Case Study

6

CAPACITY BUILDING NEEDS ASSESSMENT SERIES

Integrated Approach to Food Safety, Plant & Animal Health: National Biosecurity Capacity

Country Report
The Republic of Kenya

CASE STUDY 6

CAPACITY BUILDING NEEDS ASSESSMENT SERIES

Implementing an Integrated Approach to Food Safety, Plant and Animal Health (Biosecurity)

By

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Country Situation Report
The Republic of Kenya

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Acronyms

AFIPEK	Association of Fish Processors and Exporters of Kenya
AGNS	Food Quality and Standards Service, FAO
CAC	Codex Alimentarius Commission
CBD	Convention on Biological Diversity
CPB	Cartagena Protocol on Biosafety
CPM	Commission on Phytosanitary Measures
DLP	Department of Livestock Production
DVS	Department of Veterinary Services
FAO	Food and Agriculture Organization of the United Nations
FD	Fisheries Department
FPEAK	Fresh Produce Exporters Association of Kenya
GAP	Good agricultural practice(s)
GDP	Gross Domestic Product
GMO	Genetically Modified Organism
HACCP	Hazard Analysis and Critical Control Point System
HCDA	Horticulture crops development Authority
IPPC	International Plant Protection Convention
IPM	Integrated pest management
ISO	International Organization for Standardization
ISPM	International Standard for Phytosanitary Measures
KARI	Kenya Agricultural Research Institute
KEBS	Kenya Bureau of Standards
KEPHIS	Kenya Plant health Inspectorate Service
KES	Kenya Shillings
KMC	Kenya Meat Commission
LMO	Living Modified Organism
MOA	Ministry of Agriculture
MOFD	Ministry of Fisheries Development
MOLD	Ministry of Livestock Development
MOH	Ministry of Health
MOPHS	Ministry of Public Health and Sanitation
MRL	Maximum residue limit
NFNP	National Food and Nutrition Policy
NFSCC	National Food Safety Coordinating Committee
NTH	National taskforce on Horticulture
OIE	World Animal Health Organisation (Organisation Internationale des Epizooties)
PAIA	Priority Areas for Interdisciplinary Action
PCPB	Pest Control products Board
PHD	Public Health Development
PLWHA	People living with HIV/AIDS
USD	United States Dollars

Glossary

Biosecurity; A strategic and integrated approach that encompasses the policy and regulatory frameworks for analyzing and managing relevant risks to human, animal and plant life and health, and associated risks to the environment.

Biotechnology; Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use

Competent Authority; The official authority charged by the government with sector control of biosecurity, including setting and enforcing of regulatory requirements.

Maximum residue limit (MRL); the maximum concentration of an agricultural compound **residue** legally permitted (or recognized as acceptable) in or on a food, agricultural commodity or animal feed.

Pest; Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants and plant products

Pesticide(s); Those products that contain chemicals, plants, animals, micro-organisms or other active ingredients used for the prevention and management of injurious pests .

Risk-based; Decisions and actions in biosecurity control programmes that are based on specific knowledge of risks to health or life.

Surveillance; Active and ongoing collection, analysis and dissemination of data on risks to life and health

Zoonoses; Infectious diseases that can be transmitted naturally between wild or domestic animals and humans.

1 Introduction

1.1 Background

National governments have a basic mandate to ensure food safety, animal and plant health in their country. Biosecurity is a holistic concept for agriculture sustainability, public health and protection of environment and biodiversity. Thus the goal of biosecurity is to prevent, control and manage risks to life and health and to facilitate strengthening of control of the primary production through improved animal and plant health and is thus fundamental to food safety and quality, through food chain approach. Biosecurity can therefore be described as strategic and integrated approach that encompasses the policy and regulatory frameworks for analyzing and managing relevant risks to human, animal and plant life and health and associated risks to the environment (FAO Biosecurity Toolkit 2007). Biosecurity covers the introduction of plant pests, animal pests and diseases, and zoonoses, the introduction and release of genetically modified organisms (GMOs) and their products, and the introduction and management of invasive alien species and genotypes. Biosecurity can also include measures that counter terrorism.

Due to globalization of trade, especially on food and agriculture products, the need to ensure safety and quality of imported and exported goods has gained increased relevance. Whereas imported foods may be treated as part of the internal food supply and therefore come under the jurisdiction of national laws and regulations, food exports come under the regulatory dimension given by international standards such as those designated by the World Trade Organization (WTO) Agreements on application of SPS and the Agreement on TBT, as well as Codex Alimentarius. Many developing countries have developed food quality and safety control systems to meet the required standards of the importing developed countries, but not so for the local products. It is therefore easy to conclude that the market incentives have assisted in the development of stringent control measures that include both policy and legal frameworks.

Developing countries would greatly benefit from implementing biosecurity approach, but require external support to build capacity to effect improvement in an integrated approach. Strengthening of overall, biosecurity in the country, would assist in improvement of domestic food safety, animal and plant health, which in turn would improve domestic food security through increased access to safe food, and also effectively participate in international food and agricultural markets as a means of wealth creation and poverty alleviation and address most of the Millennium Development Goals (MDG)..

FAO is the only UN agency whose mandate clearly includes areas covered by biosecurity. Since the inception in 2002 of FAO's interdepartmental working group on biosecurity, also known as the FAO Biosecurity PAIA (Priority Area for Interdisciplinary Action), the group continues to work to promote, develop and reinforce the concept, policy and regulatory frameworks for food, agriculture, fisheries and forestry, including support to national implementation of a biosecurity approach.

1.2 FAO Biosecurity Toolkit and its application

This report has been prepared using results of application of procedure stipulated in the "FAO Biosecurity, Toolkit" which is in three parts. Within the work of the Biosecurity PAIA,

AGNS/FAO has developed the "FAO Biosecurity Toolkit" comprising three parts: Part 1 – Biosecurity Principles and Components; Part 2 – Guide to Assess Biosecurity Capacity; and Part 3 – An Overview and Framework Manual for Biosecurity Risk Analysis. This report specifically applied Part 2; Guide to Assess Biosecurity Capacity" to assist Kenya to identify her biosecurity capacity needs and also adopt an integrated approach to address them. The Biosecurity Toolkit guidelines, sets out a systematic process to examine critically the capacity and performance of the existing national food control systems, plant life and animal life health, and environment and biodiversity health protection. This process is envisaged to improve future controls, pinpoint areas for improvement and identify options to address the identified needs. The capacity needs are the gaps between what is current and what is desired. It is however recognised that circumstances and needs differ substantially between countries and there is no universal model for biosecurity or capacity development.

AGNS/FAO has implemented a series of regional workshops on biosecurity from which various participants have expressed interest in promoting an integrated approach to food safety, animal and plant health in their own countries. Other countries have identified a need to focus on cross-cutting biosecurity capacity needs and one specific cross-cutting issue, food safety of fresh produce and pesticide residue management, is of particular concern to some countries. Consequently, the Biosecurity PAIA is supporting a "project to monitor pesticide residues in fresh produce in Kenya". The implementation of this project is outlined in a Letter of Agreement between FAO and KEPHIS of the Ministry of Agriculture.

Drawing from the resulting baseline evaluation the report presents a draft Action Plan that should be subjected to stakeholders for discussion and ownership.

During the visits the consultant who teamed up with a national counterpart from the KEPHIS gathered information of the current situation with respect to Kenya's biosecurity system with particular focus on cross-cutting issues of food safety of fresh produce and pesticide residues management and ideas on the desired future.

2 Scope and Objectives of the Assessment

2.1 Scope and Objectives of the Assessment

The scope of the assessment of the Kenyan biosecurity system includes an overview of the policy framework, legislation, organizational arrangements, communications (including stakeholder information, education and communications), inspection, verification and enforcement, quarantine and certification, diagnostic services (analytical laboratories), emergency preparedness and response, risk analysis, monitoring and surveillance. The more detailed assessment focuses on matters pertinent to the specified cross-cutting issue, food safety of fresh produce and pesticide residue management, and documents Steps 3, 4, 5, 6 and 7 as set out in Part 2 – Guide to Assess Biosecurity Capacity of the "FAO Biosecurity Toolkit".

The objective of the assessment is to (i) prepare a description of the current state of the Kenyan biosecurity system and (ii) prepare a national biosecurity action plan with particular focus on the cross-cutting issues of food safety of fresh produce and pesticide residue management, using the assessment as a baseline, for capacity building that addresses the identified gaps, needs and priorities. One of the project activities included in the Letter of

Agreement (PR40698) is a "Biosecurity needs assessment mission" resulting in: National biosecurity situation report; proposed national biosecurity action plan; and National roadmap to improve biosecurity situation.

2.2 Assessment and report preparation Methodologies

The Biosecurity Needs Assessment Mission was undertaken by the National Consultant and KEPHIS counterpart from June 8 to 15th 2009 with reference to the FAO Biosecurity Toolkit and the TORs. The exercise was carried through direct interviews of stakeholders and key players in biosecurity. The main respondents were the government officials involved in development of biosecurity related policy, standards and regulations and enforcement activities as well as other key stakeholders.

The objective of the assessment was explained to respondents before interviews were conducted using prior prepared generic questionnaire (annex 1) though questions were modified to suit different stakeholders. The list of those interviewed is presented as Annex 2.

The assessment process was conducted using the steps (3-7) suggested in Part 2 of the FAO Biosecurity Toolkit with the Mission beginning at Step 3. A profile of the biosecurity context for Kenya was developed using interview sessions as well as accessing pertinent documentation. Direct interviews of stakeholders in the biosecurity system, including government officials involved in development of food safety-related policy, standards and regulations, field enforcement activities, as well as reports available from various field projects, and data from other websites were used to access relevant information presented in this report. The existing biosecurity capacity and performance were assessed through the compilation of data, views and insights gained during the direct interviews with stakeholders. The desired future situation of biosecurity derived from stakeholders' interviews was defined. The needs or gaps were identified and Options to address the identified capacity needs were subsequently generated and a draft national action plan was developed

3 Country Profile

3.1 Factors influencing biosecurity

Biosecurity issues, opportunities and challenges differ across countries and are influenced by such factors as geography, environment, climate, economic system, trade patterns, borders, etc. These factors provide the context that shapes biosecurity goals and activities for a country.

3.1.1 Geography

Kenya has a coastline on the Indian Ocean, broad plains and numerous hills. Total area is 582 650 km² which include Land; 569 250 km² and Water: 13 400 km² Total: 3446 km Kenya Borders Ethiopia, Somalia, Sudan, Tanzania, and Uganda. The capital city is Nairobi and other important cities are Mombasa, Kisumu, Nakuru and Eldoret. Among the many geographical wonders of the country is Mount Kenya (5,199m), the second tallest mountain in Africa, the Great Rift Valley, the easternmost shore of Lake Victoria, the second largest freshwater lake in the world, shared with Tanzania and Uganda and Lake Turkana. Low

plains on the Indian Ocean rise to the highlands, where extensive agricultural production areas have made Kenya a major supplier of fresh produce, flowers and other agricultural products to its neighbours and important markets in Europe and the Middle East. The climate of Kenya is tropical, with high rainfall patterns at the highlands and semi arid conditions in the North Eastern Kenya.

3.1.2 Natural resources

Natural resources that are found on Kenya include limestone, soda ash, salt, gemstones, fluorspar, zinc, diatomite, gypsum, wildlife and hydropower. Kenya has a range of natural forest cover from tropical rainforest to dry land forests (shrub lands) and mangroves. There are a wide variety of wildlife species in Kenya, which contribute enormously to tourism, and famous Kenyan game safaris and wildebeest's migration, the recent on of the new Seven Wonders of the World. There are inland lakes, mainly Lake Victoria and Lake Naivasha as well as Indian Ocean with a variety of natural fish species.

Kenya is also home to some of the world's best known and most spectacular wildlife reserves, and therefore tourism is a major contributor to the country's economy. Because of its extensive lake and marine coasts, fisheries is a major industry and a large contributor to the country's food supply and export economy.

3.1.3 Kenya's Population

Based on the 1999 census, the population of Kenya in 2006 is estimated at about 34 million. The population is composed of many ethnicities and includes most major language groups in Africa. Official languages are Kiswahili and English, but many indigenous languages are spoken.

