



REPUBLIC OF KENYA

AGRICULTURAL SECTOR DEVELOPMENT STRATEGY 2010–2020





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ABBREVIATIONS

AgGDP	Agricultural Gross Domestic Product
ASALs	arid and semi-arid lands
ASCU	Agricultural Sector Coordination Unit
ASDS	Agricultural Sector Development Strategy
CAADP	Comprehensive African Agricultural Development Programme
COMESA	Common Market for Eastern and Southern Africa
DADC	district agricultural development committee
ERS	Economic Recovery Strategy for Wealth and Employment Creation
GDP	Gross Domestic Product
HIV / AIDS	human immunodeficiency virus / acquired immunodeficiency syndrome
KENFAP	Kenya National Federation of Agricultural Producers
KEPSA	Kenya Private Sector Alliance
KES	Kenya shilling
MDG	Millennium Development Goal
M&E	monitoring and evaluation
MTEF	medium-term expenditure framework
NARC	National Alliance of Rainbow Coalition
NEPAD	New Partnership for Africa's Development
NGO	nongovernmental organization
RDA	regional development authority
SACCO	savings and credit cooperative organizations
SRA	Strategy for Revitalizing Agriculture
USD	United States dollar

FOREWORD

The agricultural sector is the backbone of Kenya's economy and the means of livelihood for most of our rural population. Sustained agricultural growth is critical to uplifting the living standards of our people as well as generating rapid economic growth. However, in spite of the importance of the agricultural sector, farming in our country has for many years been predominantly small scale, rainfed and poorly mechanized. In addition, institutional support and infrastructure have been inadequate.

To address these challenges, my Government launched the Strategy for Revitalizing Agriculture (SRA) in 2004. I am pleased to note that implementation of the SRA has been largely successful. As a result, the sector surpassed the growth target that we had set of 3.1 per cent to reach a high of 6.1 per cent in 2007.

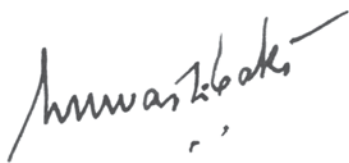
The new Agricultural Sector Development Strategy (ASDS) is intended to build further on the gains made by the SRA. It is intended to provide a guide for public and private sectors' efforts in overcoming the outstanding challenges facing the agricultural sector in Kenya. Besides ensuring food and nutritional security for all Kenyans, the strategy aims at generating higher incomes as well as employment, especially in the rural areas. Moreover, it is expected to position the agricultural sector as a key driver in achieving the 10 per cent annual economic growth rate envisaged under the economic pillar of Vision 2030.

Under the ASDS, agricultural sector ministries are expected to ensure that farmers, producers, processors and marketers of agricultural produce employ the most contemporary methods and technologies. This will require that all agricultural enterprises be highly productive, commercial in nature and competitive at all levels. The strategy also underscores the need to develop and prudently manage our factors of production such as land, water, inputs, and financial resources so that the cost of production is within international standards.

The Government shall also further reform and streamline agricultural institutions that provide services to farmers such as extension, training, research and regulatory services to ensure that they serve farmers efficiently and cost effectively. We shall also institute policy, legal and regulatory reforms so that individual farmers are encouraged to shift from subsistence to market-oriented production, and to adopt greater use of modern farming practices while increasing integration of agriculture with other sectors in the national economy.

I wish to reaffirm the commitment of my Government in creating an enabling environment for the realization of agricultural development objectives envisaged in this new strategy. Indeed, the agricultural sector is far too important for our economy and our people to be

given anything less than the highest level of attention. I urge all stakeholders to play their respective roles in ensuring that the Kenya Agricultural Sector Development Strategy is successfully implemented.

A handwritten signature in black ink, appearing to read 'Mwai Kibaki', with a long horizontal stroke extending to the right.

Hon. Mwai Kibaki, CGH, MP

President of the Republic of Kenya

PREFACE

The Agricultural Sector Development Strategy (ASDS) is the overall national policy document for the sector ministries and all stakeholders in Kenya. The document outlines the characteristics, challenges, opportunities, vision, mission, strategic thrusts and the various interventions that the ministries will undertake to propel the agricultural sector to the future. In composing this strategy, we have defined the problems in the agricultural sector, explored the possible causes of the problems and proposed possible solutions. Recognizing that we cannot solve all problems, we have selected the best solutions and shall implement them in a phased manner.

As a revision of the Strategy for Revitalizing Agriculture (SRA), the ASDS has incorporated not only the successes but also the lessons learned from the SRA to provide the framework for stimulating, guiding and directing progressive agricultural growth and development in the next 10 years. The document proposes realistic policies and institutional changes that we believe are necessary in contemporary Kenya for creating a vibrant and productive agricultural sector. We expect the strategy to encourage and enhance positive participation among the civil society, individual farmers, farmer organizations and even the private sector. The interventions and reforms proposed in this strategy are based on the need to achieve transparency, accountability, efficiency and effectiveness in performing the duties in the agricultural sector.

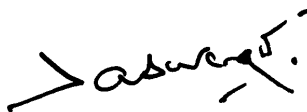
This strategy can only succeed with the total commitment and determination of all stakeholders. We must harness the will and the determination of farmers, processors, the public and private sectors, and non-State actors to realize the agricultural potential that this country holds. It is our most sincere hope and expectation that this strategy will not only be a milestone and a guide for staff of the sector ministries but will also be a landmark, and will provide direction to all of us who are involved in agriculture as a vital industry. We are convinced that if successfully implemented, this strategy will return the sector to a growth path to achieve our vision of 'a food-secure and prosperous nation', and our mission of 'an innovative, commercially oriented and competitive agriculture'.

As ministers in the sector, we are committed to this vision. We have set the mission of the agricultural sector as 'innovative, commercially oriented and modern agriculture' because we believe that farming and related enterprises are some of the most profitable businesses that Kenyans can undertake. Accordingly, we will always remain conscientiously vigilant and focused on this novel vision and mission. Our responsibility as Government is to improve the standards of living and the quality of life of all the peoples of Kenya.

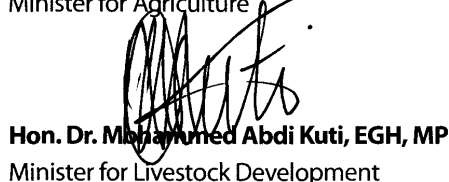
We wish to entrench this principle into the sector as our contribution to Vision 2030 of ‘a fast-developing and prosperous nation’.



Hon. William arap Ruto, EGH, MP
Minister for Agriculture



Hon. James Orengo, EGH, MP
Minister for Lands



Hon. Dr. Mohamed Abdi Kuti, EGH, MP
Minister for Livestock Development



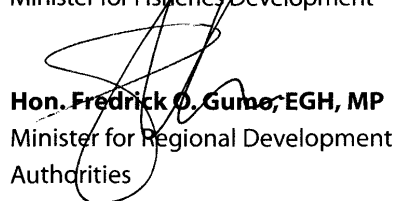
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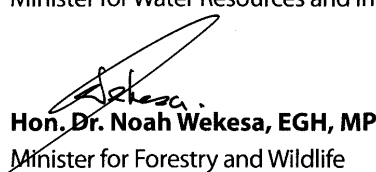
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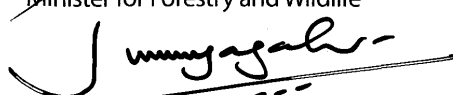
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Minister for Cooperative Development

ACKNOWLEDGEMENTS

We wish to acknowledge the efforts of the technical experts who have made compiling this document a success. Although we cannot possibly mention all of them, we will mention a few.

The work of the Inter-ministerial Coordination Committee led by Dr Romano Kiome, Permanent Secretary, Ministry of Agriculture, and including the following permanent secretaries is particularly acknowledged:

Mr Kenneth M Lusaka, Ministry of Livestock Development
Prof Micheni Japhet Ntiba, Ministry of Fisheries Development
Eng David N Stower, Ministry of Water Resources and Irrigation
Mr Seno Nyakenyanya, Ministry of Cooperative Development and Marketing
Eng Carey Orege, Ministry of Regional Development Authorities
Ms Dorothy N Angote, Ministry of Lands
Mr M A M Wa-Mwachai, Ministry of Forestry and Wildlife
Mrs Mary Ngari, Ministry for the Development of Northern Kenya and Other Arid Areas
Mr Lawrence Lenayapa, Ministry of Environment and Mineral Resources

The coordination and compiling role of the Agricultural Sector Coordination Unit and the resource people under the leadership of Dr Mussolini Kithome is also highly acknowledged.



Hon. William Ruto, EGH, MP

Minister for Agriculture

EXECUTIVE SUMMARY

Agriculture is the mainstay of the Kenyan economy directly contributing 26 per cent of the GDP annually, and another 25 per cent indirectly. The sector accounts for 65 per cent of Kenya's total exports and provides more than 70 per cent of informal employment in the rural areas. Therefore, the agricultural sector is not only the driver of Kenya's economy but also the means of livelihood for the majority of Kenyan people.

The agricultural sector comprises the following subsectors: crops, livestock, fisheries, land, water, cooperatives, environment, regional development and forestry. The sector also includes the development of arid and semi-arid lands. Thus, there are many players and stakeholders in the sector due to its role in the economy and its rural-based nature that touches the livelihoods of many people.

In 2003, the NARC Government developed and launched the Economic Recovery Strategy for Wealth and Employment Creation (ERS) as the blueprint for setting the country back on the growth path. The strategy was a shift from previous planning documents that sought to reduce poverty instead of creating wealth and employment. It elaborated the role of agriculture and recognized that for the economy to grow to create wealth and employment as the backbone of the economy, agriculture has to grow even faster. Agriculture was therefore given high prominence and priority in the ERS.

In 2004, the Government developed and launched the Strategy for Revitalizing Agriculture (SRA) as a follow up and response to the ERS. The SRA set out the Government's vision: To transform Kenya's agriculture into a profitable, commercially oriented and internationally and regionally competitive economic activity that provides high quality, gainful employment to Kenyans. The SRA set the target of agricultural growth at an average annual rate of 3.1 per cent during 2003–2007, to reach over 5 per cent by 2007.

Implementation of this strategy has over the last 5 years generally been successful. By 2007, agricultural growth had surpassed the SRA target: it grew at an average of 5.2 per cent, reaching a high of 6.4 per cent in 2006. Other achievements of SRA include the reduction of food insecurity by over 12 per cent and of poverty by over 10 per cent from 2003 to 2007; increased productivity of key commodities such as tea, maize, sugar, horticulture, milk and meat each by an average of over 6 per cent per annum from 2003 to 2007; and the revival of most agricultural institutions. While the foundations for these gains are still intact, the growth trend was interrupted in 2008 by external forces that included the post-election violence, global food price crises, escalating fuel prices, and the global financial meltdown. It is, therefore, imperative that this interruption is removed so that the sector can go back to the increasing growth path.

The ERS was a 5-year plan that was to expire during the financial year 2007/08. By early 2007 the Government started developing a new strategy to take over from the ERS. In June 2008, the Government launched the Kenya Vision 2030 as the new long-term development blueprint for the country. Its vision is: A globally competitive and prosperous country with a high quality of life by 2030. Vision 2030 has identified agriculture as one of the key sectors to deliver the 10 per cent annual economic growth rate envisaged under the economic pillar.

With most SRA targets achieved and a new government formed in 2008, it was necessary to revise the SRA to capture these new developments. The new strategy is required to strategically position the agricultural sector as a key driver for delivering the 10 per cent annual economic growth rate envisaged under the economic pillar of Vision 2030. It provides a guide for the public and private sectors' effort in overcoming development challenges facing the agricultural sector.

In the last 5 years, the sector has been revitalized and placed on the path for further development. Hence, this strategy is perceived as an Agricultural Sector Development Strategy (ASDS). Although much has been achieved during the period, the challenges of food security, poverty reduction and transforming agriculture from subsistence to farming as a business—agribusiness, markets, efficient use of inputs and agricultural credit—still remain. The ASDS seeks to progressively reduce unemployment and poverty, and to spur agriculture back to growth trends.

The vision of the ASDS is: A food-secure and prosperous nation. Since the agricultural sector is still the backbone of Kenya's economy—and the means of livelihood for most of the rural population—it is inevitably the key to food security and poverty reduction.

The overall goal of the agricultural sector is to achieve an average growth rate of 7 per cent per year over the next 5 years. Given the critical strategic issues that need to be addressed, the strategic mission for the sector is: An innovative, commercially oriented and modern agriculture.

The overall development and growth of the sector is anchored in two strategic thrusts:

- increasing productivity, commercialization and competitiveness of agricultural commodities and enterprises
- developing and managing key factors of production.

Assuming a conducive external environment and support from enabling sectors and factors, the agricultural sector has set the following targets to be achieved by 2015:

- Reduced number of people living below absolute poverty lines to less than 25 per cent, to achieve the first MDG (Millennium Development Goal).
- Reduced food insecurity by 30 per cent to surpass the MDGs.
- Increased contribution of agriculture to the GDP by more than KES 80 billion per year as set out in Vision 2030.

- Divest from all state corporations handling production, processing and marketing that can be better done by the private sector.
- Reformed and streamlined agricultural services such as in research, extension, training and regulatory institutions to make them effective and efficient.

The strategic thrust of increasing the productivity, commercialization and competitiveness of agricultural commodities will enable the sector to export more outputs, earn the country foreign exchange, and create employment. With the responsibilities of the agricultural sector currently spread across 10 ministries and the need for partnerships with several other ministries and stakeholders, implementation of ASDS will require strong partnerships among the Government, private sector, development partners and other non-State actors. A sector-wide approach and strong coordination mechanisms will be instrumental in the success of the strategy.

At the national level, sector ministries and the Agricultural Sector Coordination Unit (ASCU) organizes the sector's biennial national forum of stakeholders. The forum discusses problems constraining progress and ways of overcoming them, and considers current and future prospects. To give the forum adequate authority, the highest political authority will preside over it.

At the middle level, the inter-ministerial coordination committee will be expanded to include all ministries that provide services to the agricultural sector. The committee will comprise permanent secretaries of the lead and collaborating ministries, and will be responsible for coordinating the planning of the strategy at the sector level and monitoring its implementation to ensure that its goals are achieved.

Locally, ASDS will be implemented through district agricultural development committees (DADCs) made up of the sector ministries and stakeholders. Priorities on implementation shall be agreed upon at district development committees and DADCs, as well as at constituency development committees.

1 BACKGROUND

1.1 Agriculture and the Economy

Agriculture, the mainstay of Kenya's economy, currently contributes 26 per cent of the GDP directly and another 25 per cent indirectly. The sector also accounts for 65 per cent of Kenya's total exports and provides more than 18 per cent of formal employment. More than 70 per cent of informal employment is in the rural areas.

The agricultural sector comprises six subsectors—industrial crops, food crops, horticulture, livestock, fisheries and forestry—and employs such factors of production as land, water and farmer institutions (cooperatives, associations). Figure 1 shows the contribution of the subsectors to Agricultural Gross Domestic Product (AgGDP) and agricultural exports. Industrial crops contribute 17 per cent of the AgGDP and 55 per cent of agricultural exports. Horticulture, which has recorded a remarkable export-driven growth in the past 5 years and is now the largest subsector, contributes 33 per cent of the AgGDP and 38 per cent of export earnings. Food crops contribute 32 per cent of the AgGDP but only 0.5 per cent of exports, while the livestock subsector contributes 17 per cent of the AgGDP and 7 per cent of exports. Livestock and fisheries subsectors have huge potential for growth that has not been exploited.

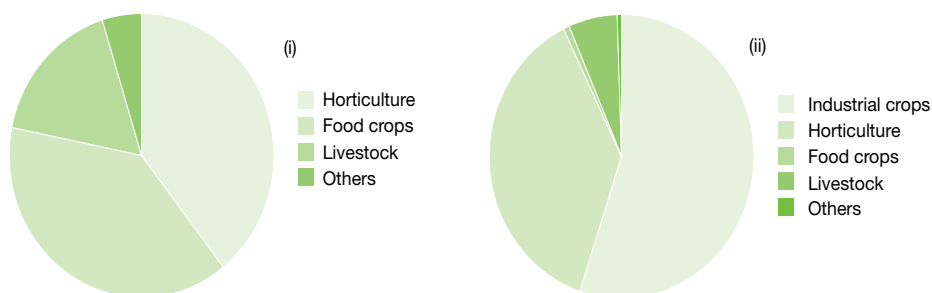


Figure 1. Contribution of agricultural subsectors to AgGDP (i) and to agricultural exports (ii).

In Kenya, growth of the national economy is highly correlated to growth and development in agriculture (fig 2). In the first two decades after independence, the agricultural sector, and in turn the national economy, recorded the most impressive growth in sub-Saharan Africa at average rates of 6 per cent per annum for agriculture and 7 per cent for the national economy. During this period, small-scale agriculture grew rapidly as the population rallied around the call by the first president of the republic of *rudini mashambani* (return to the farms). This growth was spurred by expansion because there was ample land and better use of technology. Moreover, agricultural extension and research were supported by the Government.

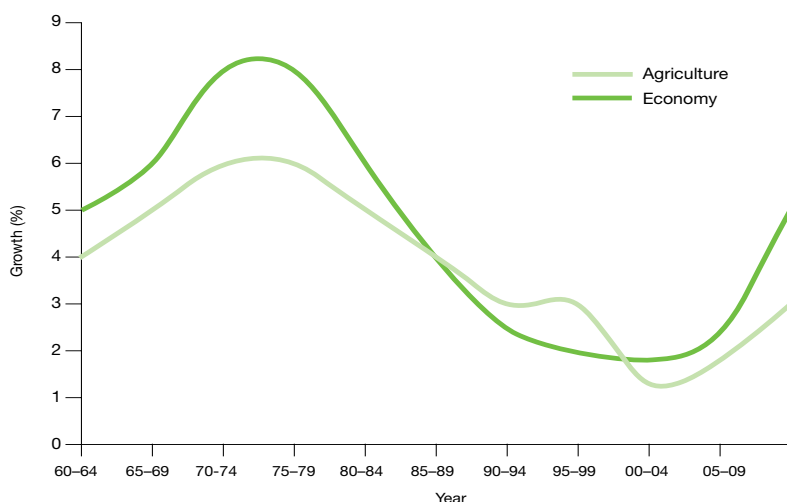


Figure 2. Trends in agricultural and economic growth (1960–2008).

The Government also established and supported many agricultural institutions such as farmer cooperatives and those for agricultural inputs, marketing, credit and agroprocessing. Budgetary allocation to the agricultural sector during this period was at an average of 13 per cent of the national budget.

However, this growth was not sustained. Between 1980 and 1990 the sector recorded an average annual growth rate of 3.5 per cent that reduced to 1.3 per cent in the 1990s. During this period, Kenya compared badly with Tanzania (3.2 per cent), Uganda (3.7 per cent), China (4.1 per cent), India (3.2 per cent) and Vietnam (4.8 per cent), which had all been performing badly in the previous decades. The main reasons for this decline were low investment in the sector, mismanagement, virtual collapse of agricultural institutions and, more importantly, negligence of agricultural extension and research. It was also during this period that the Government was implementing structural adjustment programmes prescribed by the Breton Woods institutions, which encouraged poorly sequenced privatization in the sector. Investment in the sector was at its lowest during this time with budgetary allocation declining to as low as 2 per cent or less of the national budget.

The decline in growth started to reverse in the first half of 2000 when the average growth rate picked up to 2.4 per cent. This growth was spurred by the NARC Government's concerted efforts, especially after 2003, to revive agricultural extension and other institutions and to increase investment in the agricultural sector. The Government identified the agricultural sector as a priority, hence key to economic growth both in the ERS and the SRA. It gradually started to put more investment in the sector and to

increase its budgetary allocation to an average of 4.5 per cent of the national budget.

These gains were set back by the violence following the 2007 general elections, the crises caused by escalating global food and fuel prices of 2008, and the financial crises of 2008/09 to the extent that the agricultural sector reflected a negative 2.5 per cent in 2008. It is imperative that this recent downward trend is arrested quickly to put agriculture back on the trajectory of 2003–2007. This is possible since the plans and institutions that spurred growth in 2007 are intact and can be made more efficient and effective.

1.2 Recent Strategies and Policies

1.2.1 *Economic Recovery Strategy for Wealth and Employment Creation*

Upon assuming power in 2003, the NARC Government made reviving the economy its top priority. With the previous government having been in power for 24 years, the new Government had overwhelming public and international support. It expeditiously developed a new strategy and policies that abandoned the policy on poverty reduction and adopted economic recovery. The ERS, the blueprint for setting the country back on the growth path, was launched in 2003.

The ERS emphasized economic growth and creation of wealth and employment as means of eradicating poverty and achieving food security. This was a major shift from the previous focus on poverty reduction and food security. The strategy identified agriculture as the leading productive sector for economic recovery. In addition, the strategy recognized that revival of agricultural institutions and investment in agricultural research and extension were critical and essential for sustainable economic growth. Thus, the ERS was the launching pad for revitalizing the agricultural sector.

1.2.2 *Strategy for Revitalizing Agriculture*

The Government developed and launched the SRA in March 2004 as a response to the ERS. The strategy set out the vision of the Government as: To transform Kenya's agriculture into a profitable, commercially-oriented and internationally and regionally competitive economic activity that provides high-quality, gainful employment to Kenyans. This was to be achieved within the framework of improved agricultural productivity and farm incomes, while conserving the land resource base and the environment. The Government's vision pointed to a paradigm shift from subsistence agriculture to agriculture as a business that is profitable and commercially oriented. The SRA also gave policy direction and actions that needed to be taken in each agricultural subsector to achieve the vision.

The strategy also set out to have real output of the agricultural sector growth at an average of 3.1 per cent during 2003–2007, to reach 5 per cent by 2007. The development of the

sector was considered to be top priority in reducing poverty because it is the most important economic activity the poor in the rural areas rely on for a livelihood. The SRA was therefore required to contribute significantly to the following ERS targets:

- Reduce the proportion of the population below the basic poverty line from 56 per cent in year 2000 to 26 per cent by 2010
- Reduce the number of people who are food-cum-poverty stricken from 48.4 per cent to 23.5 per cent in 2008 and below 10 per cent in 2015.

These targets are broad and require more than the agricultural sector to achieve them. Within the domains of the sector, the SRA identified the following six interventions to be in the fast track.

- Review and harmonize the legal, regulatory and institutional frameworks
- Restructure and privatize core functions of parastatals and sector ministries
- Improve the delivery of research, extension and advisory services
- Improve access to quality inputs and financial services
- Improve access to both domestic and external markets
- Formulate food security policies and programmes.

The following milestones were achieved while implementing the SRA.

Establishing the Agricultural Sector Coordination Unit (ASCU). Although the establishment of ASCU was well articulated in the SRA, it took time to be implemented and accepted by the sector ministries. It was not until 2006 that the unit was fully established and staffed. Recruitment of key staff, which comprised seconded staff, went on until 2008. The unit is now well established and playing a key role in coordinating issues that cut across ministries. It also serves as a one-stop shop for the entire agricultural sector.

Reviving agricultural institutions. One of the pledges of the NARC Government was to revive all public institutions that provide services to citizens. Within the agricultural sector, this has been a success story. Institutions that were on the verge of collapse and have since been revived are the Kenya Meat Commission, the Kenya Cooperative Creameries (KCC), the Kenya Seed Company, the Agricultural Finance Corporation, and the Agricultural Development Corporation. Institutions that were considered moribund and dysfunctional, such as research and extension services with their subcentres, training centres and tractor hire are now vibrant and providing services to farmers. Even institutions that were running into losses, such as the sugar factories, have been revived, are reporting profits and are on the verge of being privatized.

Increasing agricultural productivity. Despite the vagaries of the weather, the impact of climate change and external factors such as high cost of inputs, crop yields on smallholder farms have increased significantly over the last 5 years. For example, the average yield

of maize has increased from 1.5 to 3 tonnes per hectare. This is attributed to better technology transfer and extension services. Furthermore, the yield for medium- and large-scale farmers has increased by a higher margin due to use of high-yielding varieties and better agronomic practices.

Developing policies and legislation. Developing policies and drawing up legislation has been hampered by lack of capacity and a protracted process. In the last 5 years, over 15 policies and 6 pieces of legislation have been developed and are being implemented. Among these are the Seed Policy, the Food Security and Nutrition Policy, the National Dairy Development Policy, the National Agricultural Sector Extension Policy, the Cotton Act 2006 and the Cooperatives Policy. This success is attributed to restructuring ministries by creating directorates and units that are coordinating policy development.

Increasing agricultural growth. The SRA set the target for agricultural growth at an average of 3.1 per cent by 2003, to reach 5 per cent by 2007. This target was achieved: growth reached an average of 5.2 per cent by 2007 with the highest being 6.2 per cent in 2006. This growth path was interrupted in 2008 by external factors. However, the sector has great potential to return to its previous growth path.

Reducing food insecurity and poverty. The ERS had set a target of reducing food insecurity by 23.5 per cent by 2008 and poverty by 26 per cent by 2010. By 2007 food insecurity had been reduced by 12 per cent from 48.5 to 36.5 per cent, while poverty had been reduced by 10 per cent from 56 to 46 per cent. However, this reduction was interrupted by external factors in 2008. Nevertheless, indications are that the food insecurity and poverty reduction trends will be resumed.

