training facilities for competitive dairy production and trade	MoCD, MoLD, NGO, KDB,				Productivity Incomes Employments Milk quality and safety market led innovations
Introduce outreach training programmes to spread dissemination of innovations	Farmer groups, Coops, Colleges, KARI, Universities,				Productivity Incomes Employments Milk quality and safety market led innovations

#### 5.1.4. Plan objective 4: Manage seasonal milk gluts

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Support private entrepreneurs to invest in expanding milk processing capacity for long life and high value products	MoCD, MoLD, KDB,				Productivity Incomes Employments Milk quality and safety market led innovations
Process surplus milk into milk powder for re-constitution during dry periods	Processors, MoCD, , MoLD, KDB,				Productivity Incomes Employments Milk quality and safety market led innovations
Establish national milk strategic reserve through public-private partnership contractual arrangements to absorb glut milk and stabilise milk prices	MoA, MoCD, MoLD, KDB,				Productivity Incomes Employments
Actively assist entrepreneurs to gain access to profitable regional and global milk markets	MoCD, MoLD, KDB,				Milk exported regional markets Milk quality and safety Market led innovations

					Productivity Incomes Employments
Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to ease distribution of milk products to deficit areas in the country	MoA, MoCD, MoLD, KDB, Farmer groups, Coops,				Productivity Incomes Employments
Advocate for inclusion of milk supply in public and NGO food security programmes in vulnerable areas through public-private partnership contractual arrangements.	MoA, MoCD, MoLD, KDB, Farmer groups, Coops, NGO				Productivity Incomes Employments

**5.1.5. Plan objective 5: Develop breeding objectives and selection criteria for smallholder producers' to embrace commercial approach to milk production**

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Train smallholder producers on simple herd recording, book keeping and financial planning	MoLD, KDB, Farmer groups, Coops, NGO				Productivity Incomes Employments
Popularise livestock registration and performance recording through Dairy Hub Business	MoLD, KDB, Farmer groups, Coops, NGO				Productivity Incomes Employments
Revitalise the national dairy database platform and processing to improve data quality for planning and decision making	MoLD, KDB, Farmer groups, Coops				Productivity Incomes Employments
Initiate performance recording and genetic improvement in camels	MoLD, KDB, Farmer groups, Coops, NGO				Productivity Incomes Employments
Expand AI processing and distribution infrastructure for efficient delivery of genetics –AI, embryo or proven bulls	MoLD, KDB,				Productivity Incomes Employments
Promote conservation of indigenous livestock species	MoLD, NGO, Farmer groups, Coops, Colleges, KARI, Universities,				Productivity Incomes Employments Market led innovations
Launch incentive rewards to best performing smallholder dairy farms to promote herd recording, application of breeding objectives	MoCD, MoLD, KDB, Farmer groups, Coops,				Productivity Incomes Employments
Implement the animal breeding policy	MoLD, Farmer groups,				Productivity Incomes Employments
Strengthen the KLBO roles and functions	MoLD, Farmer groups, Coops, NGO				Productivity Incomes Employments

**5.2. ACTION PLANS FOR EFFICIENT DELIVERY OF DEMAND DRIVEN RESEARCH, EXTENSION, FINANCE AND MARKET INFORMATION SERVICES BY PUBLIC, PRIVATE AND NGOS TO CHAIN OPERATORS**

