



REPUBLIC OF KENYA
MINISTRY OF ENVIRONMENT AND MINERAL RESOURCES
NATIONAL ENVIRONMENT MANAGEMENT
AUTHORITY

NANDI NORTH DISTRICT



NANDI NORTH
DISTRICT ENVIRONMENT ACTION PLAN
2009-2013

issues from the divisions and it highlights priority themes and activities for the district towards attaining sustainable development. It is divided into eight chapters.

Chapter one covers the preamble that highlights provisions for environmental planning as provided for under EMCA, Environmental Action Planning process that discusses the methodology used in preparation of the DEAP. It also stipulates objectives, scope of this DEAP and challenges for environmental management in the district. It further describes district profile, climate and physical features, population size and distribution and social economic characteristics.

Chapter two discusses the district's environment and natural resources such as soils; land and land use changes; agriculture, livestock and fisheries; water sources; forest and wildlife resources and Biodiversity conservation.

Chapter three addresses the human settlements and infrastructure. It covers human settlements and planning; human and environmental health; pollution and wastes generated from human settlements; communication networks; social economic services and infrastructure and energy supply.

Chapter four discusses industry trade and services in the district. It highlights major industrial sector that covers agro-based industries, engineering, chemical and mineral industries; trade; service sector; tourism sector; mining and quarrying.

Chapter five discusses environmental hazards and disasters. It gives a definition of hazard and disaster, the extent and trend of environment hazards and disasters. The major hazards and disasters covered include; drought floods and fire.

Chapter six covers environmental information, networking and technology. Issues discussed include status of formal and non-formal environmental education; public awareness and participation; technologies; environmental information systems and indigenous knowledge. The chapter thus highlights the need for sustainable environmental management through environmental education and information, awareness raising and enhancing public participation at all levels.

Chapter seven covers environmental governance and institutional framework. It discusses status of environmental governance and institutional arrangements, regulatory and management tools and multilateral environmental agreements. The key issue addressed is the need for strengthened collaboration among lead agencies and stakeholders in environmental management.

Chapter eight provides an implementation strategy in a matrix form for addressing key environmental issues and proposed actions highlighted in chapters two to seven. The implementation matrix is divided into issue category, problem statement, action needed, stakeholders involved and the time frame.

The respective lead agencies and stakeholders are expected to be involved at all stages in the implementation of the district environmental action plan. Secondly, they are required to monitor and evaluate environmental management indicators identified in the matrix for the annual reporting for the district state of environment report.

FOREWORD

The 1992 Earth Summit held in Rio de Janeiro came up with various recommendations among them Agenda 21, a Global Environmental Action Plan. The theme of the Summit focused on how nations could attain sustainable development. The Government of Kenya embraced this idea by developing the first National Environment Action Plan (NEAP) in 1994.

Since independence, Kenya has continued to demonstrate her commitment to environmental management through various initiatives, among them the National Development Plan of 1974 and the National Environment Action Plan of 1994. Further, there have been a number of sectoral policies on environment in fields such as Agriculture, Livestock, Water, Energy, Food, Land, Wildlife, Forest, Industry, Trade, Arid Lands, Disaster Management and the Draft Sessional Paper No. 6 of 1999 on Environment and Development.

The Environmental Management and Coordination Act (EMCA, 1999) provides for the integration of environmental concerns in national policies, plans, programmes and projects. In this regard, EMCA 1999 provides for the formulation of National, Provincial and District Environment Action Plans every five years.

Environmental Action Planning (EAP) is a tool that aims at integrating environmental concerns into development planning. This EAP process was participatory, involving various stakeholders from institutions and sectors, including the public, private, NGOs and local communities at District, Provincial and National levels. These consultative meetings provided the basis for formulation of the Provincial Environment Action Plan (PEAP) and finally the National Environment Action Plan (NEAP) Framework.

The DEAP report addresses environmental issues from various sectors in an integrated manner and their significance in development planning. It proposes a strategy for achieving sustainable development in line with Kenya's quest to meet the Millennium Development Goals (MDGs), Vision 2030 and Medium Term Plan (MTP). The report has brought out a number of proposed interventions, legal and institutional framework to be incorporated into sectoral development plans and programmes. Its implementation will be monitored through the Annual State of the Environment Reporting.

I wish to underscore that the 2009-2013 DEAP report is a broad-based strategy that will enable the district attain sustainable development as envisaged in Vision 2030.

**Dr. Ayub Macharia (PhD),
DIRECTOR GENERAL (Ag),
NATIONAL ENVIRONMENT MANAGEMENT**

ACKNOWLEDGEMENT

On behalf of the National Environment Management Authority (NEMA), I would like to thank the Nandi North District Commissioner, who is also the chairman District Environment Committee (DEC) for spearheading the preparation process for this District Environment Action Plan (2009-2013). I also wish to thank most sincerely the District Environment Committee and the District Environmental Action Plan Technical Committee for their invaluable inputs and approval of this environmental action plan.

I acknowledge the insights and dedication to this process by the Provincial Director of Environment (Western) and the District Environment Officer. Last but not least, I extend my gratitude to all those who contributed towards the finalization of this District Environmental Action Plan in one-way or another.

Dr. Kennedy I. Ondimu

**DIRECTOR, DEPARTMENT OF ENVIRONMENTAL
PLANNING & RESEARCH CO-ORDINATION**

TABLE OF CONTENT

Contents

EXECUTIVE SUMMARY	1
FOREWORD	4
ACKNOWLEDGEMENT	6
TABLE OF CONTENT	7
LIST OF TABLES	9
CHAPTER 1	9
1.0 INTRODUCTION.....	10
1.1 PREAMBLE.....	10
1.2 EMCA, 1999 PROVISION ON ENVIRONMENTAL PLANNING	10
1.3 THE ENVIRONMENTAL ACTION PLANNING PROCESS.....	11
1.4 NANDI NORTH DISTRICT SCOPE	11
1.5 DISTRICT PROFILE.....	12
1.5.1 GEOGRAPHICAL LOCATION, SIZE, AND ADMINISTRATIVE UNITS	12
1.6 CLIMATE AND PHYSICAL FEATURES	12
1.7 POPULATION SIZE AND DISTRIBUTION	14
1.8 SOCIAL, CULTURAL, AND ECONOMIC CHARACTERISTICS	14
CHAPTER 2	16
2.0 ENVIRONMENT AND NATURAL RESOURCES	16
2.1 SOILS AND LAND USE.....	16
2.2 LAND USE CHANGES	17
2.3 AGRICULTURE, LIVESTOCK AND FISHERIES.....	17
2.4 WATER RESOURCES.....	22
2.5 WETLANDS.....	24
2.6 BRICK MAKING INDUSTRY	25
2.7 FORESTRY	26
2.8 WILDLIFE.....	27
2.9 BIODIVERSITY CONSERVATION.....	27
CHAPTER 3	30
3.0 HUMAN SETTLEMENT AND INFRASTRUCTURE.....	30
3.1 HUMAN SETTLEMENT AND PLANNING.....	30
3.2 INFRASTRUCTURE	31
3.3 HUMAN AND ENVIRONMENTAL HEALTH	32
3.4 POLLUTION AND WASTE GENERATED FROM HUMAN SETTLEMENT.....	32
3.5 COMMUNICATION NETWORK.....	33
3.6 EDUCATION FACILITIES	34
3.7 HEALTH FACILITIES.....	35
3.8 ENERGY SECTOR	36
CHAPTER 4	38
4.0 INDUSTRY, TRADE AND SERVICES	38
4.1 INDUSTRY.....	38
4.2 TRADE.....	38
4.3 SERVICES.....	38
4.4 TOURISM	39
4.5 MINING QUARRYING	40