3.1.4 Economy and Trade

Kenya is essentially an agricultural country. Agriculture contributes over 25 percent of the GDP. Livestock, in turn, contributes over 40 percent of agricultural GDP. Only about 16 percent of Kenya's land is of high and medium agricultural potential and supports about 25 percent of its human population. According to the draft National Food and Nutrition Policy, "on-farm employment accounts for 80 percent of the rural population. The agricultural sector consists of both subsistence and commercial sub-sectors and accounts for about 60 percent of national employment through its forward and backward linkages with other sectors. About 96 percent of rural women work on family farms provide 75 percent of labour in smallholdings and directly manage 40 percent of smallholder farms."

From a biosecurity perspective there are a number of regional and international influences of particular relevance. Kenya is a member of several international standard-setting bodies, including: the Codex Alimentarius Commission (CAC); the World Organisation for Animal Health (OIE); and the Commission on Phytosanitary Measures (CPM) (under the International Plant Protection Convention, IPPC). Kenya also has other international obligations under, the World Health Organization (WHO), the WTO, the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and Agreement on Technical Barriers to Trade (TBT Agreement); and the Cartagena Protocol on Biosafety (CPB) as a party to the Convention on Biological Diversity (CBD).

3.1.5 Food production

Agriculture contributes 24.2% GDP and horticulture is projected to contribute 13% of the Agricultural GDP. The horticulture sector employs about 2 million Kenyans, directly and another 3.5 million indirectly.

The main staples of the Kenyan diet are cereal and cereal products, maize, rice, tubers, such as cassava, legumes, fruits and vegetables, meat and poultry products, dairy products, fresh, smoked and dried fish, sugar, and cashew nuts. The production of some important food groups in Kenya is presented in Table 1.

Table 1: Agricultural Production in Kenya, 2003

Food Group	Product or Commodity	Production*
Horticulture	Fruits and vegetables	3,200,000 MT
Cereals and Grains	Maize	2,783,000 MT
	Rice	47,700 MT
	Sorghum	126,400 MT
	Wheat	64,400 MT
	Millet	64,000 MT
Milk	Fresh milk	3.1 billion litres
Meat	Beef	363,000 MT
	Pork	16,000 MT
	Poultry	19,000 MT
Fish and Other Seafood	Fresh water fish	139,800 MT
	Marine fish	6,300 MT
	Crustaceans	1,100 MT

Source: FAO Report on Assessment of Capacity Building Needs of the Food Control System in the Republic of Kenya

Table 2: Horticulture Exports 2008

	Volume (tons)	Value KES	USD
Fruits	17,122,922	2,071,240.40	27253
Flowers	93,638,678.69	39,765,903,592.00	523235574
Vegetables	82,358,379.31	16,128,697,800	212219708
Total	193,119,980	55,896,672,632.40	735482535

Source: HCDA

3.1.5.1 Cash crops

Among Kenya's leading cash crops are horticulture, including floriculture, tea and coffee.

Horticulture

This is an important industry based on the export of fresh fruits and vegetables, notably to EU markets. Horticulture exports (both fresh and processed) accounted for slightly higher than Kenya Shillings 73.7 billion (over 900 million US dollars). This put horticulture ahead of tea and coffee. Over 95 % of these exports go to the EU market. The domestic sales through supermarkets, municipal markets, restaurants and hotels if included would bring the total horticulture value to over 190 billion Kenya shillings. In 2008, the major Kenyan fruits, vegetables and flowers export destination were France, United Kingdom, and Holland respectively.

Increasing European consumer concerns about the safety of imported produce, particularly, but not limited to, pesticide residues and current trends towards concentration of European produce imports in a few, large supermarket chains, have brought about the emergence of private produce standards (e.g., BRC, GlobalGAP). Producing countries like Kenya are finding increasingly challenging to meet these standards. In practice, the imposition of these standards most of the times supersede those of the FAO/WHO Codex Alimentarius Commission (CAC). These private standards come at a high cost in infrastructure and accreditation fees and do not limit their scope to produce safety and quality but also have social parameters such as gender issues, child labour and animal welfare. The Kenyan produce exporters, grouped under the Fresh Produce Exporters Association of Kenya, FPEAK has been proactive and effective despite the large outlay of investments that the changes required by the new standards. Whenever possible they try to surpass the requirements and as a result, Kenya has achieved a good standing in the EU market. The "KenyaGAP" Code of Practice that is benchmarked GlobalGAP has been developed by a technical committee of the association. This is an important asset for Kenya to access any world market it targets is progressively impacting the safety and quality of fruits and vegetables for local consumption.

A challenge to achieve the above is the fact that most farm produce for local consumption is grown by small-scale farmers and marketed by also small-scale traders and distributors. Agricultural food crops, vegetables and fruits are transported to local markets through various means that are neither standardized nor controlled. From the farm, crops may be sold to a wholesale trader or directly to a retailer and the safety and quality of these products along the entire chain supply is not monitored regularly by public health officers. However the private sector has put in place its own measures to ensure compliance along the supply chain.

Tea

Kenya produces about 16 percent of the world's black tea.

Coffee

Kenya's coffee is world famous for its quality but the are many small holder farmers who have abandoned this farming in recent times due to low returns and high costs of inputs such as fertilizers and pesticides. These farmers usually opt for horticulture farming due to qick returns to their investment and regular income compared to coffee.

3.1.5.2 Cereals and grains

Wheat

Ninety percent of wheat in Kenya is produced by large scale farmers and only 10 percent is produced by small-scale farmers (Kenya has a wheat deficit). Rice, on the other hand, is mainly produced by small-scale farmers from irrigation schemes. The country has a large deficit in rice.

Maize

With regard to maize, the country produces about 32 million bags against a consumption demand of 33 million bags, 60 percent of which is produced by small-scale farmers for consumption. Kenya imports maize from Uganda and Tanzania to satisfy the demand gap (raw material trade is liberalized in East Africa). Maize from small-scale farmers is marketed through organized middlemen who sell to wholesalers who, in turn, sell to large buyers in the region. About 4 million bags (over 10 percent) of maize are lost annually post harvest, usually due to pests and improper handling. Aflatoxin contamination of maize is a problem in Kenya mainly because of harvesting before it is dry, exacerbated by poor storage. The

harvesting of maize before it is dry due to fear of theft especially in areas of low rainfall and poor harvest.

Beans
Beans are another important staple in the Kenyan diet. The country produces four million bags against a demand of five million bags and imports from Uganda close this gap. All beans are produced by small-scale farmers. Post-harvest losses are caused by pests and improper handling. Dusting with Acetellic is used to reduce losses caused by weevils. Adequate information has been passed to farmers on safe use of Acetellic by both KEPHIS and PCPB and consumers are said to be aware on how to use beans thus treated.

3.1.5.3 Dairy, Meat and Fish products

Dairy
Dairy production is a major economic and social activity for the communities that are in the high rainfall areas, whereas beef production predominates in the arid and semi arid lands (ASALs). The livestock sub-sector accounts for over 30 percent of farm gate value of agricultural commodities. The dairy industry, the largest contributor to the livestock GDP, is predominantly smallholder and is the most developed of the livestock sub-sectors in Kenya. Kenya has an installed capacity of 19,000 l/day for powder milk, 1.2 million l/day for Ultra High Temperature milk, 29,000 kg/day for cheese, 30,000 kg/day of cream for butter and 4,000 kg/day for ghee but only a small fraction of the installed capacity is currently utilized. Pasteurization has an installed capacity of 2.5 million l/day, but the vending of milk in raw form through the informal market accounts for some 80 percent of total sales.

Beef
Beef production in Kenya is mostly in the ASALs. The commercial beef herd is mainly found in a few ranches in the Rift Valley, coast and eastern provinces. The production and supply of livestock is basically by small-scale farmers and traders and therefore, there are plans for installing satellite abattoirs and related infrastructure in beef producing ASAL areas. No stringent hygiene or food control systems have been put in place for production and distribution of animal food products. Although there are legal statutes governing transportation of meat, not all food safety issues have been addressed and there is no is no legal requirement to refrigerate the meat on transit.

Poultry
Kenya has an estimated poultry population of about 30 million birds. Of these 69 percent consist of indigenous chicken kept under free-range conditions. Most households in the country keep indigenous birds for food and for occasional income due to low capital investment. In addition, there are five main chicken hatcheries in the country, which produce over 16 million day-old chicks annually, mainly broilers for commercial farming

Fish
Over ninety percent of fish production is fresh water fish from came from Lake Victoria. The major fish species in Lake Victoria is the Nile Perch (*Lates niloticus*) and most of the fish harvested is exported, mainly to the EU. Most of other marine and freshwater fish is sold in local markets or directly to the hotels and restaurants either fresh or cured. There are no food safety measures taken when displaying fish at the market. Because there is no legal requirement for fish handling and display at the local market, there is no basis for requiring good handling of perishable products at these markets such as icing of fish. Inspectors try to

inform and teach the vendors good handling methods, but there is a need to develop legal instruments to ensure fish is hygienically and properly handled throughout the supply chain.

3.1.6 Food processing, quality and safety

Most food processing establishments in Kenya are small cottage industries that often are not regulated. Medium and large food processing plants manufacturing pre-packaged foods, on the other hand, are regulated and inspected by designated and mandated authorities. In contrast, fish, meats, fresh produce and other foods available at retail markets, are not regulated, though the government is now taking some measures to monitor and regulate.

The export market for fish and fresh products has however highly developed safety and quality assurance systems in place, which has attained equivalence with that of the European Union and other importing countries. Kenya has a three-tiered food control system: a modern safety and quality assurance system for fish and fresh produce; food imports, mostly medium or large food processing establishments manufacturing pre-packaged foods; and (c) the entire informal sector composed, with or no food safety or quality control.

Because of the very limited resources available for consumer education and information, there is little or no awareness about food safety and quality among Kenyan consumers. Food price is the primary determinant of consumer choice. On the supply side, producers and processors are not motivated by price incentives such as those enjoyed by fish or fresh produce exporters or by government monitoring and enforcement, to improve the quality and safety of their products. Consequently, in the absence of consumer choice and supplier incentives, market forces as promoters of change concerning food quality and safety of the local food supply are missing. Such changes will require a large measure of governmental action in partnership with the private sector.

3.2 Trends in production, processing and distribution that influence biosecurity

Poor cold chain has an effect on small scale producer and traders. The need for establishment of HACCP Systems in food processing for export has affected export of value added products, especially due to the EU stringent food quality and safety standards, This notwithstanding, Kenya has managed to overcome these SPS based restrictions for fish and fresh produce by putting in place systems that guarantee quality and safety of products.
In the late 1980s and early 1990s, Kenya suffered fish export bans due to suspected use of pesticides for fishing. The Competent Authority which is Fisheries department developed a monitoring system to analyze pesticide residues in fish water and sediments. The negative results and the HACCP and audit systems in place convinced EU that Kenya had complied with their standards requirements. In 2002, Kenya placed on the EU harmonized list (list 1) of the third countries that can export fish into EU,

3.3 Pathways for introduction of biosecurity hazards

The term ‘biosecurity’ is somehow a new terminology in Kenya and therefore many people are not familiar with the term .Although there are measures that are put in place to minimise to cover food safety, zoonoses, the introduction of animal and plant diseases and pests, the introduction and release of living modified organisms (LMOs), genetically modified organisms (GMOs) and their products, and the introduction and management of invasive alien

species as well as the official control of significant diseases and pests, these are not seen as biosecurity measures.

The major pathways for introduction of identified biosecurity hazards in Kenya include the following:-

(i). Cross border activities, especially with neighbouring countries, tourism, global movement of human and goods impact on biosecurity
(ii). Mosquitoes, vectors for malaria
(iii). Food and water-borne illnesses resulting in occasional outbreaks
(iv). Unintentional or intentional introduction of alien invasive species in water and land
(v). Importation of food e.g. large grain borer through maize imports from Tanzania
(vi). Food production, processing, preservation and storage
(vii). Bird migration and regional trade pathway for avian influenza.

Table 3 below gives a summary of the identified biosecurity hazards across the sectors, through stakeholders' interviews during this assessment.