Over the last 5 years and in the course of implementing the SRA, several lessons were learned that will be useful in implementing the ASDS. One of the key lessons learned is the importance of sector coordination and a sector-wide approach to planning and implementation. As the agricultural sector has been split into several ministries, the only way to avoid duplicating efforts and to create synergy among Government ministries is through better coordination. The establishment of ASCU is an endeavour towards achieving these objectives.

Another important lesson learned during this period is the role of the private sector in the agricultural sector. While more support and investment are required from the public sector for it to grow, much of the work—production, processing, marketing, value addition and financing—is done by the private sector. Subsectors where the Government has little involvement, such as horticulture, are resilient to external shocks and are growing rapidly. Likewise, subsectors that are liberalised perform better generally than those that are not. However, when liberalisation is carried out where there is no critical mass and enough capacity for the private sector to grow, producers are exploited and these subsectors risk collapsing.

In promoting agriculture as a commercial business, it has emerged that marketing and associated infrastructure is critical. Cooperative societies that deal with marketing of farmers produce need to be revived and made efficient and effective. Other marketing infrastructure, such as wholesale and retail markets, need to be established across the country.

1.2.3 Vision 2030

The ERS was a 5-year plan that was to expire in the financial year 2007/08. In early 2007 the Government started developing a new strategy to take over from the ERS. In June 2008, Kenya Vision 2030 was launched as the new long-term development blueprint for the country.

The vision of this strategy is: A globally competitive and prosperous country with a high quality of life by 2030. It aims to transform Kenya into ‘a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment’. The vision is anchored on the following three pillars:

- *Economic pillar* that aims to achieve an economic growth rate of 10 per cent per annum and sustain the same till 2030 to generate more resources to address the MDGs
- *Social pillar* that seeks to create just, cohesive and equitable social development in a clean and secure environment
- *Political pillar* that aims to realize an issues-based, people-centred, results-oriented and accountable democratic system

Vision 2030 has identified agriculture as one of the key sectors to deliver the 10 per cent annual economic growth rate envisaged under the economic pillar. To achieve this growth, transforming smallholder agriculture from subsistence to an innovative, commercially oriented and modern agricultural sector is critical. This transformation will be accomplished through:

- Transforming key institutions in agriculture, livestock, forestry and wildlife to promote agricultural growth
- Increasing productivity of crops, livestock and tree cover
- Introducing land-use policies for better use of high- and medium-potential lands
- Developing more irrigable areas in arid and semi-arid lands for both crops and livestock
- Improving market access for smallholders through better supply chain management
- Adding value to farm, livestock and forestry products before they reach local, regional and international markets

Vision 2030 has identified four major challenges that continue to face the agricultural sector.

Productivity. Productivity levels for many crops are below potential and for some agricultural produce yield and value over a 5-year period have either remained constant or are on the decline. Similarly, the production level for most fish and livestock products is below potential. Forest cover and tree productivity have been on the decline while population growth has led to increased human–wildlife conflict.

Land use. Land in the high- and medium-potential areas as well as in arid and semi-arid lands (ASALs) remains under-exploited for agricultural production. Much of the available cropland remains under-used with smallholders using only 60 per cent of their land for agricultural production.

Markets. The productivity of the agricultural sector is constrained by inefficiencies in the supply chain resulting from limited storage capacity, lack of post-harvest services and poor access to input markets. Vision 2030 calls for proactive efforts to maintain existing markets and create new ones to increase Kenya’s bargaining power in global agricultural markets.

Value addition. In agriculture, value addition determines the competitiveness of the country’s produce in world markets. However, Kenyan farmers export semi-processed, low-value produce, which accounts for 91 per cent of total agriculture-related exports. The limited ability to add value to agricultural produce coupled with high production costs make exports less competitive.

1.3 The Need for a New Agricultural Sector Strategy

Although much has been achieved in the last 5 years, challenges still remain in achieving food security, poverty reduction, transformation of agriculture from subsistence to commercial farming and agribusiness, markets, efficient use of inputs and agricultural credit. It became imperative to capture these new developments and revise the SRA with the expiry of ERS, the launching of Vision 2030, the achievement of most SRA targets and the formation of a new government in 2008, .

A new strategy was needed to position the agricultural sector as the key driver for delivering the 10 per cent annual economic growth rate envisaged under the economic pillar of Vision 2030. The strategy would guide public and private sector efforts in addressing major development challenges facing the agricultural sector. In addition, the new strategy has taken into account the ongoing institutional and policy reforms, the country’s new political system and structure of government, the just-completed ERS and the SRA, and has incorporated agricultural policy proposals contained in Vision 2030’s medium-term plan. It has also taken into account regional and international initiatives such as the Comprehensive African Agricultural Development Programme (CAADP),

which recognizes agriculture's contribution to accelerated economic growth in African countries, and the MDGs in which the United Nations member countries pledged to reduce extreme hunger and poverty by 2015.

In developing this strategy, the Government perceives that the agricultural sector has been revived and is now set on the path for further development, hence the Agricultural Sector Development Strategy. The overriding goal of the ASDS is to achieve a progressive reduction in unemployment and poverty, and the two major challenges of poverty and food security that Kenya continues to face. The strategy outlines the agricultural policies, institutional reforms, and programmes and projects that the Government will implement in the short and long term to achieve this goal.

2 CHARACTERISTICS OF THE AGRICULTURAL SECTOR

2.1 Land Resource Base

Land is the most important resource in agricultural production. Limited availability of productive land is a major constraint to increased agricultural production. Kenya has an area of about 587,000 km² out of which 11,000 km² is water. Of the remaining 576,000 km² landmass, only about 16 per cent is of high and medium agricultural potential with adequate and reliable rainfall. This potentially arable land is dominated by commercial agriculture with cropland occupying 31 per cent, grazing land 30 per cent, and forests 22 per cent. The rest of the land is used for game parks, urban centres, markets, homesteads and infrastructure.

About 84 per cent of the country is arid or semi-arid and is not suitable for rain-fed farming due to low and erratic rainfall, though there is limited cultivation of some crops. The ASALs are used as rangelands by ranchers, agropastoralists and pastoralists; agricultural growth must be led by intensification and substitution towards more high-value products, and expansion of the cultivated area through irrigation.

2.1.1 Land Tenure

In Kenya, land tenure can be classified into three broad categories: communal land, Government trust land, and privately owned land. The communal land ownership system is based on traditional customary rights, and all individuals born in that community have a right to use but not sell it. Government trust land is land held by ministries, state corporations or other public institutions for public use such as buildings, forests, research and national parks. Privately owned lands are registered; the owner holds the title under a freehold or leasehold system. The owner of such land can use it as collateral to access credit. Private ownership of land has encouraged investment and long-term improvements or development on farms to create a secure market for land.

2.1.2 Agro-ecological Zones

Kenya is divided into seven ecological zones: Tropical Alpine, Upper Highland, Lower Highland, Upper Midland, Lower Midland, Lowland and Coastal Lowland. The country is divided into three main production zones when rainfall is used as a basis.

The high-rainfall zone receives more than 1000 mm of rainfall annually, occupies less than 20 per cent of the productive agricultural land and carries approximately 50 per

cent of the country's population. Most of the food and cash crops as well as livestock are produced in this zone under semi-intensive and intensive systems. The zone accounts for all the tea, pyrethrum, potato, coffee, vegetables and nearly 75 per cent of milk production.

The medium-rainfall zone receives between 750 mm and 1000 mm of rainfall annually and occupies between 30 and 35 per cent of the country's land area. It is home to about 30 per cent of the population. Farmers keep cattle and small stock and grow drought-tolerant crops. There is significant migration of the population from the densely populated high-rainfall zone to the medium-rainfall zone.

Low-rainfall areas receive 200–750 mm of rainfall annually. These areas are home to about 20 per cent of the population, 80 per cent of the country's livestock and 65 per cent of the wildlife.

2.1.3 Natural Resources

Though it is recognized that the natural environment is the basis of all production, continued degradation of the environment and natural resources constitutes a major challenge to economic development. Increasing population, changing patterns of human settlement, expansion of urban environments, unsustainable land-use systems and industrialization all pose serious threats to the environment across the country. Until the 1990s, environmental management was largely viewed as unrelated to economic development. This contributed to unsustainable development patterns through accelerated land degradation from deforestation, desertification, soil degradation, loss of biodiversity, climate change and industrial pollution. The result has seen poverty for a large section of the population that depends on the natural resource base.

2.2 Agricultural Systems

Kenya has two agricultural production systems: rain-fed and irrigated agriculture.

2.2.1 Rainfed Agriculture

Kenya's agriculture is mainly rainfed and is entirely dependent on the bimodal rainfall in most of the country. There are two cropping seasons except in the very high-altitude areas.

The performance of rainfed agriculture varies due to the diverse agro-climatic zones. In the humid, high-altitude areas productivity as well as predictability of a good crop is high. However, the population density in these areas has increased and land has been subdivided into such small sizes that it is becoming uneconomical for farm enterprises. To mitigate this problem, land subdivision should be restricted and farm enterprises intensified.

In the medium altitude and moderate-rainfall areas, arable rainfed farming is moderately

suitable. However, there is a relatively high risk of crop failure due to increased frequency of dry spells and an uneven rainfall distribution. Increasing productivity in these areas will require better selection of crops, adoption of improved technologies, and better crop husbandry.

A large proportion of the country, accounting for more than 80 per cent, is semi-arid and arid with an annual rainfall average of 400 mm. Droughts are frequent and crops fail in one out of every three seasons. Most of the area is rangeland suitable for ranching and pastoralism. Farm enterprises comprise mixed crops and livestock. While there is ample land, farmers tend to grow crops that are not suitable for this rainfall regime or for the soils. These areas require better planning, careful selection of farm enterprises and greater investment in infrastructure. The Government will make efforts to harmonize and prioritize the development of ASALs.

2.2.2 Irrigated Agriculture

Kenya is classified as one of the water-deficient countries in the world. Water resources are unevenly distributed in space and time: about 56 per cent of all the country's water resources are in the Lake Victoria basin. Even in the basins, with the exception of the highlands, water availability is scarce. Consequently, the country's irrigation-based farming is still limited.

Irrigation agriculture in Kenya is carried out mainly in irrigation schemes and in large-scale irrigation of crops such as rice and coffee. Individual farmers have developed their own systems of irrigation especially for export crops such as coffee and horticulture. Large commercial farms account for 40 per cent of irrigated land, smallholder farmers 42 per cent, and Government-managed schemes 18 per cent.

With a national average rainfall of 400 mm, the country should harvest and store adequate water for agriculture and other uses. Groundwater resources that can be exploited for agriculture need to be assessed and quantified. More land can be reclaimed for crop cultivation by developing irrigation infrastructure in the ASALs. It is estimated that intensified irrigation can increase agricultural productivity fourfold and, depending on the crops, incomes can be multiplied 10 times.

2.3 Production Scale

2.3.1 Small-Scale Farming

Kenya's agriculture is predominantly small-scale farming mainly in the high-potential areas. Production is carried out on farms averaging 0.2–3 ha, mostly on a commercial basis. This small-scale production accounts for 75 per cent of the total agricultural output and 70 per cent of marketed agricultural produce. Small-scale farmers produce over 70 per

cent of maize, 65 per cent of coffee, 50 per cent of tea, 80 per cent of milk, 85 per cent of fish, and 70 per cent of beef and related products. However, adoption of improved inputs such as hybrid seed, concentrate feeds, fertilizer, safe use of pesticides and machinery by small-scale farmers is relatively low. There is huge potential for increasing productivity for these farmers with adoption of modern farming practices.

In the rangelands, the small-scale livestock production system features mainly pastoralists. Livestock herd sizes are considerably large because of communal grazing with low use of purchased inputs like feed, drugs and artificial insemination. Production is mainly for subsistence rather than market oriented. Disease and nutrition are major constraints to increased livestock productivity in this system.

2.3.2 Medium-Scale Farming

Medium-scale farms range from 3 to 49 ha. Farmers in this category are receptive to technology and practise commercial agriculture by investing in inputs, marketing produce and borrowing credit for farm development.

2.3.3 Large-Scale Farming

In Kenya, large-scale farming is practised on farms averaging about 50 ha for crops and 30,000 ha for livestock ranches. The large-scale farming subsector accounts for 30 per cent of marketed agricultural produce, mainly involving growing crops such as tea, coffee, maize and wheat in addition to keeping livestock for commercial purposes. The use of improved technologies and better farm management has resulted in increased productivity per land unit in all categories of farming.

2.4 Agricultural Commodities and Enterprises

2.4.1 Crop Production

Crop production is in two categories based on the use of the harvested produce: food crops and cash / industrial crops.

FOOD CROPS

Food crops are classified into cereals (maize, wheat, sorghum, rice, millet); pulses (beans, pigeon pea, cowpea, chickpea, green grams); and, roots and tubers (sweet potato, irish potato, cassava, arrow root and yam). The main food crops are maize, rice, wheat, sorghum, potato, cassava, vegetables and beans.

Since 2002, most food crops have recorded increased production. Maize production increased from 2.4 million tonnes in 2002 to 3.2 million tonnes in 2006; this reduced to 2.9 million tonnes in 2007. Production of beans increased from 481,225 tonnes to

531,800 tonnes, while roots and tubers increased from 1.1 million tonnes to 1.8 million tonnes over the same period. However, the production of other food crops, particularly legumes and root crops, declined due to a combination of factors such as the effects of heavy rains, pests and diseases, and lack of quality planting material.

The positive trend in the productivity of most agricultural crops resulted from implementing measures identified in the SRA in the last 5 years up to 2008. Production costs for most of these crops are still high due to high costs of inputs especially fertilizer, poor and long marketing chains, low level of mechanization and high transport costs. Increases in global fuel prices have also contributed. Production of the main food crops—maize, wheat and rice—has generally been below the country's consumption requirements.

INDUSTRIAL CROPS

The main industrial crops are tea, coffee, sugar cane, cotton, sunflower, pyrethrum, barley, tobacco, sisal, coconut and bixa, all of which contribute 55 per cent of agricultural exports.

Tea is still one of the leading foreign exchange earners in the country. Tea production increased from 287,100 tonnes in 2002 to 370,200 tonnes in 2007, while the value of exports increased from KES 34.3 billion to KES 47.3 billion in 2006, decreasing slightly to KES 46.8 billion in 2007. The value of coffee exports increased from KES 6.5 billion to KES 8.7 billion over the same period.

Declines were recorded in several crops. Pyrethrum recorded an average decline of 13 per cent. Sugar cane is a major cash crop whose performance declined. Kenya produces about 400,000 tonnes of raw sugar annually while annual consumption is 600,000 tonnes, which necessitates importation to meet the demand. The main producers of sugar cane are smallholder farmers in Nyanza, Western and Rift Valley Provinces. Local sugar cannot compete with imported sugar because of high production costs. This poses a major threat to the local sugar industry and the five million people that it supports.

Other commercial crops whose production has remained low despite large unexploited potential are cotton, pyrethrum, oil crops, cashewnut, bixa and sisal.

HORTICULTURE

The horticultural industry plays an important role in the national economy. Products in this industry include cut flowers, vegetables, fruits, nuts, herbs and spices. The area under horticultural crops increased from just over 350,000 ha in 2002 to over 380,500 ha in 2006, while the value of total production increased from KES 32.0 billion to KES 54.4 billion over the same period. The value of horticultural exports grew by an average of 16 per cent rising from KES 26.6 billion in 2002 to KES 43.3 billion in 2006 and to KES 65.2 billion in 2007.

2.4.2 Livestock Production

Livestock plays an important economic and socio-cultural role among many Kenyan communities. The livestock subsector contributes to the food and cash needs of the farmers, and provides employment to about 10 million people, contributes 7 per cent to the GDP and 17 per cent to the AgGDP, and provides 50 per cent of the agricultural labour. Both crop farmers and pastoralists keep livestock for food and income generation.

The livestock industry has a high degree of vertical links with upstream and down-stream industries. It is a significant user of products from feeds, drugs, vaccines and equipment manufacturing industries and is a major provider of raw materials for agro-processing industries. Therefore, any shock in the industry will affect the supply chain.

The key livestock subsectors are beef, dairy, sheep, goats, camel, poultry, piggery and emerging livestock.

DAIRY INDUSTRY

The country's dairy cattle are estimated at 3.5 million head. Dairy cattle are mainly kept in medium- to high-rainfall areas. The key dairy breeds are Ayrshire, Friesian, Guernsey, Jersey and cross-breeds. In 2008, milk production was estimated at 5.1 billion litres valued at KES 100 billion. At current effective demand, the country is self-sufficient in milk production.

BEEF INDUSTRY

The beef cattle population is estimated at 9 million. The main beef species are East African Zebu, Boran, Sahiwal and cross-breeds. Although most beef is produced from rangelands, dairy cattle culls contribute substantially to the national supply. On average, the country produces 320,000 tonnes annually of beef worth KES 62.1 billion. However, beef production is affected by climate variability and animal diseases.

SHEEP AND GOATS

Sheep and goats play a key role in pastoral households' food security and incomes owing to their short-generation intervals, high adaptability and versatile feeding habits. The country has an estimated 13 million goats and 10 million sheep. Annual meat production is estimated at 84,000 tonnes of mutton and chevon worth KES 14 billion.

POULTRY

Kenya has an estimated 28 million birds out of which 76 per cent consist of free-ranging indigenous chicken, while 22 per cent are commercial layers and broilers. Other poultry species like duck, turkey, pigeon, ostrich, guinea fowl and quail make up 2.2 per cent and are becoming increasingly important. Annually, the country produces about 20 tonnes of poultry meat worth KES 3.5 billion and 1.3 billion eggs worth KES 9.7 billion.

PIGS

Pig rearing in the country has become a relatively well-established industry in African markets. It has withstood periodic fluctuations common in the pig industry, moving from large-scale to smallholder farming. The country produces an estimated 12,000 tonnes of pig meat worth KES 1.2 billion.

APICULTURE

Beekeeping (apiculture) is practised in most parts of Kenya, particularly in the ASALs. In addition to contributing directly to household incomes, bees play an important role in plant pollination. The country produces an estimated 14,600 tonnes of honey and 140 tonnes of beeswax annually, all valued at KES 4.4 billion. Due to the low investment and variable costs involved, beekeeping is becoming increasingly popular in rural areas.

CAMELS

Camel keeping is mainly practised in northern Kenya. The camel produces milk, meat, income and serves as pack animals. Currently, 900,000 camels are producing 7000 tonnes of meat worth KES 1 billion, and 200 million litres of milk worth KES 2 billion annually. Already, camel keeping has extended to the South Rift region and is expected to extend to other parts of the country in the coming decades.

2.4.3 Aquaculture

The aquaculture subsector in Kenya has the potential of significantly contributing to the national economy by creating employment, earning foreign exchange, reducing poverty and supporting food security. Demand for fish is rising owing to the growing population and their changing feeding habits among Kenyans as they move towards healthy living. With its cholesterol-free white meat, fish offers the best nutrition profile for humans.

Aquaculture is the only sustainable source of fish and has great potential for growth in Kenya due mainly to the presence of a wide variety of water sources such as rivers, springs, dams, lakes and the Indian Ocean. In addition, most of the land that is suitable for other agricultural activities is also suitable for aquaculture as are swampy and marshy areas, which are unsuitable for crop production. Aquaculture can also be integrated with other production activities such as rice farming, poultry and dairy production to increase production efficiency per unit area.

Commercial aquaculture enterprises are increasing. This is a paradigm shift from subsistence aquaculture, which has been practised in Kenya over the years. Due to aggressive extension, aquaculture has increased fourfold over a short time. In 2000, production was about 1000 tonnes; in 2006 production had risen to 4250 tonnes, earning the country about KES 1.0 billion. This makes aquaculture the fastest growing production subsector in the country deserving due attention and support.

The main constraints facing the development of aquaculture include: inadequate support to aquaculture infrastructure such as fish hatcheries, poor-quality fish seed and feed, inadequate budgetary provision, inadequate market information and marketing uncertainties, limited aquaculture research, lack of aquaculture policy, inadequate provision of extension services, poor link between production and marketing, lack of national aquaculture extension guidelines, and lack of baseline data for aquaculture investment.

2.4.4 Forestry and Forest Products

Forests are origins of water streams for hydropower. Forests and related forestry activities contribute to improved agricultural productivity through conserving soil and water and enhancing soil fertility.

Kenya's national forest cover is less than 3 per cent compared with the internationally accepted level of 10 per cent. This decrease has resulted from unplanned excision of land for settlement and excessive harvesting of trees without replanting. The destruction of forestland has contributed to increased rates of flooding as the concentration time is reduced on bare ground leading to landslides and siltation of rivers. Currently, efforts in forestry development in the country focus on expanding tree cover in industrial plantations, on-farm trees, urban forestry and in local authority forests to achieve the desired 10 per cent forest cover.

Government is rehabilitating degraded water catchments areas. Adoption of agroforestry has improved over the years. Promoting on-farm forestry and conservation of natural environment is ongoing. Initiatives aimed at introducing commercial tree species in ASALs to control desertification and improve livelihoods have been undertaken. Integrated development that entails trees, wildlife, agriculture and micro-enterprises provide synergies that improve overall environmental and production needs.

2.4.5 Wildlife

The Government's fundamental goal for wildlife management is to maximize returns from wildlife. Wildlife-based tourism as a land use is competing favourably with other types of land uses. Returns from tourism can exceed returns from competing land uses such as pastoralism and ranching, especially in the ASALs. The challenge is to identify the best types of land use (or combination of them) for specific areas in terms of their long- and short-term benefits to the people.

Wildlife resources also present huge potential for game farming. They meet local and international demands for game products from crocodile, ostrich and guinea fowl, among others. As a result there is need to review the wildlife policy and Act to provide the legal framework and incentives for wildlife-related enterprises.

While most wildlife is concentrated in game parks and reserves, a considerable population is on farmlands and ranches. Wild animals in parks and reserves are well managed and play a key role in the national economy, mainly through tourism. However, wildlife on farmland and ranches is seen as a menace. Human–wildlife conflict remains a serious threat to other forms of crop production including establishing industrial forests. Electric fencing has proved effective in reducing wildlife-related damage and should be enhanced, especially where land-use types are incompatible.

2.5 Cooperatives

The cooperative movement has played an important role in agricultural development and in the economy. Agricultural cooperatives have helped in procurement of inputs, production, value addition and marketing. In the financial sector the cooperative movement through savings and credit cooperatives (SACCOs) has helped mobilize savings and provide credit to producers.

Agricultural cooperatives form 46 per cent of all cooperative societies in the country. They have 3 million members out of a total membership of 7 million in the entire cooperative movement. The cooperatives are member-owned and -operated organizations. The Ministry of Cooperative Development and Marketing provides the necessary legal and regulatory environment.

The Government recognizes the role played by cooperatives in the economy and has emphasized the need to revitalize the cooperatives sector to play a more significant role in reviving the economy through improved governance and management capacity. Consequently, the Government has reviewed the Cooperative Societies Act and formulated a new cooperative development policy in addition to the cooperative investment policy to guide the cooperative movement in the medium term.

Due to the enormous growth of SACCOs in the last few years, and to ensure that they continue to be relevant in the financial sector, the ministry has also developed the SACCO Regulatory Act and operationalized the SACCO Regulatory Authority.

3 FEATURES OF AGRICULTURAL SERVICES

3.1 Agricultural Research

Currently, the agricultural research system comprises public and private agricultural research institutions established under different legal and institutional frameworks. The Kenya Agricultural Research Institute (KARI), the Kenya Forestry Research Institute, the Kenya Marine and Fisheries Research Institute and the Kenya Industrial Research and Development Institute are parastatal research institutions established under the Science and Technology (Amendment) Act of 1979, each with a specific mandate.

The Coffee Research Foundation, the Tea Research Foundation of Kenya, the Kenya Sugar Research Foundation, and the Kenya Seed Company (KSC) are State corporations registered under the Companies Act (Cap 486). These institutions are responsible for research on coffee, tea and sugar cane respectively, while KSC is involved in agricultural research relating to seed production. The National Irrigation Board established under the State Corporations Act (Cap 446) has a research division that undertakes research on irrigation technologies and practices.

The universities are established under various Acts and charters and have faculties of agriculture and allied sciences that carry out agricultural research independently or in collaboration with other agricultural research institutions. However, these collaborative efforts are constrained. Despite the large number of skilled scientific staff engaged in agricultural research in both public and private universities, no mechanism exists to harness these strengths at the national level or even a designated process to link the universities with the large public or private research initiatives and industry.

Some agricultural research is undertaken by private sector institutions. This research is geared at enhancing productivity, product quality and safety, and competitiveness in domestic and global markets.

There are also several regional and international research institutions undertaking agricultural research. These institutions have regional and international mandates and offer opportunities for enhancing and complementing the national agricultural research agenda.

Overall, a sizeable pool of agricultural research institutions is managed by independent management boards or councils, with each institution planning and executing research programmes independently. The challenge is how to establish an integrated agricultural research system that is well balanced and directed towards addressing the diversity of national development goals and objectives in light of limited resources.

3.2 Agricultural Extension, Training and Information Services

The agricultural sector extension service plays a key role in disseminating knowledge, technologies and agricultural information, and in linking farmers with other actors in the economy. The extension service is one of the critical change agents required in transforming subsistence farming to a modern and commercial agriculture to promote household food security, improve income and reduce poverty.