**5.2.1. Plan objective 1: Building capacity for efficient service delivery**

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Raise research funds from the dairy value chain operations to support targeted demand driven research	MoLD, KDB,				Productivity Incomes Employments Market led innovations
Conduct regularly capacity needs of the in post human resource	MoLD, KDB,				Productivity Incomes Employments Market led innovations
Accredit research, training and consulting institutions and firms in areas of strengths for contracting required services	MoLD, KDB				Productivity Incomes Employments Market led innovations
Expand capacities and quality in vocational training facilities and programmes	MoLD, KDB				Productivity Incomes Employments Market led innovations
Expand outreach programmes	MoLD, NGO, Farmer groups, Coops, Colleges, KARI, Universities,				Productivity Incomes Employments Market led innovations
Build capacity in information sharing along the value chain	MoLD, KDB, KARI,				Productivity Incomes Employments Market led innovations
Engage private sector in designing innovatively flexible financial services for dairy producers and traders	MoLD, KDB				Productivity Incomes Employments Market led innovations
Mainstream the dairy master plan actions into departmental performance contracting for fast racking implementation and progress	MoLD, KDB, MoCD, KARI				Productivity Incomes Employments Market led innovations
Establish a nation dairy information network desk to build national database	KDB				Productivity Incomes Employments Market led innovations
Produce Kenya Dairy Bulletin with two issues yearly reporting research on topical issues and informing stakeholders of the industry situation	KDB				Milk exported regional markets Productivity Incomes Employments Market led innovations

### 5.2.2. Plan objective 2: Improve prevention and control of animal diseases

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Intensify training on effective on-farm bio safety management of diseases of Tick-borne, Trans boundary and Intensification	MoLD, KARI, Universities, Colleges, Private Veterinary Firms				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Strengthen control, diagnostic and surveillance facilities for diseases	MoLD, KARI, Universities, Colleges, Private Veterinary Firms, Farmers, NGO				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Rehabilitate, improve and equip laboratory facilities	MoLD, KARI, Universities, Colleges, Private Veterinary Firms,				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Facilitate setting up of private laboratories in strategic milk producing regions	MoLD, KDB				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Establish satellite laboratories in the dairy productive areas	MoLD, KDB				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Enforce animal disease control regulations for movement and product sales	MoLD				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Popularise ethics in drug use quality and safety requirements in marketed milk	MoLD, KARI, KDB, Universities, Colleges, Private Veterinary Firms, Farmers, NGO				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Promote private sector participation in animal health delivery services	MoLD				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Recruit appropriate and adequate manpower	MoLD, KDB, MoCD				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Increase funding to public veterinary	MoLD				Milk exported

regulatory services					regional markets Productivity Incomes Employments Milk safety and quality
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### 5.2.3. Plan objective 3: Enhance efficiency in milk collection and transportation system

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Revitalise dormant milk co-operative societies.	MoLD, KDB, MoCD, Farmer groups, Coops, NGO,				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Promote formation of farmer groups and Co-operative societies to ease logistics in milk collection from smallholder farms.	MoLD, KDB, MoCD, Farmer groups, Coops, NGO,				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Scale up and out adoption of Dairy Hub Business Development Services Centres in milk producing areas with low market access	MoLD, KDB, MoCD, Farmer groups, Coops, NGO,				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Introduce standard milk safety and quality tests and certification	KDB, KEBS				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to attract private investments milk collection and transportation facilities	MoA, MoCD, MoLD, KDB, Farmer groups, Coops, NGO				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Offer regular training in safety and quality requirements in milk collection and transportation	MoLD, KDB, KEBS, Universities, Colleges, groups, Coops, NGO				Milk exported regional markets Productivity Incomes Employments Milk safety and quality
Enforce registration and compliance with safety and quality requirements in milk collection and transportation	KDB, KEBS				Milk exported regional markets Productivity Incomes Employments Milk safety and quality