Table 3: Biosecurity hazard/threats identified by stakeholders

Threat/ Hazard	Effects/impacts	Responsible Agencies
Food and water-borne illnesses	Human health; illness and death	MOH
Malaria (mosquito)	Human health	Ministry of Public Health and Sanitation
	Plant health; transfer of diseases to mangoes etc	KEPHIS
Avian Influenza	Animal and human health	Ministry of Livestock
Foot and Mouth	Animal health (economic losses)	Ministry of Livestock
Aflatoxins	Human health and post harvest losses	MOA, KEPHIS and Ministry of Public Health and Sanitation
Swine Influenza	Human health; illness and death	MOH, Ministry of Livestock
Alien invasive species	Environment and biodiversity	KEPHIS and KWS
Fruit fly	Plant health and economic losses	MOA
LMOs and GMOs	Environment and Biodiversity	MOA, KEPHIS and KARI
Indiscriminate use of pesticides	Plant and Human health and environment	PCPB, MOA, KEPHIS, Ministry of Public Health and Sanitation
Pests	Economic losses	MOA
Microbiological contamination	Human health, food quality, economic losses	MOFD, KEBS,
Pesticide levels in/on food	Human health	KEPHIS,

Table 4: Main vegetables Pests in Kenya

Crop	Common name(s)	Scientific name

Vegetables	Bean podborer	*Maruca testulalis*
	Vegetable leafminer	*Liriomyza sativae*
	Red spider mite	*Tetranychus* spp.
	African bollworm or Tomato fruit worm	*Helicoverpa armigera*
	Tobacco cutworm or Common cutworm	*Spodoptera litura*
	Rust	*Puccinia arachidis*
	Damping off /Soft rot	*Pythium* sp., *Fusarium* sp.
	Downy mildew	*Peronospora manshurica*
	White flies	*Bemisia spp,Trialodes spp*
	Thrips	*Flankliniella* spp
	Aphis	*Aphis fabae*
Fruits	Fruit flies	*Bactrocera invadens, ceratitis spp*
	Mango seed weevil	
Flowers	Army worm	*Spodoptera littoralis*
	Thrips	*Flankliniella* spp
	Leaf miners	*L. huidobrensis, L. sativae*
	African bollworm	*H. armigera*

3.4 Cultural perceptions and practices

Biotechnology is not well understood and its introduction would greatly affect production in the subsequent seasons, due to farmers' cultural practice to produce their own seeds from harvested crops. This would threaten food security, because it is unlikely that GMOs introduction would be sustainable due to high cost of seed production and therefore not easily accessible to farmers. Farmers also have the cultural way that they protect their crops which include uprooting infected crop and also crop rotation.

4 Biosecurity Capacity Assessment

The Biosecurity capacity assessment in Kenya applied the procedure of Step 4: "Assess existing biosecurity capacity and performance" of the FAO Biosecurity Toolkit. The analysis is applied firstly at the systems level detailing the existing policy framework, legal and regulatory framework, organizational arrangements and communication, followed by an examination of the sectors of biosecurity/risk analysis functions at the organization level, with particular attention to the cross-cutting issue of "food safety of fresh produce and pesticide residue management".

4.1 Policy framework

Policy and regulatory frameworks for analyzing and managing relevant risks to human, animal and plant life and health and associated risks to the environment in Kenya, has no reference and are largely sector-based. Policies, organizational arrangements in support human life and health, including food safety; animal life and health, plant life and health; and environmental protection are in place and executed by different government agencies.

Kenya does not yet have a defined, published policy regarding food safety and quality, but such a policy is under development as part of a wider National Food and Nutrition Policy (NFNP). The overall goal of the NFNP to have all Kenyans enjoy at all times food that is free from adverse substances in sufficient quantity and quality to satisfy the nutritional needs of individuals taking into account dynamics in feeding habits. Specific objectives refer mainly to food security, such as to ensure food availability and access both in qualitative and quantitative terms. The aim of the nutrition policy is therefore, to ensure nutritional security for all Kenyans at all times through promoting health and nutrition of all age groups, improving the nutritional status of PLWHA promoting consumption of micro-nutrient rich food, reducing the prevalence of dietary related non-communicable diseases, improving sanitation and access to safe water, and ensuring access to safe food.

The policy also addresses the urban and peri-urban agriculture and makes reference to food safety by stating: “In order to promote urban and peri-urban agriculture, the government will promote intensive production of vegetables, fruits and appropriate livestock products. The Local Authority regulatory framework will be reviewed to enable safe production of these products and also enhance capacity of regulatory institutions involved in enforcement of food safety standards.”

The chapter of the NFNP dealing with nutrition and primary health describes more extensively the actions to be taken to improve the safety and quality of Kenyan food. The challenge facing Kenyans is the quality and safety of the foods prepared and consumed at household and non-formal outlets as well as counterfeit food products. The incidences of food poisoning such as aflatoxin poisoning and contamination are partly attributed to consumers’ ignorance on food quality control and safety as evidenced by improper harvesting stage, inappropriate post-harvest processing and poor storage conditions. The NFNP does not articulate the strategy for the food safety and quality control system in Kenya. The focus of the policy, therefore, remains heavily centred on food security and nutrition.

4.2 Institutional Framework

Although there is governmental support for the relevant institutions involved in food safety and quality control, there is little awareness about the magnitude and impact of food safety on the national economy and development at all levels, with the notable exception of the fish export industry, which has a defined Competent Authority. The NFSCC attempts to fill this gap by coordinating all food safety issues in Kenya. The institutions dealing with food safety issues are as many as the members of NFSCC (about 22). The role of NFSCC is given in details on Section 4.4.3.1

There is no institutionalized foodborne disease surveillance system in Kenya and only sporadic monitoring of chemical, including pesticide and veterinary drug residues and mycotoxins or microbial contamination of the local food supply is carried out. Therefore, there are no reliable data on which to base risk assessment of foodborne hazards and/or justify subsequent risk mitigation strategies. The NFNP describes the various needs for training and education in areas of nutrition to ensure public health.

Food borne diseases are lumped together and thus hard to isolate from the overall disease data In 2004 there were some 643,000 cases of salmonellosis, over 600,000 cases of dysentery, 722,000 cases of gastroenteritis, 56 cholera cases, 198 brucellosis cases and 323 aflatoxicosis in Kenya (Olielo 2006)[1]. The NFNP makes ample reference to data gathering, creation and maintenance and utilization of databases on agricultural production and many other relevant issues, but does not clearly mention food borne disease surveillance and reporting, both of which are essential for conducting risk assessment on which to base targeted, effective food safety management strategies and actions.

4.3 Legal and Regulatory Framework

Although by no means exhaustive, the following are the major food safety of fresh produce and pesticide residue management government/official/legal documents that form part of the legal and regulatory framework for Kenya's biosecurity system. Across these different documents, a legal framework and regulatory framework emerges for the different 'biosecurity' sectors in Kenya, but the responsibilities of some Ministries are not immediately clear and some areas of activity appear to be duplicated.

The Kenyan laws of relevance to food safety and quality, the institutions involved and the regulated food products or sectors are listed in Table 5.

Table 5: Kenyan Laws and Regulations on Plant and Animal Health and Food Safety and Quality

Law or Regulation	**Institutions Involved**	**Sector Regulated**
Agricultural Produce (Export) Act, Chapter 319	Ministry of Agriculture and Rural Development– Horticultural Crops Development Authority	- Exports of fruits and vegetables
Animal Health Act, Chapter 364	Ministry of Livestock and Fisheries Development – Department of Veterinary Services	- Animal health and zoonoses
Dairy Act, Chapter 336 (1915)	Kenya Dairy Board	- Dairy production - Dairy products
Fisheries Act, Chapter 378	Ministry of Livestock and Fisheries Development	- Fisheries - Fish and fisheries products
Fisheries (Fish Quality Assurance) Regulations, 2000	Ministry of Livestock and Fisheries Development – Fisheries Department	- Fish and fisheries products - Fish export certification
Food, Drugs and Chemical	Ministry of Health – Public	- Basic food law

[1] Olielo, T.K. 2006. Food Safety and Quality in Kenya. Prepared for FNPP Support to Kenya on Food Security. FAO/Netherlands Partnership Programme.

Substances Act, Chapter 254 (1965) – amended 1978, 1980, 1982, 2002	Health (Standards) Board	- All foods
KMC Act, Chapter 363 (1950), amended 1967, 1972	Kenya Meat Commission (KMC)	- Slaughter of animals and meat processing - Inspection of abattoirs and meat processing facilities
Meat Control Act, Chapter 356 (1972)	Ministry of Livestock and Fisheries Development; Ministry of Health	- Abattoir inspection - Meat and meat products - Veterinary public health
Pest Control Products Act, Chapter 346	Pest Control Products Board	- Agrochemicals, including pesticides - Pesticide registration and use
Plant Protection Act, Chapter 324	Ministry of Agriculture and Rural Development – Kenya Plant Health Inspectorate Service (KEPHIS)	- Plant health - Phytosanitary issues - Plant and plant products import and export certification

4.4 Organizational arrangements

In Kenya the responsibilities for biosecurity rests with a number of different government institutions. Table 6 is a summary of the government agencies responsible for various biosecurity issues.

Table 6: Kenya Food Safety and Quality Institutional Framework – Institutions and Responsibilities

Institution	**Executive Branch**	**Responsibilities**
Department of Public Health	Ministry of Health	- Food inspection - Inspection of food processing and preparation establishments
Fisheries Department	Ministry of Livestock and Fisheries Development	- Fisheries - Fish and fisheries products inspection - Audit of fish safety and quality - Fish export certification
Horticultural Crops Development Authority	Ministry of Agriculture	- Fruit and vegetable exports
Kenya Bureau of Standards (KEBS)		- Development of national standards
Kenya Dairy Board	Semi-autonomous – Ministry of Livestock and Fisheries Development	- Dairy production - Inspection of dairy plants and products

Kenya Meat Commission (KMC)	Semi-autonomous – Ministry of Livestock and Fisheries Development	- Abattoir inspections - Abattoir operation - Slaughter of animals and processing of meats
Kenya Plant Health Inspectorate (KEPHIS)	Ministry of Agriculture	- Plant health - Phytosanitary certification - Monitoring pesticide and mycotoxin residues
Local Government Authorities – LGAs (District & Municipal Councils)	Ministry of Local Government	- Food inspection - Enforcement of food regulations
Pest Control Products Board	Ministry of Agriculture	- Registration, approval and monitoring use of pesticides
Veterinary Services Department	Ministry of Livestock and Fisheries Development	- Animal health - Control of zoonoses - Animal health and animal products import/export certification - Abattoir inspection - Meat processing inspection - Meat and meat products inspection
NEMA	Ministry of Environment	-Environmental Protection -Environmental monitoring - Environmental management

4.4.1 Regulatory institutions for biosecurity and food safety

4.4.1.1 Mainstream ministries

Ministry of Health (Food safety)

The Ministry of Health (MoH), through its Public Health Department, is the central food safety and quality authority in Kenya. It conducts its activities under the Public Health Act, Chapter 242 of the Laws of Kenya (1914) and the Food, Drugs and Chemical Substances Act, Chapter 254. The latter act dates back to 1965 but was amended in 1978, 1980, 1981 and 2002, mostly to reflect terminology changes but not content. In addition, the department also operates under the Meat Control Act, Chapter 356 of 1972 for abattoir and meat inspections. Although these Acts are end product-based instead of the current global shift towards process –based food safety assurance, in the Ministry's view the existing food control legislation provides inspectors with wide authority for entry into food processing, preparing and serving establishments (including ships and aircraft) for inspection purposes, and they are empowered to condemn products, order their destruction and shut down the premises without court order. Implementation and enforcement of the legislation is however, weak despite these powers.

Although food processing plants, abattoirs and establishments preparing and serving food are regularly inspected for sanitation and food hygiene, the very large informal sector has received little attention. The Ministry feels that simple enforcement of regulations achieves

little if there are no parallel education and awareness creation efforts of food producers and processors.

Other responsibilities of the MoH include the issuance of health certificates for food exports. In addition, the Nairobi City Council inspects foods at city entry/exit points, with a special emphasis on examination of meat and meat products arriving from other parts of the country. It should be noted that the inspection of abattoirs and meat processing establishments used to be performed by the Ministry of Health but the Ministry of Livestock, through the Veterinary Services Department, which has the legal mandate for this function, slowly taking over these responsibilities from the former.