The extension system is a product of gradual evolution in extension management practices, and the entry of the private sector, non-governmental organizations (NGOs) and civil society players in response to changes in economic policies. The changes have implications on how extension is managed, approaches and methods are applied, key stakeholders are coordinated and linked, and on the most optimal way of financing extension service in the country. Other extension service providers include NGOs, community-based and faith-based organizations. The entry of these new players has helped fill the gap created by the reduced presence of public sector extension service.

Several public training institutions offer services to the agricultural sector. These include universities, middle-level colleges and institutes, and farmer and pastoral training centres. Agricultural training institutions run by the private sector also offer general and specialized courses. Other public support institutions involved in human resource capacity building include a livestock-recording centre, a national beekeeping station, fish breeding and demonstration farms, sheep and goat stations, livestock farms, agricultural mechanization stations and rural technology development stations. These institutions provide specialized training to clients (farmers and extension personnel) and act as demonstration centres for improved technologies.

The Agricultural Information Resource Centre and other resource centres, agricultural shows, field days, and open forums have been important sources of agricultural knowledge, information and technology.

Institutional constraints in human resources development include inadequate levels of funding for public training institutions leading to deterioration of infrastructure and facilities for training and technology demonstration; limited capacity to train in emerging areas such as indigenous animals and plants husbandry, and organic farming; advanced biotechnology; the slow pace of commercializing services offered by training institutions; and failure to respond to market demands for specialized courses.

3.3 Marketing

Marketing of agricultural produce and products is critical to increasing agricultural productivity and commercialization of enterprises so that farming is perceived as a business. Generally, marketing chains for the different commodities are long, not transparent and consist of many players making them inefficient and unresponsive to producer needs.

Over the years, cooperatives have played a key role in marketing coffee, dairy products, pyrethrum, livestock, fish, handicrafts and honey. Out of 12,000 registered cooperatives, 49 per cent are in agribusiness, with a membership of over 4 million.

Marketing of agricultural produce and products within the country is carried out by the private sector either as formal marketing companies or as brokers. National and regional markets have great potential to expand with better marketing infrastructure and quality assurance. The export markets mainly deal with raw commodities and have become stringent on issues of traceability, safety, sanitary and phytosanitary standards, and maximum residue limits.

3.4 Agricultural Credit and Inputs

3.4.1 Credit

Access to bank credit by farmers is still a major challenge despite the fact that Kenya has a relatively well-developed banking system. Risks associated with agribusiness coupled with complicated land laws and tenure systems that limit the use of land as collateral make financing agriculture unattractive to the formal banking industry. In addition, corruption, political interference in the operations particularly of State-owned banks, and a dysfunctional court system in the past, gave rise to a culture of defaulting that led to high numbers of non-performing loans. This development forced many banks to charge their customers, who included farmers, prohibitively high interest rates to remain afloat. Limited competition in the banking industry despite the large number of banks, also ensures interest rates remain high. The cost of bank credit and the limited number of banks in rural areas are some of the factors that make it difficult for farmers to access bank credit.

After independence, the Government set up the Agricultural Finance Corporation to provide long-term credit to individuals and groups to purchase farms and to finance farm improvement, as well as seasonal credit for production. By providing suppliers with credit, cooperative societies also supported farmers. These organizations have been mismanaged and run down and are no longer important sources of finance for agriculture. Indeed, a large number almost collapsed. Today, farmers get credit mainly from cooperatives, NGOs and community-based lending institutions.

3.4.2 Inputs

The other major inputs in agriculture are seed, fertilizer, pesticides, feed, farm machinery, breeding animals and building materials. The volume of various inputs has increased steadily over the last 5 years. Large increases were noted for fertilizer, purchased seed and animal feed. This change indicates increased demand of inputs triggered by increased crop

farming and livestock-keeping activities. The annual fertilizer demand increased from 329,449 tonnes in 2002/03 to 410,214 tonnes in 2006/07. Production of certified seed for various crops increased from 12,998 tonnes in 2002 to 34,682 tonnes in 2006, while the volume of imported seed increased from 1217 tonnes to 4773 tonnes over the same period. The volume of pesticide imports reached 7000 tonnes in 2006/07. The inputs are distributed through a wide range of stockists and merchants all over the country. Also, some cooperative societies and commodity boards supply inputs to members.

The use of improved seed has remained low due to poor distribution systems and the monopoly of the supply of seed by the Kenya Seed Company (KSC), which concentrates its operations in high-rainfall areas. The use of fertilizer is low due to its high price, attributed to the high cost of transportation and distribution systems. Fertilizer use in Kenya is about a third of the level used in India and a quarter of the level used in Indonesia. In addition to the high cost, adulteration by merchants, which affects the quality of fertilizer, seed and pesticides, has limited the use of these inputs. Only about 24.3 per cent of farmers use manure to improve soil fertility.

Animal feeds are manufactured locally by using crop by-products from the milling industry and imported micronutrients. The current installed capacity for concentrate feeds production is about 800,000 tonnes out of which only about 58 per cent is used. There are about 100 feed manufacturers in Kenya with an annual turnover of about KES 7 billion. The smallest feed company produces about 1000 tonnes per year, while the biggest feed company produces about 90,000 tonnes per year. In the fisheries subsector, only one company produces trout feed and no company produces fish feed for tilapia and catfish. Different fish species have different nutritional requirements and fish feed formulations vary. Therefore, there is a need to manufacture quality commercial fish feeds.

Although there is capacity to produce over 60,000 tonnes of oilseed cake, Kenya produces less than 30 per cent with the balance of the national requirements imported mainly from other East African Community member States. Kenya imports feed additives such as vitamins, amino acids, enzymes, growth promoters, antibiotics and probiotics, and minerals from Europe, China, Korea and India. Feed additives are used to improve milk yield, growth rate and feed-use efficiency.

Feed additives are included in animal rations and their use is growing especially in intensive livestock production—dairying, poultry and pig production. Poor quality of feeds due to inadequate regulation remains a major challenge.

Manufacture and distribution of fish farming inputs such as feeds, seed, harvesting and marketing gear is still low and needs to be developed further. Quality fish seed is critical in developing aquaculture. Aquaculture producer groups that are in their formative stages now will play a vital role in distributing aquaculture inputs. The Sagana Aquaculture Centre is the main producer of fish seed for tilapia and catfish. However,

the seed production capacity of the facility is inadequate to serve the national demand. Development of private fish seed producers is being encouraged.

Feed production is negatively affected by both good harvests and famine situations. During good harvests, excess maize is exported unprocessed denying the industry the by-products that are used for producing animal feeds. When there is a shortage in maize supply, famine relief is distributed directly to consumers denying the animal feeds industry the by-products that would have been supplied by millers. Like other inputs, availability of animal feeds is constrained by the cost and density of stockists.

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

3.5 Pest and Disease Control

Pests and diseases cause heavy losses through deaths, reduced productivity and loss of markets for products. Crop pests and diseases reduce yields substantially, sometimes by over 50 per cent or even total crop failure. Measures to prevent, control and eradicate diseases and pests in livestock and crops play a major role in improving productivity. In the livestock subsector, notifiable, communicable, zoonotic, transboundary and trade-sensitive diseases are of major economic importance.

3.5.1 Livestock Pests and Diseases

Pest and disease control measures include surveillance, diagnosis, mass vaccination, quarantine restrictions, management of animal movement, test-and-slaughter, port sanitary controls and veterinary public health services. Decline in public sector funding over the years has resulted in little success in controlling pests and diseases. Previously controlled diseases that have re-emerged include foot-and-mouth, anthrax, East Coast fever and rabies. Elsewhere in the world, new diseases have emerged such as notifiable avian influenza and mad cow disease. Although these diseases have presently not been reported in Kenya, they require heavy investment in preparedness, surveillance and controls at ports of entry.

3.5.2 Crop Pests and Diseases

A number of crop pests and diseases have continued to reduce the potential crop yields both pre- and post-harvest. Lack of appropriate storage structures and poor handling

have resulted in up to 40 per cent of post-harvest losses. Post-harvest disease pathogens like aflatoxins have been reported with catastrophic effects—in some cases deaths—among consumers in parts of the country.

Invasive pests like locusts, army worms and quelea birds are controlled by the Government. Other pests and diseases are controlled on farm by farmers. However, pest and disease control still poses a major challenge to most farmers, especially small- and medium-scale operators, due to high cost of pesticides and control equipment.

3.5.3 Fish Pests and Diseases

Diseases that threaten the health of fish include fungal and bacterial infections. Symptoms of fungal diseases include cotton-like growths on skin, mouth, eggs and barbels, which result in heavy loss of eggs and fry caused by poor handling. Control may include adding a few milligrams of malachite green to the pond or enclosed water.

Bacterial diseases result from parasitism, poor water quality and poor nutrition. They lead to loss of appetite and white spots around the mouths and fins, and fish exhibit a ‘waddled’ or nervous swim pattern at or near the surface.

Other health threats to fish are ectoparasites such as leeches, and endoparasites. While small numbers of parasites do little harm in most cases, in large numbers they can seriously compromise the health of fish. Control and prevention of these pests and diseases are also the concern of the Government.

3.6 Statutory Boards and Development Authorities

Statutory boards provide regulatory and specialized services on behalf of the Government. There are many commodity and non-commodity regulatory boards and companies performing these functions. Although the functioning of some boards has improved, most still require intervention to improve their performance.

Regional development authorities (RDAs) were formed with the overall objective of ensuring optimal exploitation of river basin resources for equitable, balanced and sustainable development within their areas of jurisdiction. There are six authorities: Coast Development Authority, Ewaso Ng’iro North Development Authority, Ewaso Ng’iro South Development Authority, Kerio Valley Development Authority, Lake Basin Development Authority, and Tana and Athi Rivers Development Authority.

RDAs serve a useful link in development. They are mandated to reverse development disparities in the regions by acting as drivers of integrated regional socio-economic development through planning, developing, implementing and coordinating basin-wide programmes and projects such as providing hydropower; water for irrigation, domestic and industrial use; and environmental conservation. They also promote resource mobilization and investment in their respective regions.

4 CHALLENGES, OPPORTUNITIES, VISION AND MISSION

4.1 Challenges and Constraints

Over the last 5 years, the performance of the agricultural sector has been encouraging in a number of important commodities and enterprises, notably horticulture, tea, dairy and maize. The agricultural sector has been revived and is on a trajectory of further development. However, challenges remain in some commodities such as coffee, sugar and pyrethrum, and in exploiting the potential in livestock and fisheries. Emerging constraints to agricultural growth also need to be addressed.

Challenges and constraints facing the sector vary with commodity and region. The effects of some of these challenges and constraints were accelerated by the worldwide food price crisis and its underlying drivers in 2008. This strategy will address the following key constraints and challenges.

Inadequate budgetary allocation. Insufficient budgetary allocation to the agricultural sector is a key constraint. In 2003 under the Maputo Declaration, African Heads of State committed to allocate 10 per cent of their annual budgets to the agricultural sector. Kenya has not yet achieved this target; by 2008, the sector was receiving 4.5 per cent of the budget. This insufficient allocation has reduced human resources and service delivery by Government institutions.

Reduced effectiveness of extension services. The effectiveness of extension services declined over the last two decades due to use of inappropriate methods and a sharp reduction in operational budgets and human resources in the sector ministries. In particular, livestock extension in ASALs has been underfinanced. While much has been achieved in the last 5 years, inadequate financial and human resources continue to constrain the sector.

Low absorption of modern technology. Although Kenya has a well-developed agricultural research system, use of modern science and technology in agricultural production is still limited. Inadequate research–extension–farmer linkages to facilitate demand-driven research and increased use of improved technologies continue to constrain efforts to increase agricultural productivity.

High cost and increased adulteration of key inputs. The cost of key inputs such as seed, pesticides, fertilizer, drugs and vaccines is high for resource-poor farmers. Such high costs lead to low application and adulteration of inputs.

Limited capital and access to affordable credit. Farming is considered highly risky by the formal banking sector, thus it gives farming little attention. Without credit farmers

are hard pressed to finance inputs and capital investment. A number of microfinance institutions are operating but they tend to increase the cost of credit, reach only a small proportion of smallholder farmers, and provide only short-term credit. The formal banking system is just beginning to develop credit facilities particularly suited to small-scale farming.

Pre- and post-harvest crop losses. There have been high levels of waste due to pre- and post-harvest losses occasioned by pests and diseases, and lack of proper handling and storage facilities. Smallholder farmers are unable to control pests and diseases due mainly to lack of information.

Heavy livestock losses to diseases and pests. Livestock diseases and pests affect animal production and marketing and pose a threat to human health. Specifically, they cause heavy losses through deaths, reduced productivity and loss of markets for products. The prevalence of transboundary diseases such as foot and mouth, chronic bovine pleuropneumonia, lumpy skin disease, trypanosomiasis, East Coast fever, brucellosis, pestes des petits ruminants (PPR), contagious caprine pleuropneumonia, rabies, Newcastle disease, and Gumburo disease continue to be a challenge. Emerging and re-emerging diseases that are also zoonotic like Rift Valley fever, avian flu and bovine TB need sustained surveillance.

Low and declining soil fertility. The rising population density has contributed to the subdivision of land to uneconomically small units. In addition, the reduction of fallow periods and continuous cultivation have led to rapid depletion of soil nutrients, declining yields and environmental degradation.

Inappropriate legal and regulatory framework. While much has been achieved in the last 5 years, an outdated and fragmented legal and regulatory framework still remains a challenge to development in the agricultural sector.

Lack of coherent land policy. There is no comprehensive land policy covering use and administration, tenure and security, and delivery systems of land. This has resulted in low investment in land development, underutilization of productive land and lack of access to land.

Inadequate disaster preparedness and response. There is low preparedness, response capacity and coping mechanisms in the event of disasters such as drought, floods, fires, diseases and pests. Early warning and response systems need to be strengthened and widened.

Multiple taxes. As they transport or market their farm produce, farmers have been subjected to multiple taxes from local authorities and Government departments. This has contributed to reduced net farm income and created distortions in marketing structures without necessarily improving the services that these authorities are supposed to deliver.

Weak surveillance on offshore fishing. The weak capacity to effectively monitor and

enforce compliance and regulations governing the exploitation of offshore territorial waters has limited Kenya's ability to fully exploit the offshore fishing potential.

Inadequate infrastructure. Poor rural roads and other key physical infrastructure have led to high transportation costs for agricultural inputs and products. This has reduced farmers' ability to compete. In addition, electricity in rural areas is often not available or is expensive, leading to reduced investment especially in cold storage facilities, irrigation and processing of farm produce.

Insufficient water storage infrastructure. The high variability of floods and droughts is likely to increase with global climate change. Water harvesting and storage infrastructure need to be expanded to store the run-off for livestock watering points, irrigated agriculture and fish farming.

Inadequate storage and processing facilities. Inadequate storage facilities constrain marketability of perishable goods such as fish, dairy products, beef and vegetables. Lack of fish-processing facilities close to Lake Victoria and the coastal area (Mombasa) has limited the extent of exploiting fish resources.

Inadequate markets and marketing infrastructure. While Kenya's agriculture is better developed than that of most countries in Sub-Saharan Africa, the domestic market is too poorly organized to take advantage of the regional market. The local marketing information system has recently been established but has not been well utilized.

Increasing incidence of HIV and AIDS, malaria, water-borne and zoonotic diseases. The rapid spread of these diseases and corresponding deaths have resulted in the loss of productive agricultural personnel and of the manual labour force with sustained farming knowledge, and have resulted in diversion of resources to treat these diseases.

4.2 Opportunities

In spite of the many challenges and constraints limiting agricultural growth in Kenya, many opportunities and advantages exist that can be exploited to build a robust and dynamic agricultural sector.

Abundant human resources. Kenya is endowed with a massive but underused human resource capacity. Primary, secondary and post-secondary education has expanded and produces thousands of graduates each year. This resource can be used to change the face of agriculture if young people, from primary to university level, are to be attracted to agriculture as a career. The human resource can be used in training and research to develop new and relevant technologies, and to create and expand agribusinesses.

New and expanding markets. Kenya is uniquely placed to take advantage of expanding domestic, regional and international markets. Due to the diverse agro-ecology, the country can produce a wide range of temperate, tropical and subtropical products. Large and expanding markets for traditional products like maize and other cereals, beef and dairy

products, tea, coffee and pyrethrum exist. Global demand for horticultural products, and emerging livestock such as ostrich, guinea fowl, crocodile, frogs and butterflies, gum arabic, and emerging crops such as assorted resins and essential oils, and aloe remain under-exploited. Vast opportunities are opening up in the production of biofuels from sugar cane, maize, millet, sorghum, jatropha and other oil-bearing seeds.

Potential for increasing production. Not much effort has been put to increasing production of traditional commodities in Kenya. Agricultural productivity can be increased in multiples through better use of unused land in traditional farming areas, and through irrigated agriculture. The vast livestock potential in the arid and semi-arid areas that cover 80 per cent of the country remains untapped as does the fisheries potential of the exclusive economic zone in the Indian Ocean, and of fish farming in the highlands and ASALs.

Vast irrigation potential. Kenya's irrigation potential is estimated at 540,000 ha of which only about 105,000 ha is exploited. The potential for exploiting irrigation can be expanded by 1 million ha by developing the Tana and Athi basins. Lake Victoria has a 253-km shoreline in Kenya that is basically unused despite the huge irrigation potential.

Potential for increasing yields. Yields of crops and livestock are far below their optimum. Yields of maize, sugar and dairy are one-tenth of global potential. Tripling national average yields of major crop and livestock production systems in the country is easily achievable.

Value addition. Value addition includes processing, branding, quality certification and accreditation, as well as farm-level quality improvements that the market values. It is estimated that 91 per cent of total agricultural exports are in raw or semi-processed form. Thus, the country loses billions in earnings by not adding value to its produce. Potential for adding value to products such as tea, coffee, pyrethrum, hides and skins, milk and beef, fruits and vegetables remains largely untapped.

Given the challenges and constraints facing agriculture and agricultural potential and the available and emerging opportunities, the following strategic issues need to be addressed to ensure accelerated growth of the agricultural sector as envisaged in Vision 2030:

- Empower farmers by strengthening producer organizations
- Improve regulatory frameworks
- Review taxation on agriculture
- Improve the agricultural extension system
- Establish an efficient agricultural research system
- Increase competition in the supply of agricultural inputs
- Improve access to financial services and credit
- Promote market orientation
- Encourage growth of agribusiness
- Develop and implement land reforms and an agricultural land-use masterplan

- Improve environmental management
- Strengthen institutional frameworks for coordinating development in northern Kenya and other arid lands
- Improve food security and nutrition

4.3 Vision, Goal, Mission

The agricultural sector is still the backbone of Kenya's economy and the means of livelihood for most of the rural population. Inevitably, it is the key to food security and poverty reduction.

The agricultural sector's vision is: **A food-secure and prosperous nation.**

Its overall goal: **To achieve an average growth rate of 7 per cent per year over the next 5 years.**

Its mission: **Innovative, commercially oriented and modern agriculture.**

The overall development and growth of the sector is anchored in two strategic thrusts:

- Increasing productivity, commercialization and competitiveness of agricultural commodities and enterprises
- Developing and managing the key factors of production

These thrusts will require critical inputs and support from enabling sectors and factors such as a conducive macro-economic environment, security, infrastructure, education and social development. To deliver the vision of the agricultural sector, institutional reforms and better coordination will be critical.

Assuming a conducive external environment and support from enabling sectors, the agricultural sector has set the following key targets to be achieved in the medium term:

- Reduced number of people living below absolute poverty line to less than 25 per cent, to contribute to achieving the MDGs set by the United Nations
- Reduced food insecurity by 30 per cent, to surpass the MDGs set by the United Nations
- Increased contribution of agriculture to the GDP by more than KES 80 billion per year as set out in Vision 2030
- Divest all state corporations dealing with production, processing and marketing that can be better done by the private sector
- Reformed and streamlined agricultural service institutions such as research, extension and regulatory bodies to make them effective and efficient.

5 SUBSECTOR STRATEGIC FOCUS

The strategic thrust on increased productivity, commercialization and competitiveness of agricultural commodities will enable the agricultural sector to export more outputs and in turn earn the country foreign exchange and create employment. Experience has shown that where agriculture is led by technology, poverty alleviation and food security can be achieved. Promoting agricultural growth and development, however, must be done in a manner that does not damage the environment.

5.1 Crops and Land Development Subsector

The crops and land development subsector is predominantly characterized by small-scale farming, mainly in the high-potential areas. Small-scale farming in Kenya accounts for 75 per cent of the total agricultural output and 70 per cent of marketed agricultural produce. Small-scale farmers produce over 70 per cent of maize, 65 per cent of coffee, 50 per cent of tea, 65 per cent of sugar, and almost 100 per cent of the other crops. Production is carried out on farms ranging in size from 0.2 to 3 ha, for subsistence and commercial purposes. Currently, the use of improved inputs such as hybrid seed, fertilizer and pesticides or machinery is low. Increased productivity is possible in smallholder farming, but it will require concerted efforts to encourage farmers to adopt modern farming practices.

Large-scale farming is practised on farms averaging 50 ha. It accounts for 30 per cent of marketed agricultural produce. Large-scale farmers mainly grow tea, coffee, horticultural crops, maize and wheat. Sustained high use of inputs and better management have ensured that these farmers have higher yields than their small-scale counterparts.

Great potential exists in the crops and land development subsector to realize high-quality crop production. The subsector will strive to improve and sustain the agricultural resource base, increase capacity for production, improve delivery of extension services, and support technology development and transfer to achieve the full potential in agricultural production.

There has been a general increase in both production and productivity for most food crops, except for some legumes and tuber crops. This is attributed to the expansion of area under production and the introduction of high-yielding varieties. While most industrial crops recorded a gradual increase in total production, their overall mean yield productivity has declined drastically over the years due to various factors ranging from inadequate use of inputs, inappropriate agricultural practices to natural calamities. To raise production and productivity, the prevailing constraints must be addressed. Although the total production and productivity for horticultural crops has been rising since independence, the gap between the current levels and the mean potential is still considerable.

5.1.1 Challenges and Constraints

The productivity and competitiveness of the crops and land development subsector have been challenged and constrained by:

- Inappropriate policy and legal framework that are not fully supportive of private sector-led agricultural development in a liberalized economic environment
- Insufficient and poorly maintained transport and market infrastructure for handling food products in urban and rural areas resulting in high levels of waste and spoilage
- Low agricultural output and productivity resulting from low adoption of appropriate technologies such as high-yielding crop varieties, inadequate application of fertilizer and manure, inefficient tillage and cultivation methods, and high cost of inputs and productive resources such as credit and irrigation infrastructure
- Poor performance of research and extension systems due to low Government investment, restrictions on staff recruitment, and weak research–extension linkages
- Inappropriate land-use practices and environmental policies that have encouraged land fragmentation, extension of urban development into agricultural land, retention of idle land, cultivation of river banks, deforestation and encroachment into catchment areas and wetlands
- Weak institutional framework, which leads to poor coordination of the various actors following liberalization of service delivery
- Poor access to agricultural information and technologies leading to low output, limited access to markets and narrow market destinations for various commodities the country is capable of producing
- Poor access to credit by producers in spite of a well-developed financial sector
- Weak institutional capacity attributed to deficiencies in determining training needs and in monitoring and evaluating training undertaken, as well as high turnover of senior personnel, which lead to loss of institutional memory and change of priorities.

5.1.2 Interventions

To address these challenges, the following interventions aimed at increasing the productivity and competitiveness of the crops and land development subsector will be implemented:

- Formulating and implementing appropriate policy and legal frameworks
- Improving agribusiness and market access
- Strengthening research, extension and training
- Improving land use and crop development

- Enhancing farmer access to affordable inputs and credit
- Enhancing institutional efficiency and effectiveness in implementation and service delivery

FORMULATING AND IMPLEMENTING POLICY AND LEGAL FRAMEWORKS

The current policy environment is not supportive of private sector-led agricultural development. Multiple and complex laws and regulations have evolved in the agricultural sector, which do not allow for investment in a liberalized economic environment. Appropriate policies should provide for the changed role of Government as a facilitator and regulator of agricultural activities.

The current tax structure is a disincentive to agricultural development. Agriculture faces many taxes and levies at the farm gate and within marketing–distribution channels. A rationalized taxation system is needed in agriculture to create a favourable climate for production and for marketing produce.

Priorities set by policy will seek to promote a competitive agricultural sector and develop diversified products and market outlets. The sector will review and harmonize existing policies and create a new policy framework to transform it. The ongoing review of all laws and regulations governing its operations will be completed to create a favourable environment for development.

It is Government policy to divest from commercial operations. Regulatory institutions with a dual mandate will be reformed. The development mandate of these institutions will be turned over to the private sector, including farmer apex organizations. Other commercial public institutions will be assessed on the basis of the core functions of the subsector. Research institutions fall under this category. Institutions, especially those with a commercial mandate, will be commercialized or privatized depending on the degree to which they contribute to service delivery in the subsector.

Plant protection and quality assurance services are crucial in increasing productivity and reducing losses along the production–trade chains, and in promoting exports. The prevalence of disease outbreaks and incidents of major pests have limited the use of large portions of fertile land for agriculture, increased costs and losses, and prevented trade in plant products. Further, pollution of the environment, misuse and adulteration of agrochemicals and seed are becoming serious concerns for Government and the public.