**5.2.4. Plan objective 4: Reduction of post harvest milk losses along the value addition chain**

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Launch regular training for stakeholders on standard milk safety and quality tests and certification procedures	MoLD, KDB, Universities, Colleges, groups, Coops				Milk safety and quality Milk exported regional markets Productivity Incomes Employments
Launch regular mandatory training on Good Manufacturing Practice (GMP) for small and large scale processors, milk collection and transportation providers	KDB				Milk safety and quality Milk exported regional markets Productivity Incomes Employments
Popularise the application of code of hygienic practice in milk production, handling, and distribution, industry regulatory services, milk and milk products standards	MoLD, KDB, Universities, Colleges, groups, Coops				Milk safety and quality Milk exported regional markets Productivity Incomes Employments
Enforce the dairy industry regulations and standards	MoLD, KDB, KEBS				Milk safety and quality Milk exported regional markets Productivity Incomes Employments
Regularly report in the Kenya Dairy Bulletin evaluation reports on the rate of compliance to standards and regulations by the industry stakeholders' classification	KDB, MoLD, KEBS				Milk safety and quality Milk exported regional markets Productivity Incomes Employments
Enforce mandatory record keeping of the quality of milk received, materials used, new product development activities and all inspection reports in milk processing plants.	KDB, MoLD				Milk safety and quality Milk exported regional markets Productivity Incomes Employments
Promote and encourage processors to attain ISO certification	KDB, MoLD, KEBS				Milk safety and quality Milk exported regional markets Productivity Incomes Employments
Engage private and public institutions with laboratories to carry out quality control tests on milk	KDB, MoLD, KEBS, Universities, Colleges, groups, Coops				Milk safety and quality Milk exported regional markets Productivity Incomes Employments
Implement payment based on quality and wholesomeness of milk as incentive to produce safe and pure milk.	KDB, MoLD, Processors, MoCD				Milk safety, quality Milk exported regional markets Productivity Incomes Employments

### 5.2.5.Plan objective 5: Increase milk value addition and branding

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Assist camel and goat milk producers to brand milk on nutritional health attributes and adaptation to climate change for high value specialised markets	KDB, MoLD, KEBS, NGO, Farmer groups, Coops				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Assist producers to brand milk from indigenous cattle and Jersey breed built on unique attributes and adaptation to climate change for high value specialised markets	KDB, MoLD, KEBS, NGO, Farmer groups, Coops				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Market promotions of Kenya branded milk in niche markets	KDB, MoLD,				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Facilitate both small and large processing on basis of compliance with safety and quality, GMP and certification requirements	KDB, MoLD, MoCD				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Scale up and out adoption of Dairy Hub Business Development Services Centres in milk producing areas with low market access	KDB, MoLD, NGO, Farmer groups, Coops				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Introduce standard milk safety and quality tests and certification	KDB, MoLD, KEBS, Processors				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to attract private investments milk processing facilities	MoA, MoCD, MoLD, KDB, Farmer groups, Coops, NGO				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Establish efficient milk manufacturing plants for processing surplus milk in wet season into long life and high value products.	Processors				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Lobby for policy shift from strategic grain reserve to strategic food reserve programme inclusive of milk	MoA, MoCD, MoLD, KDB, Farmer groups, Coops, NGO				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Expand training to small processors on milk value addition and a range of high value products	MoCD, MoLD, KDB, Farmer groups, Coops, NGO				Milk safety, quality Milk exported regional markets Productivity Incomes Employments
Introduce milk and milk product festivals similar to those cheese festivals ESADA	MoCD, MoLD, KDB, Farmer groups, Coops, NGO				Milk safety, quality Milk exported regional markets

organizes to promote consumption.					Productivity Incomes Employments
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#### 5.2.6. Plan objective 6: Expand domestic milk consumption

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Run promotional milk consumption campaigns	MoCD, MoLD, KDB, Farmer groups, Coops, NGO, Processors				Milk safety, quality Milk exported regional markets Incomes Employments
Popularise use of low cost packages and pouches for packaging of pasteurized milk.	MoCD, MoLD, KDB, Farmer groups, Coops, NGO, Processors				Milk safety, quality Milk exported regional markets Incomes Employments
Diversify products range	Processors				Milk safety, quality Milk exported regional markets Incomes Employments
Advocate for inclusion of milk supply in public and NGO food security programmes in vulnerable areas through public-private partnership contractual arrangements.	MoCD, MoLD, KDB, Farmer groups, Coops, NGO				Milk safety, quality Milk exported regional markets Incomes Employments