The Ministry encouraged and spearheaded institutionalized national focal point for food safety to harmonize operations and coordinate activities .The NFSCC was established in 2007 where the Ministry of Agriculture is chair of the initiative, which started as a taskforce, with MOH, PHD as its secretariat.

Ministry of Livestock (feed and meat inspection)

The Ministry of Livestock, through its Veterinary Services Department and Livestock Production Department oversees the safety and quality of animal feeds under the Fertilizer and Animal Feeds Act, Chapter 345. However, up until June 2006 the Ministry did not have "gazetted inspectors" officially empowered through a legal notice to conduct inspections nor a laboratory to ensure that feed manufacturers comply with KEBS standards. The Ministry is therefore currently working on establishing a new inspectorate throughout the country to monitor the quality of animal feeds, which have been implicated as the causative factor of milk contamination with aflatoxins. A survey conducted in the Nairobi area indicated levels of up to 60 ppb aflatoxins in milk, and this contamination was found only in milk from cattle that had received supplementary feeding, thus pointing to the feeds as the source of contamination. Most of these feeds are sourced from Tanzania and Uganda.

There is need for capacity building efforts at all levels in this area and a new national feed quality act has been developed with wide stakeholder participation. The Department of Livestock Production (DLP) though had legally mandated Feed Inspectors, through a Legal Notice issued in May 2006 in accordance with the developed animal feed legal framework, this was later changed. In 2009 the inspectors were later deregistered through cancellation of the legal notice and the work of feed inspection is now carried out by DVS pending establishment of an inspectorate for animal feeds.

The Ministry of Livestock through its Department of Veterinary Services (DVS) **a**nd under the Meat Control Act of 1972, Chapter 356, is responsible for the inspection of all abattoirs and meat from all species in Kenya. However, it shares this task with the Ministry of Health which claims it as its duty to cover meat inspection. This seems to be an unnecessary duplication of efforts that should be resolved. The Ministry of Health still inspects abattoirs and meat and poultry products country wide. The Meat Act also includes regulations for meat transport and imports of meat and meat products. Currently there are no meat exports due to animal health certification issues. There are occasional permits for home slaughter of animals, but a veterinary officer must be present.

The DVS licensing of abattoirs is annual, presenting an opportunity to demand improvements. Meat transportation in prescribed containers is also licensed annually. Meat

handling/processing facilities of all sizes must be certified by the Ministry of Health as well, but the DVS intends to reach all once the Meat Processing Regulations currently being developed are enacted and capacity is built and are progressing swiftly to achieve this. According to the DVS, its inspectors cover all large and most medium sized processing establishments, but they intend to also inspect small-scale processors, which are growing in numbers throughout the country.

Ministry of Fisheries Development (fish safety and quality assurance)

Fisheries Department (FD) is in charge of auditing Kenyan fisheries and the safety and quality of Kenyan fish and fisheries products. The department operates under the Fisheries Act, Cap. 378 of the Laws of Kenya and particularly the subsidiary legislation: Fisheries (Fish Quality Assurance) Regulations of 2000. An update of the latter, to be known as The Fisheries (Safety of Fish, Fishery Products and Fish Feed) Regulations, 2006 is in final draft and ready for enactment. Additionally, the Fisheries Act provides guidelines and regulations as well as training and infrastructure (e.g., landing sites) to the fisheries sector. The FD inspects fishing vessels, landing sites (which local councils hold in trust for the community) and processing establishments, monitoring their compliance with Hazard Analysis and Critical Control Point (HACCP) plans along the chain, and certifies fish (mainly Nile perch and some marine fish and seafood) for export. The department is the only fish safety and quality certifying authority (competent authority) in Kenya recognized by importers such as the EU. Its fish quality assurance program has achieved equivalence to that of the EU. The department regularly takes fish and other samples and have them analyzed free of cost to processors. The department regulates, monitors and control fishing in all waters (in lakes and the ocean).

Collaboration between the FD and the private sector greatly assisted the fish export industry in Kenya achieve international fish safety and quality standards and thus overcome the fish export ban imposed on Kenya by the EU in the late 1990s because of suspected possible use of chemicals for fishing. Measures taken by Kenya to revamp the entire fish handling infrastructure and establish a food safety assurance system based on HACCP, however, were costly. The Kenyan Nile perch and marine fish (mainly crustacean) safety and quality control system is now certified as equivalent to that of the EU. The EU audits the Kenyan system periodically.

Although legally the safety and quality of fish for local consumption are subject to the same regulations and guidelines as fish for export, they receive very little attention from the Fisheries Department and local authorities.

4.4.1.2 Semi Autonomous Government Agencies (SAGA)

i) Fresh produce related

Horticultural Crops Development Authority-HCDA (fresh produce safety)

The Horticultural Crops Development Authority is a state corporation under the Ministry of Agriculture and it is therefore, a Kenya government semi-autonomous institution established under the Act Cap 318. The Authority promotes and coordinates production, marketing and export of horticulture crops among small-holder farmers. HCDA mobilizes small-scale farmers, assists them with market access and conducts training programs on various topics such as food safety and quality requirements by importers (e.g., GlobalGAP). In addition,

HCDA facilitates and oversees contract farming for small-scale farmers with the major Kenyan horticulture producers and exporters.

HCDA mandate is to regulate the industry through licensing and application of rules; provide advisory services to the government and industry for planning purposes and provide marketing intelligent information to the industry

The horticulture industry in Kenya is the leading foreign exchange earner in Kenya and contributes to many Kenyans' livelihoods since most of the fresh produce is derived from small scale farmers. Due to commercial nature of horticulture industry, HCDA plays a very important role in ensuring the right chemicals are applied. This role is however duplicated by fresh produce exporting companies who source their raw material from the small scale farmers. The agrochemical outlets also advise farmers on the right chemicals to use

The Kenya Plant Inspectorate Service-KEPHIS (Plant health)

The Kenya Plant Inspectorate Service is responsible for plant health protection activities in KEPHIS is a semi-autonomous institution within the jurisdiction of the Ministry of Agriculture (MOA) whose mandate is to regulate the quality of agricultural inputs, including pesticides in Kenya. Its activities encompass plant health protection for compliance with the SPS Agreement, issuance of health certificates for import/export of plant materials and foods of plant origin, certifying plant material from breeders and seeds certification, and conducting research, training and information activities on phytosanitary issues. KEPHIS conducts its work under the Agricultural Act, the Agricultural Produce Export Act, the Pest Control Products Act, the Seed and Plant Varieties Act and the State Corporations Act.

KEPHIS monitors for the presence of pesticide residues in produce for export certification in its own modern, accredited laboratory. Monitoring of microbial contaminants in plants is also done, but the microbiological laboratory is not yet accredited. There is also analytical capacity for heavy metals at KEPHIS. KEPHIS regulates all aspects of quality assurance of agricultural crops and advises MOA.

KEPHIS is developing a system of conducting regular surveys of pesticide residues in produce available at local markets and supermarkets There is however funding challenge to conduct regular monitoring programmes of pesticide residues in Kenya. Mycotoxins are also becoming an issue of concern. There is need to improve and harmonize extension services through development and implementation of a strategic plan for the food sector.

Pest Control Products Board

Although the Ministry of Agriculture is not directly involved in food safety control activities, another institution within its jurisdiction is the Pest Control Products Board (PCPB), a semi-autonomous governmental body is responsible for approving and monitoring the use of pesticides in Kenya. The quality of the fresh produce however, is controlled by KEPHIS.

The Pest Control Products Board (PCPB) is a Statutory Organization of Kenya Government established under the Pest Control Products Act, Cap 346, Laws of Kenya of 1982 to regulate the importation and exportation, manufacture, distribution and use of pest control products. It includes any compound or substance that enhances or modifies or is intended to enhance or modify the physical or chemical characteristics of a pest control products to which it is added;

and any active ingredient used for the manufacture of pest control products. Several categories of products included in this definition are; conventional synthetic chemicals, microbial pesticides, botanical pesticides, biochemical pesticides, and natural enemies. The Pest Control Products Regulation 2006 requires that the use of Genetically Modified Organisms (GMOs) and Living Modified Organisms as microbial or macrobial biopesticides shall comply with any other existing laws governing such organisms before an application is made to the Board.

Control Measures

- All Pest Control Products imported into Kenya should be accompanied with an approved import license. This is a requirement at the point of entry
- All pest control products meant for use on edible crops or domestic animals are subjected to health and environmental risk assessment
- All pest control products are expected to undergo local biological efficacy trials before registration. Monitoring is also carried out at the time of testing. Some special conditions may be attached to products with high risks as per conditions set by the Kenya Standing Technical Committee on Imports and Exports (KSTCIE).
- Premises where Pest Control products are manufactured, packaged and sold are monitored through inspection. For products of GMOs, release and post environmental release monitoring will be carried out in collaboration with the relevant regulatory agencies.

On interaction with other agencies, PCPB is a member of KSTCIE, NFSCC and the National Codex Committee.

Biosafety issues

Biosafety is a concept that refers to measures put in place to mitigate or protect human health and the environment from possible adverse effects of the products of modern biotechnology. The Cartagena Protocol on Biosafety provides a comprehensive and holistic regime designed to ensure that the development, handling, transport and use of products of modern biotechnology are undertaken in a manner that maximizes benefits while preventing or reducing risks to the environment and human health. The Protocol is a subsidiary agreement of the UN Convention on Biological Diversity (CBD).

Kenya signed the Biosafety Protocol in 2000 and fulfilled the ratification requirements in 2003. One of the key obligations expected from the Parties to the Protocol is promotion and facilitation of public awareness, education and participation in biosafety activities as stipulated in article 23. The National Council for Science and Technology (NCST) established under the Science and Technology Act, Cap 250, Laws of Kenya under the Ministry of Higher Education, Science and Technology is the designated authority that co-ordinates all matters pertaining to biosafety in Kenya. The National Biosafety Committee (NBC) is the technical arm of the Council charged with the mandates of overseeing coordination and implementation of biosafety issues. The NBC platform is a broad one with multi-stakeholder representation. The Kenya Bureau of Standards (KEBS), the National Environment Management Authority (NEMA), the Department of Veterinary Services (DVS), the Kenya Plant Health Inspectorate Services (KEPHIS), the Pest Control Products Board (PCPB) and the Public Health Department are among the key biosafety regulatory agencies represented on the NBC.

The Biosafety issues under the mandate of PCPB, include; microorganisms for use directly or as active agents in pest control products including genetically modified organisms, macrobials for use directly or as active agents in pest control products including genetically modified

organisms and biochemicals derived from genetically modified organisms used directly or as active ingredients or in pest control products.

Kenya Bureau of Standards (food standards)

The Kenya Bureau of Standards (KEBS) is the institution entrusted with developing standards in Kenya since its inception in 1974. KEBS activities range from standard setting, including product standards as well as process standards and guidelines, to preparation and dissemination of information for processors technical assistance to processors in achieving compliance with KEBS product and/or process standards, assistance in attaining certification (ISO 9000), registration of food processing establishments. The bureau also certifies products that are compliant with national standards by awarding them a KEBS "safety mark" that is renewable on a yearly basis. Processing plants manufacturing products certified under the safety mark are inspected by the bureau every quarter for compliance with KEBS standards. The bureau has a Department of Food and Agriculture that formulates and implements quality standards for food safety. The KEBS also develops specific codes of practice and has adopted relevant international standards such as the Codex Alimentarius Standards for Foods Derived from GMOs and a number of ISO standards.

The bureau inspects food processing plants to enforce compliance with its standards and has the power to stop production and even shut down plants. It also inspects imported products at entry points. Inspection is supported by quality verification at the bureau's own laboratories, some of which are accredited.