These concerns are addressed by the Plant Protection Services, the Kenya Plant Health Inspectorate Service, the Pesticides Control Products Board, the National Environment Management Authority (NEMA) and the Kenya Bureau of Standards (KBS). These bodies are expected to control plant pests and diseases, regulate and monitor aspects of plant health services, license the use of agrochemicals, and undertake other quality assurance measures. With so many bodies, there is the risk of inefficiency, duplication of effort and over-regulation of the agricultural sector. This is counterproductive.

To strengthen these services, the subsector, in collaboration with the other agricultural sector ministries and stakeholders, will rationalize the regulatory bodies to achieve economies of scale, improve efficiency, quality and synergies while minimizing overlaps and duplication. Laws that relate to delivery of plant protection services will be reviewed and their enforcement enhanced.

IMPROVING AGRIBUSINESS AND MARKET ACCESS

Market access is vital to agricultural development. Related to this is the need to address issues along the entire value chain to enhance agricultural productivity. Major agricultural exports include industrial crops such as tea, coffee and pyrethrum, and horticultural produce dominated by fruits, vegetables and flowers. These products have been exported in their raw form with little or no value added, resulting in their reduced competitiveness in the global market.

The subsector will emphasize collecting, collating and disseminating information on domestic and international markets. The information will be disseminated to producers, exporters and service providers. Global information networks will be developed through subscriptions to trade information systems and close collaboration with Kenya's diplomatic service. To support an effective marketing strategy, the agriculture subsector will collaborate with other stakeholders in the public sector to facilitate private sector involvement in the development of marketing infrastructure, especially rural market facilities. Farmer organizations will be supported and empowered to play their role in providing market support services.

An effective market infrastructure should address the compliance process for quality and safety standards. The subsector will work closely with relevant stakeholders to ensure that agricultural products meet international quality and safety standards.

Kenya is a member of the World Trade Organization. This multilateral trade system aims to expand markets through liberalizing global trade. The agriculture sector will be a key player in multilateral and bilateral trade negotiations with the objectives of expanding and diversifying agricultural products and markets. Regional markets, especially the COMESA block, are now the major destination for Kenya's exports. The subsector will collaborate with other relevant sectors and subsectors to promote economic cooperation and regional integration as a strategy for expanding local markets.

Appropriate credit packages for small-scale producers will be developed to facilitate access to key inputs. The subsector will enhance value-addition technologies through building capacity of stakeholders, and providing material and financial support. These strategies are aimed at shifting the sector from subsistence agriculture to farming as a business.

To broaden the lending base, the sector will advocate appropriate legislation to encourage commercial and microfinance institutions to extend credit to small-scale

agricultural producers. In collaboration with other stakeholders, the subsector will also support mobilization of financial resources through SACCOs and other community-based lending organizations to accelerate agricultural development.

The subsector will address the high cost of agricultural inputs through formulating and implementing farmer-friendly policies, promoting a rationalized input distribution system, competing within the supply chain and providing information on the availability and cost of inputs.

STRENGTHENING RESEARCH, EXTENSION AND TRAINING

Kenya relies on a few marketed agricultural products: tea, coffee, sisal and horticulture. Expanded and diversified regional and global market access for the country's agricultural products will largely depend on the competitiveness of the agricultural sector. This calls for improved productivity and an increased agricultural production base.

The country's agricultural resource base will be increased and improved through developing diversified, demand-driven crop varieties; intensively applying appropriate technologies; and expanding use of irrigation systems in agricultural production. To achieve this research-extension links will be strengthened to ensure demand-driven research and effective application of research technologies on the farm. In addition, the private sector will be encouraged and supported to invest in agricultural production at all levels of the supply chain from farming, research and extension to processing and marketing.

Strengthening extension services and creating strong links between research and extension are two of the subsector's overriding objectives. Effective adoption of technology packages will require a participatory approach to extension. The sector will strengthen its extension service delivery system and encourage private sector participation in the delivery of extension services, and will, in particular, empower farmer organizations and communities to provide these services at the grassroots.

The sector will also improve and strengthen support services to include access to appropriate and affordable credit, to production and market-related information and to appropriate technologies, and improve its institutions such as agricultural training colleges, rural training development centres and agricultural training centres. The sector will work with the private sector and other agricultural sector ministries and agencies to make these support services available to farmers and service providers.

Information generation and dissemination in all aspects of agriculture are necessary for the industry to develop. Essential aspects of information for agriculture should embrace the totality of the value chain from the farm to the market. Data and information on production systems and on the production resource base, on distribution systems and marketing channels, and on opportunities and constraints to accessing regional and global markets are essential to the sustained development of a competitive agricultural industry.

Developing and operationalizing internal data management within the subsector and among the agricultural sector ministries and agencies will enhance efficiency in service delivery.

IMPROVING LAND USE AND CROP PRODUCTION

The subsector will ensure dynamic equilibrium of agricultural land through sustainable land-use practices and environmental conservation. In land-use development, the subsector will conceptualize and develop irrigation schemes and soil and water conservation programmes, reclaim drylands, and protect forests and riverbanks. Through this intervention, the subsector will enhance sustainable land management through promoting the development and adoption of soil and water conservation measures, agroforestry, riverbank protection, water-harvesting technologies, and equipping and improving agriculture mechanization stations.

To enhance sustainable and competitive crop productivity, the sector will adopt the agricultural product value chain approach to address identified challenges. Emphasis will be placed on accessing productive resources, implementing relevant policies and promoting flagship projects. This will include promoting appropriate technology, participatory extension and research; strengthening stakeholder partnerships; commercializing crop enterprises; and complying with food safety and quality regulations.

To achieve food security, initiatives will be up-scaled that involve developing appropriate technologies for the various agro-ecological zones, particularly in the ASALs where drought-resistant and new and emerging crops will be promoted alongside irrigation, water harvesting and farm forestry.

ENHANCING FARMER ACCESS TO INPUTS AND CREDIT

To increase agricultural productivity and improve farming as a business, farmers need access to inputs and credit. Appropriate credit packages suitable for small-scale producers will be made available to enable producers access key inputs such as fertilizer, agrochemicals and seed. Farmers need capital investment for irrigation infrastructure, value-addition technologies and general farm development, and to comply with food safety regulations.

The subsector will employ the following interventions:

- Develop appropriate credit packages suitable for small-scale producers
- Improve access to key inputs
- Implement the flagship fertilizer cost-reduction investment project.

As outlined in Vision 2030 and in its medium-term plan, the flagship fertilizer cost-reduction investment project will be implemented in collaboration with private sector partners. It will review institutional ability to import and distribute fertilizer in bulk to

reduce costs, promote local fertilizer blending and initiate the establishment of a national or regional manufacturing plant. To ensure the bulk fertilizer purchase programme is successfully implemented, the Government will facilitate capacity building for farmers and enhance capacity of farmer institutions to purchase and distribute fertilizer efficiently.

ENHANCING INSTITUTIONAL EFFICIENCY AND EFFECTIVENESS

Agriculture is the main economic sector of the country and involves many stakeholders and institutions to deliver the range of services required by the farming community. These stakeholders should be coordinated to avoid duplication of effort and wastage of resources. The various institutions within the sector need to be efficient and effective in service delivery.

The subsector will employ the following interventions to improve coordination:

- Restructure the subsector and its institutions for improved coordination
- Strengthen public–private partnerships
- Train and foster positive organizational and service integrity through a well-trained human resource corps
- Mainstream gender, HIV and AIDS, malaria and other water- and air-borne diseases, and other cross-cutting issues in development programmes
- Develop, install and manage an integrated information system that informs programme planning and management.

5.2 Livestock Subsector

The livestock subsector contributes 7 per cent of the GDP. Animals are a source of food, more specifically protein for human diets, income, employment and foreign exchange. Livestock also provide draught power, organic fertilizer for crop production and a means of transportation. Increasing population, income growth and urbanization are boosting demand for food of animal origin. The world aggregate meat consumption will increase to 327 million tonnes by 2020 from 209 million tonnes in 1997, and milk consumption to 648 million tonnes from 422 million tonnes over the same period.

Poverty-reducing opportunities for livestock development have not been tapped into. In the high-rainfall areas, there is immense potential to develop the dairy, poultry and pig industries. The ASALs are richly endowed with natural resources that can be used to develop meat, honey, gum and resin, and emerging livestock industries.

5.2.1 Challenges and constraints

The livestock subsector faces many challenges and constraints that have had a negative impact on the rate of livestock development. These include weak policy and

legal frameworks, low livestock productivity, and erratic and unpredictable weather conditions which affect the quality and quantity of livestock feed and the water supply. Other constraining factors include the prevalence of transboundary animal and zoonotic diseases and pests coupled with inadequate technical capacity for disease control, weak delivery of extension services, poor access to local and international markets, and unreliable data and information management in the livestock industry.

5.2.2 Interventions

To address these challenges, the livestock subsector will implement the following interventions aimed at transforming the livestock development subsector:

- Reviewing policy, legal and institutional frameworks
- Improving livestock productivity
- Integrating development and management of rangeland
- Improving animal health and quality assurance services
- Improving access to markets
- Establishing a centrally coordinated livestock database
- Implementing the flagship disease-free zones project.

REVIEWING POLICY, LEGAL AND INSTITUTIONAL FRAMEWORKS

The policy and legal environment in the livestock subsector requires updating to realign it with current goals and challenges in the local, regional and international spheres. Much of the legislation has not been updated in a long time, rendering it ineffective and difficult to implement. In addition, institutions in the subsector are weak or underperforming. They also face challenges of low capacity in human, physical and financial resources.

Areas of intervention for policy and legal reforms include national policies for livestock, poultry, livestock breeding, animal disease control, animal welfare, apiculture, dairy development, animal feedstuff and veterinary pharmaceuticals. Institutions will be developed, reformed and strengthened to facilitate efficient service delivery and attainment of subsector objectives. All relevant laws and policies will be reviewed to reflect current practices. Where none exist, they will be formulated in collaboration with stakeholders.

IMPROVING LIVESTOCK PRODUCTIVITY

Livestock productivity is constrained by a number of factors key among them breeding, feeding and nutrition, and inadequate extension services. To improve livestock productivity, strategies will be developed and implemented to improve livestock breeds, improve feeds regulation, develop pastures and forage, and enhance research and extension services.

Animal breeding. Animal breeding is one of the key intervention areas for increased livestock productivity. Currently, livestock productivity is negatively affected by poor genetic make-up. The average milk yield is 5 litres per dairy cow per day; the carcass weight for beef animals is 120 kg. To increase overall productivity, these two parameters need to be improved through breeding using superior genetics.

The country has a large and diverse reservoir of animal genetic resources. However, the database on species and breed diversity, population size, trends and distribution is inadequate and only available for a few species as no inventory or characterization has been undertaken. A complete inventory, characterization and documentation of animal genetic resources for conservation is needed.

The responsibility for producing and supplying breeding stock lies with farmers. In the past, the Government had been supplementing this effort through its multiplication farms and the artificial insemination services. Unfortunately, livestock multiplication farms have been unable to meet the high demand for quality breeding animals due to low investment for breeding stock and necessary infrastructure.

Farmers, community-based organizations, NGOs, breeder associations and the Government are involved in managing animal genetic resources. Breeding services are facilitated by the Kenya Stud Book, the Livestock Recording Centre, the Central Artificial Insemination Station, the Kenya National Artificial Insemination Service, and breeder associations. A central authority for recording animals, regulating breeding programmes and undertaking other relevant tasks related to self-sustaining breeding schemes in the country should be established.

The major challenges facing production and supply of breeding stock include the high mortality rate of young stock, inadequate breeding and recording services, and an under-performing artificial insemination service, which was unprepared during privatization and consequently uptake of the service by the private sector has been low. The service is also constrained by weak regulation. Consequently, this has resulted in indiscriminate cross-breeding leading to inbreeding and poor breeding records, which have impeded the development of quality breeding stock. The cost of breeding animals is beyond the reach of most smallholder farmers. These challenges need to be addressed urgently.

Feed and nutrition. Livestock feeding and nutrition determines the productivity of the various livestock breeds. The main livestock feeds consist of roughage, concentrates, minerals and vitamins. Concentrate feeds consisting of protein, energy, minerals and vitamins are important especially for poultry, dairy and pig production. These feeds account for up to 80 per cent of production costs of farm animals.

The greatest proportion of the diet for ruminants is roughage, which includes grass and browse. In low-rainfall areas where extensive livestock keeping is practised, there is minimal supplementation with concentrates and minerals. In high-rainfall areas, concentrates make a significant proportion of livestock diet. The cost of producing

roughage sources is higher in these areas compared with the low-rainfall areas where no inputs are used. Grazing animals (cattle, sheep, goats, camels, donkeys, etc.) are fed on natural pastures or fodder with supplemental concentrates for high-yielding animals.

Some of the challenges in these regions include inadequate research on suitable forages, forage crop diseases, unavailability of planting material and lack of skills in forage management. Use of rangelands for sustainable livestock production is hampered by seasonal variations of quality and quantity of forage; overstocking and overgrazing; tsetse infestation and communal conflicts; inadequate livestock support services, credit facilities and socio-economic services; and weak infrastructure.

Non-grazing animals such as pigs and poultry are fed mixed concentrates to meet their nutrient requirements. The concentrates are made from cereals such as maize, wheat, barley, oats, millet and sorghum, legumes and oilseed cake—soybean, cotton seed cake and sunflower—and animal by-products such as fishmeal, bloodmeal, meat and bonemeal. Inconsistent supply of some of the ingredients especially the imported ones—oil-seed cake and meal, finer mineral elements, fishmeal, vitamins and amino-acids—has a major effect on feed quality.

Forage conservation is done as standing hay (particularly in the ASALs), baled hay or silage. Forage conservation is not widely practised. There is need to promote forage conservation in these areas to ensure feed availability during unfavourable conditions and feed scarcity for increased livestock productivity. This will include using various conservation technologies and establishing strategic feed reserves.

Kenya's agro-ecological zones are suitable for producing cereals and leguminous crops. Crop residues could be mixed with other fodders or processed for feeding animals, especially during the dry season. Use of crop residues is constrained by inadequate knowledge on how to use them, limited conservation technologies, low nutritive value, post-harvest loss and their bulkiness.

Optimum productivity of animals largely depends on the adequacy of essential nutrients in rations. Production of feedstuffs is constrained by the low quality of ingredients, inadequate quantity and seasonal availability of raw materials, inadequate credit facilities, inadequate knowledge on feed formulation, high cost of production and lack of self-regulation by the industry. To promote production of concentrates for increased livestock production and productivity, there is need to support farming of various crops for use as raw materials, and to enforce quality control.

Strengthening livestock extension services. Extension services are an important prerequisite for promoting technology uptake and its eventual use by end-users to increase productivity. Over the years, low funding and low staffing levels have hampered the production and dissemination of information on livestock technologies to livestock farmers, resulting in poor performance of the livestock subsector. Currently, the subsector

has only 20 per cent of its required extension staff quota, a situation that is likely to deteriorate due to natural attrition and staff retirement.

This strategy will explore avenues for revitalizing livestock extension services in Kenya. In particular, more resources will be committed to increase staffing levels towards the ratio of 1 livestock extension officer to 500 farmers in high-potential areas, and 1 to 150 farmers in low-potential areas to improve service delivery.

IMPROVING CONTROL OF LIVESTOCK DISEASES AND PESTS

Disease and pest control is a key input for increased livestock productivity to reduce losses associated with disease incidence and pest infestation. Since structural adjustment programmes were adopted in the 1990s, public provision of disease and pest control services was placed under the private sector. However, low private sector presence owing to thin and sometimes missing markets in various parts of the country, led to poor service delivery and compromised livestock productivity. As a result, Kenya has virtually lost its international market share for livestock and livestock products.

Notifiable diseases that had hitherto been brought under control, such as the contagious bovine pleuropneumonia, contagious caprine pleuropneumonia and foot and mouth, are now being widely reported. Zoonotic diseases particularly those transmitted through milk, such as tuberculosis and brucellosis, are also becoming important. Kenya faces new challenges from emerging and re-emerging diseases such as the avian influenza, the Rift Valley fever and PPR, which require rapid and expensive response to contain.

This strategy will support efforts to reduce diseases and pests through establishing disease-free zones, building farmers capacity to adopt and use appropriate and cost-effective livestock husbandry practices, and through establishing collaborative links. This will be carried out through various forums with stakeholders and neighbouring countries to increase surveillance, management and control of local and transboundary diseases.

INTEGRATED DEVELOPMENT AND MANAGEMENT OF RANGELANDS

The ASALs constitute 80 per cent of Kenya's total land surface. These areas support over 25 per cent of the human population and have over half of the country's livestock population. ASALs are fragile ecosystems with scarce and erratic rainfall patterns. Despite the enormous livestock potential, development in these areas has been low compared with the rest of the country.

Pastoral and agropastoral production systems currently are the dominant land-use systems in the rangelands. Nevertheless, pastoral systems are changing with increasing sedentarization due to changing lifestyles and land tenure, and adoption of crop production in marginal lands.

The frequency and severity of drought has increased in recent years. Coupled with overstocking and the degraded environment, this has had a devastating effect on pasture

regeneration and on the livelihoods of pastoral communities. Natural seed banks in the soil have depleted to the extent that even with adequate rainfall, little grass or other palatable vegetative material regenerates.

During periods of extreme drought, there is widespread migration of livestock to areas with better pastures, invariably leading to the spread of diseases and economic losses where disease-control measures have not been put in place.

Livestock migration has resulted in conflicts over use of pastures and water sources, and in environmental degradation. Ensuring that pastoralists have adequate feed for their livestock will help control movement, especially during times of drought. With the changes in land-use patterns, appropriate interventions must be introduced to enable pastoralists cope with these changes.

Rangelands are chronically short of pasture and water. Restoring rangelands into productivity will require reseeding and range pitting, bush control, soil conservation, and water rehabilitation and development.

Soil erosion is a major contributor to range degradation. Wind is the main agent for soil erosion, especially in areas where vegetation cover has been cleared. Good management practices that conserve vegetation cover, and avoiding livestock concentration in one area for long are needed to combat and reduce the effects of soil erosion in rangelands. Where there is serious degradation, interventions such as reseeding, deferred grazing and other natural resource conservation measures will be implemented.

Since rangelands are characterized by low and erratic rainfall patterns coupled with high evaporation rates, lack of water is one of the major development problems among the pastoral communities. Water availability is a precondition for improving livelihoods and for making use of the natural resource base. However, haphazardly planned and poorly developed water sources and facilities have contributed significantly to land degradation in the pastoral areas.

To improve livestock productivity in the rangelands, there is need to improve water harvesting and management techniques such as constructing pans, water holes, dams, run-off diversion from roads and a well-planned boreholes programme. All stakeholders will be involved before undertaking water rehabilitation and development. Proper water distribution and maintenance systems are necessary to ensure minimal water-use conflicts.

Disease control measures such as establishing disease-testing systems along stock routes to the markets are crucial for livestock marketing. Other prerequisite support facilities for developing the rangelands include road and rail transport systems to transport animals to markets, electricity supply and communication systems.

Ranches have the potential to play a key role in breeding, finishing and marketing livestock. The following options are currently available for ranchers to intensify production: improving breeds, managing pastures, and conserving and using urea–molasses–mineral

blocks especially during the dry spell. Intensive beef production in feedlots may also be profitable where a particular market niche demanding guaranteed quality is available. Ranches need support in breeding stock, conserving forage, providing livestock water and developing farm infrastructure.

IMPROVING ANIMAL HEALTH AND QUALITY ASSURANCE

Animal health and quality assurance services are important in efforts to increase productivity, reduce losses along the production to marketing chain, and to promote local and export trade. The services also protect humans from zoonoses and diseases transmitted through consuming animal products like meat, milk and eggs. The prevalence of diseases and pests has had negative economic impact such as loss of livelihood, humans and animals, and has curtailed access to markets for animals and animal products. Further, misuse and abuse of pesticides, veterinary drugs and vaccines have introduced residues to the food chain predisposing humans, animals and the environment to toxicity and making them less resistant to microbial activity.

Bodies addressing these concerns are the Department of Veterinary Services, the Pest Control Products Board, the Pharmacy and Poisons Board, the Kenya Veterinary Board, the Kenya Bureau of Standards and the Ministry of Health. The function of these bodies is to regulate and monitor aspects of animal health services; license the use of pesticides, veterinary drugs and vaccines; and undertake other quality assurance and sanitary measures.

Though their mandates are different, overlaps are occasionally encountered leading to duplication of effort. As an example, some aspects of meat inspection fall under the Meat Control Act, which is administered by the Department of Veterinary Services; other aspects are under the Public Health Act administered by both the Ministry of Public Health & Sanitation and the Ministry of Fisheries Development. Veterinary medicines lie under the Ministry of Livestock Development but are regulated by the Ministry of Public Health & Sanitation.

To strengthen these services, the livestock subsector in collaboration with the private sector and stakeholders will reform the legal, regulatory and institutional frameworks; build capacity for delivery of animal health and quality assurance services; and domesticate and implement sanitary measures according to regional and international standards.

IMPROVING MARKET ACCESS FOR LIVESTOCK AND LIVESTOCK PRODUCTS

Access to markets is a precondition for livestock development. The economic growth of livestock producers will depend on fair market access to their livestock products. The most important factors that determine access to markets for livestock producers include household characteristics (in particular proximity to markets, membership in producer organizations and market information) and broader institutional frameworks as well as livestock marketing and processing facilities.

To improve access to markets, capacity building in the market value chain will be undertaken and infrastructure developed. In particular, organizing livestock producers into marketing groups, developing markets and supporting infrastructure including a livestock marketing information system will be addressed.

Since the late 1990s, global trade in agricultural products has seen an increase in sanitary and phytosanitary conditions. For instance, BSE and foot and mouth disease have forced countries to impose import bans and stricter sanitary requirements as well as other technical barriers such as requirements on labelling and animal traceability schemes.

To access the expanding international markets, research will be carried out and sanitary interventions will be implemented to satisfy the growing demand for high-quality livestock products and by-products to allow producers to benefit from the increased demand for livestock worldwide. In addition, the country will conduct trade mission and bilateral agreements to increase market outlets.

A characteristic feature of Kenya's agricultural sector is the dominance of primary production with very little on-farm and off-farm processing, translating into low incomes for farmers. To maximize income from the livestock subsector, efforts will be made to intensify value addition to livestock products. Agro-processing will contribute immensely to the country's industrialization and lead to improved rural incomes, save on transport costs by delivering high-value, low-volume products, and create opportunities for using by-products as inputs. It will also provide opportunities to convert perishable commodities into more durable products and help create jobs, thus contributing to poverty reduction.

Adding value to hides, skins and leather should be prioritized as a strategic transitional economic development activity towards realizing the industrialization strategy by 2020 as a joint venture between the private and public sectors.

ESTABLISHING A CENTRALLY COORDINATED LIVESTOCK DATABASE

Livestock census had not been undertaken since 1966 but was undertaken in 2009 and results are still awaited, and data used have always been estimated. Information on livestock supply and demand is not available in a coordinated central database. There is finalise analysis of livestock census and establish a database to monitor demand and supply of livestock and livestock products, and for planning.

ESTABLISHING DISEASE-FREE ZONES

A project under the economic pillar of Vision 2030, establishment of disease-free zones is a flagship programme under the livestock subsector. The programme will facilitate access to local, regional and international markets by producers of livestock and livestock products. Strategically placed zones will be identified in the country. In these zones, trade-sensitive diseases will be controlled through implementing sanitary measures

consistent with international standards. International and regional markets are more lucrative than local markets and accessing them will increase returns.

To facilitate implementation and attainment of the objectives of the programme, institutions in the livestock subsector will be strengthened. Within this programme, investments will be made in livestock breeding, range improvement, export abattoirs and livestock marketing and marketing infrastructure to raise the quality, quantity and value of processed animal products that Kenya can export. Milk exports will also benefit from enhanced disease-control measures in the highlands.

The programme will be implemented through the following measures.

Improving animal health. This component will involve strategies and interventions for controlling and eradicating trade-sensitive diseases, zoonoses and pests, and ensuring quality of livestock products.

Infrastructure development. To facilitate establishment of disease-free zones, the subsector will rehabilitate and construct infrastructure for disease control, animal handling, and marketing. Quarantine stations will be erected and strategic holding grounds and outspans will be rehabilitated and developed.

Improving animal productivity. Through this component, livestock-breeding programmes will be enhanced to improve local breeds and achieve faster growth rate and higher slaughter weights.

Improving rangeland. This component will undertake activities to improve rangeland management.

Improving livestock marketing. The component will revamp livestock marketing to enable it take a lead role in the international meat trade and bring in the expected benefits to livestock producers and other players within the value chain.

Institutional strengthening. Capacity will be built in relevant offices and laboratories, and staff will be trained on zonation and other sanitary measures.

5.3 Fisheries Subsector

The fisheries subsector plays an important role in the national economy, providing economic support to about 80,000 people directly and about 800,000 indirectly (assuming a dependency ratio of 1:10). In 2006, it contributed 0.5 per cent of the GDP. This figure could be higher if value is added along the various stages of the supply chain and post-harvest losses are minimized.

The subsector's growth was estimated at 4.1 per cent in 2005. In the same year, 158,670 tonnes of fish valued at over KES 8 billion was produced. Fish exports in 2005 earned the country approximately KES 5 billion.