4.6 SAND HARVESTING	40
CHAPTER 5.....	41
5.0 ENVIRONMENTAL HAZARDS AND DISASTERS.....	41
CHAPTER 6.....	43
6.0 ENVIRONMENTAL INFORMATION NETWORKING AND TECHNOLOGY	43
6.1. ENVIRONMENTAL EDUCATION	43
6.2. TECHNOLOGY	44
6.3. ENVIRONMENTAL INFORMATION SYSTEM.....	44
6.4 INDIGENOUS KNOWLEDGE	45
CHAPTER 7.....	47
7.0 GOVERNANCE, LEGAL FRAMEWORK, INSTITUTIONAL ARRANGEMENTS AND POLICIES	47
7.1 OVERVIEW	47
7.2 EMCA STRUCTURES FOR ENVIRONMENTAL MANAGEMENT.....	47
7.3 REGULATORY AND MANAGEMENT TOOLS	48
CHAPTER 8.....	50
8.0 IMPLEMENTATION STRATEGY.....	50
8.1 STAKEHOLDER INVOLVEMENT.....	50
8.2 RESOURCE REQUIREMENTS.....	50
8.3 MONITORING AND EVALUATION.....	51
APPENDICES	59
<i>PART IV OF THE ENVIRONMENTAL MANAGEMENT AND COORDINATION ACT (1999) –</i> <i>ENVIRONMENTAL PLANNING.....</i>	59
REFERENCES.....	62

LIST OF TABLES

Table 1: Area and Administrative unit of the District by Division (km ²).....	12
Table 2: Population size and Distribution.....	14
Table 3: Types of crops, Acreage, % area coverage, Yield and Production Levels.....	18
Table 4: Table of Rivers and their annual discharges in 2004 and 2005.....	22
Table 5: Aquifer Characteristics for Selected Boreholes.....	23
Table 6: Status and Trend of Forest Resources in the district	26
Table 7: Forest biodiversity	28
Table 8: Population Density Projections by Divisions (1999 – 2010).....	30
Table 9: Status of Communication Services.....	34
Table 10: Implementation Matrices	43

CHAPTER 1

1.0 Introduction

1.1 Preamble

The United Nations Conference on Environment and Development (UNCED) commonly known as the Earth Summit held in Rio de Janeiro in 1992 aimed at improving the global environment, while ensuring that economic and social concerns are integrated into development planning. The Conference underscored the need to plan for sustainable socio-economic development by integrating environmental concerns into development through adopting and preparing appropriate policies, plans, programmes and projects. The Conference agreed on the guiding principles and a global plan of action (*Global Environmental Action Plan*) for sustainable development commonly called Agenda 21.

Sustainable development is commonly defined as “*development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs*”. Development is also said to be sustainable if it meets ecological, economic and equity needs. The process of attaining sustainable development calls for the integration of environmental considerations at all levels of decision making in development planning and implementation of programmes and projects.

The theme of the Summit was on how nations could attain the sustainable development objective. The Government of Kenya embraced this noble idea when it developed the first National Environment Action Plan (NEAP) in 1994. The country also prepared the National Development Plan (1994-97) that ensured that there was not only a chapter on Environment and Natural Resources but also that environmental concerns were integrated in all the chapters of the Development Plan. Environmental Planning was thereafter well anchored in the Environment Management and Coordination Act (EMCA, 1999). (EMCA, 1999) provides for the integration of environmental concerns in national policies, plans, programmes and projects. In this regard, EMCA provides for the formulation of National, Provincial and District Environment Action Plans every five years.

1.2 EMCA, 1999 Provision on Environmental Planning

The EMCA provides that every District Environment Committee shall every five years prepare a District Environment action plan in respect of the district for which it's appointed and shall submit such plan to the chairman of the provincial environment action plan committee for incorporation into provincial environment action plan as proposed under section 39.

1.3 The Environmental action Planning process

DEAP Methodology

The process started with holding of regional workshops and appointment of the DEAP Secretariat by the Director General in 2004. The secretariat comprising of a District Water Officer, District Development Officer (DDO) and District Environment Officer (DEO) latter attended an induction course on the DEAP methodology.

District Environment Committee (DEC) members were gazetted in 2003 and requested to form a District Environment Action Planning Committee (Technical Committee comprising lead agencies and representatives from other stakeholders), chaired by the DDO and the DEO being the secretary to spearhead preparation of the DEAP. The role of the DEC was to approve the DEAP once prepared and submit it to the Provincial Environment Committee for inclusion in the Provincial Environment Action Plan.

The District Environment Action Planning Committee spearheaded the preparation of the Bungoma DEAP. The committee requested for sectoral environment reports from the lead agencies and compiled the DEAP.

Objectives of District Environment Action Plans

The objectives of District Environment Action Planning were:

- To determine the major environmental issues and challenges facing the district
- To identify environmental management opportunities
- To create synergy and harmony in environmental planning
- To integrate environmental concerns into social, economic planning and development of the district
- To formulate appropriate environmental management strategies specific to the district

1.4 Nandi North district scope

The preparation of the Nandi North DEAP was aligned with Vision 2030 and the Midterm Plan 2008-2012. It covers the period 2009-2013 and will be revised after five years as directed by EMCA

(1999). The DEAP will be monitored by the annual preparation of the State of Environment Reports. The environmental indicators that have been developed in the implementation matrix will be monitored by the respective lead agencies on an annual basis and incorporated in the annual State of Environment Reports. The National Steering Committee and the National Environment Action Planning Committee have approved the indicators. The DEAP has been subjected to stakeholder meetings at District level.