KEBS is a member of the International Organization for Standardization (ISO) and has a Codex Alimentarius Desk that handles all Codex Alimentarius Commission (CAC)-related issues, acts as secretariat for the National Codex Committee, recruits stakeholders for participation in Codex committee work at the national level and disseminates Codex information.

ii) Others SAGA dealing with other food and feed safety

Kenya Dairy Board

The Ministry of Livestock Development, through the semi-autonomous Kenya Dairy Board, is responsible for monitoring the safety and quality of milk and dairy products and of inspecting dairy plants and products as well. The board operates under the Dairy Act, Chapter 336 of 1915, which is currently being updated to fit the current dairy development strategy. There is also a KEBS code of hygiene for milk and dairy products that extends from production to consumption. To promote compliance, the MOLD communicates with all stakeholders, but the Act is applied only to processors and distributors and not to small market or itinerant milk vendors. Among the largest dairy operations, the Kenya Corporate Creameries (KCC), formerly a government-owned enterprise, has been privatized and its shares are now owned by dairy farmers.

The Kenya Dairy Board trains milk producers through extension activities, demonstrations and field days and is currently harmonizing the necessary training material. Trainers receive certificates of accreditation from the board. In addition to training efforts, the board is establishing "coding centers" (receiving stations), and milk processors' initiative of milk to guard milk quality. Milk traceability is now possible down to a pool level of 3–4 farms (i.e., milk from several farms collected in a single can). The Ministry's emphasis in the past has been mostly on increasing the volume of milk production, overlooking quality. However,

there have been recent efforts to improve the quality of milk and dairy products, including development and dissemination of manuals specifically targeted to milk producers, handlers, processors and distributors. Moreover, there are financing programmes through the Agriculture Finance Corporation to help farmers improve their facilities, procedures and marketing.

Kenya Meat Commission (KMC)

The Kenya Meat Commission is a corporate body established in 1950 by Parliament as an oversight body for slaughter of cattle and small stock, processing, chilling, freezing, canning or storing beef, mutton and other meats (excluding poultry) for export and for the local market. The legal instrument creating the commission is the KMC Act, Chapter 363 of the Laws of Kenya, 1950. According to the KMC Act, any abattoir, cold storage or refrigeration facility for cattle, sheep and goats is expected to operate under a license granted by the MOLD after consultation with KMC. KMC must also approve any export permits for meat and meat products granted by the Ministry.

The Veterinary Services Department has inadequate capacity for vaccination of notifiable diseases such as foot-and-mouth disease to ensure the country is declared animal disease free by the OIE. In addition, there is neither a developed monitoring system to document diseases and actions taken to eradicate them nor established traceability system of beef products.

4.4.2 Private Sector involvement with fresh produce food safety

4.4.2.1 Fresh Produce Exporters Association of Kenya

The Fresh Produce Exporters Association of Kenya (FPEAK) is a trade Association for growers, exporters and service providers involved in the horticulture industry, which include flowers, vegetables and service providers. The association seeks to improve competiveness and market access for Kenya's fresh produce. 99 percent of members are the flower, vegetable and fruit exporters. FPEAK has two categories of membership, Ordinary and Affiliate members. To become an ordinary member an exporter must have been in exporting business for at least 6 months. Affiliate members are firms and/or people serving the industry, such as airlines, certification bodies, packaging manufactures, chemical companies, and input suppliers such as seed.

Nationally, the association represents the trade in lobbying at government level, in monitoring standard compliance and providing training to members. It also supports its members on technical matters and acts as a source of information. Internationally, the association participates in trade negotiations and promotes the country's produce in target markets. A Board of Directors elected by the membership provides direction, defines strategies and identifies lobbying issues, and a Secretariat runs the association's office and has technical and support staff. The overall vision of the association is to make Kenyan horticulture a global choice, something it promotes via presentations about Kenyan produce at international forums.

FPEAK members are required to adhere to international standards on food safety, social and environment responsibility. Members subscribe to the Kenya Good Agricultural Practices (KenyaGAP). FPEAK coordinates capacity building and internal audits of member companies against international standards.

All certifications are in the hands of the private sector, including monitoring of pesticide residues and microbial contaminants. There are internationally trained auditors working at the exporting companies. These auditors do farm appraisals for members, at no charge, and help correct problems. The central government supervises occupational health aspects (all horticultural workers have to be medically examined according to such international certification guidelines as the British Retail Consortium, BRC, GlobalGAP (Private Standards for Foods). The Kenya Plant Health Inspectorate monitors pesticide residues in produce for export and issues phytosanitary certificates.

An increasing proportion of association members are supplying local hotels and the tourist industry with produce surpluses, some of which also find their way into the also expanding general local market via supermarkets. FPEAK in-house standard, KenyaGAP, is benchmarked with the GlobalGAP. As part of Kenya GAP, FPEAK has developed a domestic scope which is targeting local consumers. There is an involvement with large supermarkets that sell fresh horticulture products to help them develop systems along the value chain that ensure safety of the food that they sell. The established value chain with supermarkets is under review and some of the large supermarkets have become members of FPEAK.
FPEAK and KEBS have established an MOU for use of their safety mark for those local products that comply. There is need however to set up a committee that would carry out monitoring.

4.4.2.2 Fresh produce exporting companies

There are many fresh produce exporting companies, some large and others small. Most of these exporting companies source their products from small scale farmers and most of the time through contract farming. Some have large farms that they manage on their own serving as nucleus but also buying from farmers to bridge the supply gap .Each company has an approved list of suppliers who are compliant with set standards and this also facilitates traceability.

If farmers use chemicals that are not allowed or are found with malpractices (not adhering to Code of practice) by field officers, they are suspended from supplying the exporting company. However due to competition these farmers usually sell their products to other exporters or local markets.

4.4.3 Public/Private Sector partnerships

4.4.3.1 National Food Safety Coordinating Committee (NFSCC)

In view of the diversity of institutions involved in food safety activities, their often overlapping responsibilities and functions, and the need to coordinate activities in areas of food safety and quality, the Ministry of Agriculture has spearheaded a movement to create a National Food Safety Coordinating Committee, in compliance with the Food and Feed Regulation 882/2004 that came into effect on January 1st, 2006. NFSCC has no legal mandate, but its secretariat is at the Ministry of Public Health and Sanitation and its chair is the Ministry of Agriculture. There is plan however to start a process for legal entrenchment to make it into an Authority. The members of this Committee have continued to expand and now there are over twenty members who include the following institutions; MOFD, MOA, Ministry of Public Health and Sanitation, Ministry of Local Government, PCPB, KEPHIS, KEBS, Kenya Dairy Board, Kenya Coffee Board, Kenya Tea Board, Kenya Medical Research

Institute, DVS, DLP, Pharmacology and Toxicology Department of University of Nairobi, National Council of Science and Technology, WHO-Kenya, FAO-Kenya, UNIDO-Kenya
The major role of this Committee is to deal with food safety issues and now with established coordinating mechanisms, the secretariat receives any food safety alert from importer and notifies the Competent Authority to take action and monitors action. The Committee is therefore being recognized as an authority on food safety both locally and internationally.

The envisaged role of NFSCC is:

- Capacity building for the food control system
- Problem identification
- Intervention through empowered stakeholders
- Awareness creation
- Sustainable funding for monitoring, analysis and information dissemination
- Training of retailers of various agricultural inputs
- Training of trainers
- Development for a legal framework to address the issue of food control systems

4.4.3.2 National Taskforce for Horticulture

A national maximum residue level (MRL) Steering Committee was created by MOA in 2002 to address the challenges faced by Kenyan horticultural producers in the international markets, especially with regard to pesticide residue levels.

The Steering Committee was renamed NTH in 2004 due to broadened issues. Pesticide Initiative Programme (PIP) of the EU supported development of strategy and action plan.

The NTH is a consensus building forum and is composed of public and private sector organizations including exporter associations, agro chemical and grower representatives. The KNTH promotes private-public sector dialogue.

The EU comprises the major market for Kenya's horticulture exports and therefore the need to Kenya to comply with their standards. The EU regulators covering horticulture include:

- Council directive 76/895/EEC (1976) on MRLs of pesticides. This was amended in 2005 to Regulation (EC) No. 396/2005.
- Council directive 2000/29/EC of 2000 on introduction of harmful micro-organisms.
- Regulation (EC) No. 1148/2001 of 2001 on conformity checks and certification of fresh fruits and vegetables. This was amended to 1580/2007 in 2007.
- Regulation (EC) No. 178/2002 of 2002 on traceability.
- Regulation (EC) No. 882/2004 of 2004 on official controls.

Some other market standards that are important to Kenya include:

- GlobalGAP.
- TESCOS Natures Choice.
- British Retail Consortium (BRC)
- KenyaGAP etc.

Major Objectives of the NTH are to ensure that Kenya's horticulture produce compliance with market requirement; facilitate information sharing and channelling; and industry training and capacity building. The membership of NTH comprise of 17 members from public and private sectors. The public sector include: MOA, KEPHIS, KARI, HCDA, PCPB, KEBS, Export Promotion Council, NFSCC, and Ministry of Trade. The private sector membership include: FPEAK, Kenya Flower Council, Agrochemical Association of Kenya (AAK), NEMA, Kenya National Federation of Agriculture producers (KENFAP), Grower representatives, and Kenya Organic Agriculture Producers (KOAN), Lake Naivasha Growers Group and development partners.

The NTH creates an interactive forum for members identifying and resolving issues that affect the industry. The taskforce also publicizes and disseminates information and compliance status of Kenyan horticulture sector both locally and internationally.

4.5 Communication

4.5.1 Intergovernmental/stakeholder Coordination

Government Agencies dominate the biosecurity responsibilities but other stakeholders (public sector) also have roles to play. However, all those involved in biosecurity do not have formal structured communication among themselves. Most communication on cross-cutting aspects of biosecurity is handled through letters, circulars, telephones, meetings and workshops. The focal points of various aspects of biosecurity including, NFSCC and WTO/SPS enquiry point KEPHIS, initiate communication or react to issues raised by others, but there is no systematic approach for information dissemination.

Notification of disease outbreaks such as Avian Influenza, or cholera, to the general public is well developed by MOLD and PHD respectively, through posters, mass media, telephones, letters, meetings and circulars. On the cross-cutting issues of food safety of fresh produce and pesticide residue management in Kenya, coordination amongst the responsible ministries are not effective, particularly in regard to monitoring and surveillance efforts for locally traded and consumed products.

4.5.2 International communications

A level of Communication with regional and international bodies such as AU, COMESA, OIE, CAC, WTO, EU etc by relevant authorities exists but there is no developed communication strategy for regional collaboration on transboundary issue does not exist and therefore dissemination of information is weak.

In regard to international communications/reporting channels, information flows seem to be well established, the Chief Veterinary Officer in the Department of Animal Health serves as the contact point for the World Organisation for Animal Health Organisation (OIE). KEPHIS is the contact point for the Commission on Phytosanitary Measures (CPM) (under the International Plant Protection Convention, IPPC); KEBS is the contact point for the Codex Alimentarius Commission (CAC); Ministry of Trade and KEPHIS is the contact for World Trade Organization (WTO) matters related to the Agreement on the Application of Sanitary and Phytosanitary Measures.

4.5.3 Websites

Notably, most Kenyan ministries and many of their departments have websites that amongst other matters provide access to legal documents pertaining to their responsibilities.

5 Sectors of biosecurity/risk analysis

Most biosecurity related activities are undertaken by MOA (KEPHIS), MOH, Ministry of Livestock and Ministry of Fisheries. Semi Autonomous Government Agencies (SAGA) that include Research Institutions and the specialized boards, such as KEBS and PCPB also have significant role to play at the boarder entry points.

5.1 Food safety

MOH and MOPHS through Food Drugs and Chemical Substances Act and Public Health Act is mandated to ensure pre packaged foods are safe for consumption and the establishments that process food do so in hygienic manner. There is however a slight conflict because the local government also certifies hotels and restaurants to assure food safety for consumer. MOFD is the Competent Authority for fish and fish products.

5.2 Animal and plant health

Ministry of Agriculture is responsible for plant health through KEPHIS while DVS is responsible for animal health. The PCPB has a role to play through registration and monitoring of pesticides that can affect plants and animal health.

5.3 Human Health

Ministry of Public Health and Sanitation is responsible for prevention and management of food-borne illnesses including outbreaks. The ministry is responsible for diagnosing, treating and managing food-borne illnesses

6 Stakeholder Analysis

The analysis of stakeholders was carried out during the field mission as guided by Annex 7 of the FAO Biosecurity Toolkit. The roles of different stakeholders are summarized below (Table 7).