5.3.1 Challenges and Constraints

Despite Government's commitment and past interventions, the subsector has been unable to realize its full potential due to inadequate supportive infrastructure such as cold storage, roads, fish port and electricity; inadequate budgetary provisions; environmental degradation due to invasive weeds such as water hyacinth; weak producer organizations; lack of collateral and access to credit facilities; absence of a saving culture; ineffective marketing information; and lack of adequate and quality fish seed and feed. Other major hindrances are inadequate research–extension links; illegal, unregulated and unreported fishing; weak monitoring control and surveillance systems; low fishing technology; stringent sanitary and phytosanitary standards set by major export destinations; tariff and non-tariff barriers to international trade; and diminishing fish stocks.

5.3.2 Interventions

To address these challenges and constraints, the fisheries subsector will implement the following interventions:

- Developing marine capture fisheries
- Developing inland capture fisheries
- Developing aquaculture
- Promoting fish safety, quality assurance, value addition and marketing.

DEVELOPING MARINE CAPTURE FISHERIES

The marine fishing industry in Kenya is characterized by under-exploited resources, overfishing and artisanal fishery. The current inshore fish production is slightly over 7500 tonnes valued at KES 635 million, which is approximately 5 per cent of the total annual landings. Though the country's coast is located within the rich tuna belt in the south-west Indian Ocean, production from off-shore waters is not yet established because fleets of the Distant Waters Fishing Nations do not land, trans-ship or declare catches on Kenyan waters.

The marine fishery potential is estimated at 150,000 tonnes annually; the main species are the highly valued tuna and tuna-like fish species in the exclusive economic zone. This fishery is currently exploited by foreign vessels, which land their fish harvest at off-shore island states in the Indian Ocean due to the absence of a fish port in Kenya. Exploiting this resource and landing the harvest on Kenya's coastline will contribute to food security, employment, wealth creation and raw materials for the domestic food and feed industries.

Through adequate and strategic investment, proper resource management, reduced post-harvest losses and value addition, marine fisheries exploitation has the potential of doubling fisheries contribution to the GDP from the current KES 13 billion to KES

26 billion by 2015. This strategic investment should also target to give Kenya a regional competitive advantage by attracting foreign fishing vessels operating within the country's exclusive economic zone to off-load their harvests at the country's coastline.

To tap into this potential, Kenya immediately requires a fish port with adequate infrastructure to handle up to 500 fishing vessels a day. This port should be constructed at Lamu to enable exploitation of the commercial fishery in the northern Kenya coastal waters, which is within the Somalia upwelling system.

The Government will support the development and maintenance of the fish port, and the establishment of a fisheries coast guard unit to conduct shoreline and sea-based surveillance. In addition, mechanisms will be put in place to facilitate the formulation of joint partnership agreements and initiate negotiation processes aimed at engaging foreign fishing vessels into fishing partnerships and monitoring control and surveillance systems in the exclusive economic zone.

DEVELOPING INLAND CAPTURE FISHERIES

In 2006, about 94 per cent of the national annual catch was from the fresh waters of Lakes Victoria, Turkana, Baringo, Naivasha and Jipe, and Tana River dams by some 38,000 mainly artisanal fishers operating slightly over 12,200 fishing boats. Thus, the inland capture fishery is overexploited and overfished, operating beyond the maximum sustainable yield. If this state of affairs is not reversed, it can lead to a total collapse of the fishery.

To reverse this decline in fortunes, sanitary and phytosanitary facilities will be improved to reduce post-harvest losses; fish-landing facilities and cold chains will be improved; collaboration among the three East African States on issues affecting fishery and catchments of Lake Victoria will be enhanced; and common fishery management measures, alternative income-generating activities and State-private fisheries co-management practices will be encouraged.

Focus will also be on the unexploited fishery resource of Lake Turkana, which contains significant quantities of Nile perch and tilapia, the two most prized freshwater fish in the country. A conservative potential estimate of landing in the lake is 30,000 tonnes valued at about KES 3 billion.

For the riverine systems, restocking programmes and demarcation of fish sanctuaries and refugia sites shall be supported and protected.

DEVELOPING AQUACULTURE

Aquaculture is an important fisheries development that involves culturing aquatic organisms in a controlled environment in marine and freshwater systems. It has mainly been carried out at subsistence level by a few commercial fish farm enterprises, hence

it can easily be integrated into household farming systems. The current aquaculture production is 1000 tonnes valued at KES 137 million or about 1 per cent of the national fish value. If well developed, aquaculture has the potential to contribute to food security and reduce poverty and pressure on capture fisheries.

The country has the potential to support a commercial fish culture in marine and freshwater areas. If the national aquaculture potential is fully exploited, fish production can increase from the current 1000 tonnes to 15,000 tonnes annually valued at KES 1.1 billion, and support about 10,000 large and small-scale farmers. This will also reduce pressure on capture fisheries and lead to sustainable use of other fishery resources.

This enhanced productivity can be achieved by supporting research on certified fish seed and feed production, formulating and implementing aquaculture business plans, establishing public–private partnerships in fish seed and feed production, developing an aquaculture policy and legislation, developing an aquaculture master plan and investment plan, and supporting fisheries participatory extension services.

PROMOTING FISH SAFETY, QUALITY ASSURANCE, VALUE ADDITION AND MARKETING

Fish is a highly perishable product, a factor that has been used by middlemen and fish factory owners to exploit fishermen by forcing them to sell their catch at low prices. One solution is to develop fish auction centres complete with cold chain and safe market facilities to hold fish until prices are favourable. These centres will be at landing sites on the shores, while cold chain facilities will be developed at the airports.

The bulk of fish products and exports from Kenya comprise unprocessed products such as whole, headless and gutted, fillet and frozen Nile perch maws, tuna loins, Nile perch skins, octopus and lobsters. This deprives the country of optimal earnings as these products either undergo further processing to add value or are branded after export and fetch higher prices in the export markets.

Opportunities exist for developing and producing value-added products from Nile perch frames, fish skins, fish heads, fat and fish bladders—which all contain Omega 3 fatty acids—that can be traded in local and international markets. Other opportunities exist for setting up fish-canning establishments for species such as the sardine-like *Rastrineobola argentea* (locally known as omena) and tuna. Value addition and use of the discarded by-catch from prawn trawling are also areas for investment.

Local fishing communities will be educated on appropriate handling of fresh fish, and will be organized into fishing groups so that they can profit from economies of scale in bulking and marketing. Cold chain facilities will be constructed near lakes and other fishery resources to stem losses and spoilage.

5.4 The Cooperatives Subsector

Agricultural marketing cooperatives constitute 49 per cent of all cooperatives with over 4 million members out of the entire membership of 7 million countrywide. These institutions are vital for agricultural development as they own a national network of storage and distribution facilities for agricultural inputs such as fertilizer, seed, chemicals and equipment.

Cooperative societies have traditionally facilitated aggregation of members' input requirements and then purchased them centrally to create economies of scale and save on costs to individual members.

Agricultural cooperatives have been instrumental in bulking, processing and transporting produce on behalf of their members, and in providing credit and supplying farm inputs. The performance of secondary cooperatives such as the Kenya Planters Cooperative Union, the Cooperative Alliance of Kenya (formerly, Kenya National Federation of Cooperatives), district cooperative unions and commodity-specific unions has declined due to a number of reasons among them mismanagement, failure to adapt to the challenges of competition and withdrawal of financial and technical support. Consequently, member investments are lost as assets continue to be stripped.

Following liberalization, cooperatives have witnessed major changes in the business environment that has seen the emergence of a competitive market economy. Among the changes was the withdrawal of direct State involvement in the day-to-day operations of cooperatives. Their capacity to meet the challenges brought about by liberalization has been inadequate. As a result, their performance has been on the decline and subsequently, cooperative members the losers. This has negatively affected agricultural productivity and market share.

5.4.1 Challenges and Constraints

Cooperatives face many challenges that affect service delivery. These challenges and constraints, both internal and external, include governance and management, adding value to produce, and poor access to market information.

A large part of cooperative business involves commodity transactions with very little product differentiation. Lack of market and product research has led to limited product development and market penetration. Most cooperatives have not embraced value addition and processing including packaging and branding, and thus lose out on potential returns and benefits to their members or producers. As a result, the subsector has almost stagnated. Agricultural marketing cooperatives are characterized by low capital investment as capital formation has not been commensurate with the growth of cooperative business.

Up-to-date and relevant information is crucial in a market-based economy. Market information and access are poorly developed. The subsector lacks an integrated

agricultural data and information management system. The scope and geographical coverage of market information is also limited due to underdeveloped infrastructure for dissemination.

Cooperatives play an important role not only in the supply of major farm inputs but also in influencing competitive pricing. However, supply and pricing are affected by capital constraints, sourcing of inputs, lack of skills in import business, and restrictive domestic laws that limit investment by potential competitors.

Cooperatives have not harnessed economies of scale and the comparative advantage inherent in them. Poor collaboration, lack of networking and competition among themselves are evident.

5.4.2 Interventions

Cooperatives will be revitalized and their capacities strengthened to make them competitive. This will involve providing education and training, improving governance and management, enforcing legal provisions, adopting prudential standards, developing appropriate marketing strategies and operationalizing the regulatory framework for SACCOs. Cooperatives will pursue business models that embrace innovation and modern technology transfer, and will adopt information and communication technology in their operations.

The cooperative subsector will implement the following interventions:

- Reviewing cooperative development policy and legal framework
- Improving capacity for marketing agricultural inputs and produce
- Enhancing access to agricultural credit
- Promoting value addition
- Promoting internal and external trade
- Improving governance and management.

REVIEWING COOPERATIVE DEVELOPMENT POLICY AND LEGAL FRAMEWORK

All cooperatives are governed by the Cooperative Societies' Act (2004). However, the Act was amended before the cooperative development policy was revised and it is therefore not consistent with the provisions of the policy. In its current form the Act has a number of gaps and omissions such as lack of a clear way to effectively cater for all categories of cooperatives. The Government has enacted the SACCO Regulatory Act and a SACCO regulatory authority is already in operation.

IMPROVING CAPACITY FOR MARKETING AGRICULTURAL INPUTS AND PRODUCE

Marketing is a major challenge in the agricultural sector. Productivity is constrained by inefficiencies in the supply chain which result from limited storage capacity, lack of post-

harvest services and technologies, and poor access to input markets. Exploitation by intermediaries also creates distortions in the market. Many primary marketing cooperatives have lost business due to weak internal marketing capacity, weak capital base, loss of monopoly, protection previously enjoyed by some societies, inadequate trained personnel to deal with modern ways of marketing, limited value addition and delayed payments for delivered produce. Agricultural exports have relied heavily on a few key markets.

The cooperative marketing promotion component will focus on:

- enhancing the marketing capacity of the relevant subsector ministries
- strengthening marketing capacity within cooperative societies.

Equally important is the capacity of cooperatives to compete in a global marketing environment. Capacity building for members, officials and staff will be enhanced through training and providing technical support, policy guidance, technology transfer and access to marketing information. Mainstreaming marketing activities is core to business operations though currently, this function is peripheral. Policy direction on cooperative marketing shall be spelt out to guide the cooperative subsector.

Low productivity in the agricultural sector is attributed to several factors including the high cost of inputs (fertilizer, pesticides, veterinary drugs, animal feed, and seed and other planting material), poor husbandry practices, outdated extension approaches, over-dependence on rainfed agriculture, lack of markets, and limited application of agricultural technology and innovation.

Cooperative societies will play a role in addressing these constraints, especially those related to accessing agricultural inputs. Further, cooperative institutions have extensive supply stores throughout the country that could be used to improve access to fertilizer and other inputs by producers.

To contribute to increased agricultural productivity, two strategies will be adopted:

- bulk purchasing and supply through a nationwide distribution network
- provision of long-term opportunities for domestic production.

In the medium term, measures to lower the cost of fertilizer will include revitalizing or re-incorporating the national cooperative institutions that were extensively involved in bulk purchasing and distribution of inputs to perform roles of input marketing.

Supply of major farm inputs and competitive pricing are affected by capital constraints, where to source for inputs, lack of skills in importation business, and restrictive domestic laws that limit investment by potential competitors.

Inputs in rural areas will be distributed through existing cooperatives such as commodity marketing, merchandising and inputs supply societies. Franchising, networking with manufacturers and wholesalers on bulk purchases and stocking will also be encouraged. The Government will encourage the formation of cooperative structures that create the

necessary capacity to trade in large volumes of inputs to take advantage of economies of scale.

ENHANCING ACCESS TO AGRICULTURAL CREDIT

The main focus of SACCOs is 1) to offer affordable financial services on a cost-effective basis in order to cover a large number of cooperative members, 2) to provide an alternative system of securing credit. Government should intervene to create a better environment for banks and the mainstream financial institutions to develop products that address farmers needs.

PROMOTING VALUE ADDITION

A characteristic feature of Kenya's agriculture is the dominance of primary production. Cooperatives still engage in raw production and market their produce in crude or semi-processed form, which is delivered to processors for value addition and marketing. There is little on-farm and off-farm processing of agricultural produce, or efforts to improve the quality and shelf life of their produce by agricultural marketing cooperatives. This translates to low prices, fewer job opportunities and eventually low incomes for farmers and members, and loss of a substantial part of their income to intermediaries and processors. The situation is more hopeless when dealing with perishable produce such as milk and horticultural products. Vision 2030 has identified value addition as key to driving economic growth.

This situation provides compelling reasons for encouraging agro-processing with the following outcomes:

- Improved rural incomes, savings on transport costs by delivering high-value, low-volume products, and creating opportunities for using by-products as inputs in other farm operations such as animal feeds, manure and fuel
- Reduced farm losses through converting perishable commodities into more durable products
- Creation of jobs in rural areas, in the process contributing to the reduction of both poverty and rural–urban migration.

The Government will strengthen the complementarities and interdependence of the agricultural sector with agribusiness by promoting forward and backward links and prioritizing rural industrialization. Where contractual obligations can be enforced, forging partnerships between smallholders and agribusiness in the form of outgrower and contract farming schemes will be encouraged. Such partnerships assure smallholders of markets for their produce, and the supply of inputs on credit basis or through input voucher schemes. Contractors are also assured of a continuous supply of commodities of higher quality. Such schemes are currently in use for some commodities.

PROMOTING INTERNAL AND EXTERNAL TRADE

The main constraints to internal trade include high transport costs due to the poor state of roads, and lack of proper handling and storage facilities. In the case of livestock trade, lack of cattle-holding grounds and interference with stock routes have led to limited access to domestic markets.

The competitiveness of Kenyan produce has been undermined by inadequate infrastructure such as poor roads and railways that increase vehicular maintenance costs; high port and road charges and tariffs; and slow and outdated communications systems and infrastructure that impede the flow of market information.

Kenya is signatory to several trade protocols and agreements—the East African Community, the Inter-Governmental Authority on Development (IGAD), the Common Market for Eastern and Southern Africa (COMESA), the World Trade Organization (WTO), and the European Union (EU). Kenya must take advantage of these opportunities provided by regional and international agreements to attain a certain level of global competitiveness. Trade barriers that increase uncertainties and transaction costs will be removed to provide the private sector with the impetus to plan production, processing and marketing for external markets instead of producing solely for subsistence and internal markets.

As a first measure, the Government shall simplify the trade procedures in these protocols for cross-border traders. Relevant government institutions created to promote trade must be more proactive in this task. Measures shall be taken to improve farmer capacity to add value to their produce to make it more competitive.

To accelerate development in northern Kenya and in other arid areas, a number of targeted interventions will be carried out. Roads and railway lines will be constructed to open up the area for economic development and for trade with neighbouring countries such as Ethiopia, Sudan and Somalia, and to link northern Kenya to the south. Infrastructure development will open up the area for rapid investment and ensure access to input and output markets.

PROMOTING GOOD GOVERNANCE AND MANAGEMENT

Opportunities are available to develop networks and partnerships between cooperative societies to reduce internal competition among them. Some of the opportunities that will be explored include working with stakeholders to form joint ventures with the private sector, creating new initiatives such as cooperative private partnerships, getting direct investments in identified areas and working with the export processing zone authority to create export processing zones in areas with active cooperative societies.

5.5 Private Sector Participation

The agro-based private sector comprises both profit-driven and not-for-profit (civil society) non-State actors. Such actors could be broadly categorized into farmer or producer organizations that include:

- primary producers—individual farmers and producer companies, farmers/producer groups, producer organizations, commodity-based associations, farmer federations
- various categories of cooperatives, agribusiness firms, individual entrepreneurs, cooperative societies, agricultural input dealers
- agricultural commodity processors, packaging agents, transporters and warehousing agents
- financial service providers—microfinance institutions, commercial banks, SACCOs, and agribusiness development
- technical and professional service providers—extension, research, insurance, legal, consultancy, quality assurance and education, training, information
- civil society, local and international NGOs, faith-based organizations, community-based organizations, other resource mobilization organizations and opinion leaders

The Kenya Private Sector Alliance (KEPSA) is a coalition of private sector institutions such as business associations, federations and professional bodies. KEPSA engages Government in structured consultations and policy dialogue towards improving the business environment, accelerating transformation of public sector institutions, promoting private sector cultural change, facilitating growth through expansion of trade, improving productivity and competitiveness of enterprises, and supporting entrepreneurship and development of micro and small enterprises in line with the national development agenda. Private sector issues are consolidated into one major agenda cutting across all sectors of the economy. Individual organizations identify key priority areas and work together with the Government to find practical solutions to issues.

The Kenya National Federation of Agricultural Producers (KENFAP) coordinates and facilitates functions and processes of agricultural producers and producer organizations along various agricultural value chains. Similarly, the Cooperative Alliance of Kenya (previously the Kenya National Federation of Cooperatives) coordinates commercial agricultural services in line with producer management through a variety of cooperative societies. Currently, KENFAP chairs the Agricultural Sector Board of KEPSA, making it the private sector focal point on various consultations and functions under the public–private partnerships implementation framework.

In agriculture, the private sector constitutes beneficiaries and resource mobilizers to transform economic operations. It is the vehicle for requisite investments to transform agriculture towards increased productivity, agribusiness, and infrastructure development.

The private sector draws strength and legitimacy from the public–private partnerships in the framework of the National Economic and Social Council, National Business Agenda, the budgetary process sector working groups, ministerial stakeholders forum and ministerial task forces created through *Kenya Gazette* Notice No. 7699 of 24 September 2004. The initiative builds and uses private sector capacities and synergies through collaborating, engaging and networking to promote efficiency and effectiveness in service delivery.

The private sector will continue working closely with the Government to ensure services are delivered to producers and other players through the following interventions:

- Facilitating organization of smallholder producers at all levels
- Developing and implementing a framework and instruments for strengthening institutional capacity of producer organizations
- Fast-tracking legal and regulatory reforms to promote private sector engagement
- Promoting private sector participation in agro-processing
- Developing a mechanism for recognizing and supporting integrated innovation in agricultural value chains.

6 PRODUCTION FACTORS STRATEGIC FOCUS

6.1 Improving Water Resources and Irrigation Development

Of the total land area under agriculture, irrigation accounts for only 1.7 per cent but contributes 3 per cent to the GDP and provides 18 per cent of the value of all agricultural produce, demonstrating its potential in increasing agricultural production and productivity.

Kenya has an estimated irrigation potential of 1.3 million ha and a drainage potential of 600,000 ha. Currently, 114,600 ha of irrigation and 30,000 ha of drainage area have been developed. Of the available irrigation potential 540,000 ha can be developed with the available water resources, while the rest of the area will require water harvesting and storage.

The developed irrigation potential can be categorized into three main types: smallholder schemes, 49,000 ha (43 per cent); public / national schemes, 20,600 ha (18 per cent); private schemes, 45,000 ha (39 per cent). The remaining potential of over 424,400 ha of irrigation and 570,000 ha of drainage calls for increased focus to unleash this potential.

Less than 20 per cent of Kenya's land mass has medium to high agricultural potential and supports about 75 per cent of the population. The remaining 80 per cent lies in the arid and semi-arid lands (ASALs), where sustainable rainfed crop production is limited by water deficits—an indication that the country's potential for rainfed agriculture is low, which alone cannot meet the challenge of achieving food security. There is pressure on land with agricultural potential and population migration to the ASALs is likely to increase.

African Governments, regional bodies, development partners, and agricultural and other stakeholders meeting in Maputo in 2003 identified irrigation as a priority area for investment to accelerate agricultural growth. Agricultural production through irrigation can be increased by up to 300 per cent and create jobs at the rate of up to 15 persons per acre directly and indirectly. Irrigation could also guarantee a reliable supply of raw materials for agro-industries and improve national security by creating opportunities for the youth to be economically engaged while stemming rural–urban migration.

The impact of Mwea Irrigation Scheme on the economy of Kirinyaga District, of irrigated horticulture in parts of Central Province and of irrigated floriculture on the economy demonstrates the potential of irrigation on national economic growth. In the face of adverse effects of climate change, expanding irrigation through development of sustainable production systems will contribute to the stabilization and subsequent growth of agricultural production.

In addition to land resources, sustainable irrigation requires adequate and reliable water resources. Currently, the country has about 4100 small dams and water pans giving a total water storage capacity of only 183.6 million m³ for all uses, equivalent to 5.3 m³ per capita per year, which is among the lowest water storage rates in the world, equivalent to only 3 months of use. As a result, if the country does not receive rains for only 3 months, it experiences famine, drought, low irrigation levels and even power rationing.

The quantity and quality of surface and groundwater are important to the irrigation subsector. There is continuous and increasing pressure for sufficient water resources to support irrigation and other economic activities. Well-targeted actions are needed to rehabilitate and manage watersheds or catchments to increase the country's water resource base.

Incidents of flooding are common in areas that receive high rainfall as a result of heavy run-off causing rising siltation and sedimentation of water bodies. Increasing pollution of water bodies by industrial and domestic waste water is threatening the quality of water available for agriculture. In some areas, the quality of groundwater sources is unfit for agricultural use.

The country's five water towers—the forests of the Aberdares, Mt Kenya, Mt Elgon, Cheranganyi Hills and Mau—continue to suffer forest clearance and from land-use changes; as a result many lakes and rivers have already reached critically low levels. Across the country perennial rivers such as the Ewaso Ng'iro have been reduced to small streams during the dry season, while others have disappeared from the map altogether. The lifespan and storage capacity of dams is also steadily decreasing due to siltation arising from degradation of the catchments and water courses, while the frequency of changing water courses is increasing.

Water resources management and development cannot be viewed in isolation but as an integral part of improving watershed resources. Properly managed and developed watersheds can contribute to sustainable flow and availability of water (blue and green in the form of soil moisture, groundwater and surface water). Managing water resources in an ecologically sustainable manner alongside proper land use, and an integrated development of resources—agriculture (livestock, crop, fishery and agroforestry), natural resources (forest, range, wildlife), environment and human resources—are critical.

6.1.1 Challenges and Constraints

Sustainable development and management of irrigation has been constrained by:

- lack of a national plan and policy, legal and institutional frameworks to guide irrigation development resulting in problems such as duplication of effort, wastage of scarce resources and haphazard interventions
- lack of adequate financial resources to invest in irrigation development caused

by high interest rates on loans and the requirement by commercial financial institutions for physical assets as collateral, which preclude many farmers from credit facilities

- limited and fragmented research on irrigated crops, water management, farm mechanization, soils and other issues that have hampered irrigation development, resulting in application of inappropriate techniques that leads to low yields and land degradation
- inadequate infrastructure such as electricity, access roads, marketing channels and extension services has slowed the pace of irrigation and drainage development
- inappropriate management system of public settlement irrigation schemes with minimal involvement of beneficiaries in planning, development, operations, maintenance and management
- lack of security of land tenure, as land adjudication and registration has either not been done or is incomplete
- poor performance of some public and smallholder schemes due to inadequate farmer participation, low level of Government support services, weak farmer organizations and poor financial base of communities.

6.1.2 Interventions

The water and irrigation development subsector will address these challenges and constraints through the following interventions:

- Finalizing and implementing the national irrigation policy and legal framework
- Intensifying and expanding irrigation
- Improving rainwater harvesting and storage for agriculture
- Rehabilitating and protecting water catchments
- Implementing the irrigation flagship projects.

NATIONAL IRRIGATION POLICY AND LEGAL FRAMEWORK

The overall goal of this intervention is to accelerate sustainable development of irrigation and drainage to contribute to the national goals of wealth and employment creation, food security and poverty reduction. This is also in line with the country's aspirations for transforming agriculture as underpinned by Vision 2030.

The policy on irrigation and drainage will seek to achieve the following:

- fully develop and exploit the irrigation and drainage potential in the country to achieve food security, create employment, supply raw materials and reduce poverty
- effectively promote, coordinate, manage and regulate the core activities within the irrigation and drainage subsector

- mobilize and increase financial resources, and create an appropriate financing system that will attract investment in the sector
- increase Government's financial allocation to the subsector to at least 2 per cent of the GDP annually
- create an enabling environment for effective farmer organization and participation, and for other stakeholders to provide quality and cost-effective support services
- establish and promote a multi-sectoral approach to sustainable irrigation and drainage development and management

INTENSIFYING AND EXPANDING IRRIGATION

The subsector will accelerate the development of irrigation and drainage through financing the construction of major irrigation, drainage and flood control infrastructure. It will also adopt an integrated basin-wide approach to irrigation planning and implementation to attain the Vision 2030 target of developing 32,000 ha per annum and 704,000 ha of new irrigation areas by 2030.

To improve the performance and productivity of existing irrigation schemes, the subsector will rehabilitate and improve their infrastructure. The irrigation water users' associations will be strengthened to ensure that they have capacity and resources to operate optimally and maintain the irrigation systems in schemes.