1.5 District Profile

1.5.1 Geographical Location, Size, and Administrative Units

Nandi North District is situated on the Western part of Rift valley Province. It is bordered by Nandi North District to the North -West, Uasin Gishu to the North and East, Nandi South to the South West and Vihiga to the South –West. It lies within latitude 0° and $0^{\circ} 34''$ North and longitudes $34^{\circ} 45''$ and $35^{\circ} 25''$ East. It occupies an area of 1,582 square kilometers with a maximum distance of 90km from North to south and 75km from East to West. The District has 5 Administrative Divisions, 42 Locations and 125 Sub-locations. The table below shows area and administrative unit of the District by division (**km²**)

Table 1: Area and Administrative unit of the District by Division (km²)

Division	Area	No. Of Locations	No. Of Sub-locations
Kapsabet	493.7	8	24
Kabiyet	368.0	6	18
Kilibwoni	373.1	9	30
Kosirai	195	9	24
Kipkaren	315.5	10	28
	1745.3	42	124

Source: District Development Plan (2003 – 2008)

1.6 Climate and Physical Features

Physiographically the District is divided into 5 distinct features. The rolling hills to the West, the Kapsabet plateau (part of the Uasin Gishu Plateau), the weeded highland and foot hills of Tinderet

volcanic Mass to the Southeast, the Kigwal Swamp in the Baraton/Chepterit area, and the dissected Nyando Escapement area at the southern border

The altitude of the District ranges from 1300m to 2,500m above sea level. It is hilly and is underlain by outcrops of the basement rock system, which are distinct to the North giving way to thick layers of red soil covered anthills to the south. This topography is favorable to the growth of natural forests, which serve as watersheds of the five major rivers and the numerous streams that form a good drainage pattern in the rest of the District. These rivers are Kipkaren, Clare, Onyonkie, Kimondi Kingwal, and Yala.

The rivers are perennial which ensures availability of water for domestic use as well as for potential commercial and industrial use. However, the rugged topography of the district inhibits transportation especially in the wet seasons. This terrain also affects farm mechanization particularly in the steep slopes making it unfeasible to realize optimal land exploitation.

The District has a cool and moderately wet climate. On the average, it receives between 1,200 mm and 2,000 mm of rainfall per annum. The long rains start in early March and continue up to end of June, while the short rains usually fall from mid September to end of November. A dry spell is normally experienced between December and March, but there is no month when the District records virtually no rainfall.

There is a direct relationship between the rainfall regime and the economic activities in the district. The southern and central parts, which receive a minimum of 1,500 mm rainfall per annum, form the tea production belt. The relatively drier areas to the East and Northeast, which receive an average of 1,200 mm of rainfall per annum, are ideal for maize and sunflower cultivation. The whole District is ideal for dairy farming.

The District has the potential to produce a surplus of diverse crops such as tree crops, horticulture, pyrethrum, cereal and fruit trees owing to adequate and reliable rainfall it receives. Most parts of the district experience mean temperatures of between 18°C and 22°C during the rainy seasons while higher temperatures averaging 23°C are recorded during the drier months of December and January. The coolest temperatures, as low as 12°C, are experienced during the cold spell of July and August.

1.7 Population size and distribution

Settlement patterns in the district follow agro-ecological zones with high potential areas having the highest population density in the district. The table 2 below shows the population size and distribution in the district.

Table 2: Population size and Distribution

Division	1979 (No)	Densit y	1989 (No)	Den s	1999 (No)	Dens	2005 (Est) No	Dens
Kilibwon i	29343	131	45468	179	37075	225	44334	269
Kosirai	2689	67	18445	147	35383	181	42076	216
Kabiyet	32956	96	27755	138	43367	162	51569	192
Kipkaren	36827	101	55879	125	52753	167	62731	199
Kapsabe t	64236	213	90044	181	125115	253	148779	301
Total	166,051		237,591		123,089		261,410	

1.8 Social, Cultural, and Economic Characteristics

There is a direct relationship between the rainfall regime and the economic activities in the district. The southern and central parts, with a minimum of 1500mm rainfall per annum, form the tea production belt. The relatively drier areas to the east and northeast receiving an average rainfall of 1200mm per annum are ideal for maize and sunflower. There are no major industrial plants in the District, except one Tea Factory, and a K.C.C. Milk processing plant.

The expansion of rural electrification programme is a problem despite the community raising the required deposit of 10%. There is more deforestation due to demand for firewood than afforestation. Good indigenous trees have been replaced by exotic trees that degrade our soils lowering food production. Gas is beyond reach of many while Biogas Technology is lacking. The road network is poorly maintained with only 15% of the roads being tarmacked. The feeder roads are in the pathetic state of disrepair. Poor roads network has made transportation of goods to markets costly and increased wastage. Only 10% of the population has access to tap water. Most

rural communities rely on stream water. Catchment encroachment has led to many springs drying up. Jua kali sector lacks premises. The operations lack basic tools and capital. They also lack access to credit/funding facilities to buy equipment.

CHAPTER 2

2.0 Environment and natural resources

2.1 Soils and land use

Soils

The distribution of soil depends on the soil-forming factor, which include the parent rock, climatic conditions, time, and human and biological activities. Fertility depends on soil characteristics. Soil on hills and major scarps around Lelmokwo are developed on various parent materials. These soils are shallow, excessively drained, red, fumble stone, clay loam to sandy clay loam. The soils are predominantly combisols with regosols and lithosols. There are rock outcrops.

The topography of the District exhibits a general undulating to rolling topography in the upper zones in the North and North Eastern parts that give way to flatter terrain in the South. The soil in the North/Northeastern parts range from high to moderately fertile. Those in the Southern tip range from low to very low in fertility. Those in the Central part of the District and the South Western tip range from moderately/high to variable in their fertility.

Soils on plateaus and high-level structural plains of Mutwot and *Biribiriet*, which are developed on intermediate igneous rocks, are well-drained, moderately deep red, friable clays over petroplinthite. They have low base content with a cation exchange capacity of less than or equal to 16 Meg /100/g day. The phosphorus is fixed therefore phosphate fertilizers are required. They have an oxyl B-horizon with sesquioxides (iron and aluminium oxide) as dominant. The soils are classified as rhodic ferrisols.

Soil on middle- level uplands of the Western part of the District, which are developed on granites and basement rock system are found in most parts of the District radiating from the centre, and are developed on grasses, igneous rocks and quartzites. Those developed from granites, igneous rocks and basement rock system form acrisols, while those developed from quartzites in the south form humic cambisols and those from grasses form nitosols. The soils are well-drained, very deep, dark red to brown friable clays with thick humic topsoil.

There are also Soils on bottomlands. These are soils on the major swamps of Kingwal and Ndurio River. They are developed from igneous rock (King'wal) and undifferentiated basement rock (Ndurio). These are poorly drained, dark grey, mottled clay with Humic topsoil in many places over

petroplintite. They are classified as mollic grey soil. Other good soils for coffee expansion lie in the hills of Sarora/ Chepterwai in the North. It is important to note that zones that are designated for expansions of selected crops are not mutually exclusive and do in fact tend to overlap.

2.2 Land Use Changes

Land uses in the district include agriculture and rural settlements, which are the most predominant. Other land uses are commercial/urbanization and industrialization to a smaller extent. Most land in the district is suitable for agriculture and livestock farming.

There is increased subdivision of land in the district into smaller uneconomical holdings. This is because the rapidly increasing population combined with the cultural practice of land inheritance from fathers to sons.

There are significant land use changes in the district due to increased demand for cultivation. There is encroachment of riverine ecosystems and wetlands for cultivation. Wetlands are being reclaimed for settlement and farming activities. The hilltops have encroached for farming and settlement, which has led to severe land degradation through soil erosion.

Key environmental issues

- Land fragmentation
- Livestock farming leads to soil degradation,
- Overgrazing and Poor farming methods have accelerated soil erosion in the district
- Poor waste management practices and excessive use of agrochemicals have led to soil pollution due to leaching of chemicals.