Table 7: Current institution mandates roles and responsibilities

Roles and mandates	**Responsible institutions and agencies**
Policies and legislation	
Public health	MOPHS and MOLG
Food safety	FD, KEPHIS,
Animal health	MOLD- DVS
Plant health	KEPHIS
Environment	NEMA
Invasive alien species	NEMA, KEPHIS
Biosafety and biotechnology	KEPHIS
Fisheries	MOFD
Implementation and enforcement	
Public health	MOPHS
Food safety	FD, MOPHS, MOLG and KEPHIS
Animal health	DVS

Plant health	KEPHIS
Environment	NEMA
Invasive alien species	KEPHIS and KWS
Biosafety and biotechnology	KEPHIS, NEMA, DVS, KEBS and PCPB
Fisheries	MOFD
Services (Regulatory, research, diagnostic and certification)	
Quarantine	KEPHIS
Risk Analysis	KEPHIS
Standards setting	KEBS
Diagnostic services	MOH-PH LABS, KEBS, KEPHIS,
Biosafety/biotechnology	KARI,
Research and scientific advice	KARI
Early warning on food-borne disease outbreak	MOH
Monitoring and surveillance	MOH, MOA,
Advocacy and trade	FPEAK, AFIPEK
Inspections and Certification	FD, MOH, KEPHIS,DVS-MOLD
Competent Authorities/ 3rd party	
Inspections, verification, certification, diagnostic services, emergency preparedness etc	None (NFSCC will fill this role once it is established and is legally mandated. The process is ongoing)

6.1 Core biosecurity-related activities

6.1.1 Diagnostic and/or Laboratory testing services

KEPHIS has accredited and modern laboratories for heavy metals and chemical analysis and environmental monitoring.

6.1.2 Monitoring and surveillance

Biosecurity-related monitoring and surveillance activities are extensive. Testing for pesticide residues on fresh fruits and vegetables is done by KEPHIS. Field (on-farm) monitoring is conducted by PCPB, KEPHIS. HCDA and FPEAK and also fresh produce exporters themselves.

6.2 SWOT Analysis

The following SWOT Analysis, concentrating on the food safety of Kenya's fresh produce, was done based on the information obtained through stakeholder interviews conducted

Strengths	**Weakness**	**Opportunities**	**Threats**
• Importance of proactive biosecurity management appreciated by all relevant institutions • Policies, laws, regulations and procedures in place that address some of the biosecurity issues. • Surveillance, analysis, and information dissemination of	• Fragmented legislations and policies without a coordinating mechanism. • Lack of awareness at policy level to influence resource allocation. • Small sized agricultural production units • Lack of capacity to manage	• Globalized and liberalized International trade • Membership of WTO, CAC, OIE, CBD • Membership of COMESA and EAC • Biosecurity	• Strict SPS requirements and escalating cost of compliance • Political instability causing decreased foreign investment. • Climate change and water shortage • Global food

Strengths	Weakness	Opportunities	Threats
pesticides are in place and working, at KEPHIS and PCPB. • Some quarantine facilities in place at KEPHIS (Muguga). • Pesticide and chemical accredited labs at the KEPHIS. • National standards body and standard-setting process well established • Existing capacity for monitoring agricultural compounds, including pesticide residues • Entry point inspections of fresh produce goods in the country take place. • Strong Stakeholder communication among public and private sectors and also the general public on biosecurity and food safety exists Good and sustainable training programmes for small scale farmers in place • Communication on biosecurity matters at regional and international level developed. • Some level of national collaboration on biosecurity matters developed e.g. NFSCC and taskforce on Horticulture.	borders • Increasing globalization and tourisms political interference • Institutional roles conflict and duplication • Low level budgetary allocation for biosecurity issues due to other issues of economic importance competing for resources at national level.	awareness • Initiative by KEPHIS to address biosecurity issues • FAO interest in Biosecurity issues in Kenya	shortage and growing demand in domestic markets for imported agro-foods • Differing priority placed on biosecurity matters in some neighbouring countries • Illegal importation of high risk products and chemicals

7 Conclusions

The current Kenyan biosecurity control and management systems are scattered in different ministries and agencies and there is no coherent and coordinated approach to prevent and manage biosecurity threats. The unclear policies, weak legislations, and low capacity for effective implementations and enforcement of the laws that are in place and the weak border controls, exacerbates the biosecurity threats and make the country vulnerable. The major findings of this assessment indicate the need to have the country biosecurity situation addressed and control and management improved through a collaborative approach. There was therefore a general consensus from all those interviewed that a national Biosecurity and food safety institutional arrangement need to be established as soon as possible so that a coordinated and collaborative approach to biosecurity threats, especially of pesticide can be achieved. There is general agreement that MOA through KEPHIS due to its intensive involvement in pesticide analysis and inspection of fresh produce should continue to spearhead the process until an overarching institution is established. Based on formation of NFSCC and NTH, formation of such an institution that enjoys a legal mandate and national

resource allocation should be expedited. There was also consensus that the biosecurity institution arrangement should be either autonomous or semi autonomous entity backed by legal mandate but not a loose arrangement as committees and taskforces. All those interviewed were of the view that the membership should be inclusive of both private and private sectors.

This assessment found various areas that require attention in the prevention, control and management of biosecurity threats and hazards. The following activities are necessary to build Kenya's Biosecurity Capacity:-

(i) Development of a national biosecurity policy that touches all areas affecting animal and plant health, and environment
(ii) Building institutional capacity in terms of personnel and equipment.
(iii) Improving diagnostic facilities
(iv) Development of a comprehensive legal frame work to cover all areas of biosecurity that defines roles and responsibilities of participating institutions to avoid overlaps and duplication;
(v) Competent authorities should be clearly established with a defined collaborative mechanism.
(vi) Development and implementation of enforcement systems
(vii) Establishment and management of quarantine facilities
(viii) Improvement of biosecurity communication systems
(ix) Biosecurity Risk Analysis and Management capacity
(x) Biosecurity hazards and threats preparedness capacity
(xi) Need to build strong collaborative regional and international links

8 Identification of Capacity Building Needs Related to Kenya's food safety and plant health

Through interview of key players, capacity building needs were identified and prioritized. As with the SWOT Analysis, Step 6 has been completed using information obtained through the stakeholder interviews. The result is set out in the following table.

Current Status	Desired Future Capacity	Gap or Obstacle	Capacity Building Need	*Priority
Policy Framework • There is no national statement of policy regarding biosecurity or food safety • Sectorial policies related to biosecurity and food safety exist across various sectors. • Most policies in place often outdated. • No integrated policy biosecurity or food safety. • The policies on pesticides are not harmonized	• Biosecurity and food safety are recognized as a national priority. • An integrated National policy on Biosecurity and food safety developed • Relevant sectorial policies that are consistent with overall biosecurity and food safety policies synchronized. • Appropriate policies enabling the establishment of a risk-based system for food safety and hygiene	• Lack or limited awareness on biosecurity both at technical and decision-making levels of government • Sectorial Policy overlaps and inconsistencies. • Lack of an integrated policy approach	• Increase awareness about the impact of biosecurity on the economic and social fabric of the nation at all levels. • Develop a national biosecurity and food safety policy • Review and harmonize all the relevant biosecurity and food safety related sectorial policies to ensure consistency with the national policy	1 1 1
Regulatory Framework • No integrated legal framework on biosecurity or food safety • Outdated or inadequate sectorial Biosecurity. Legislation. • Limited domestication of international standards and requirements • Basic right of consumers to safe, wholesome food not recognized in legislation	• A national (over-aching) all inclusive Biosecurity Act in place. • All inclusive Regulations to provide administrative guidance, which recognizes role and legislations of the relevant sectors. • Domestication of regional and international requirements through legislations • Responsibility of producers and processors to provide safe and wholesome food clearly stated	• Inadequate and ineffective legislations on biosecurity • lack of an integrated national biosecurity Act	• Umbrella Biosecurity and food safety legal framework (Acts) to cover all issues and spell out the arrangement that will implement relevant activities and sources of resources for its support • Identification and amending of any gaps, overlaps, or inconsistencies in other legislations related to biosecurity • Enactment of Legislations that are in tandem with international requirements. • Recognition of other regional/	1 1 2

Current Status	Desired Future Capacity	Gap or Obstacle	Capacity Building Need	*Priority
	in food legislation		international organizations, of initiatives will be necessary in the legal review.	2
Organization arrangement • Some aspects of biosecurity are coordinated e.g. disease outbreaks such swine and avian influenza. • There is collaborative roles between KEPHIS and PCPB on pesticides monitoring; and inspections of chemicals, • National Biosafety and Biodiversity and Codex committees in place • Taskforce on Hortculture and NFSCC are established but have no legal mandate	An integrated arrangement with well spelt out roles for each collaborating institution.	• Unclear mandates of biosecurity within the relevant institutions • Overlapping and duplicated roles of regulatory agencies • Stakeholders involvement is limited and roles not defined • Absence of effective consumer organizations	• Develop the mandate and responsibilities of the Biosecurity arrangement • Definitions of roles and responsibilities, including procedures for collaboration among government institutions. • Define the roles of stakeholder involved in the Act and encourage development of MOUs, through transparent consultations for effective collaboration. • Create awareness at the policy level to ensure adequate budgetary resources are allocated for the umbrella body and all other agencies involved.	1 1 1 1
Communication • Government Agencies and stakeholders (public sector) involved in biosecurity do not have formal structured communication among themselves. • Most Communication on	• A Communication strategy for effective communication among government agencies and stakeholders involved in Biosecurity should be developed. • All communication should be coordinated through the an	• No communication strategy on biosecurity issues. • Weak biosecurity linkages and communication at national, regional and international level, including mechanism for communication among regulatory agencies in neighbouring	• Communication strategy that spells out roles of each participating institution through guidelines that are developed through consultative process. • Identification of stakeholders that are important for communication	1 1

Current Status	Desired Future Capacity	Gap or Obstacle	Capacity Building Need	*Priority
cross-cutting aspects of biosecurity handled through letters, circulars, telephones, meetings and workshops. • Lack of awareness about food safety and quality among food producers and processors, due to absence of a communication mechanism • Strong but separate training programmes for farmers on use of pesticides by both public and private sector • The focal points of various aspects of biosecurity including NFSCC initiate communication or react to issues raised by others, but there is no systematic approach for information dissemination. • A level of Communication with regional and international bodies such as AU, ECOWAS, OIE, CA, WTO, EU etc by relevant authorities exists. • A communication strategy for regional collaboration on transboundary issue does not exist and therefore dissemination of information is weak.	established Biosecurity coordinating Agency • A structured and effective strategy for communication with international agencies (FAO, WHO, WTO, etc on biosecurity should be developed. • Communication with the public and private sector should be developed to avoid overlaps and conflicting messages	countries • Lack of consumer education and information material and activities	in biosecurity • Creation of biosecurity awareness to the general public • Information dissemination of the international biosecurity requirements, such as WTO SPS Agreement as they emerge to stakeholders to raise awareness. • Biosecurity spokespersons and communicators in concerned agencies • Dissemination of information on basic food safety issues to the public • Creation of a public consumer protection office • Preparation of coordinated materials on food safety and quality for producers (GAPs and GAHPs) and processors (GMPs) • Coordinated public sensitization on hazards through wrong application of pesticides.	1 1 2