The subsector will adopt a multi-sectoral approach to irrigated agricultural production while encouraging and supporting the establishment of public-private partnerships with the aim of contributing to development efforts through provision and delivery of services (inputs, microfinance, technology, value-adding, market outlets, etc.). The Government will also mobilize funds from different sources to develop the subsector.

To enhance productivity per unit of land, measures will be put in place to facilitate multiple cropping, improve yields through targeted research, better extension services, assess and build capacity of staff and farmers, and strengthen farmer institutions. The Government will also introduce impact assessment of projects to ensure stakeholders realize project goals and objectives, especially the socio-economic benefits.

RAINWATER HARVESTING AND STORAGE FOR AGRICULTURE

The water subsector is developing a national water storage policy to increase water storage from slightly over 183.6 million m³ to 25 billion m³. This will provide enough water to irrigate an additional 800,000 ha above the current irrigation potential of 540,000 ha. It would provide adequate water for livestock, secure water for all uses, raise the standards of the country's overall water resource management capacity, and ensure a water-secure Kenya. Water storage through harvesting flash floods will provide water for irrigation while reducing the damaging effects of flooding in areas such as Nyando, Budalangi and Kano plains.

The water subsector will enforce the law that requires each irrigation scheme to develop facilities that store water for 90 days for agricultural production. To comply with this law, the Government will invest in the development of storage facilities for smallholder and national irrigation schemes. The subsector will also support and encourage water-harvesting activities at household and community levels as an integral part of watershed development for use in irrigation, livestock watering and groundwater recharge.

REHABILITATING AND PROTECTING WATER CATCHMENTS

Catchment degradation is causing increased run-off, flash flooding, reduced infiltration, erosion and siltation, and is undermining the limited sustainable water resource base in the country. It has invariably affected surface water availability as rivers and reservoirs dry up. The main causes of degradation are poor farming methods, population pressure and cutting down forests for agricultural land and fuelwood. For example, sediment yields from the Ewaso Ng'iro and Tana Rivers have increased 115 times since 1970.

Over-abstraction of surface water in some parts of the country, inappropriate land-use practices, soil erosion in catchments and deterioration of riparian lands are causing flash floods and turbidity. Siltation of water courses and storage facilities has led to serious degradation of the quantity and quality of water resources. Poorly controlled discharge of effluent from industry and sewage outflows has also negatively affected the quality of water. The dramatic reduction in the depth of Lake Baringo from over 15 m in 1921 to an average of 1.8 m today, is due not only to reduced inflows but also to the increased sediment load from surrounding unprotected and degraded catchments.

The National Water Resources Management Strategy that was validated in January 2007 stresses that integrated water resources management (IWRM) must be elevated and recognized as a national priority that underpins all of Kenya's social and economic development. IWRM promotes the coordinated development and management of water, land and related resources to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. Implementation is on course through various programmes, mechanisms and measures. However, massive investments are required to achieve and sustain this objective, and resources must be mobilized from both internal and external sources.

IMPLEMENTING THE IRRIGATION FLAGSHIP PROJECTS

Flagship projects identified in Vision 2030 will be implemented. These include expanding the schemes in Ahero, Bunyala, Bura, Ewaso Ng'iro, North Hola, Kerio Valley, Mwea, Ngurumani, Perkerra, Taita Taveta and West Kano. In addition, the Yatta canal will be extended by another 100 km to cover Yatta District and parts of Kitui and Mwingi Districts. This will involve constructing a 1-km uptake dam upstream at the existing intake point along Thika River and repairing Mathauta and Munyu dams to serve as the starting points for extending the canal.

The Kano plains and Nzoia (upper, middle and lower) irrigation projects will be implemented and will each involve new areas with a development potential of over 20,000 ha. The construction of the Tana Delta Project, aimed at irrigated sugar production covering 16,000 ha, will be given the highest priority. These interventions will substantially increase cropland and boost agriculture, which was previously dependent on rainfall. Drainage areas will also be expanded in Western (Busia, Bungoma, Butere, Kakamega, Mumias, Teso) and Central (Thika, Nyandarua North and Nyandarua South) Provinces. Research will also be carried out to enhance efficiency and productivity of irrigated agriculture.

6.2 Land Use

Land is an important factor of production because it provides the foundation for all other activities such as agriculture, water, settlement, tourism, wildlife, forestry and infrastructure. Land issues are important to the social, economic and political development of Kenya. Secure land tenure, sustainable land-use planning and equitable distribution of land contribute to food security and social-economic development of a country.

6.2.1 Challenges and Constraints

Over the years, administration and management of land has been challenging because of the lack of a comprehensive national land policy worsened by the existence of many land laws, some of which are incongruent. This has led to fragmentation of land, breakdown in land administration, and disparities in land ownership. Other challenges include deterioration in land quality, squatting, landlessness, under-utilization and abandonment of agricultural land, tenure insecurity and conflict.

Several factors affect the way land is used. In some parts of the country, high population densities and cultural practices of dividing land for inheritance have resulted in highly fragmented and uneconomical plots. In some of these areas, land scarcity and population pressure have led the poor to convert marginal lands (such as floodplains and slopes) into farmland. This has led to increased vulnerability and has aggravated environmental damage. Consequently, the affected agrarian groups are barely able to meet their subsistence needs. In some parts of the country with low population density, certain cultural practices and other factors lead to idle or under-utilized land. In addition, glaring disparities exist with regard to gender, with few women owning land.

6.2.2 Interventions

To address these challenges, the Government will develop and implement policy, legal and institutional reforms on security of land tenure, land use and development, and on sustainable conservation of the environment. The national land policy has been approved

to address land administration and management problems. It provides a framework and defines key measures required to address the critical issues of land administration, access, land-use planning, restitution of historical injustices, environmental degradation, conflicts, proliferation of informal settlements, outdated legal framework, institutional framework and information management. Finalizing this policy and enacting legislation will be given priority.

The national land policy was adopted in 2009 and a national spatial plan and land-use policy are being developed. The land-use policy will address the challenges of rapid urbanization, inadequate land-use planning, unsustainable production, poor environmental management, and inappropriate ecosystem protection and management.

Transforming land use for better and sustainable use and management shall be addressed under the following interventions:

- creating a consolidated geographic information system (GIS)-based land registry
- developing and implementing a land-use masterplan
- investing in institutions and infrastructure
- settling the landless poor.

CREATING A CONSOLIDATED GIS-BASED LAND REGISTRY

Land adjudication has not been completed in most areas of the country. Although some 3.5 million land records have been digitally scanned, a computerized management information system is yet to be established. To speed up land transactions, a GIS-based land management information system will be necessary. This will contribute to good governance and improved security of tenure.

The system will also enhance efficiency and effectiveness in the delivery of services to all Kenyans, especially the poor. Further, it will enable the capture, management and analysis of geographically referenced land-related data to produce land information for decision making in land administration and management. Investments will be directed at revamping the recording system, revising land maps and computerizing the land registries to reduce the amount of time taken in service delivery.

DEVELOPING AND IMPLEMENTING A LAND-USE MASTERPLAN

Land remains under-exploited for agricultural production. In the high- and medium-rainfall areas, only 31 per cent of the land is under crop production—a mere 5 per cent of the total land in the country. Much of the available cropland remains under-utilized. For example, on average, smallholders use 60 per cent of their cropland for agricultural production; a substantial amount of high- and medium-rainfall land is currently idle.

In rural areas, land-use practices are largely incongruent with the specific ecological zones. Uneconomic land subdivisions coupled with poor land-use practices are responsible for

accelerated land degradation and declining land productivity. In urban areas, proliferation of informal settlements, urban sprawl and encroachment into protected land remain key challenges. The escalation of desertification as a result of land degradation and climate change poses risks to the lives of people living in ASALs.

This intervention will facilitate the development and implementation of an agricultural land-use masterplan for more efficient use of all forms of land.

INVESTING IN INSTITUTIONS AND INFRASTRUCTURE

The legislative framework to handle land-related cases is weak. This has contributed to a backlog of disputes in courts. In addition, land issues are governed by many laws, most are incompatible with each other. This has led to complexities in land administration and management.

Currently, land adjudication and registration in the country covers only one-third (8 million ha) of the country. This situation continues to prevent people from asserting their rights over land. To date, only 4.06 million title deeds have been registered countrywide. This is partly due to a slow adjudication process, inadequate resources for survey and mapping, conflicting land laws, a backlog of land disputes (some over 20 years old) and lack of civic education and awareness.

Progress in addressing these challenges is being made through the National Land Policy, which principally provides an overarching framework for access to, planning and administration of land in the country. It also addresses issues related to restitution of land resulting from historical injustices and the institutional framework. A land reform transformation unit has been established in the Ministry of Lands to facilitate the implementation of the land reforms programme as outlined in the National Land Policy.

SETTLING LANDLESS POOR

The Government has been settling poor landless Kenyans through the settlement fund trustee programme. This programme has been facing challenges due to increase in population, which does not match the availability of agriculturally viable land. There is need to finalize all established settlement schemes so that the landless can engage in meaningful production.

6.3 Developing Northern Kenya and Other Arid Lands

The ASALs have not enjoyed the same level of development as the rest of the country. One consequence of this bias is that, while poverty is reducing in other parts of Kenya, it continues to rise in these regions. The region has districts with the highest incidence of poverty in the country. Absolute poverty levels in northern Kenya were 65 per cent in 1994 and 73 per cent in 2000, increasing further to 74 per cent in 2005/06. Marsabit

recorded 97 per cent and Turkana 98 per cent in 2000. In 2005/06, these poverty levels recorded insignificant drops to 92 per cent and 95 per cent respectively.

Human development indicators in the region are also well below the national average. In North-Eastern Province, for example, the risk of infant deaths is reported to be over six times greater than in Central Province, while maternal mortality is nearly 2.5 times the national average. This regional disparity poses one of the biggest challenges to Kenya's efforts of meeting the MDGs.

While ASALs constitute over 80 per cent of the country's land mass, their enormous potential remains largely untapped. There are 24 million ha of land that can be used for livestock production, but only 50 per cent of the carrying capacity is currently being exploited. In addition, 9.2 million ha have potential for crop production if irrigated. This irrigable land is equivalent to the total farmland in high- and medium-potential areas in the country.

6.3.1 Challenges and Constraints

The ASALs faces unique development challenges that are inter-related and entrenched. Some of these have their roots in legal inequalities, social exclusion and economic marginalization that resulted from colonial rule. For example, Sessional Paper No. 10 of 1965 on 'African Socialism and its Application to Planning in Kenya', reinforced a pattern of public investment where resources were channelled to areas deemed to be of highest potential returns. This favoured the former White Highlands while perpetuating the marginalization of arid areas.

Other factors that contributed to underdevelopment of the region include: insecurity and long-standing inter-communal tensions; competition over resources; poor road network and communications infrastructure, limited access to electricity leading to restricted scope for investment, especially off-farm activities; poor infrastructure for livestock and crop marketing; lack of water for irrigation, domestic and livestock use; poor delivery of agricultural services; high prevalence of livestock diseases; limited and poor education facilities.

6.3.2 Interventions

The nature of the unique challenges facing ASALs calls for a different approach to their development. The Government will use three strategies to develop the arid and semi-arid lands. First, it will drive or implement selected flagship projects and programmes that have been identified by the beneficiaries as having potential for creating impact in the region. Second, it will work on the policy, legal, cultural or institutional issues that impede or that could facilitate development in northern Kenya. And last, it will provide an effective institutional framework for coordinating development activities at all levels of Government and beyond.

While the arid lands are mainly suitable for livestock production, the survival of the communities living in these areas will largely depend on their capacity to manage the difficult environment and diversify into other opportunities, particularly those that support the population that is now increasingly becoming sedentary. This will also require change in attitude among all people involved in developing the region.

Woodland rehabilitation and afforestation projects introducing high-value commercial tree species, and irrigation schemes are needed to support the communities.

To realize the full potential of ASALs, the following interventions will be implemented:

- Formulating and implementing appropriate policy and legal framework
- Investing in targeted ASAL development programmes
- Increasing area under cultivation
- Diversifying income sources for pastoral communities
- Implementing the Vision 2030 ASAL development flagship projects.

DEVELOPING POLICY AND LEGAL FRAMEWORK

One of the priority strategies to be adopted to facilitate rapid development of northern Kenya and other arid lands that have over the years remained underdeveloped is to formulate a policy framework that will specifically research on and address the unique challenges facing the region. This policy will address the legal, administrative, cultural and attitudinal impediments and provide the roadmap for developing the region. It is envisaged that if the policy framework will be successful, all regions in the country will be developing at acceptable rates.

The Government will also implement an effective institutional framework to ensure a coordination mechanism to facilitate multi-sectoral development in the region.

INVESTING IN TARGETED ASAL DEVELOPMENT PROGRAMMES

Water that is periodically available in the ASALs during the rainy season will be harnessed to increase access to water for domestic use, irrigation and livestock. This will involve promoting water harvesting by constructing dams, pans and tapping run-off from roads and roof-tops.

Strategically located disease-free zones will be established to increase livestock productivity and quality. Emphasis will be on improving access to local and export markets. Livestock marketing infrastructure especially stock routes, holding grounds, markets and watering points will be improved. To provide easy access to markets for livestock, especially during drought, public and private abattoirs in arid districts will be established. The Government will also strengthen capacity for delivering animal health services.

The Government will strengthen community-led natural resource management, including the use of cross-border grazing and browse resources, through collaborating

and harmonizing sanitary measures with neighbouring countries. Appropriate strategies will also be developed for conserving the environment in ASALs. Keeping of camels and other non-traditional livestock such as ostrich and wildlife through game ranching and sanctuary management will also be promoted.

INCREASING AREA UNDER CULTIVATION

To increase the area under crops, about 9.2 million ha of irrigation potential that currently lie largely unused in the ASALs will be exploited. Irrigation schemes will be established in various parts of the region, particularly the Tana and Athi basins, to increase agricultural production and reduce dependence on rainfed production. The implementation of appropriate strategies will reduce the adverse effects on the environment and on pastoral communities.

Rainfed production will be encouraged for emerging high-value, drought-tolerant crops such as jatropha, melia, indigenous fruits, medicinal species, gum arabic and resins. In addition, research in and adoption of drought-tolerant crop varieties such as cotton, sisal, sorghum, millet and pigeon peas will be promoted.

DIVERSIFYING SOURCES OF INCOME FOR PASTORAL COMMUNITIES

To reduce poverty among communities in ASAL, diversification of income and employment sources will be promoted. This will include enhancing livestock value-adding projects such as processing meat, milk, honey, hides, skins and bone, as well as soap and oil making. Commercial tree planting will be encouraged to provide income, medicines, fodder, foliage, biofuels, fruits, juices and jams, dyes, silk and spices.

Priority will be given to the establishment of wildlife conservancies and game farming as a land use under local community management.

IMPLEMENTING FLAGSHIP PROJECTS FOR ASAL DEVELOPMENT

The flagship projects for ASAL development identified under the agricultural sector in Vision 2030 will be implemented in an integrated manner. These projects include exploiting the 9.2 million-ha irrigation potential; developing water resources for livestock, domestic and irrigation use; constructing roads; managing natural resources; facilitating sustainable exploitation of renewable sources of energy to support agricultural development; exploring the possibility of providing a livestock insurance scheme for producers in arid areas; and improving technical capacity of communities in arid lands.

6.4 Improving Management of the Environment and Natural Resources

Kenya has seen rapid economic development. However, coupled with rapid population growth this development has exerted cumulative pressure on the environment and natural resources. Increased industrial activity and trade have resulted in problems in managing waste and pollution. The importance of the sustainability of the environment and natural resources cannot be underestimated in the country's economic development plan. The subsector is crucial to achieving sustainable development in the country and, particularly, in achieving MDG 7: Ensuring environmental sustainability.

Kenya's various habitats and ecosystems—forests, grasslands, wetlands, coral reefs and mangroves—are biodiversity hotspots. Most of the country's biodiversity is also found within protected areas, which make up these habitats and ecosystems.

The country is home to over 6500 plant species; 260 are found nowhere else in the world. With more than 1000 bird species and over 350 mammal species, Kenya ranks second highest among African countries in species richness for these animal groups.

Over time, the country has lost some of her well-known biodiversity resources mainly due to population increase, habitat destruction, desertification, over-exploitation of species, and conversion through deforestation and drainage of wetlands for agriculture and settlement. .

Pollution and waste are some of the leading environmental health problems in the country affecting both rural and urban populations. Although the quality of air in Kenya is not regularly monitored, it is estimated that it is below the WHO recommended levels.

Agricultural wastes are defined as residues from the growing and first processing of raw agricultural products. Large quantities of solid wastes from food processing, crop, forestry and animal production are generated from the agricultural sector. Agriculture and food-processing industry involve various agents and intermediaries such as slaughter houses, food processors, food growers, farmers, shippers and truckers, canneries, packagers, frozen food producers, food dehydrators, restaurants, etc., which produce plenty of wastes and by-products.

Agricultural wastes can be in the form of liquids, slurries or solids. The major components of these wastes are biodegradable. However, they also contain components such as nitrogen, human and animal pathogens, medicinals, feed additives, salts, and certain metals that under uncontrolled conditions are harmful to aquatic, plant, animal, or human life. In rural areas, the most common method of disposing of these wastes is by applying them to the land. Hazards to humans occur either directly via water or indirectly via crops and animals fed or grazing on the crops. Use of these wastes as animal feed can also be a pathway.

By-products or waste material have significant value, which is underutilized in Kenya. It has been found that sometimes the by-products could be more valuable than the main products. While in Kenya no major crises have been associated with hazardous materials in agricultural solid wastes, the potential for problems should not be underestimated. Discharge of agricultural and industrial chemicals into water bodies or disposing of them on land masses is killing ecosystems. The use of mercury to form amalgam during gold processing around Lake Victoria is gradually polluting the various rivers flowing into the lake with mercury, as is evidenced by the accumulation of the mineral in fish.

Pesticide use in urban and peri-urban production of crops and animals carries serious risks. These households make regular use of highly toxic pesticides not necessarily related to pest type or pest pressure, often near densely populated areas. Urban households are also vulnerable to other contaminants. Farmers take advantage of the nutrients in urban and peri-urban wetlands, sewage disposal areas and dumpsites to plant food crops. These areas contain heavy metals and pathogens, and the air around is generally heavily polluted.

6.4.1 Challenges and Constraints

Water catchments are being encroached and converted into agricultural land. This has led to reduced water levels in rivers, drying up of seasonal rivers and destruction of fragile ecosystems. Vital for carbon sequestration, wetlands are lost every day to agricultural production. The effect of invasive species such as the water hyacinth on water bodies is compounded by limited functional mechanisms for monitoring and regulating the introduction into the country of alien invasive species. .

While appreciating the contribution of urban and peri-urban agriculture to financial, food and nutritional security particularly for the urban poor, ways should be sought to educate both producers and consumers of the hazards and risks of agricultural waste, without compromising the benefits derived. The inability to capture the unrealized value of by-products could be attributed to three factors:

- lack of information about uses of by-products and lack of market opportunities for products made from by-products
- the dearth of ancillary industries that are able to make use of specific by-products. For instance, lactic acid is produced as a by-product of the fermenting process in meat packing plants, it has more value being used as a flavouring agent instead of being consumed in other low-value uses as in animal feeds
- the low level of market development, for instance, straw is mainly used as animal feed in developing countries whereas in some industrialized countries straw is now being processed into an interior building material.

6.4.2 Interventions

The above challenges combined with low capacities and awareness have contributed to destruction of the environment particularly while extracting land-based resources and insufficient enforcement of regulations.

To address these challenges, the environment subsector will implement the following intervention strategies:

- Improving environmental conservation
- Improving pollution and waste management
- Enhancing conservation and management of resources
- Implement the national climate change response strategy

IMPROVING ENVIRONMENTAL CONSERVATION

Unsustainable use of natural resources leads to environmental degradation. Indices of degradation include floods, landslides, droughts and desertification. Environmental disasters and their effects are cumulative and long term.

Within the last decade, invasive species have inhabited water bodies (water hyacinth) and land (salvinia weed and prosopis); pests, notably aphids and army worms, have destroyed agricultural produce.

Urban forestry developments, important in fixing carbon emitted from industrial processes and motor vehicles, will be encouraged along highways and recreational parks in all urban centres.

A national environment policy is under preparation; it outlines measures for environmental conservation and sustainable exploitation of natural resources.

IMPROVING MANAGEMENT OF POLLUTION AND WASTE

With the increasing per capita solid and liquid waste generation in the country, the risks to human health are real and call for the design of appropriate agricultural waste management systems. Manpower and financial support shall be provided to obtain more detailed information on how much agricultural waste is produced in the country, the modes of dispersing hazards to humans, animals and crops, and the associated risks.

The sector will ensure that information is available on market opportunities for by-products, encourage the establishment of ancillary industries in areas with agro-processing activities, and develop markets for by-products of agricultural waste.

Air pollution is another contaminant pathway for heavy metals. Levels of contamination and the point and non-point sources shall be determined in different sites in order to formulate mitigation actions, including policy recommendations.

There are several global programmes on chemical and waste control. Kenya is signatory to various international conventions on persistent organic pollutants and is committed to implementing them.

ENHANCING CONSERVATION AND MANAGEMENT OF RESOURCES

Kenya's various habitats and ecosystems—forests, grasslands, wetlands, coral reefs and mangroves—are biodiversity hotspots. Most of the country's biodiversity is also found within protected areas, which make up these habitats and ecosystems.

Over time, the country has lost some of her well-known biodiversity resources mainly due to population increase, habitat destruction, desertification, over-exploitation of species, and conversion through deforestation and drainage of wetlands for agriculture and settlement. This problem is compounded by limited functional mechanisms for monitoring and regulating the introduction into the country of alien invasive species. The Government shall also enforce laws that control movement of vegetative and animal matter in and out of the country.

With increasing demands for genetic material for use in biotechnology by developed countries, illegal collection of genetic materials has increased yet there is no mechanism for monitoring such activities. In the process, the country has been denied revenue from sale of such material, and also its potential to develop its own biotechnology capacity and related industrial potential. A bioprospecting policy will be formulated to this effect.

The Biosafety Act was passed in 2009 and is a good starting point. Necessary regulations will be enforced to control access and exploitation of genetic resources.

Wetlands cover 2–3 per cent of the country's surface area and are home to diverse biodiversity in type and distribution. Some of Kenya's wetlands, such as Lake Naivasha and Lake Nakuru, have been included in the Ramsar List of Wetlands of International Importance. The 400-km coastline is rich in marine resources and mangrove ecosystems that comprise the main coastal wetlands. With a comprehensive national inventory on wetlands, the preparation of a wetlands development policy will address wetlands conservation and their sustainable use.

IMPLEMENTING THE NATIONAL CLIMATE CHANGE RESPONSE STRATEGY

Climate fluctuations have a bearing on the way the environment and natural resources are managed. The effect has been unpredictable weather that in turn has affected agricultural activities. Local communities will be encouraged to document knowledge and practices that provided early warning systems and helped mitigate some of these changes within their environments for adoption and customization.

The national climate change response strategy has come up with modalities of addressing climate change. These include recommendations on relevant policies, institutional

framework, awareness creation and resource mobilization. The key objectives of this strategy will be to: identify priorities for climate adaptation and mitigation; develop comprehensive national education and awareness creation programmes; establish specific sectoral or cross-sectional adaptation measures for vulnerable groups, communities and regions; conduct periodic climate change threat and risk assessments at national and local levels; develop a national capacity building framework in strategic climate change areas; identify specific research and development needs to address climate change, and opportunities for technology development, absorption and diffusion; strengthen governance of climate change, that is, policy, legislation and institutional frameworks; strengthen national disaster risk reduction capacity in order to minimize the effects of climate change-related disasters; establish and sustain an effective implementation framework; and ensure monitoring and evaluation of the implementation of the action plan.

6.5 Developing River Basins and Large Water Body Resources

Since independence, the Government has adopted various development policies articulated in sessional papers, special policy reports and commissions, all intended to reverse the effects of unbalanced regional development. In spite of its efforts to realize equitable and balanced development through implementation of various macroeconomic and sectoral policies, economic and social disparities still persist among regions. These disparities are evident between regions and, more subtly, within regions. If not addressed, persistence of these disparities may impede attainment of the Government's development agenda for productivity and equitable growth, social justice and environmental sustainability as envisioned in Vision 2030.

The most common spatial inequalities in regional development in Kenya include inter- and intra-regional inequalities, urban–rural inequalities; inter- and intra-urban inequalities; and inter- and intra-rural inequalities. To address these inequalities, the Government established six regional development authorities based on watersheds. These are the Tana and Athi Rivers Development Authority, Kerio Valley Development Authority, Lake Basin Development Authority, Ewaso Ng'iro North Development Authority, Ewaso Ng'iro South Development Authority and Coast Development Authority. These authorities are the vehicles for implementing integrated multi-sectoral programmes and projects in their areas of jurisdiction, and ensure equitable and sustainable exploitation of resources for the benefit of the communities and the country at large.

6.5.1 Challenges and Constraints

The regional development subsector faces several challenges, namely, weak institutional policy and legal framework, lack of comprehensive resource mapping and resource databanks, limited documentation of the levels of development in the regions, river bank cultivation and resultant soil erosion, catchments areas degradation, weak mechanism

for ensuring equitable compensation and benefit sharing for the local communities arising from the economic exploitation of resources in the regions, and low levels of development in various regions resulting in high incidence of poverty.