#### 5.2.7. Plan objective 7: Export more milk and milk products in the regional and global markets

Actions	Responsibility	Implementation timeframe term			M&E Impact indicators
		Short	Medium	Long	
Expand milk processing capacities in low market access high milk producing areas	MoCD, MoLD, KDB, Farmer groups, Coops, NGO				Milk safety, quality Milk exported regional markets Incomes Employments
To re-orient milk processing towards long life and high value dairy products	KDB, Processors, Farmer groups, Coops				Milk safety, quality Milk exported regional markets Incomes Employments
Engage high level policy negotiations to open regional market for Kenyan milk and milk products	MoCD, MoLD, KDB,				Milk safety, quality Milk exported regional markets Incomes Employments
Launch regular mandatory training on Good Manufacturing Practice (GMP) for small and large scale processors, milk collection and transportation providers	MoCD, MoLD, KDB,				Milk safety, quality Milk exported regional markets Incomes Employments
Popularise code of hygienic practice in milk production, handling, and distribution, industry regulatory services, milk and milk products standards	MoLD, KDB,				Milk safety, quality Milk exported regional markets Incomes Employments

**5.3. ACTION PLANS FOR POLICY AND REGULATION FRAMEWORKS, INFRASTRUCTURE AND ENFORCEMENT THAT BENEFICIALLY WORK FOR ALL DAIRY VALUE CHAIN STAKEHOLDERS**

**5.3.1. Plan objective 1: Increase quantity and quality of concentrates in the market**

Actions	Responsibility	Implementation timeframe term			<b>M&amp;E indicators</b>
		Short	Medium	Long	
Strengthen existing regulatory services on feed testing at retail level	MoLD, KEBs, AKEFEMA,				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Impose heavy penalties and sanctions on trade malpractices	MoLD, KEBs, AKEFEMA,				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Create animal feeds inspectorate unit with legal authority to enforce standard of both raw materials and finished product	MoLD, KEBs, AKEFEMA,				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Enact the Animal Feedstuff Act to strengthen the monitoring of feed quality at the point of sale.	MoLD, AKEFEMA,				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Strengthen Association of Kenya Feed Manufacturers (AKEFEMA) and other stakeholders in the feed industry for self-regulation in the feed industry	MoLD, KEBs,				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Facilitate private investors to set up private feed testing labs	MoLD, KEBs, AKEFEMA,				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Test regularly commercial feeds at factory and stockist levels	MoLD, KEBs, AKEFEMA,				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments

### 5.3.2. Plan objective 2: Review and harmonize policies, regulations and control

Actions	Responsibility	Implementation timeframe term			M&E indicators
		Short	Medium	Long	
Revise and strengthen new policies for delivery system: Veterinary Surgeon Act CAP 366, Cattle cleansing Act CAP 358, Pharmacy and Poisons Act CAP244	MoLD				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Establish stakeholders driven ethics/standards committee	All stakeholders				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Formalise field practice by Community Animal Health Workers on common simple attendance cases	MoLD				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments

### 5.3.3. Plan objective 3: Design enabling policy and regulation frameworks

Actions	Responsibility	Implementation timeframe term			M&E indicators
		Short	Medium	Long	
Raise funding to support regular tailor made training for filling skills needs in the dairy value chain	KDB				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Accredit and contract institutions with the technical capacity to offer training on the gap skills	KDB, MoLD, MoCD, KEBS				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Launch Kenya Dairy Bulleting with two issues yearly reporting on topical issues in the dairy value chain	KDB				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Engage public and private organisations with capacity on special dairy technical skills in outreach programmes to dairy value chain operators	KDB, MoLD, MoCD, KEBS				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments
Develop policies to guard against monopolistic and oligopoly tendencies	KDB, MoLD, MoCD, Farmer groups, Processors, Coops				Reformed policy and regulations Milk safety, quality Milk exported regional markets

					Incomes Employments
Enhance research funding through formalized public and private sector partnerships	KDB, MoLD, MoCD, Farmer groups, Processors, Coops				Reformed policy and regulations Milk safety, quality Milk exported regional markets Incomes Employments