Current Status	Desired Future Capacity	Gap or Obstacle	Capacity Building Need	*Priority
• Notification of disease outbreaks , such as Avian Influenza, or cholera, to the general public is well developed by DVS and PHD respectively, through posters, mass media, telephones, letters, meetings and circulars				
<u>Inspection, verification and enforcement</u> • Food safety inspections are carried out by DVS, FD, KEPHIS, KEBS, MOH – PHD, MOLG, but overlaps and duplication exists. • Plant health inspection conducted by KEPHIS is well established though require capacity building, especially in personnel. • Due to their efficiency, KEPHIS mandate is over stretched and they carry out inspections in non-traditional areas such as wildlife • Issuance of licences for most agencies is centralized, but many licences. • All inspectorate agencies face a various challenges, such as shortage of inspectors, inadequate	• A coordinated and efficient, Biosecurity and food safety inspection system by the agencies affiliated to the Biosecurity Agency. • Coordinated border inspections. • Development of inspection guidelines and procedures consistent with international standards and national standards • Informal food processing and preparation sector registered and informed • The food safety and quality system focuses on process rather than on final product	• Inadequate technical capacity of inspectorate • Inadequate use of appropriate guidelines and procedures for inspection to ensure consistency • Shortage of inspection equipment (equipment for instant field detection especially at entry points) and mobility constraints • Districts and regions lack financial and technical resources • Limited knowledge about GAPs, GAHPs, GMPs, and HACCP	• inventory of capacity of inspectorate • Development of Inspection guidelines based on existing international manuals and guidelines for use by inspectors • Capacity building on use of inspection guidelines, and modern inspection techniques, • Strengthen capacity of inspectors and inspectorate • Clarity, definition and demarcation of roles of various agencies involved in biosecurity inspections • Build enforcement capacity • Budgetary and technical support to districts • Enforcement of registration and establishment of training programs on basic food sanitation for street vendors • Capacity building for GAPs and HACCP:	1 1 1 2 1 1 2 3 1

Current Status	Desired Future Capacity	Gap or Obstacle	Capacity Building Need	*Priority
facilities, inadequate transportation, inspection guidelines and procedures, skills on modern inspection techniques, etc. • Large, unregulated informal food processing and preparation sector				1
<u>Diagnostic services</u> • KEPHIS, PHD, Government Chemist DVS, Customs, etc all operate laboratories for different functions • Most of Laboratories have inadequate equipment and trained personnel. • KEBS has Microbiology accredited laboratories • KEBS and KEPHIS both have capacity and system for aflatoxin surveillance analysis and results dissemination • KEPHIS has accredited chemical and heavy metal laboratories	• Accredited Food safety, livestock and plant laboratories operating efficiently and in a coherent fashion • A well equipped laboratory for analysis of all mycotoxins	• Inadequate national and regional laboratories and even fewer with international accreditation • Inadequate qualified and appropriately trained staff. • Inadequate or outdated diagnostic facilities and equipment	• Update testing methodologies, laboratories' manuals, protocols, Standard Operating Procedures, levels of detection. • Train analysts and technicians on chemical, microbiology, pesticide, heavy metals analysis, etc. • Upgrade FRI laboratories to conduct ochratoxin analysis • Inventory of the existing diagnostic facilities to identify which ones require upgrading, so as to enhance collaboration under the new institutional arrangement. • Enhancement of efficiency in the primary sample testing and communication of results. • Laboratories accreditation	2 1 2 1 2 1
<u>Quarantine and certification</u> • **KEPHIS (Muguga)**	• Effective quarantine and certification systems	• Inadequate animal and plant quarantine capacity in terms of skills and infrastructure • Weak coordination between relevant agencies	• Specify roles for food export certification agencies • Create new plant quarantine stations including one for MOFI to monitor aquaculture material	2 2

Current Status	Desired Future Capacity	Gap or Obstacle	Capacity Building Need	*Priority
		• Poor or inadequate quarantine facilities	• Establish animal quarantine facilities at entry points • Review and update quarantine manuals addressing sampling protocols, procedures quality assurance, reporting, etc. • Training needs assessment of quarantine inspectors	1 2 1
Emergency preparedness and response • Avian Influenza National Rapid Response Team in existence. • A food and waterborne disease control plan exists with the PHD though it is only institution specific. • No other sector had developed any rapid response system and handle situations as they arise.	• Sound systems in place to proactively respond to and manage biosecurity emergencies	• Integrated approach to biosecurity emergency situations though this is essential for rapid prevention or containment, is lacking • Roles and responsibilities of different stakeholders in biosecurity emergency situations not defined	• Develop a National Biosecurity (Animal and plant Health; and Food Safety) Emergency Plan that spells out responsibilities for each player in an emergency situations • Develop decision-making and operational procedures for biosecurity emergencies and provide training • Provision of a contingency fund under the new Biosecurity Agency would be desirable to initiate action to curb a biosecurity emergency situation	1 2 2
Risk Analysis • There is limited expertise on risk analysis. • KEPHIS has capacity to carry out pest risk analysis though not adequate • Limited knowledge and	• A well established a risk analysis program that Identifies, hazards, characterizes risks, recognizes uncertainties and gaps, and recommends options to facilitate decision making process. • Biosecurity decision-making	• Weak Risk Analysis capacity in all sectors at biosecurity risk; in food safety, animal health, plant health and biosafety	• Awareness creation workshop to sensitize key players at management level on risk analysis concept for the management of biosecurity • Specialized trained trainers on use of risk analysis in different	1 2

Current Status	Desired Future Capacity	Gap or Obstacle	Capacity Building Need	*Priority
specialized skills on components of risk analysis for use in food safety, animal health, plant health and biosafety	that is based on risk analysis		biosecurity sectors • Use of trainers to fast- track development of the risk analysis for all possible biosecurity risks.	2
<u>Monitoring and Surveillance</u> • Surveillance for animal and plant health is in place but lack resources to make it effective**.** • System for food-borne illnesses in place but grossly requiring upgrade • Border activities surveillance and monitoring is confined to the official entry points	• Disease/ pests prioritized surveillance in place for all biosecurity hazards • Well developed early warning system for occurrence of food-borne diseases	• Need for development of data and records collection and updating all health and food safety hazards • Weak and inadequate food-borne disease surveillance.	• Develop data collection, recording and dissemination system • Establish baseline data through survey and analysis. • Establish an integrated food-borne disease surveillance system	2 1 1

9 National Action Plan to Address the Capacity Building Needs of Kenya's Biosecurity System

The tables below constitute a proposed Action Plan for strengthening the capacity of Kenya's food safety system over the next five years, with particular reference to horticulture products and food safety. The preparation of the Action Plan completes Step 7 and concludes the process to assess the country's capacity needs as set out in Part 2 of the FAO Biosecurity Toolkit. The Action Plan attempts to provide specific guidance in addressing the cross-sectoral (i.e., human health/plant health) issue of "food safety in fresh produce and pesticide residue management".
Please note in the Plan that priority has been allocated on a scale of 1-5 and those actions with a score of 1 constitute the highest priority actions.

Table 8: 5-year Action Plan for Kenya's Biosecurity

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Year				
					1	2	3	4	5
Policy Framework • There is no national statement of policy regarding biosecurity or food safety • Sectorial policies related to biosecurity and food safety exist across various sectors. • Most policies in place often outdated. • No integrated policy biosecurity or food safety. • The policies on pesticides are not coordinated • Many policies do not capture current trends	• Biosecurity and food safety are recognized as a national priority. • An integrated National policy on Biosecurity and food safety developed • Relevant sectorial policies that are consistent with overall biosecurity and food safety policies synchronized. • Appropriate policies enabling the establishment of a risk-based system for food safety and hygiene	• Increase awareness about the impact of biosecurity on the economic and social fabric of the nation at all levels. • Develop a national biosecurity policy • Review all the relevant biosecurity related sectorial policies to ensure consistency with the national policy	• Hold workshops, seminars, meetings, and briefings • Use mass media and opinion leaders to create awareness in outside the towns and cities • Establish a national working group/ task force to guide the ownership and implementation of this action plan. • Initiate and develop an integrated overarching Biosecurity policy. (Need to align the policy with national template for policies. Need to sensitize Parliamentary Committee on Agriculture and Natural Resources regarding the policy) • Various sectors to review their	• MOA, HCDA,MOPH&FP EAK,NFSCC • MOA, KEPHIS • MOA, KEPHIS, ALL • MOA, KEPHIS	X X X X				

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Year				
					1	2	3	4	5
			current policies to harmonize with integrated policies.	• AG, ALL		X			

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Year				
					1	2	3	4	5
<u>Regulatory Framework</u> • No integrated legal framework on biosecurity or food safety • Outdated or inadequate sectorial Biosecurity. Legislation. • Limited domestication of international standards and requirements • Basic right of consumers to safe, wholesome food not recognized in legislation	• A national (over-aching) all inclusive Biosecurity Act in place. • All inclusive Regulations to provide administrative guidance, which recognizes role and legislations of the relevant sectors. • Domestication of regional and international requirements through legislations • Responsibility of producers and processors to provide safe and wholesome food clearly stated in food legislation	• Umbrella Biosecurity and food safety legal framework (Acts) to cover all issues and spell out the arrangement that will implement relevant activities and sources of resources for its support • Identification and amending of any gaps, overlaps, or inconsistencies in other legislations related to biosecurity • Enactment of Legislations that are in tandem with international requirements. • Recognition of other regional/ international organizations, of initiatives will be necessary in the legal review.	• Develop umbrella Biosecurity and food safety Acts. • Set or use the exiting Horticulture taskforce to draft legal instrument for the integrated biosecurity arrangement and involve AG in the drafting of the legislations • Collect and collate wider stakeholder views • Review various legislations related to Biosecurity and food safety to identify any gaps, overlaps, or inconsistencies; amend legislations in line with international requirements. Must recognize initiatives of other regional/ international organizations,	NFSCC, KEPHIS, MOA, MOH, ALL MOA, MOPH&S-PHD KEPHIS, ToH, NFSCC ALL, AG	X X X X	X X			

Current situation	Future Goals	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year				
						1	2	3	4	5
Organization arrangement • Some aspects of biosecurity are coordinated e.g. disease outbreaks such swine and avian influenza. • There is collaborative roles between KEPHIS and PCPB on pesticides monitoring; and inspections of chemicals, • National Biosafety and Biodiversity and Codex committees in place • Taskforce on Hortculture and NFSCC are established but have no legal mandate	An integrated arrangement with well spelt out roles for each collaborating institution.	• Develop the mandate and responsibilities of the Biosecurity arrangement • Definitions of roles and responsibilities, including procedures for collaboration among government institutions. • Define the roles of stakeholder involved in the Act and encourage development of MOUs, through transparent consultations for effective collaboration. Create awareness at the policy level to ensure adequate budgetary resources are allocated for the umbrella body and all other agencies involved.	• Establish a working group to develop the institutional arrangement for biosecurity • Obtain stakeholder consensus and high-level commitment on respective biosecurity roles and responsibilities. • Raise awareness about biosecurity roles and responsibilities at all levels. • Carry out training needs assessment, develop a training programme and source for funding • Strengthen capacity of all agencies involved in biosecurity through staff training and upgrading of facilities.	MOA-KEPHIS MOA -KEPHIS NFSCC, NTH, MOA ALL GOK	FAO, WHO, WTO/ STDF	X X X X X	X X	X	X	X

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year				
						1	2	3	4	5
Communication • Government Agencies and stakeholders (public sector) involved in biosecurity do not have formal structured communication among themselves. • Most Communication on cross-cutting aspects of biosecurity handled through letters, circulars, telephones, meetings and workshops. • Lack of awareness about food safety and quality among food producers and processors, due to absence of a communication mechanism • Strong but separate training programmes for farmers on use of pesticides by both public and private sector • The focal points of various aspects of	• A Communication strategy for effective communication among government agencies and stakeholders involved in Biosecurity should be developed. • All communication should be coordinated through the an established Biosecurity coordinating Agency • A structured and effective strategy for communication with international agencies (FAO, WHO, WTO, etc on biosecurity should be developed. • Communication with the public and private sector should be developed to avoid overlaps and conflicting messages	• Communication strategy that spells out roles of each participating institution through guidelines that are developed through consultative process. • Identification of stakeholders that are important for communication in biosecurity • Creation of biosecurity awareness to the general public • Information dissemination of the international biosecurity requirements, such as WTO SPS Agreement as they emerge to stakeholders to raise awareness. • Biosecurity spokespersons and communicators in concerned agencies • Dissemination of information on basic food safety issues to	• Develop and implement an effective national communication strategy for Biosecurity, through a taskforce or working group. • Train biosecurity spokespersons and communicators in concerned agencies and work with media to disseminate messages to general public • The Biosecurity Coordinating agency should initiate an all inclusive consultative process of developing and implementing a communication strategy • Develop a website for the agency with linkages to national, regional and international users of information. • Develop appropriate measures to create	MOA-KEPHIS NFSCC HCDA PCPB	GOK STDF FAO	X	X	X	X	X

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year				
						1	2	3	4	5
biosecurity including NFSCC initiate communication or react to issues raised by others, but there is no systematic approach for information dissemination. • A level of Communication with regional and international bodies such as AU, COMESA, OIE, CA, WTO, EU etc by relevant authorities exists. • A communication strategy for regional collaboration on transboundary issue does not exist and therefore dissemination of information is weak. • Notification of disease outbreaks , such as Avian Influenza, or cholera, to the general public is well developed by DVS and PHD		the public • Creation of a public consumer protection office • Preparation of coordinated materials on food safety and quality for producers (GAPs and GAHPs) and processors (GMPs) Coordinated public sensitization on hazards through wrong application of pesticides.	awareness on biosecurity to the general public and work with media to disseminate messages to general public.							