6.5.2 Interventions

To address these challenges, the Government will implement the regional development policy, rationalize and restructure the authorities, and consolidate the regional development Acts. Emphasis will be on developing resource masterplans and implementing integrated development programmes that create social and economic impact in the regions and nationally. More specifically, the following interventions will be implemented:

- Implementing policy and institutional reforms to strengthen regional development planning
- Developing and conserving river banks, water bodies and catchments areas
- Developing community support and empowerment programmes
- Formulating and implementing integrated basin-based development programmes.

POLICY AND INSTITUTIONAL REFORMS TO STRENGTHEN REGIONAL DEVELOPMENT PLANNING

Despite the establishment of regional development authorities (RDA) in the 1970s, Kenya has not had a clearly defined regional development policy to guide their operations. As a result, RDA have continued to draw their operational mandates from their respective Acts of Parliament. However, the functions and mandates prescribed in these Acts are too broad and in some cases create jurisdictional conflicts. The Government has put in place an institutional framework to guide policy and build capacity of the RDAs. A regional development policy has been formulated to provide an overarching framework to facilitate regional development in the country. However, some aspects of the policy will be reviewed to accommodate new challenges in the subsector.

RDAs interpret their mandates exclusively without reference to their counterparts making them pursue different activities for similar functions. To address this problem, the different RDA Acts will be reviewed and consolidated into one Act to enable them execute their mandates more effectively. Institutional reforms to rationalize and restructure them will be undertaken to improve their capacity in delivering effective and quality services to Kenyans.

Lack of a database and information to support regional development is another major constraint. This has contributed to lack of comprehensive planning by stakeholders in the regions. Therefore, supporting information and records management in the subsector will provide the necessary data to support development planning and provide investment opportunities.

The levels of development in the regions are currently not well documented. Lack or limited information in this area has made the subsector and other stakeholders unable to set development priorities based on the investments already on the ground. Comprehensive resource maps, integrated masterplans and databanks on these resources will be developed for each region. The subsector will monitor and document the various levels of development, and disseminate this information to the relevant stakeholders.

CONSERVING RIVER BANKS, WATER BODIES AND CATCHMENTS

Kenya is a water-scarce country: renewable fresh water per capita currently stands at 647 m³ and is expected to fall to 235 m³ by 2025 if supply does not keep up with the population increase. This situation is attributed to several factors among them the destruction of catchment areas through forest destruction, river-bank cultivation and poor land-use practices. The result has seen increased run-off, flash floods, reduced infiltration, soil erosion and siltation of dams and other water reservoirs. Further, the effects of unsustainable human and industrial activities near large water bodies contribute to the decline in the quality of the environment.

The regional development subsector will carry out feasibility studies to protect and conserve the environment, and will formulate and implement programmes and projects that promote protection and conservation of river banks, water bodies and catchments areas in collaboration with communities and stakeholders.

EMPOWERING COMMUNITIES

The majority of vulnerable groups, women and youth are to be found in Kenya's rural and slum areas. These groups lack employment, capital and, in some cases, skills. Poverty is a major challenge among these groups. The Government's goal in this area is to achieve social equity and reduce poverty through reduced income disparities. Vision 2030 aims at reducing inequality in accessing public services and income opportunities across gender, social status and regions. This will be achieved through reducing the national poverty ratio from the current 46 per cent to a range of between 30 and 35 per cent by 2012.

To contribute to efforts to reduce poverty and increase income, the subsector will promote integrated community programmes that support empowerment ventures and reduce poverty in rural areas. To achieve this, partnerships, collaboration and linkages with other stakeholders will be forged in the use of devolved funds in rural areas.

INTEGRATED RIVER BASIN DEVELOPMENT

The river basins are endowed with various natural resources with huge potential for exploitation. The rivers forming the major basins include Aror, Athi, Ewaso Ng'iro, Kerio, Kuja, Mara, Mwache, Nyando, Nzoia, Sabaki, Sondu, Tana and Yala. The large water bodies include the Indian Ocean, Lake Victoria, Lake Challa and Lake Turkana. There are also extensive rangelands that are home to various livestock and wildlife.

These perennial rivers and water bodies can be used for hydropower production, irrigation, domestic and industrial use, livestock and fisheries, mining, marine activities and tourism. Rangelands have potential for pastoralism, tourism, mining and wind power generation, which can be used to extract water for irrigation and to supply power for both industrial and domestic use in remote areas. These resources are partially exploited or unexploited.

Demand for more human food and animal feed, energy for industrial and domestic use, potable water and environmental protection in the river basins and in the country at large require concerted efforts to be met.

To address these challenges, the regional development subsector will formulate and implement integrated programmes and projects that will increase hydropower generation, area under irrigation, storage water capacity and area under catchments conservation. The integrated development will include flagship projects along major rivers such as the Tana. Most of the programmes / projects under this strategy will be implemented under, among others, public–private partnerships.

6.6 Forestry and Wildlife Resources

About 70 per cent of Kenya's population lives in the 12 per cent of land area that is classified as being of medium to high potential for agriculture and livestock production; parts of the remaining land area is severely degraded. The growing population and the resulting increase in demand for land, energy and water are putting tremendous pressure on the natural resource base.

Natural resources play two basic roles in development: they support subsistence and they are a source of development resources. Commercial management of natural resources is profitable and can provide important sources of foreign exchange. A major focus and priority in use and development of natural resources is to ensure their sustainability and the stability of the supporting resource base. Resources of the forest and wildlife subsectors should be harnessed and sustainably used.

Forest ecosystems are biodiversity reservoirs. Forests provide a wide range of economic, environmental and social goods and services such as raw materials for the wood-based industries, employment, soil stabilization, carbon sinks and water catchments that protect the rate of flow and quality of water discharged by rivers draining these catchments. Indigenous forests have endemic and threatened species.

In Kenya, forests provide wood and non-wood products to over 80 per cent of all households. Forests play a key role in supporting other productive sectors including agriculture, industrial energy and, significantly, enhancing the environment's ability to withstand disasters such as floods, landslides and drought.

There is a recognized wealth of indigenous knowledge on different uses of plants and animal materials, particularly those with medicinal value that provide ingredients that can be developed into commercial products. Proceeds from these products have not been of much benefit to local communities. Kenya has lost some of her well-known biodiversity resources due mainly to population increase, habitat destruction, desertification, over exploitation of species, conversion through deforestation, and drainage of wetlands for agriculture and settlement. This loss is exacerbated by limited functional mechanisms for monitoring and regulating the introduction into the country of alien invasive species.

While most wildlife is concentrated in protected areas, there is a considerable population in areas surrounding farmlands and ranches. Wildlife play a key role in the national economy through tourism. However, game in farmland and ranches is seen as a menace resulting in conflict between wildlife and humans. There is significant potential to exploit these resources through game ranches and conservation areas and to rear some special wild animals such as ostriches and crocodiles.

Land is the basis upon which activities like agriculture, wildlife conservation, urban development, human settlement and infrastructure are carried out. Local authorities that hold land in trust for their residents have abused the trusteeship through illegal allocation and change of user, negatively affecting wildlife conservation and management in such areas.

Wildlife habitats provide an important resource base for rural peoples livelihood. However, rapidly increasing population and other socio-economic factors have put enormous pressure on the limited productive land forcing rural poor to resort to inappropriate land uses. Four main factors cause severe habitat degradation: poor cultivation methods, deforestation, charcoal burning and overgrazing.

Security entails measures to protect wildlife, communities and visitors. Insecurity in most areas where wildlife are found is a serious threat and challenge to wildlife conservation and management efforts. This situation has been exacerbated by insecurity in neighbouring countries, which has led to the proliferation of small arms in the region that are used for poaching.

Most protected areas were established without regard to the surrounding landscapes. Fences and other barriers have been erected between protected areas and the wider landscapes and communities. Land bordering protected areas is either communally or individually owned and serves as dispersal areas. In terms of wildlife management, these rigid boundaries have compromised integrated and effective management of many ecosystems.

Conservation and management of wildlife outside protected areas has not been integrated into the broader protected area management, and partnerships between adjacent communities and park management authorities are limited. There are few incentives to motivate communities and landowners to adopt land-use practices compatible with

wildlife conservation and management. In addition, most protected areas are too small to encompass ecosystem processes on which wildlife populations depend. An increase in wildlife populations can result in pressure that degrades park ecosystems. Limited park sizes and confined wildlife populations are inimical to the survival of species at the edges of protected areas, especially where land use in the adjacent areas is incompatible with conservation.

The forest and wildlife subsector is mandated to protect, conserve and sustainably manage forests, wildlife and allied resources in the country. This sustainable development agenda is linked to the improvement of the economic and social conditions of Kenyans. This will lead to the attainment of the objective of achieving equity in wealth distribution, ecological sustainability and economic growth. The subsector is expected to play a major role in meeting this national and global objective. To ensure effective protection, conservation and sustainable management of forestry and wildlife resources, the following interventions will be implemented:

- Formulating and implementing appropriate forestry and wildlife institutional, policy and legal frameworks
- Developing and implementing appropriate mechanisms for protecting, conserving and sustainably managing forest resources
- Developing and implementing appropriate mechanisms for protecting, conserving and sustainably managing wildlife resources
- Strengthening forest and wildlife research, extension and training
- Implementing forest and wildlife flagship projects.

6.6.1 Developing Institutional, Policy and Legal Frameworks

Forests and wildlife play a key role in advancing the national economic and social agenda on economic recovery and poverty reduction. However, the benefits have not been fully realized due mainly to weak policy, legal and institutional frameworks.

To streamline this, the forest and wildlife subsector will institute appropriate reforms with the objective of enhancing the management of forestry and wildlife resources for sustainable development. In addition, the subsector will articulate and implement the country's commitment to global and regional forestry and wildlife conventions that include Agenda 21 on sustainable development, the MDGs, the United Nations Convention on Combating Desertification, the United Nations Framework Convention for Climate Change, the Ramsar Convention on Wetlands and the NEPAD initiative.

6.6.2 Protecting, Conserving and Managing Forest Resources

Forests play important roles in protecting water catchments areas, in conserving biodiversity and in providing forest products. However, there has been accelerated

destruction of forests due to increasing population and Kenya is now considered a low forest-cover country. The remnant natural forest has also been degraded and forests of the five water towers can no longer provide a sustainable supply of water, raw materials and other services required to meet the goals of Vision 2030. Trees on farmlands and in industrial plantations have also been over-harvested leading to a widening gap between the supply and demand of forest products. Low levels of public investment as well as clearing of woodlands in dry areas for agriculture and charcoal production are also major causes of environmental degradation.

To arrest this situation, appropriate interventions for protecting, conserving and sustainably managing forest resources will be developed and implemented.

6.6.3 *Protecting, Conserving and Managing Wildlife Resources*

The Kenya Wildlife Service is responsible for wildlife conservation and management. It also has sole jurisdiction over national parks, an oversight role in the management of national reserves and private sanctuaries, and the legal mandate to enforce wildlife laws and regulations.

Kenya's wildlife biodiversity provides the base for the tourism industry. Most of the wildlife is found in only 8 per cent of the land area that is gazetted for wildlife conservation. The main concern in wildlife management is encroachment into protected areas for agriculture and infrastructure development, and the rapid decline in wildlife populations both in and out of protected areas. Since 1977, the country has lost 60–70 per cent of its large wildlife with the annual decline currently estimated at 3 per cent. Some species like rhino, the Hirola antelope and the dugong are endangered.

To address this situation, appropriate interventions for protecting, conserving and managing wildlife resources sustainably will be developed and implemented. These interventions will take into account the fact that rural people also use the same resources to earn a livelihood. Measures to mitigate human-wildlife conflict as well as projects that make it possible for rural populations to benefit from conserving wildlife will be implemented. Communities will also be educated on the need to conserve wildlife as part of their ecosystem, as it serves an important function in ecosystem equilibrium.

6.6.4 *Strengthening Forestry and Wildlife Research, Extension and Training*

The overall objective of this intervention strategy is to create an integrated forest and wildlife research, extension and training system that will facilitate the development of an innovative, commercially oriented forestry and wildlife subsector. This will be achieved through establishing an appropriate institutional arrangement and mechanisms for efficiently mobilizing and managing human, physical, financial, knowledge and information resources; and orienting research, extension and training to be responsive to

the subsector's development goals, market demand, client needs and cross-cutting and emerging issues.

The coordination of research, extension and training institutions will be enhanced through better regulation, monitoring and evaluation. There will be increased levels of interaction among the forest and wildlife subsector, the private sector, academic and research institutions and key stakeholders. This interaction will ensure that resources are better allocated to reduce duplication of research, dissemination and training activities. Greater collaboration among the key stakeholders will be promoted to strengthen the linkage between policy and research.

6.6.5 Forestry and Wildlife Flagship Projects

Vision 2030 flagship projects of relevance to the forest and wildlife subsector include:

Managing water catchments. This flagship project entails full rehabilitation of the five water towers: Mau Escarpment, Mt Kenya, Aberdare Ranges, Cherangani Hills and Mt Elgon. Existing community-based natural resource management initiatives will be supported where they exist, and initiated with communities where necessary.

Securing wildlife corridors and migratory routes. Most wildlife corridors have been encroached upon by human activity. The purpose of this flagship project is to reclaim these wildlife corridors, while at the same time providing alternative livelihoods to affected communities, to enable wildlife to continue providing the base for the tourism sector.

7 ENABLING FACTORS

The performance of the agricultural sector depends on several factors that are closely linked, but are external to the sector. These include macroeconomic stability, taxation policies, education and training system, and security.

7.1 Macroeconomic Stability

The Government's role is to ensure that macroeconomic stability is achieved and maintained. In Kenya, the foundation was firmly in place after various reforms were implemented under the Economic Recovery Strategy for Wealth and Employment Creation (ERS), which was concluded in 2007. Vision 2030 will build on the successes of the ERS of a macroeconomic framework of low and stable inflation and interest rates, a sustainable public sector debt position, and a competitive real exchange rate to support export-led economic growth. This framework will help to deliver high and sustainable levels of growth, employment and poverty reduction.

Vision 2030 requires the rate of growth of the economy to rise from 7.1 per cent achieved in 2007 to 10 per cent by 2012/13. Achieving these growth targets will require continued implementation of prudent fiscal, monetary and exchange rate policies; enhanced efforts to raise the level of investment and savings; and accelerated structural reforms to increase the efficiency of both physical and human capital and raise total factor productivity.

7.2 Taxation System

While farmers in many countries are subsidized sometimes by as much as 100 per cent, Kenyan farmers face numerous direct and indirect taxes, which make agriculture uncompetitive internationally. The central government and the local authorities charge a wide range of taxes, levies, cesses and fees on farm produce and forestry products, and on farm inputs and services. These taxes, levies, cesses and fees distort market prices and make farm produce uncompetitive on the domestic and international markets. It is also difficult to efficiently administer multiple agricultural taxes.

Some taxes, such as the local government's cess, create artificial barriers to the movement of goods and create fertile ground for corruption. To remove these fiscal disincentives and encourage private sector investment in agriculture, forestry and wildlife, the Government will review all taxation laws and regulations to rationalize taxes, cesses, fees and levies charged on agricultural products by local authorities and the central Government. This will ensure that such charges are paid only where a service is being provided.

7.3 Governance

The Government has taken bold measures to combat corruption, promote good governance and instil a sense of financial discipline and prudent management of the economy. As a result, Kenya's relations with development partners have improved dramatically in recent years. This has resulted in a major increase in external assistance, which has had a positive impact on the inflow of foreign investment and the delivery of services by the Government.

Steps will be taken to consolidate and strengthen the renewed working relations with our development partners. Improved sectoral and donor coordination, together with a sector-wide monitoring and evaluation framework are some of the elements of sustaining and strengthening relations with external partners. These will be formalized by periodic meetings between the Government of Kenya and development partners.

7.4 Education, Training, Science and Technology

The Government of Kenya recognizes that educating and training its citizens is fundamental to the success of the strategy. Vision 2030 relies on the creative talents that can raise the country's international competitiveness through enhanced productivity at the micro (agribusiness) and national levels. A literate population is an asset to the agricultural sector as it provides qualified personnel and opportunities for developing and disseminating science and technology, as well as innovation-based solutions to the agricultural sector. It will also help the country to address gender imbalances, youth-related problems and obstacles facing other vulnerable groups by equipping them with the skills that enable them to live more productive and satisfying lives in an expanding and diverse economy.

The Government will ensure affordable and equitable access to education by developing and operationalizing an education policy that addresses basic and functional literacy.

A knowledge economy creates, adopts and adapts to information on production and distribution of goods and services, making it the focal point and engine for rapid agricultural growth. Four elements allow effective exploitation of knowledge:

- an economic and institutional regime that provides incentives for the efficient use of existing knowledge, creates new knowledge and encourages flourishing of entrepreneurship
- an educated and skilled population that can create, share and use knowledge well
- a dynamic information and communications infrastructure that can facilitate processing, communication, dissemination and storage for later use
- an effective innovation system comprising a network of research centres, universities, think tanks, private enterprises and community groups that can tap

into the growing stock of global knowledge, assimilate and adapt it to local needs and contexts while creating new knowledge and technologies as appropriate.

Kenya intends to become a knowledge-led economy where the creation, adoption and use of knowledge will be among the most critical factors for rapid economic growth. Efforts will be made to promote awareness of new ideas and discoveries to the general public to create and deepen awareness of science technology and innovation (STI), particularly in the social sphere. It will also support initiatives to develop STI solutions to address current and potential development problems, and transform proven technical and indigenous knowledge and practices into technologies and protect them as intellectual property rights.

Measures will be put in place to identify and protect national agricultural heritage. To encourage innovation and scientific endeavours, a system of national recognition will be established to honour innovators in agriculture.

7.5 Infrastructure

To stimulate increased agricultural, livestock and fish production, the Government will invest in rural railway, roads, water supply, transportation, storage, cattle dips, rural markets, electrification, communications, water management schemes, stockholding grounds, stock auction markets, stock routes and abattoirs. The stock of rural infrastructure is in poor condition and inadequate for the development of the rural economy, and is also unevenly distributed leaving some high agricultural potential areas with little or no coverage.

Some rural infrastructure falls directly within the agricultural sector but has been handed over to user associations. The main infrastructure such as railway, rural roads, communication and electrification is outside the realm of the agricultural and rural sector. The development of this infrastructure under the relevant ministries will take into account the needs of agricultural development in their masterplans and development plans at national and devolved levels.

Energy is one of the infrastructural enablers for agricultural growth. The level and intensity of commercial energy use in the agricultural sector is a key indicator of the degree of economic growth and development. To improve the energy supply, the agricultural sector ministries, in collaboration with the Rural Electrification Authority, will develop a comprehensive rural electrification masterplan to enhance agro-industry.

Programmes aimed at promoting alternative sources of energy such as solar, wind, biogas, geothermal, woodlots and hydropower will be encouraged. The private sector will also be encouraged to venture into power-generating initiatives. Emerging sources of energy such as biofuels will be promoted through investment in research and careful planning in line with the national strategy guiding production of biofuels. For northern Kenya and

other arid lands, emphasis will be on exploiting solar and wind energy with individual and isolated production points being used to reduce the cost of connecting a grid to the dispersed settlements.

7.6 Human and Social Development

7.6.1 Human Health and Labour

Human health is important as it affects the labour force involved in agricultural activities. The most devastating impact of human health on agriculture is epidemics and pandemics such as malaria, HIV and AIDS and zoonoses.

The active age group 15–39 years that constitutes about 70 per cent of the population is most vulnerable to the pandemic. Within this group, women and girls, who provide about 60–80 per cent of the household labour force, are more vulnerable to HIV and AIDS due to biological and social factors. The situation for women is aggravated by the added burden placed on them by traditional responsibilities of caring for the sick. AIDS has neither a vaccine nor affordable and effective treatment.

HIV and AIDS, malaria and water-borne diseases pose serious threats to the human population and hence to agricultural labour, and have adverse effects on agricultural development. They consume household savings as a result of high health care costs leading to a decline in household asset base. The diseases cause labour shortages and break up social bonds. Further, there is loss of farm management resources and skills because adults die before passing on their knowledge.

Labour shortages and increasing dependency on households headed by survivors—notably widows, orphans and elderly people—lead families to resort to less labour-intensive agricultural activities. Moreover, the death of productive adults who are key family providers is shattering social networks that provide households with community help and support, leading to social exclusion of survivors.

Given its profound social and economic implications, the HIV and AIDS pandemic is a major concern of the Government. Strategies aimed at mainstreaming gender issues will be developed and operationalized to control the spread of the pandemic and mitigate its effects on agricultural development.

Priority will be given to the early control of diseases that hinder continued growth of the rural sector because they affect the most active and economically able sections of the population. These diseases take away vital labour and market groups for agriculture and limits livestock production. Community-level measures and actions to control the tsetse fly, mosquito and water-borne diseases will be developed, and community- or household-level water purification systems will be promoted.

7.6.2 Gender

In principle, existing laws provide for equal rights and privileges for both men and women. However, it is difficult to interpret existing laws through common law and social conventions and ultimately, the equality enshrined in these laws is compromised. Women contribute 60–80 per cent of labour in household and reproductive activities and in agricultural production. Generally, women work longer hours than men. This contributes to their poorer health and nutritional status and high maternal mortality.

Traditionally considered heads of households, men have greater access to land, credit and extension services. In schools, girl dropouts make them proportionally less educated than boys.

Traditional interventions in agricultural development are likely to affect men and women differently. An effective gender approach to designing and implementing interventions in agriculture would take these differences into consideration, focusing on equality and equity of the outcomes rather than just equal treatment.

The Government will develop a gender policy for the agricultural sector to ensure women's empowerment and mainstream the needs and concerns of women, men, girls and boys in all sectors so that they can participate and benefit equally from development initiatives. This will also promote the use of gender analysis and gender-based budgeting in all community-based development programmes through appropriate participatory approaches.

Developing a gender policy is a crosscutting issue. Consequently, coordinating and collaborating with other sectors is necessary. Within the agricultural sector, gender issues will be incorporated into all the proposed interventions at the community level through participatory approaches. It is intended that gender integration in all activities of ASDS will significantly increase efficiency, sustainability, empowerment and equity at all levels.

7.6.3 Empowering Youth

The agricultural sector's human resource base is being eroded not only by malaria and the HIV and AIDS pandemic, but also by the continuous migration of youth from rural to urban areas. This migration is caused by a number of factors such as the drudgery of agricultural work under current agricultural practices and the lack of attractive alternative employment in rural areas. The Government will review and produce an appropriate youth development policy that outlines measures to reduce youth migration in order to sustain the agricultural human resource requirement and empower the youth.

Being dynamic and energetic, the youth are impatient and need quick and tangible results to be attracted to any business. To attract the youth into agriculture, attitudes must change among rural communities to perceive it as a business and make it commercially viable.

The youth will be sensitized on lucrative ventures in the agricultural sector, and processing plants for value addition will be established in rural areas to provide employment opportunities for the youth and to allow them to produce agricultural raw materials. Linkages between the Ministry of Youth and Sports and the agricultural sector will be established to offer incentives to the youth in farming either through the Youth Enterprise Development Fund, Constituency Development Fund or the Innovation Fund for Agriculture and Agribusiness.

These facilities will provide the means and motivation for the youth to engage in farming. Measures will be taken to make rural areas more attractive to the youth by offering facilities like information and communication technology and resource centres to stem the rural–urban migration.

7.6.4 National Security

Security is critical for investment in agriculture. It ensures a society that is free from danger and fear.

Measures to promote public security and to minimize conflict, especially in the rural areas, will be given priority through i) reviewing and enacting laws to address modern crimes and allow community-based security systems, and ii) developing a framework for border and territorial policing and collaborative security management. In the arid lands, where insecurity is a major challenge, the Government will develop a strategy to end inter-communal conflict. This will harmonize and take into a deeper level the efforts of all actors in peace building and conflict management.

7.6.5 Participatory Planning

Much of the current planning is as a result of years of centralized planning, which has been supported by the systems for accessing external support, mainly through the Government ministries. The top–down system is supported by human resources and other institutional arrangements.

Participatory and planning tools and skills are not widely used at the local level except by NGOs, posing the risk of poor support at the local level. To avoid such a situation, modalities for institutionalizing joint planning between the agricultural sector and supporting sectors at the local level will be supported. Locally developed work plans will be the basis for resource allocation.

To revitalize rural development, the first step will be to strengthen the decentralization of decision-making and to devolve management to the districts. Local authorities will be appropriately strengthened through reviewing the relevant legal and fiscal instruments. The District Focus for Rural Development and the Constituency Development Fund (CDF) provide entry points but will need to be modified and strengthened to serve this

purpose. These national initiatives will be supplemented with resources raised locally (such as fees, cess and taxes), and through NGOs and stakeholder contributions. This is already being practised by some NGOs, community- and faith-based organizations, and community-based initiatives. The change will devolve and de-concentrate power and responsibility for decision-making, planning and implementing management to grassroot levels, and will ensure local communities and their institutions participate and are empowered.

Programmes will be implemented according to priorities set by stakeholders at the lower level. Experience has shown that beneficiaries can identify priorities that are interrelated and that require multi-sectoral interventions to solve. On this basis, district plans will be prepared by stakeholders and local authorities jointly, and submitted for financing by the Government.