#### 5.3.4. Plan objective 4: Expand export market for milk and milk products

Actions	Responsibility	Implementation timeframe term			M&E indicators
		Short	Medium	Long	
Expand processing capacities for long life and high value products	Processors, Farmer groups, Coops, KDB, MoLD, MoCD				Milk safety, quality Milk exported regional markets Incomes Employments
Offer regular trainings on safety and quality requirements for marketed milk and products	Processors, Farmer groups, Coops, KDB, MoLD, MoCD				Milk safety, quality Milk exported regional markets Incomes Employments
Diversify dairy products	Processors, Farmer groups, Coops, KDB,				Milk safety, quality Milk exported regional markets Incomes Employments
Assist processors brand milk and milk products	KDB, MoLD, MoCD				Milk safety, quality Milk exported regional markets Incomes Employments
Enforce compliance with requirements for safety, quality, GMP and code of hygienic practice in the dairy value chain	Processors, Farmer groups, Coops, KDB, MoLD, MoCD				Milk safety, quality Milk exported regional markets Incomes Employments
Conduct market research and surveillance in the EAC and COMESA markets	KDB, MoLD, MoCD				Milk safety, quality Milk exported regional markets Incomes Employments
Lobby at high policy levels for removal of non tariff trade barriers	Processors, Farmer groups, Coops, KDB, MoLD, MoCD				Milk safety, quality Milk exported regional markets Incomes Employments

## 5.4. ACTION PLANS FOR MAINSTREAMING CROSS CUTTING ISSUES IN THE DAIRY VALUE CHAIN TO SUSTAIN HIGH PRODUCTIVITY AND COMPETITIVENESS

### 5.4.1. Plan objective 1: Mainstream gender in the dairy value chain support

Actions	Responsibility	Implementation timeframe term			M&E indicators
		Short	Medium	Long	
Develop gender sensitive extension packages	MoLD, Universities, Colleges, NGO				Productivity Incomes Employments
Adopt gender sensitive extension approaches	MoLD, Universities, Colleges, NGO				Productivity Incomes Employments
Develop gender sensitive financial services	Financial service providers, NGO				Productivity Incomes Employments
Develop gender sensitive technologies	MoLD, Universities, Colleges, NGO				Productivity Incomes Employments

### 5.4.2. Plan objective 2: Improve security to encourage investments in the dairy industry in Kenya

Actions	Responsibility	Implementation timeframe term			M&E indicators
		Short	Medium	Long	
Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in rural infrastructure to generate off-farm remunerative options	MoLD, MoA, Farmer groups, Coops				Milk safety, quality Milk exported regional markets Incomes Employments
Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in building police posts where insecurity is high	MoLD, MoA, Farmer groups, Coops				Milk safety, quality Milk exported regional markets Incomes Employments
Popularise in community policing	All stakeholders				Incomes Employments

### 5.4.3. Plan objective 3: Improve better understanding of climate change implications for and adaptation in the dairy industry in Kenya

Actions	Responsibility	Implementation timeframe term			M&E indicators
		Short	Medium	Long	
Engage stakeholders in climate risks workshops for awareness	All stakeholders				Environmental quality Productivity Incomes Employments
Develop regional information sheets on climate change and adaptation strategies	All stakeholders				Environmental quality Productivity Incomes

					Employments
Incorporate climate change issues in extension services	All stakeholders				Environmental quality Productivity Incomes Employments
Target climate change workshops to the most vulnerable	All stakeholders				Environmental quality Productivity Incomes Employments

#### **5.4.4. Plan objective 4: Enhance mitigation and adaptation to climate change variability and change in the dairy industry**