Proposed interventions

- Control overgrazing
- Encourage land consolidation
- Enhance education on safe use of agrochemicals
- Increase awareness on environmental conservation
- Undertake reseedling and other soil conservation measures
- Enforcement of relevant laws and legislations.

2.3 Agriculture, livestock and fisheries

Agriculture and Livestock are the main sources of livelihoods for rural populations. The three broad Agricultural production systems are Crop Cultivation, Livestock Rearing, and Fisheries. Each of the production system has the potential to significantly affect human and environmental health.

Agriculture

The district receives enough rainfall and has fertile soils which supports cultivation of crops such as; maize, finger millet, sorghum, beans, bananas, soybeans, wheat, kales, cabbages, tomatoes, onions, Irish potatoes, carrots, local vegetables etc. Majority of the crops are sold to earn a livelihood. Chewing sugarcane is also grown in the district. Tea and coffee constitute the two major cash crops in the district. Food crops include maize, beans, bananas, groundnuts, sweet potatoes, sugarcane and millet. Minor crops are pineapples, Garlic, Spinach, Mangoes, Local vegetables, Avocadoes, Garden peas, Pumpkins, Paw paws, Passion fruits, Onions, Macadamia and Citrus fruits

The cropping patterns in the District are closely intertwined with the rainfall patterns. During the long season, (November – May) almost 100% of the farm families go into cropping as compared to 50% - 60% of farm families who go into cropping during the short season (June – October).

Table 3 shows the types of crops acreage % area coverage yield and production levels

Table 3: Types of crops, Acreage, % area coverage, Yield and Production Levels

No.	Crop	Acreage (Ha)	% Area	Yield (Tones)	Production Tones/Ha
1.	Maize	28,759	19.8	56,942	2.0
2.	Beans	6,658	4.6	3,329	0.5
3.	Finger Millet	580	0.4	174	0.3
4.	Sorghum	145	0.1	66	0.5
5.	Wheat	2	*	3.6	1.8
6.	Irish Potatoes	1,118	0.8	13,416	12
7.	Sweet Potatoes	404	0.3	404,024	1000
8.	Soya Beans	8	*	4	0.5
9.	Bananas	186	0.1	1,860	10
10.	Pyrethrum	N/A	N/A	N/A	N/A
11.	Tea	3,108	2.1	N/A	N/A
12.	Coffee	165	0.1	N/A	N/A
13.	Cassava	3	*	4	1.3

No.	Crop	Acreage (Ha)	% Area	Yield (Tones)	Production Tones/Ha
14.	Cabbages	299	0.2	2,994	10
15.	Kales	265	0.1	2,955	11.2
16.	Field Peas	5	*	7.5	1.5
17.	Tomatoes	145	0.1	1,308	9.0
18.	Pigeon Peas	2	*	1.0	0.5
19.	Green grams	1	*	2	2.0
20.	Cow peas	2	*	2	1.0
21.	Groundnuts	2	*	1.0	0.5
22.	Chicken Peas	40	*	20	0.5
23.	Tobacco				

Source: District Agriculture Office (2004)

Key Environmental Issues

- Inappropriate farming practices such as cultivating steep gradients without terraces and cultivating up to river/stream banks, inappropriate agricultural practices,
- introduction of alien species
- Land degradation
- Soil erosion
- pollution due to use of agro chemicals
- Wetlands encroachment
- Deforestation
- Poor management of Liquid and solid waste disposal

Proposed Interventions

- Afforestation and reforestation programmes
- Developing technologies that reduce the introduction of invasive species.
- Extensive agricultural education and extension
- Improvement of marketing of farm produce.
- Promote appropriate soil conservation measures.

- Promote Value adding and other post harvest activities.
- Use of integrated pest control strategies.
- User of high yielding crop varieties
- Promote Agro – forestry,
- promoting the use of alternative/energy saving technologies
- Enforcement of relevant laws and legislations.
- Awareness creation to the public on safe use, storage, and disposal of Agro-chemicals
- Encouraging the community to diversify on crops and livestock, especially by adopting the emerging livestock industries
- Encouraging the Farming Community to adopt organic farming

Livestock

Livestock production in the district is geared towards enhancing delivery of efficient and effective extension services that ensures improved livestock productivity and environmental conservation, collaboration with stakeholders in strengthening livestock industry, improved documentation, management and dissemination of information, staff capacity development, and mainstreaming of cross-cutting issues in livestock development programmes. Natural pastures and fodder crops (especially Napier grass) form the bulk of livestock feedstuffs in the district

Livestock production in the district consists mainly of both local and exotic breeds. These include cattle, sheep, goats, pigs, chicken, turkeys, ducks, rabbits and bees.

Key environmental issues

- Pollution
- Overgrazing leading to land degradation
- Livestock pests and diseases
- Poor animal husbandry
- Soil erosion

Proposed interventions

- Control of pollution by enforcing relevant laws and regulations such as water quality regulations ,waste management regulations and Public Health Act
- Control of pests and livestock diseases
- Enhance soil conservation measures
- enhance extension services to livestock farmers

- community sensitization
- Encouraging farmers to adopt proper stocking rates to maximize on productivity and reduce Environmental degradation
- Addressing issues of insecurity in the District

Fisheries

There are two types of fish species found in the district which are capture species and culture species. The main capture species in the district are tilapia, Catfish, *labeo victoriansus*, and Barbus. The culture species are *tilapia niloticus*, *tilapia zillii*, African sharp-toothed catfish, and Trout.

The main fish products in the district are fish, fish cakes, omena dust (mainly used in the animal feeds industry), and fish oil. The four main marketing channels for fish in the district are, on-farm to neighboring households mainly for cultured fish species, local market centers for both captured and cultured fish species.

There are several efforts being promoted by the Fisheries Department in the District. These include, stocking and restocking of resource bases such as Rivers, and Dams/Water Pans, enhancement of the productivity from the present Dams/Water Pans and Rivers, and use of effective and recommended fishing gears such as gill nets of 4 inches mesh size. Aquaculture potential areas also compete with other economic activities such as brick making and crop cultivation.

Key Environmental Issues

- Pollution of rivers and streams due to the release of agro-chemicals that drain from the farms
- Lack of proper facilities for the disposal of agro-chemical wastes
- Water pollution due to effluent discharge from tea and coffee processing factories
- Water catchment degradation due to human encroachment
- Inadequate fish storage facilities

Proposed Intervention

- Promote soil and water conservation measures.
- Proper disposal of agrochemical wastes.
- Enforcement of relevant regulations.
- Capacity building on proper handling and use of chemicals.

- Create awareness on proper fish management
- Promote use of clean and appropriate technology both in production and processing stages.

2.4 Water Resources

The District has 7 permanent rivers, 5,555 wells, 2,770 protected springs, 65 boreholes, and 15 dams. The number of households with access to piped water is 3,500 and those with access to portable water are 30,000. Further, the number of households with roof catchments is 20,000.