An innovative feature of the strategy is its implementation through local authorities and district development committees where district development plans are formulated; district agricultural development plans will be a component of district development plans. Agricultural development at the district level will be incorporated into the overall development plans of the district.

An important and new role for the lead agricultural sector ministries will be to ensure that local authorities appreciate the importance of a strong and vibrant agricultural sector within their districts, and give it priority in planning and in allocation of funds. Local authorities will allocate a proportion of locally generated funds for agricultural development and thus qualify for grants to supplement their efforts to develop the agricultural sector. Other sources of funds like the CDF will be channelled to activities that give priority to agricultural development.

8 ORGANIZATIONAL AND IMPLEMENTATION STRUCTURES

8.1 Organizational Structures

Currently, the responsibilities for agricultural development are spread across the sector ministries. Other ministries responsible for roads, local authorities, administration, health, education, trade and industry, and finance support the functions of the agricultural sector ministries. Key stakeholders will implement the Agriculture Sector Development Strategy (ASDS) in a sector-wide approach in which sector ministries, the private sector and development partners will each have distinct roles to play coordinated by the Agricultural Sector Coordination Unit (ASCU).

8.1.1 *The Role of the Agricultural Sector Ministries*

The ASDS will be implemented through the established structure of Government ministries that go to the district, division and location level. Each sector ministry will work out the activities under its dockets and make elaborate financing plans in the medium-term plans, which will be funded by the Government of Kenya, development partners and the private sector. Implementation will be carried out through the medium-term expenditure framework (MTEF) of financial allocation by Treasury. The expenditure frameworks and the medium-term plans will be harmonized with the respective development documents currently being implemented by the Planning and Finance ministries to align them with Vision 2030 and other Government development plans.

Collaborating ministries will provide the enabling environment for agriculture to thrive. This will include infrastructure development—roads, electricity—availing appropriate technologies, negotiating favourable trade conditions for Kenya's agricultural produce and ensuring a healthy farming population by controlling diseases such as malaria, tuberculosis and HIV and AIDS, the main killers of farming populations.

8.1.2 *The Role of ASCU*

The Agricultural Sector Coordination Unit was established in 2005 to address the fragmentation of responsibilities between agriculture and rural development-related ministries and non-state actors. ASCU was tasked to spearhead the implementation of the Strategy for Revitalizing agriculture (SRA), which was the sector strategy for addressing the Economic Recovery Strategy for Wealth and Employment Creation (ERS). The ASCU secretariat has personnel recruited competitively and seconded from key constituent ministries.

The ASCU mandate is to facilitate and add value to the reform process and to coordinate the efforts of sector ministries and other stakeholders towards implementing the ASDS vision.

ASCU will link the sector players and provide an enabling environment for sector-wide consultations along the various levels of implementation, from the division to district to national level. ASCU will not be involved in the actual implementation of the strategy. However, it shall coordinate budgeting within the sector, and participate in the review of subsector strategic and annual work plans to ensure they conform to ASDS, Vision 2030, the MDGs and other Government development agenda.

Specifically, ASCU role is to:

- drive reforms in the sector and fast-track implementation of the ASDS in a coordinated manner across sector ministries and other partners
- be the referral centre for reforms, and collect, analyse and disseminate information on agricultural reforms
- influence sector resource allocation to areas of highest impact
- initiate major studies and policy developments within the agricultural sector
- be a centre for capacity building for all stakeholders involved or affected by the agricultural reform process
- monitor implementation of ASDS activities.

To fast-track interventions of the initial reforms, six thematic working groups (TWGs) have been established:

- Legal, regulatory and parastatal reforms
- Research and extension
- Agribusiness, value addition and marketing
- Inputs and financial services
- Food and nutrition security policy and programmes
- Environment
- Environment, sustainable land and natural resources management.

TWG members include representatives from the private sector, NGOs and universities, directors / senior Government officers from the sector ministries and development partners. Each TWG is chaired by a representative from the private sector, and convened by directors from the sector ministries. ASCU provides the secretariat.

TWGs carry out in-depth analysis of a particular fast-track area of the SRA to prepare well-structured and coherent plans of action, and appropriate programmes for investment by the Government of Kenya and its development partners. Besides guiding implementation, piloting and other innovations within the sector, they also prepare various policy documents and their implementation frameworks.

8.1.3 Private Sector Institutions

Through the formation of the Kenya Private Sector Alliance (KEPSA), private sector players have been organized along sector boards to mirror the public sector arrangements and engage on issues. Key players within the agricultural sector include KENFAP, which represents agricultural producers, and KNFC, which handles the commercial arm of agriculture through the cooperative movement. Other private sector institutions include processors, marketing agencies and farm input dealers that, through their profit-oriented nature, have survived but can neither be regarded as strong nor organized players.

To contribute significantly to the development and growth of the agricultural sector, the role of the private sector in providing physical and social infrastructure, production, processing, input and output marketing, imports and exports, providing financial services and goods and services will need to be clearly defined. To facilitate effective participation, appropriate reforms in the legal and regulatory framework shall be instituted.

8.1.4 Development Partners and Regional Cooperation

Bilateral and multilateral donors have for many years financed Kenya's agricultural budget. With the country's increased financial capacity, the role of development partners has been reduced and Government's own resources are now financing over 90 per cent of the agricultural budget. However, development partners continue to play an important role, particularly in spearheading new initiatives and carrying out pilot projects.

Projects that provide innovative extension services and those that emphasize aspects of value addition and market orientation are now embodied in policies developed under ASCU and some of its TWGs. Of importance has been the development partners' support to agricultural reform.

Donors are increasingly aware of the importance of consulting with Government to support the latter's programmes rather than picking stand-alone projects of their choice. Increasingly, development partners are moving towards programme support thereby strengthening a sector-wide approach to development. These partners shall provide assistance using the Government's budget system.

Kenya is a member of regional and continental cooperation bodies such as the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA). These bodies provide opportunities for expanding Kenya's markets for goods and services. The New Partnership for Africa's Development (NEPAD) and the launching in Kenya of the Comprehensive African Agricultural Development Programme (CAADP) in 2006, a common strategic framework for agricultural policy development in Africa, are important initiatives. Kenya fully adheres to the CAADP principles; ASDS is Kenya's tool to achieve its own version of CAADP.

ASDS is fully compatible with the following four pillars of CAADP:

- Extending the area under sustainable land management and reliable water control systems
- Increasing market access through improved rural infrastructure
- Increasing food supply and reducing hunger by increasing smallholder productivity
- Improving agricultural research and systems to disseminate appropriate technologies.

8.1.5 Local Structures

As the Government decentralizes decision-making to stakeholders, the local-level governance and development structures (LLGs) will eventually become more involved in managing development activities at community level. LLGs will, through appropriate participatory methodologies, determine the priority development aspirations and initiatives of their communities and lead in their implementation. Towards this effort, appropriate mechanisms will be developed and operationalized to facilitate increased participation of LLGs in fiscal responsibilities including sourcing, and accounting and auditing of local resources, taxes and grants provided by the Government and donors.

8.1.6 Farmer Organizations

Farmer organizations include cooperatives societies, farmer unions and federations, commodity associations, enterprise-based groups and community-based organizations. These organizations are important economic entities established to enhance farmer representation, to lobby for and advocate on their behalf at various levels, and to make farmer needs and demands known to service providers. These organizations need information on issues affecting the agricultural sector that have an impact on the livelihood of farmers. Articulating demands and the requisite interventions to shape the policy environment have been the key challenges these organizations are facing. Capacity building is therefore required.

Representation occurs at various levels as does demand for precise information on relevant issues. Effective management strategies shall be put in place to enable these organizations play a key role in empowering farmers and allow them to benefit from economies of scale. This strategy will seek to enhance farmers' capacity to organize, generate and use resources more effectively.

8.1.7 Other Non-State Actors

The civil society continues to play an important role in many areas of the rural society. Civil society groups include NGOs, community- and faith-based organisations. The importance of these groups has increased significantly over time. It remains a challenge to empower them to participate more effectively in implementing the Government's

agricultural policies and strategies. This strategy will seek to enhance civil society capacity to organize, generate and use resources more effectively.

8.2 Implementation

8.2.1 *Results Framework and Impact Orientation*

The agricultural sector results framework (annex 1) shows 15 growth result areas and their respective intervention strategies. These must be urgently implemented if the sector is to attain an average growth rate of 7 per cent per year as envisaged in Vision 2030. This framework is informed by Vision 2030 and other national planning documents such as the Vision 2030 medium-term plan, the medium-term expenditure framework and the interim investment programme. Annex 2 shows the outcome mapping of the agricultural sector results for better impact.

The intervention strategies outlined in annexes 1 and 2 are broad enough to accommodate specific agricultural sector ministries and private sector activities. These activities will contribute to the attainment of the sector result areas and will be detailed in the strategy implementation framework. The strategy implementation framework will form the basis for formulating the respective ministries and private sector strategic plans.

8.2.2 *Implementation Framework*

The strategy implementation framework shall be divided into medium-term plans covering the period 2010–2015 in line with Vision 2030 medium-term plan, and 2016–2020. The implementation of each medium-term plan shall be underpinned by an integrated and holistic approach carried out through priority thrusts and associated interventions for addressing priority agricultural sector challenges and constraints. Implementation of the plans will incorporate joint planning and participation to ensure that multiple views, needs and concerns in resolving priority agricultural sector issues at different levels are taken into account and negotiated.

The planned thrust areas will be addressed through nationally coordinated programmes and projects. Cross-organizational synthesis, networking and sharing lessons learned will be used to improve programmes and projects outcomes. Better working relationships and partnerships among public, private and development partners will be established and maintained.

8.2.3 *Medium-Term Plans*

The medium-term plans, which will be done in cycles of 5 years, will contain the activity, implementation timeframe, implementing agency and financing plan. They will be in harmony and synchronized with the strategic plans of each ministry.

To ensure proper alignment of results down the planning levels, the development of the implementation plan shall pick up the planning process from the intervention strategy level under each result area, as outlined in the Agricultural Sector Results Framework, and unpack each intervention strategy into its necessary broad-based activities. Activity delivery timeframe, responsibility for carrying out each activity, the intended users of the activity results, and the expected outcomes following the attainment of the activity will follow. This information shall be summarized into an appropriate format. The cost of implementing each medium-term plan of the strategy shall be contained in a financing or investment plan.

8.3 Financing the Strategy

The cost of implementing the strategy will be shared among Government, development partners and the private sector. The principle enshrined in the sharing reflects the Government's deep commitment to increase the operation and management of the productive sectors to those best placed to do so, and to increase the control of economic affairs to the citizenry. This will increase efficiency in operations, reduce costs and improve distribution mechanisms to achieve the desired wealth. The costing of this strategy will be part and parcel of the medium-term plan and the medium-term investment plan from which the medium-term expenditure framework will be derived.

8.3.1 *Innovation Fund for Agriculture and Agribusiness*

An essential component of the ASDS is to enhance the capacity of the private and public sectors in agriculture through supporting innovative private sector activities or public-private partnerships that promote market-driven production, processing and marketing initiatives. This support will be actualized through the establishment of an Innovation Fund for Agriculture and agribusiness (IFAA). The objective of the Fund will be to foster ASDS's central objective of commercializing agriculture by catalyzing private sector participation in market-oriented production and service delivery, promoting productivity and profitability or commercial viability of sector activities at all levels of the wider agricultural sector value chains.

The Fund will target the semi-commercial agribusiness or transitory level actors: farmers, traders, processors, traders, agribusiness service providers. For purposes of the fund, semi-commercial enterprise is defined as 'a business enterprise that is producing or offering a product or service for sale and fully for profit and or is at below the desired or optimum level of operation, but at the same time is neither capable of injecting all of the required additional resources / capital from own sources nor has the capacity to acquire required additional resources / capital from commercial sources.'

IFAA is a competitive grant fund to support agriculture, livestock, fisheries, forestry,

wildlife and agribusiness initiatives at all levels of the value chain from production at farm level through value addition and marketing. The fund will support all subsectors of agriculture and agribusiness across all commodities.

8.3.2 *Agricultural Development Fund*

Although the Government has increased the agricultural sector budget, it is unlikely to result in more investment in the sector. An agricultural development fund will be established and operationalized as a new mechanism for investing in the agricultural sector. It is anticipated that the fund will focus on strategic issues and areas stipulated in Vision 2030. The fund will cover areas that are outside the budgetary provisions of the mainstream sector ministries that are priority and offer high rates of return to investment.

9 COORDINATION, MONITORING AND EVALUATION

9.1 Coordination

To achieve the objectives set out in this strategy, an effective coordination and monitoring and evaluation framework is important. The wide range of actors that will be involved in the strategy will require a harmonized and coordinated framework to effectively and efficiently manage activities and resources. The framework provides for regular feedback among agencies entrusted with implementing the strategy. An appropriate institutional framework that uses existing ministries and institutions to implement the activities specified in the strategy, and which facilitates the active participation of the private sector, the civil society and communities, is being developed.

The implementation framework will be structured at three levels: national, middle and local.

9.1.1 *National Level*

At the national level, sector ministries and ASCU will organize the biannual national forum of stakeholders. This will ensure political will, give the strategy a niche and prominence, and provide a platform for reviewing progress in implementing the strategy and the extent to which its objectives are being achieved. The forum will discuss problems constraining progress and ways of overcoming them, and consider current and future prospects. To give the forum appropriate profile, the highest political authority in the country will preside over it.

9.1.2 *Middle Level*

The purpose of the middle-level institutions is to provide a link between national and local level implementation of ASDS, technical support and coordination between ministries and stakeholders. In this connection, the following institutions will be strengthened:

- The Inter-ministerial Coordination Committee (ICC) will be expanded to include all ministries that provide services to the agricultural sector. The ICC will be composed of permanent secretaries of the collaborating ministries, and will be responsible for coordinating the planning of the strategy at the agricultural sector level and monitoring its implementation to ensure that its goals are achieved.
- Sector ministries have established a technical committee that acts as the secretariat for the ICC. The technical committee consists of directors of sector ministries, private sector representatives, development partners and the ASCU

secretariat. Its terms of reference will include preparing technical guidelines for implementing the strategy and formulating interventions according to MTEF budgetary process and the medium-term plan.

- ASCU has established thematic working groups that address key fast-track areas of the strategy in consultation with relevant sector players and resource persons.

9.1.3 Local Level

At the local level, the ASDS will be implemented through district agricultural development committees (DADCs) made up of sector ministries and stakeholders. These DADCs will elect the chairman and secretaries on two-year rotation basis, who will link with ASCU headquarters on project implementation. ASCU will organize the requisite training and capacity support for stakeholders to implement the strategy.

Implementation will be carried out at local (district and division) levels. ASCU will strengthen the local multi-stakeholder forums to enable them serve farmers and other stakeholders. Priorities on implementation will be agreed upon at district development committees, DADCs and constituency development committees. Measures will be instituted to encourage CDF committees to allocate resources to agricultural sector development with the aim of encouraging the youth to participate in agriculture.

9.2 Priority Setting and Phasing

The ASDS will be implemented over a 10-year period and will run parallel and be part and parcel of activities agreed on with development partners on economic reforms, poverty reduction and food security. An initial medium-term plan will be prepared and synchronized with the Vision 2030 medium-term plan. However, the need for rapid growth and development of the sector makes it necessary to identify and start implementing actions in priority areas that lend themselves to fast-track actions, which impact more significantly on the immediate needs of poverty reduction, food security and accelerating sector investment and development. For this reason, the sector will develop medium-term investment plans.

9.3 Monitoring and Evaluation System

Competent bodies under the auspices of ASCU will carry out sector-wide monitoring and evaluation (M&E) and periodic progress reviews. Corrective action will be instituted as the programmes are implemented. ASCU will further support and participate in subsectoral policy reviews and formulation as well as facilitate implementation of new policies by relevant stakeholders. It will continue to play any other relevant supportive role to any of the players in the sector.

M&E will provide reliable and timely data to inform decision-makers and the public on

progress, results and shortcomings of public interventions in the agricultural / food security sector. This will enable management steer and fine-tune policies and programmes and create transparency as a basis for being accountable to the public. Trends and dynamics in the sector will be regularly monitored. An independent professional body of M&E experts will work closely with sector players under ASCU to ensure elaborate M&E, and implement appropriate control measures throughout the implementation period.

At the local level, producer organizations will be enabled to provide regular feedback (e.g. customer satisfaction surveys that validate access to, use of and satisfaction with services) on agriculture-related public services. At the national level, the National Integrated Monitoring and Evaluation System provides the framework for measuring efficiency of Government programmes and the effectiveness of policies. To provide regular information on the performance of the sector and subsectors, information originating from the different sources will be compiled in an agricultural sector M&E framework. Existing M&E instruments (ministerial monitoring, agriculture / rural household surveys, programme / project baseline surveys and monitoring systems) will be harmonized to reduce duplication and overlapping and to fill information gaps in a coordinated effort.

The M&E framework will compile indicators for the different subsector's value chain processes—production, value addition, marketing, natural resource management, food security, institutional development, etc.

To coordinate the inputs from different data sources, a coordination unit at national level within the ASCU M&E framework will be established to analyse data and elaborate on regular devolved level and national reports. The unit will have as its basis a partnership between the sector ministries and research institutions, including regular cooperation and exchange with universities. To make the M&E system sustainable, methods for funding surveys and maintaining the databank should be in place before the system is established.

With increasingly decentralized structures, district stakeholder forums (e.g. DADCs) will obtain more accurate information on financial and technical support services to their locality. The public will follow up on Government's expenditure in their locality and acquire information on what has been spent. Through these forums, the public will decide more autonomously how to make use of these resources. Through regular customer satisfaction surveys, the satisfaction of farmers, fisherfolk and pastoralists in accessing quality public services (e.g. agriculture / livestock extension, rural infrastructure) will be included in the M&E process as feedback.

Strengthening this link in planning, budgeting, implementing and monitoring is crucial for public participation in the policy cycle, and for the Government to account for its use of resources. The following consultative and participatory monitoring and evaluation process will be adopted:

- The district development committee will be responsible for implementing the

strategy through the DADC at the district level. The district monitoring and evaluation team will be responsible for the whole district down to community level.

- The Inter-ministerial Coordination Committee will be responsible for monitoring the ASDS implementation at the national level to ensure it is implemented for the benefit of the nation, and that its goals are achieved.
- The Kenya National Bureau of Statistics and the ministerial monitoring units will carry out sample surveys, which will provide independent data sources to validate information flowing from the implementing units.

Annex 1. Agricultural Sector Results framework

Intervention Logic	Objective verification indicators by 2020	Means of Verification	Assumptions
Overall Goal Innovative, commercially-oriented, competitive and modern agricultural sector	1.1 7 per cent growth rate of the agricultural sector per year 1.2 Increased agricultural sector contribution to Kenya's GDP	1.1 National impact assessment reports 1.2 Economic survey reports 1.3 CBS surveys	1.1 Social, political and economic stability will continue to prevail in the country 1.2 Government policies will continue to be favourable to the development of the agricultural sector
	Purpose To increase agricultural productivity, promote investment and encourage private sector participation in agricultural enterprises and agribusiness	1.1 Number of policy and institutional frameworks formulated and successfully implemented 1.2 Percentage increase in agricultural productivity 1.3 Percentage increase in agricultural commercialization and competitiveness 1.4 Percentage increase in private sector investment in agricultural enterprises and agribusiness 1.5 Percentage increase in the quantity and quality of food available, accessible and affordable to all Kenyans at all times	1.1 Enabling policy environment for agricultural development will prevail 1.2 Agricultural sector will continue to be a major driver of the national economy 1.3 Relevant external environment stability will prevail

Intervention Logic	Objective Verification by 2020	Indicators	Means of Verification	Assumptions
1. Crop land development subsector	1.1 Percentage increase in productivity, commercialization and competitiveness of the crops subsector	1.1 Increase in institutional reports 1.2 Private sector organizations reports 1.3 Economic survey reports 1.4 CBS surveys	1.1 Social, economic and political stability will prevail 1.2 Conducive policy environment will be established and maintained 1.3 Stable macro-economic environment will prevail 1.4 Political will to undertake reforms will continue to prevail	
2. Livestock subsector	2.1 Percentage increase in productivity, commercialization and competitiveness of the livestock subsector	- Do	- Do	
3. Fisheries subsector	3.1 Percentage increase in productivity, commercialization and competitiveness of the fisheries subsector	- Do	- Do -	
4. Cooperatives subsector	4.1 Percentage increase in market access, market information, internal and external trade and rate of payment to clients	- Do	- Do	
5. Private sector participation	5.1 Percentage increase in productivity, commercialization and competitiveness of the agricultural sector attributable to private sector participation	- Do	- Do	

Intervention Logic	Objective Verification by 2020	Indicators	Means of Verification	Assumptions
Production Sector Specific Focus				
6. Water resources and irrigation development	6.1 Percentage of irrigated land and availability of water for irrigation and other uses	expansion of institutional reports	6.1 Sector ministries and institutional reports 6.2 Private sector organizations reports 6.3 Economic survey reports 6.4 CBS surveys	6.1 Social, economic and political stability will prevail 6.2 Conducive policy environment will be established and maintained 6.3 Stable macro-economic environment will prevail 6.4 Political will to undertake reforms will continue to prevail
7. Land use	7.1 Number of land-use policies, legal and institutional reforms formulated and implemented		- Do	- Do
8. Development of Northern Kenya and Arid and Semi-Arid areas	8.1 Number of collaborative programmes significantly to the improvement of livelihoods and reduced vulnerability to drought and floods	of successful development contributing	- Do	- Do

Intervention Logic	Objective Verification Indicators by 2020	Means of Verification	Assumptions
9. Improvement of environment and natural resource management	<p>9.1 Percentage increase in area mapped, environmental impact assessment/EA compliance, natural resources inventories and adoption of cleaner and sustainable land management practices</p>	- Do	- Do
10. Development of integrated river basins and large water bodies resources	<p>10.1 Percentage increase in irrigated land, catchments cover, water storage capacity and energy generation</p>	- Do	- Do
11. Forest and wildlife resources	<p>11.1 Percentage increase in forest cover, forest products and wildlife population</p>	- Do	- Do
Enabling factors			
12. Creation of an enabling environment for agricultural development	<p>12.1 Number of sustainable investor/client friendly enabling environments created and successfully operationalized</p>	<p>12.1 Published Bills, Laws, Gazette Notices, MoUs and Contracts 12.2 Sector ministries and institutional reports</p>	- Do -

Annex 2. Outcome Mapping of the Agricultural Sector Strategic Growth Result Areas For Better Impact Orientation

Implementing agencies		Outcome	Impact
Agricultural sector strategic growth result areas			
Subsector Strategic Focus and Intervention Strategies			
1. Crop land development subsector	Sector ministries, private sector organizations/institutions, development partners, Ministry of Planning and National Development, AG Chambers, Ministry of Finance, and Parliament.	Increased productivity, commercialization and competitiveness of the crops subsector	Improved livelihoods, income generation, employment creation and food security
2 Livestock subsector	-Do-	Increased productivity, commercialization and competitiveness of the livestock subsector	Improved livelihoods, income generation, employment creation and food security
3. Fisheries subsector	-Do-	Increased productivity, commercialization and competitiveness of the fisheries subsector	Improved livelihoods, income generation, employment creation and food security

Implementing agencies		Outcome	Impact
Agricultural sector strategic growth result areas			
4. Cooperatives subsector	-Do-	Strengthened and efficiently managed cooperatives and increased agribusiness leading to increased volume of internal and external trade on value added agricultural products	Improved livelihoods, income generation, employment creation and food security
5. Private sector participation	-Do-	Strong producer organizations actively engaged in policy, research and extension design and development operating in a conducive environment with appropriate investment incentive packages	Improved livelihoods, income generation, employment creation and food security
Subsector Factor Specific Focus			
6. Improvement of water resources and irrigation development	-Do-	Enhanced availability and accessibility of water for irrigation and other uses and reduced vulnerability to drought and effects of floods	Improved livelihoods, income generation, employment creation and food security
7 Land Use	-Do-	Consolidated land registry and agricultural land use master plan	Equitable, efficient and sustainable use of land resources
8 Development of Northern Kenya and Arid and Semi-Arid areas	-Do-	Unified and coordinated ASAL areas development efforts of different ministries and other stakeholders	Faster and sustainable development of the arid and semi-arid areas

Implementing agencies		Outcome	Impact
Agricultural sector strategic growth result areas			
9	-Do-Improvement of environment and natural resource management	Improved agricultural productivity and sustainable natural resources management	Clean, healthy and productive environment
10	-Do-Development of river basins and large water bodies resources	Efficient and effectively utilized and managed basins and large water bodies resources	Improved livelihood in the river basins and large water bodies regions
11	-Do-Forest and wildlife resources	Increased forest cover, forest products and wildlife population	Improved livelihood in a clean, healthy and productive environment
Enabling Factors			
12.	-Do-Creation of an enabling environment for agricultural development	Functional investor friendly environment	Increased investment in the agricultural sector
13.	-Do-Human and social development	Increased participation of players in the agricultural development process	Increased direct and indirect contribution to agricultural sector growth/development
Organization and Implementation Structure			
14.	-Do-Formulation and implementation of institutional frameworks	Increased public and private sector partnerships	Increased productivity, commercialization and competitiveness of the agricultural sector
15.	-Do-Coordination, monitoring and evaluation.	Effective and efficiently managed implementation frameworks at different levels	Faster and sustainable agricultural sector growth