Actions	Responsibility	Implementation timeframe term			M&E indicators
		Short	Medium	Long	
Conduct vulnerability and adaptation of dairy production systems to climate variability and change	MoLD, Universities, KARI, NGO				Productivity Incomes Employments
Conduct feed base audit and systems resilience analysis	MoLD, Universities, KARI, NGO				Productivity Incomes Employments
Conduct scenario planning analysis to explore options	Universities, KARI, NGO				Productivity Incomes Employments
Inventory of management technologies and practices for dissemination	MoLD, Universities, KARI, NGO				Productivity Incomes Employments
Promote increased adoption of agro forestry systems for intensifying, diversifying and buffering farm systems	MoLD, Universities, KARI, NGO, Farmer groups				Productivity Incomes Employments
Design and lobby at high policy levels for implementation of insurance buffering	MoLD, MoA, Farmer groups, Coops				Productivity Incomes Employments

#### **5.4.5. Plan objective 5: Improve environmental quality, conservation and management in the dairy value chain**

Actions	Responsibility	Implementation timeframe term			M&E indicators
		Short	Medium	Long	
Sensitise dairy producers and traders on maintenance of environmental quality, conservation and management	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Design incentives for low energy use technologies	MoLD				Environmental quality Productivity Incomes Employments
Promote mixed dairy-crop production systems	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments

Provide extension training on better management of pastures and soils	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Promote uptake of biogas plants for cooking, lighting and heating and for manure fertilising of pastures and crops	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Lobby for incentives in low energy use technologies	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Promote mixed dairy-crop production systems	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Provide extension training on better management of pastures and soils	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Provide extension training on feeding for improved productivity	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Support research and extension training on better feeding strategies of non cereals seeds for improved productivity	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Promote uptake of biogas plants for cooking, lighting and heating and for manure fertilising of pastures and crops	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments

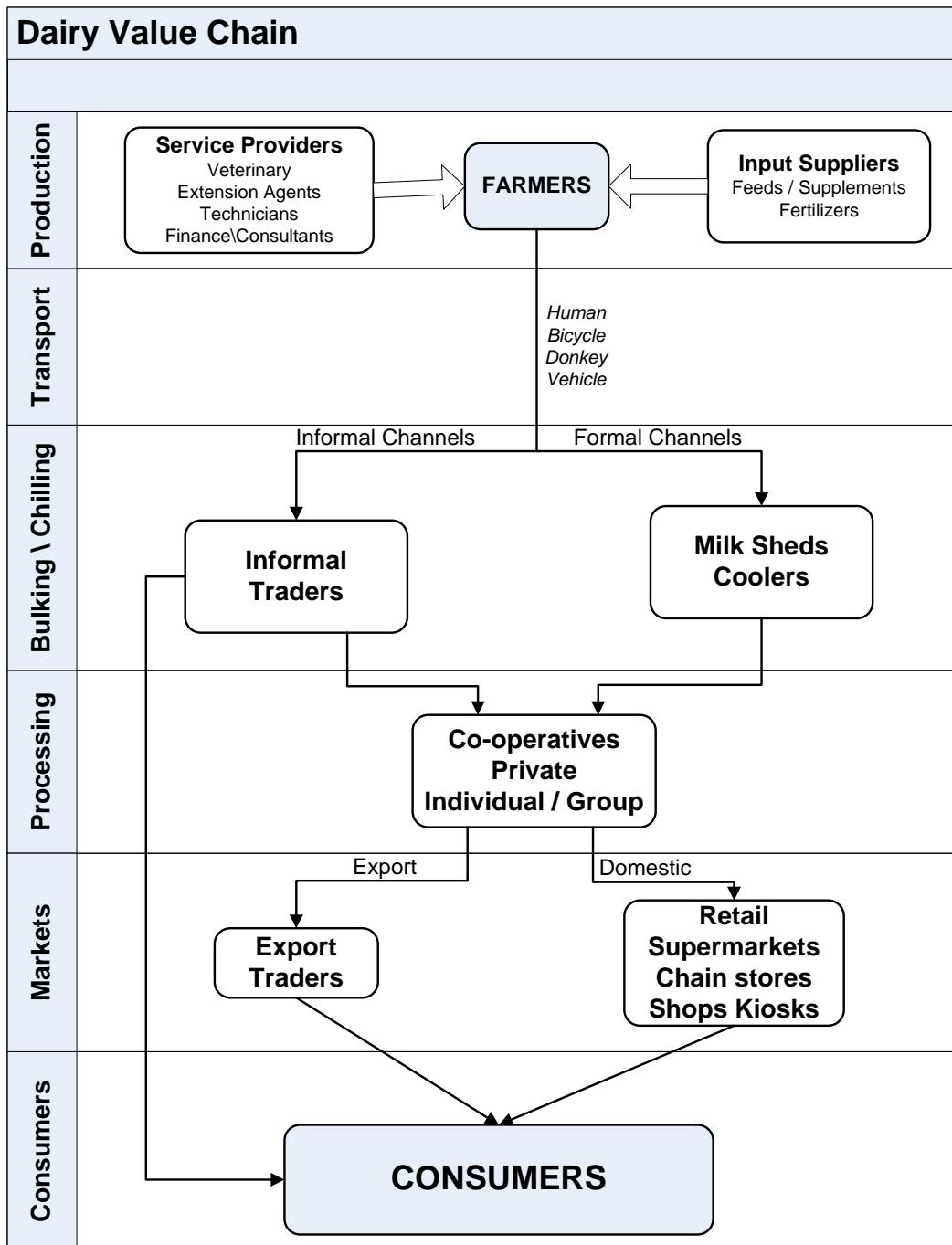
#### **5.4.6.Plan objective 6: Enable milk producers to improve water use efficiency milk production**