According to a baseline survey of the District, on average, households in Nandi North get their water at a distance of 4KM. During the wet season, 70.8% of households spend less than one hour to get water, as compared to 47.9% during the dry season. 1.1% of households spend three to four hours to get water during the wet season compared to 7.4% during the dry season. Only a small proportion of households (0.3%) spend more than five hours during the dry season to get water.

(a) Surface Water

The permanent rivers and other volumes in the Districts are show in table 4 below;

Table 4: Table of Rivers and their annual discharges in 2004 and 2005

	Name of the river	Annual discharge 2004	Annual discharge 2005
1.	Yala River	94,867 200M ²	85,380,480 M ²
2.	Kimondi River	63,244,800 M ²	56,920,320 M ²
3.	Mokong River	15,811,200 M ²	14,230,000 M ²
4.	Kipkaren River	79,056,000 M ²	71,150,400 M ²

Source: District Water Office (2004)

There has been observed a decrease of surface water discharges of 10%. This is attributed to increased agricultural activities and encroachment of forest within the watershed coupled with a sharp population increase.

(b) Groundwater

A number of aquifers are being or have been exploited for domestic and livestock water supply across the District. The average yield from these boreholes ranges from 1.8m³/h to about 7.08 m³/h. The table 5 below shows aquifer characteristics for selected boreholes

Table 5: Aquifer Characteristics for Selected Boreholes

	NAME	Elevation	Depth (m)	Water Level Rest (m)	Struct.(m)	Yield M ³ /Hr
1.	Mosoriot T.T.C	2117	22	39.2	7.08	
2.	G.K. Koisagat	-	121.9	50.3	52.4	2.27
3.	Itigo Sec. Sch.	2077	91.5		52.4	2.27
4.	Philiph Burgei	-	157.6	50.0	91.0	1.9
5.	Wilson Kalya	2092	120.0	58.0	34.0	4.8
6.	Mosoriot H. Centre	2110	133.0		33.0	1.8

The District lacks detailed information of some of the aquifers due to some drilling contractor failing to observe the regulations and procedures pertaining to drilling and equipping the boreholes.

Key Environmental Issues

- Pollution of the lake water
- Water borne diseases
- Siltation
- Pollution of water resources from effluent discharge and use of agrochemicals.
- Encroachment of wetlands
- Loss of biodiversity
- High prevalence of environmental related diseases
- Silting of water sources due to farming along river banks and even general catchment degradation is affecting both water quality and quantity.

Proposed interventions

- Rehabilitation and completion of all stalled water projects.
- Institutional support and capacity building.
- Improve water and sanitation conditions in the district

- Inventorize of all water resources
- Map and gazette water catchments for conservation.
- Education and awareness programmes on water management
- Law enforcement on river frontage cultivation
- Carry out survey on water pollution sources and enforce pollution laws.
- Promote community based catchment's management

2.5 Wetlands

Kingwal swamp is the main wetland in the district. Kingwal wetland is upheld highly in the community as an important pasture during dry season. Traditionally this wetland has been used in the region to provide communal grazing for animals and customary initiation site for Nandi community. The local community has relied on this resource for a long time as a food security safety valve. New uses for the wetland resources have been introduced in the area especially handcraft making. The newly introduced wetland products provide high returns which exceeds that of crop cultivation. Although wetlands cultivation can provide good crop yields for the first few years, but over time continuous cultivation may lead to declining yields and loss of wetland ecosystems.

Kingwal wetland is a massive wetland on the catchments of Yala River. The wetland is popular as a habitat for rare *Sitatunga*, crane birds and wetland forest of *Syzygium spp.* The wetland is a very important resource for both the community living in the catchment and those living downstream of Yala River. What happens upstream affects the wetland while what happens in the wetland affects people living downstream. The major threat to this wetland is mainly drainage/conversion to agriculture land and brick making.

Socio- Economic values of wetlands

- Commercial and subsistence agricultural farming in the swamp and on the periphery.
- An important site for research on crops and birds.
- Pasture for animal grazing
- Fishing opportunities
- Making of fish traps by use of reed *phragmites* strands
- Basket weaving, mats, chairs, hats and thatching of houses (huts) by using papyrus
- An important bird site of various species such as the *gonoleck* and crested crane that could support tourism.

- The swamp is a unique ecosystem for various mammals such as *Sitatunga* reedbuck, warthog, *dik-dik*, velvet monkeys, hippopotamus and crocodiles among others.

Key Environmental Issues

- Destruction of habitat through conversion to agricultural activities.
- Depletion of water sources due to riverine cultivation
- Saline conditions in some locations towards the drier grounds
- High prevalence of environmental related diseases.
- Illegal water abstraction
- Pollution of water sources due to agro-chemicals
- Water Resource use conflicts
- Loss of biodiversity
- Uncontrolled brick making especially within the wetland and its catchments.

Proposed Interventions

- Strengthening / capacity building of community management structures.
- Creation of awareness on government policies regarding catchment management.
- Identification and gazettement of wetlands, water catchment areas and ground water recharge areas
- Promoting public participation through formation resource users associations to enhance conservation effort
- Harmonization and proper enforcement of existing acts regarding protection of water catchment areas.
- Initiate projects to promote sustainable use of the waters of the lake
- Pegging of riverbanks and introduction of conservation vegetation
- Enforce relevant laws and regulations
- Identify and gazette areas with endemic, rare and threatened species

2.6 Brick making industry

Brick making is one of the livelihoods of the local communities. Uncontrolled brick making is on the increase especially along the road reserves, wetlands and on arable cropland. The burning of bricks requires large amounts of fuel wood and these leads to increased felling of trees because of

the high demand. Brick making also leaves behind huge open holes that could be risky to wildlife and human beings. The abandoned holes become breeding grounds for mosquitoes.

2.7 Forestry

Types of Forests

The district has three types of Forests namely natural, indigenous and exotic plantations. The table 6 below shows Status and Trend of Forest Resources in the district.

Table 6: Status and Trend of Forest Resources in the district

Type of Forest	Extent (Ha)	% of Total	Distribution
Natural	14,993.4	90.6	Kapsabet, Kabiyet, Kipkaren
Indigenous	404.5	2.4	Kapsabet
Exotic Plantations	1,153.1	7.0	Kapsabet, Kipkaren

Source: District Forest Office (2004)

Key environmental issues

- Deforestation
- Encroachment of the forest for cultivation
- Illegal logging
- Lack of environmental /forest management
- Loss of biodiversity
- Loss of vegetation cover through charcoal burning and extraction of fire wood
- Poor methods of extracting medicinal parts trees
- Unsustainable methods in natural resource utilization

Proposed interventions

- Awareness creation and sensitization of people living around the forest areas.
- Develop forest management plans
- Encourage community participation in forest management
- Enforcement of laws and regulations on illegal logging and charcoal burning activities
- Enforcing the relevant legislative measures

- Initiating afforestation and reafforestation programmes
- Introduction of other sources of income generating activities other than charcoal burning
- Involvement of the local people in the management of forestry resource through participation in afforestation and management planning processes.