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year				
						1	2	3	4	5
respectively, through posters, mass media, telephones, letters, meetings and circulars										
<u>Inspection, verification and enforcement</u> • Food safety inspections are carried out by DVS, FD, KEPHIS, KEBS, MOH –PHD, MOLG, but overlaps and duplication exists. • Plant health inspection conducted by KEPHIS is well established though require capacity building, especially in personnel. • Due to their efficiency, KEPHIS mandate is over stretched and they carry out inspections in non-traditional areas such as wildlife • Issuance of licences for most agencies is	• A coordinated and efficient, Biosecurity and food safety inspection system by the agencies affiliated to the Biosecurity Agency. • Coordinated border inspections. • Development of inspection guidelines and procedures consistent with international standards and national standards • Informal food processing and preparation sector registered and informed • The food safety and quality system focuses on process rather than on final product	• inventory of capacity of inspectorate • Development of Inspection guidelines based on existing international manuals and guidelines for use by inspectors • Capacity building on use of inspection guidelines, and modern inspection techniques, • Strengthen capacity of inspectors and inspectorate • Clarity, definition and demarcation of roles of various agencies involved in biosecurity inspections • Build enforcement capacity • Budgetary and	• Review capacity of inspectorate (number, skills, location of inspectors and budget available, etc.) and recommend specific improvements / changes to appropriate agency • Formulate inspection guidelines based on existing international manuals (e.g. FAO inspection manuals) for use by inspectors • Provide training on inspection guidelines, modern inspection techniques, etc. to inspectors • Strengthen capacity of inspectors to check and counter-check entry of alien invasive species and other exotic pests and diseases.	KEPHIS, GOK, MOH, KEPHIS	FAO OIE	X	X	X	X	X

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year				
						1	2	3	4	5
centralized, but many licences. • All inspectorate agencies face a various challenges, such as shortage of inspectors, inadequate facilities, inadequate transportation, inspection guidelines and procedures, skills on modern inspection techniques, etc. • Large, unregulated informal food processing and preparation sector		technical support to districts • Enforcement of registration and establishment of training programs on basic food sanitation for street vendors • Capacity building for GAPs and HACCP:	• Upgrade capacity of inspectorate (financial and technical) • Clearly demarcate the roles of various agencies involved in food safety inspections • Implement a single-window policy for all agencies to work together in border inspections • Build enforcement capacity by using an integrated approach in collaboration with other enforcement agencies. • Progressive training of "trainers" on GAPs and HACCP • Training of small processors on pre-requisite programmes (GMPs, SOPs, SSOPs)							
<u>Diagnostic services</u> • KEPHIS, PHD, Government Chemist, KEBS DVS, etc all operate laboratories for different functions • Most of Laboratories	• Accredited Food safety, livestock and plant laboratories operating efficiently and in a coherent fashion • A well equipped	• Update testing methodologies, laboratories' manuals, protocols, Standard Operating Procedures, levels of detection. • Train analysts and	• Update, and develop as appropriate, test methods, lab manuals, protocols, Standard Operating Procedures, benchmarks, etc.	MOA KEPHIS, KEBS MOFD	FAO OIE WHO		X	X	X	X

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year				
						1	2	3	4	5
have inadequate equipment and trained personnel. • KEBS has Microbiology accredited laboratories • KEBS and KEPHIS have capacity and system for aflatoxin surveillance analysis and results dissemination • KEPHIS has accredited chemical and heavy metal laboratories	laboratory for analysis of all mycotoxins	technicians on chemical, microbiology, pesticide, heavy metals analysis, etc. • Upgrade laboratories to conduct mycotoxin analysis • Inventory of the existing diagnostic facilities to identify which ones require upgrading, so as to enhance collaboration under the new institutional arrangement. • Enhancement of efficiency in the primary sample testing and communication of results. • Laboratories accreditation	• Train analysts and technicians on chemical analysis, microbiology, pesticide analysis, etc. and use of available equipment • Review capacity of laboratories including staff, and through collaborative and consultative approach develop an action plan to improve and source for support from government and donors. • Identify ways to improve capacity and seek support for modernization • Improve efficiency in sample testing and communication of results. • Develop plan for accreditation for appropriate laboratories as a medium-term goal							
<u>Quarantine and certification</u> • **KEPHIS**	• Effective quarantine and certification	• Upgrade animal and plant quarantine	• Specify roles for food export/imports	KEPHIS DOF	GOK IPPC	X	X	X	X	X

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year				
						1	2	3	4	5
	systems	capacity in skills and infrastructure Strengthen coordination between relevant agencies • Develop quarantine facilities	certification agencies • Create new plant quarantine stations including one for DOF to monitor aquaculture material • Upgrade animal quarantine facilities at entry points • Review and update quarantine manuals addressing sampling protocols, procedures quality assurance, reporting, etc. • Training needs assessment of quarantine inspectors • Train relevant staff in quarantine and certification		FAO STDF					
Emergency preparedness and response • Avian Influenza National Rapid Response Team in existence. • A food and waterborne disease control plan exists with the PHD though	• Sound systems in place to proactively respond to and manage biosecurity emergencies under national umbrella;	• Integrated approach to biosecurity emergency situations though this is essential for rapid prevention or containment. • Clearly defined roles and responsibilities of	• Develop a National Biosecurity (Animal and plant Health; and Food Safety) Emergency Plan that spells out responsibilities for each player in an	MOH MOA KEPHIS NFSCC	GOK STDF Dev. Partners	X	X	X	X	X

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year				
						1	2	3	4	5
it is only institution specific. • No other sector had developed any rapid response system and handle situations as they arise.		different stakeholders in biosecurity emergency situations	emergency situations • Develop decision-making and operational procedures for biosecurity emergencies and provide training • Provision of a contingency fund under the new Biosecurity Agency would be desirable to initiate action to curb a biosecurity emergency situation							
Risk Analysis • There is limited expertise on risk analysis. • KEPHIS has capacity to carry out pest risk analysis. though not adequate • Limited knowledge and specialized skills on components of risk analysis for use in food safety, animal health, plant health and biosafety	• A well established a risk analysis program that Identifies, hazards, characterizes risks, recognizes uncertainties and gaps, and recommends options to facilitate decision making process. • Biosecurity decision-making that is based on risk analysis	Development of Risk analysis capacity in all sectors at biosecurity risk; in food safety, animal health, plant health and biosafety.	Awareness creation workshop to sensitize key players at management level on risk analysis concept for the management of biosecurity Specialized trained trainers on use of risk analysis in different biosecurity sectors Use of trainers to fast-track development of the risk analysis for all possible biosecurity risks.	All Stakeholders	OIE IPPC STDF FAO WHO GOK	X	X	X	X	X
Monitoring and Surveillance	• Disease/ pests									

Current situation	Future Goal	Capacity building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year				
						1	2	3	4	5
• Surveillance for animal and plant health is in place but lack resources to make it effective. • System for food-borne illnesses in place but grossly requiring upgrade • Border activities surveillance and monitoring is confined to the official entry points	prioritized surveillance in place for all biosecurity hazards • Well developed early warning system for occurrence of food-borne diseases	Need for development of data and records collection and updating all health and food safety and environmental hazards Development and implementation of food-borne disease /pests surveillance.	Develop data collection, recording and dissemination system Establish baseline data through survey and analysis. Establish an integrated food-borne disease surveillance system	MOA MOH ALL Stakeholders Cocoa- Board EPA	WHO GOK FAO Dev. Partners	X	X	X	X	X

10 Recommendations for improvement of Food Safety System

a) In summary, implementation of the Action Plan as proposed together with the contributions of international aid and development agencies would result in a considerable increase in the capacity and performance of Kenya's food safety system.
b) There is need to establish an appropriate institutional arrangement to coordinate all biosecurity and food safety issues. This could be one institution such as NFSCC with different sections to deal with biosecurity and food safety issues; or two different autonomous arrangements. This would ensure a competitive and harmonized approach especially in the global market demands.
c) KEPHIS is the focal and enquiry point for SPS, but there is no coordinated participatory mechanism with other sectors that are affected by SPS measures. There is need to set up a subcommittee (under NFSCC) that would meet regularly to look at issues that KEPHIS can take up at the WTO.
d) Develop a Monitoring and surveillance food safety system locally for traded products
    - Design and implement a Food Residue Surveillance Programme for Kenya including fresh fruits and vegetables
    - Design and implement a Total Diet Survey to assess the dietary intake of pesticide residues in Kenya
e) While responsibility for the design of a Food Residue Surveillance Programme for Kenya should remain with the KEPHIS, implementation will require the participation of all the relevant institutions.
f) Further consideration should be given to formalising coordination arrangements for collecting and analysis of fresh produces samples.
g) Need to select critical crops (fresh produce) that have socio-economic importance for further assistance in developing systems that will assure the food safety. A number of fruits and vegetables require more attention but French beans and mangoes should be given priority for further assistance to comply with all international trade requirements.
h) There is need to develop an animal feed monitoring and analytical systems through building the institution capacity of DVS.

Appendices

Appendix 1

Persons met/interviewed (Biosecurity Needs Assessment Mission)

	NAME	DESIGNATION	INSTITUTIION
1	Joseph Ngili Kigamwa	Coordinator	National Taskforce on Horticulture c/o KEPHIS
2	Ms. Florence Masia	Horticulture Officer	HCDA HQ.
3	Sam Kimotho	Systems Manager	Sunripe Limited.
4	Jane Bunoro	Quality Assurance Manager	Sunripe Limited
5	Kenneth Mandui	General Manager	Sunripe Limited
6	David Wakaba	Production Manager	Greenlands Agro Producers
7	Robert Kilonzo	Ag. Secretary	National Food Safety Coordinating Committee, Public Health Dept. MOH
8	Francis M. Mario	Technical Manager	Fresh Produce Exports Association of Kenya (FPEAK)
9	Dr. Rhonest Ntayia	Head of Q A food safety and authorization	KEPHIS
10	Nzau Rahael Musyoki	Student on attachment	HCDA
11	Beatrice Mwenezi	Student on attachment	HCDA
12	Sebastian Nthusi	Student on attachment	HCDA
13	Phoebe Akoth	Student on attachment	HCDA
14	Celestine Khaemba	Student on attachment	HCDA
15	Dr Gladys N. Maina	Chief Executive	PCPB
16	Mr. Ndunda	Purchases manager	Uchumi supermarket
17	Mr. Julius Kiptarus	Director	DLP
18	Dr. Peter M. Ithondeka	Director	DVS

Appendix 2

Broad questions to be covered during interviews

The following broad questions were used to gather information from stakeholders' emphasis and on the cross-cutting issue, food safety of fresh produce and pesticide residue management:

1. What do they understand about the term "biosecurity"?
2. What biosecurity-related responsibilities the Ministry/Department/stakeholder have?
3. What legislation mandates these or relates to these responsibilities?
4. What biosecurity-related activities does it undertake?
5. What resources does it have for these – human and funding?
6. In regard to its biosecurity-related activities, what data is collected?
7. Who else is responsible for/involved in the *human* OR *animal* OR *plant* health aspects of biosecurity?
8. What *human* OR *animal* OR *plant* health risks constitute the biggest threats?
9. Are there preparations for the occurrence of these pests or diseases or toxins?
10. Who is involved? What are their responsibilities?
11. What are their qualifications? What training has been undertaken?
12. What diagnostic facilities are required? Are these present in Vietnam?
13. Are there written standards or procedures relating to the responsibilities/activities referred to above?