Actions	Responsibility	Implementation timeframe term			M&E indicators
		Short	Medium	Long	
Provide training on water harvesting, quality, storage and conservation	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Provide training on water use efficiency in drinking and service in the dairy value chain	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Sensitize farmers on water requirements for animals to maximize productivity	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Training on importance of quality water for livestock	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity

					Incomes Employments
Popularise water harvesting and water use efficiency in the dairy value chain	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments
Invest economic stimulus funds (ESF), Constituency Development Funds (CDF) and Local Authority Transfer funds (LATIF) in water supply services including borehole drilling, dam construction and piped water.	MoLD, MoA, Farmer groups, Coops				Environmental quality Productivity Incomes Employments

## **APPENDIX 1: THE ACTORS IN THE DAIRY VALUE CHAIN IN KENYA**

The strategic vision and mission of this dairy master plan is to develop a sustainable and globally competitive dairy value chain for wealth creation and high quality life while maintaining compliance with requirements for high standards of public and environmental health. A value chain is a series of sequential activities that add more value to the product at each step in the process that the product passes through. Figure 1 depicts the distinct steps in the Kenyan dairy value chain. They include Input and service providers; Milk producers; Collection, Chilling and Bulking group; Processors; Retailers and Distributors; and Consumers. Input and service providers include public and private sector players. They provide a range of services including feed supply, veterinary and AI services, breeding stock, extension services, testing and regulatory services. Access to these services is crucial to efficient functioning of a dairy value chain, especially for smallholder producers and traders.



## APPENDIX 2: PROJECTED SHIFTS IN THE PROPORTION OF MILK MARKETED THROUGH MARKETING OUTLETS TO 2030

Based on the 2005 estimated milk volumes and proportion through each channels, the 2010 situation is projected and on their basis to set targets for 2030. The un-shaded values represent the present share of milk marketed through each channel and the shaded values represent the targets for changes by 2030. Presently the proportion of milk production marketed is 65% leaving 35% for home consumption. Of the 2.925 billion litres of milk marketed, 45% (1.316 billion litres) is handled in the formal market or through the processors. The remaining 55% (1.609 billion litres) is handled in informal market outlets dominated by hawkers. The targeted action is to shift the proportion of marketed milk in the informal market outlet from 55% in 2010 to 35% (3.350 billion litres) in 2030. The shift targeted is reducing from 35% (1.575 billion litres) in 2010 to 20% (2.552 billion) in 2030 for milk consumed at home of the total production, in order to shift milk through markets from 65% in 2010 to 75% (9.57billion litres) in 2030.