2.8 wildlife

The district is endowed with abundant flora and fauna. The Kenya Wildlife Service provides control services in terms of controlling the human-wildlife conflicts in relation to destruction of property or loss of life. The following wild animals are found in the district; Statunga –a rare antelope species, butterflies, hyenas, monkeys, waterbucks, snakes, crocodiles and various types of birds.

2.9 Biodiversity conservation

The district is endowed with both flora and fauna. The district is endowed with important fauna and flora due to the presence of gazzetted Forests. They are important sources of food, beverages, medicine, forage, vegetable oil, fibre and hides and skins. The forests are believed to have several species of flora, fauna & micro-organisms. However, many species still remain unknown because they have not been documented or not yet even discovered. This indicates that the district is one of the contributors to the highest preserves of general pools in the country with some being endemic, rare, threatened or vulnerable in the different forest blocks.

The table below shows the status of the forest biodiversity in the district. The district has indigenous and exotic forests

Table 7: Forest biodiversity

Ecosystems		Location and size	Key species	The forest has several species with the ones mentioned being major ones. Being a continuation of the Nandi North forest you find so many spp that are in Nandi North also found here. E. Bosqueur phoberos celtis species, albizia spp, latifolia, fagaropsis angolensis (on forest edges), chemacaldet
Gazetted forests	Indigenous	Kipkaren, Kabiyet, Kapsabet 14,993.4 Ha	Croton megarlocarpus, polyscius, Elgon teak, Simbari, Muna, Prunus africanum, Fagara, syzigium	
	Exotics	Kapsabet & KipKaren 1557.6 Ha	Pinus patula, cypress, Euc. saligna	

Key Environmental Issues

- Unplanned land use practices that threatens conservation on biodiversity
- Deforestation
- Lack of soil and water conservation measures.
- Invasive species
- Drought
- Overgrazing
- Forest encroachment for settlement and farming
- Landslides and anomies & mining
- wildfires
- Changing land tenure system
- Poaching of wildlife
- Destruction of wildlife migratory corridors and dispersal areas
- Wildlife diseases.

Proposed Interventions

- Enforcement of legislation to protect endangered species
- Promote diversification of alternative livelihoods

- Formation of Water Resource Users Associations (WRUAs)
- Involvement of community participation in environmental conservation
- Formation of community based conservation groups to protect and conserve the hilltops
- Create awareness on conservation and sustainable utilization of biodiversity resources amongst the community.
- Application of indigenous knowledge (IK) in biodiversity conservation alongside other approaches
- Control of inappropriate land use and encroachment into wildlife conservation areas and protected/gazetted forests
- Community involvement in forest management.

CHAPTER 3

3.0 Human settlement and infrastructure

3.1 Human settlement and planning

Human settlements and infrastructure are physical articulations or form of the social, economic, political and environmental interaction of people living in communities. The communities can either be urban or rural. The development of these communities involves changing the environment from its natural state to a built one. These activities are significant agents of environmental change and economic development. For example, human settlements and infrastructure influence the location of investment, which provides employment, generates revenue and creates demand for materials and services. This includes education, commercial, industrial, recreational, residential, agriculture, public utility (services include supply of water, sanitation, waste disposal, and telephone and power). Public purpose will include (religious institutions) and protected land (public parks, national parks and reserves, forests). Transport (roads, railways, airways, lake/sea ports). These activities can have negative or positive impacts on the environment.

Large part of land in the district falls under freehold (absolute ownership) other forms of land tenure are government land and trust land. Land tenure determines how the local communities can conserve resources.

The Population and Distribution Pattern in the District

The settlement patterns and distribution vary from one division to another. The population distribution is attributed to agricultural potential and proximity to the urban centres. The table below shows the population density of the district as per divisions.

Table 8: Population Density Projections by Divisions (1999 – 2010)

Division	1999	2002	2004	2006	2008
Kilibwoni	62,692	68,364	72,428	76,733	81,294
Kosirai	35,383	38,584	40,878	43,308	45,882
Kabiyet	43,367	47,291	50,102	53,080	56,236
Kipkaren	52,753	57,526	60,945	64,568	68,407
Kapsabet	125,115	136,435	144,545	153,137	162,241

Source: District Statistics Office (2004)

3.2 Infrastructure

The disparity between the rate of urbanization and economic development in relation to social, infrastructure, industrial growth, commerce and employment has exacerbated the proliferation of slums and squatter settlements that suffer from inadequate water, poor sanitation, waste disposal, health facilities, environmental pollution, land degradation, loss of biodiversity, loss of aesthetic values, radiation and inadequate enforcement of legislation. These conditions have an impact on the quality of urban environment and the surroundings.

Key Environmental Issues

The following are environmental issues related to human settlement and infrastructure:

- Inadequate physical planning
- Inadequate infrastructure
- Pollution of water sources by human waste
- Inadequate waste management
- Inadequate enforcement of by-laws by local authorities

Proposed Interventions

- Carry-out comprehensive urban/physical planning
- Develop and improve on the existing infrastructure
- Develop land-use plans
- Plan and develop sewerage facilities for all urban areas
- Designate and manage waste disposal sites
- Enhance the enforcement of relevant laws and regulations
- Rehabilitation of degraded areas
- Encourage public private partnership
- Promote cleaner production technologies
- Encourage use of appropriate building technologies and materials
- Integration of environmental concerns into projects, programmes and activities.
- Improvement of sanitary accommodation and hygiene promotion
- Enforcement waste management and water quality regulation 2006

3.3 Human and environmental health

The most prevalent diseases in Nandi North district are malaria, respiratory infections, intestinal worms, diarrhea, scabies, eye infections and bilharzias. Improved human and environmental health is a function of several factors. Key among them are: Pollution and waste management, onsite sanitation in human settlements, radiation control, management of chemical pollutants of health significance, proper use of pesticides, monitoring and management of the effects of heavy metals and food safety.

3.4 Pollution and waste generated from human settlement

Human settlements are associated with generation of huge amounts of wastes. This has had serious implications on the general cleanliness of the surrounding areas and has contributed to environmental degradation, more so if the waste is composed of non-biodegradable materials. In rural areas most households dispose their garbage by dumping it on farms or gardens within the homesteads. The most common method of garbage disposal in the urban areas is through public garbage heaps, pits and other undesignated dumping sites.

Urban centers form a large portion of pollution sources. Liquid and solid wastes from various activities in these areas find their way into rivers and other water sources hence causing contamination. Pollution problem is compounded by the fact that most urban centres do not have sufficient waste disposal facilities notably a designated dumping site. Despite the existence of waste by - laws in all the local authorities within the district, enforcing them has always been a challenge.

Some of the waste generated within the district include, solid wastes, liquid wastes, medical wastes, industrial wastes, radioactive wastes, excreta and urine and dead animals.

There are no reported serious cases of air and noise pollution in the district. Lack of enforcement of municipal by - laws and low fines for polluters encourages bad management of liquid and solid waste.

Kapsabet Municipality and indeed the entire District is faced by a myriad of solid waste related problems. Presently, the Municipal Council only collects about 2 tones of solid waste per day. It is estimated that the Municipality will generate close to 35 tones of waste per day by 2008. This is expected to rise to about 50 tones per day in 2020. Most of the households within the Municipality are rural-based, and are able to manage their waste without having to rely on the Council.

The Municipal Council of Kapsabet has an open dumping site for solid waste and an effluent collection system and a pond-based treatment works for the same. It also occasionally provides an Exhauster to exhaust Pit latrines within the municipal at a cost.

Within the municipality and local shopping centers across the district, the main types of wastes identified include, effluent waste, household wastes, commercial refuse mainly from markets and shops, and institutional refuse.

Key Environmental Issues

- Water pollution
- Environmental related diseases
- Improper siting of sanitary facilities
- Low level of awareness on sanitation

Proposed Interventions

- Enforce Public Health Act and other relevant regulations
- Enforcement of EMCA, 1999 and subsidiary legislations
- Promote land use planning
- Intensification of health education especially on hygiene

3.5 Communication network

The district is fairly covered in terms of roads and communication networks. The District has 155 KM of road, which is paved. Another 783 KM is under gravel and 765 KM is Earth roads. Major Service providers including Safaricom, Zain and Telkom Kenya Ltd. Cover the district.

About 1,900 Households and 93 private and public organizations within the District have Landline Telephone connections. The Local Post office provides the only Internet linkage in the District. It also has 18 Post/Sub-post offices spread across the District. 60% of Households own radios. The table below shows the status of communication services in the district.

Table 9: Status of Communication Services

No. Of Households with Landline Telephones	1,900
No. Of Private/Public Organizations with Landline Telephones	93
Mobile Telephone Service Coverage	2 Service providers (Safaricom and Celtel)
No. Of post/sub-post offices	18
No. Of telephone booths	106
% Of Households without radios	40
No. Of cyber cafes	1 (Post Office)
Railway line	None
No. Of ports including inland container depots	Nil
No. Of airports and airstrips	Nil
No. Of water ways	Nil
No. Of public service vehicles	Not determined but it has risen sharply since 2002

Source: State of Environment (2004) report

3.6 Education Facilities

The district has primary, secondary and tertiary institutions. The table below shows the education facilities in the district.

Education Facilities (2004)

Pre-Primary Schools					
Number 582	Total Enrolment rates		Total Drop-out rates		No. Of Teachers = 450
	Boys = 36%	Girls = 35%	Boys = 20%	Girls = 23%	Teacher: Pupil ratio = 1:30
Average Years of School Attendance = 5 Years					
Primary Schools					

Number 540	Total Enrolment rates		Average Years of School Attendance		
	Boys = 52%	Girls = 48%	Boys = 7 Years	Girls = 6 Years	
Number of Teachers = 2,700			Teacher: Pupil ratio = 1:39		
Secondary Schools					
Number 80	Total Enrolment rates		Total Drop-out rates		Number of Teachers = 500
	Boys = 55%	Girls = 45%	Boys = 15%	Girls = 19%	Teacher: Pupil ratio = 1:20
Average Years of School Attendance					
Boys = 4 Years			Girls = 3 Years		
Tertiary Institutions					
Number 17	Main Types of Institutions are; Youth Polytechnics and colleges				
Adult Literacy					
Number of Literacy Classes = 148		Total Enrolment rates		Total Drop-out rates	
		Male = 580	Female = 1,249	Male = 65.7%	Female = 55.1%
Literacy Levels					
		Male = 28%	Female = 25%		

Source: District Education Office (2004)

3.7 Health facilities

The district has a total of 17 health facilities which include one hospital, two health centre, thirteen dispensaries and one maternity/nursing home.

Key environmental issues

- poor strategies of health education, disease control and prevention
- poor road network
- lack of community involvement in project planning and implementation
- inadequate waste disposal facilities

- inadequate health facilities

Proposed intervention

- supply of sufficient facilities to health institutions and schools
- reduction of the cost of health service
- provide environmental education in schools and health institutions
- proper disposal of waste
- improvement of the quality health care
- improvement of communication network

3.8 Energy sector

The main source of energy in the District is wood fuel. This has led to the clearance of most vegetation. Commercialization of Energy sources such as wood fuel is common in the District due to the market provided by the Tea factories in and around the District. The species of choice is the fast maturing Eucalyptus species (*eucalyptus saligna*, and *eucalyptus grandis*). Kenya Tea Development Authority (KTDA) is promoting the planting of these trees by the farmers on a contractual basis.

Use of electricity is still restricted to urban areas and some markets and institutions. Biogas use is also limited to urban areas and local production is largely untapped. Wind power has not been exploited as well as solar energy. The district has a potential for generation of hydropower as several permanent rivers serve it. However, no attempt has been made to exploit this potential.

Petroleum is commonly used as a source of energy in automobiles and industries in the District. Air pollution by petroleum energy products is not significant in the Districts as the population of automobiles is not as high as say in other major town.

Key environmental issues

- Air and indoor pollution
- Cultural hindrance on conservation of trees(women are not allowed to plant trees)
- Extensive deforestation
- High initial cost of accessing energy

- Loss of biodiversity
- Loss of habitats
- Soil erosion

Proposed interventions

- Awareness creation to the community on the importance of tree planting
- Design houses with adequate ventilations
- Encourage afforestation and reforestation programmes
- Enforce relevant legislations
- Enforcement of biodiversity regulations
- Introduction of efficient and affordable energy technology
- Promote soil conservation initiatives

CHAPTER 4

4.0 Industry, Trade and Services

4.1 Industry

Industry is a very important sector as it is a source of employment, income and overall development. The district's industrial sector has not been fully exploited. The industrial activities in the District include; tea processing, milk processing, and the informal (jua kali) sector – metal fabrication, apiaries, posho mills, wood workshops, blacksmiths, and motor vehicle repairs.

4.2 Trade

The major types of trade practiced in the district include;

- Agricultural produce
- Fabrication/Garages
- Hardware stores
- Livestock trade
- Lumbering /Timber production
- Open air markets
- Pharmaceuticals and agro – chemicals
- Petroleum outlets
- Quarrying
- Supermarkets outlets
- Wholesale and retail
- Manufacturing and processing (tea and coffee)

4.3 Services

The following are some of the services undertaken by various entrepreneurs in the district:

- Dry cleaning
- Hospitality and tourism
- Shoe repairs/shining
- Garages/auto services
- Carpentry
- Tailoring,
- Posho milling,

- Hairdressing and cuts

Key Environmental Issues

- Waste water
- Gaseous emissions
- Solid waste
- Health and safety concerns for the workers
- Ignorance and selfishness among resource users
- Lack of awareness among the public
- Inadequate personnel and financial resources

Proposed Interventions

- Adopting cleaner production technologies
- Environmental monitoring to ensure compliance
- Enforcing water quality and waste management regulations 2006
- Conducting research on possible alternative use of wastes and/or better methods of waste disposal
- Adequate sensitization and awareness on environmental issues, EMCA, 1999 and need for compliance
- Offer incentives, rewards, sanctions and recognition to the best technology in use
- Establishing appropriate sites and ensuring proper waste disposal.
- Ensuring proper restoration of borrow pits.
- Public private Partnership in good environmental management/ clean management practices

4.4 Tourism

The district has potential in tourism but this has not been fully developed, mainly due to the poor road network. The main tourist attraction in the district is mainly scenery beauty and cultural activities.

4.5 Mining quarrying

Quarrying in the district has not been fully exploited. The contribution to the District's income from quarrying activities has not been established although it is thought to be minimal. Bricks are used widely in the local construction industry. Rehabilitation of quarrying and sand-harvesting sites is virtually non-existent.

4.6 Sand harvesting

Sand harvesting is one of economic activities in the district. Most of the activity takes place along the banks and it is scooped manually in all the sites. Sand harvesting is regulated by Nandi North County Council under the local government Act.

Key Environmental Issues

- Uncoordinated sand harvesting
- Land degradation
- Destruction of habitats
- Loss of biodiversity
- Accumulation of wastes
- Pollution

Proposed Interventions

- Formation of sand harvesting groups/CBOs
- Development of sand harvesting plans
- Regulation of sand harvesting through proper enforcement of EMCA, 1999 and sand harvesting guidelines
- Rehabilitation of the damaged sites by planting the appropriate tree species and establishing the appropriate soil conservation measures.
- Involve community in sand harvesting activities.

CHAPTER 5

5.0 Environmental Hazards and Disasters

People and Environment face threat to their life and livelihood from naturally and human related hazards .Natural hazards include dry spells, soil erosion and landslides. Drying up of water sources lightening and hailstorms among others. Disasters happen when these natural hazards interact with vulnerable people, property, and livelihood causing varying damage depending on the level of vulnerability of the individual property or livelihood.

Anthropogenic factors causing land degradation .deforestation of catchment areas, poor agricultural practices in appropriate land use systems. Changing living conditions among others have established to be contributing to increased impacts from the various hazards. The disasters that are experienced within the district are drought, flooding, accidents, diseases outbreak like malaria, fire, an HIV/AIDS pandemic

Disease outbreak has also struck the district. The diseases outbreaks are more prevalent in the valley as compared to high lands. The latest disease outbreak in the district was Rift Valley fever, which killed a sizeable number of livestock between late 2006 to early 2007.

Status of Early Warning & Preparedness

The capacity of the district to handle, mitigation and help recovery from disaster is lacking. The district lacks an early warning and preparedness system.

Key environmental issues

- Soil erosion
- Droughts
- Diseases outbreaks
- Loss of vegetation cover
- Loss of habitats
- Destruction of food crops, dwelling structures and even loss of human life.
- Loss of biodiversity
- Destruction of the fragile ecosystem through encroachment and unsustainable farming practices.

- Loss of Biodiversity
- Destruction of property and even loss of life.

Proposed Interventions

- Proper farming methods should be practiced with soil conservation structures in place along the escarpment.
- Degraded areas must be reforested with the right tree species with immediate effect.
- Introduction of drought tolerant crops.
- Digging of boreholes and construction of dams.
- Introduction of water harvesting and conservation technologies such as roof water catchment.
- Crop and animal diversification e.g. cotton farming, Camel rearing and Bee keeping.
- Practice dry season coping feeding mechanism.
- Sensitization of people through public barazas and churches.
- Creation of firebreaks in forests.
- Purchase and Installation of fire extinguishers and hoses in all government buildings.
- Training and regular drilling of personnel on fire fighting techniques.
- Develop an early warning systems
- Enforcement of relevant laws and legislations

CHAPTER 6

6.0 Environmental Information Networking and Technology

Information is a fundamental resource in decision - making process. Information is required in defining objectives, setting targets and it guides in the implementation of programmes. In order to make an informed decision about policies and priorities, there is need to establish a strong, authoritative data gathering mechanism. Reliable and comparable information allows organizations to develop indicators and link them to other critical issues such as health and poverty. Implementation of environmental education and dissemination of environmental information is fundamental to enhancing public involvement and participation in environmental management that leads to behaviour change resulting in responsible living and interaction with the environment.

Environmental information and networking technology has not received much attention and priority for many decades as compared to other sectors. Lack of capacity, poor coordination and linkages, documentation, utilization and preservation of indigenous knowledge are key issues affecting environmental information and networking at community, civil society, and private sector, learning institution, government institutions and international levels. Information Communication Technology sector is vital for development. There is need for Telkom Kenya, Kenya News Agency and other service providers to enhance information communication through telecommunication services and e-mail facilities.

6.1. Environmental education

Information technology has become a powerful tool for environmental information dissemination. Environmental education among the Nandi North population is critical for active involvement in conservation. Formal and informal education is helpful in changing people's attitudes and behaviour. It imparts skills and knowledge that enable people to strive for sustainable development through effective public participation in decision-making processes. Types of environmental education programmes which do exist in the district include the various environment related clubs including 4k club, Wildlife Club, Geography clubs and eco-schools project. A number of primary and secondary have eco-programmes.

Public awareness and participation

Public awareness initiatives in the district are mainly through print and electronic media, barazas, commemoration of environmental days such as World Environment Day, workshops and seminars.

6.2. Technology

Cleaner production technologies have not been embraced in the district. Waste recycling firms have not been established either in spite of huge amounts of recyclable garbage. Scrap metals and high density plastics are collected by 'waste pickers' and transported to recycling plants outside the district.

6.3. Environmental information system

Environmental information refers to all forms of knowledge, which relates to the environment in one way or the other needed to understand or manage the environment. Main sources of information in the district include international organizations research institutions and centres, educational institutions and civil society organizations.

Status of environmental information management system

Information on environmental related issues is easily available in the district. This is because institutions and organizations do share the information in workshops and seminars. Nandi north Municipal Council, District Public Health office both have environment unit. The daily newspapers, which occasionally contain environment related information, are kept at the District Library and the District NEMA office. Despite the existence of valuable indigenous knowledge (IK) on environmental issues it still remains undocumented. IK is normally discussed in seminars and workshops. There is an urgent need to document this information so that policy makers can make good use of it.

The main source of environmental information in Nandi North district includes international Organizations (e.g.) JICA, World Vision international, and government ministries, Parastatals NEMA, KVDA , KWS ,research institutes/ centers and civil society Organizations & educational institutions. The data type available in the district is mainly biological, agricultural, physical land use and social-economic and cultural.

6.4 Indigenous knowledge

The local inhabitants have strong ties with their cultural and social life that address the well being of people, animals and the environment. Some of these beliefs and practices exist as indigenous knowledge and have been applied since time immemorial to save land, forest and animals from overexploitation.

The inhabitants of the district have been relying on biological, diversity to meet their basic needs. As a result of this reliance, the community has accumulated knowledge on the uses of various animal and Plant species and how they can be conserved. This knowledge covers areas such as animal and human health, weather and climate changes predictions and best practices for conservation of biological diversity.

The indigenous knowledge on various aspects of biodiversity has helped to great extend in environmental management, for example the protection of cultural sites for ritual performance and protection of certain tree species and animal have helped in reduction of environmental degradation in the indigenous forests.

Key Environmental Issues

- Bias and preference of modern technologies-The young generation belief that modern technology is far more superior to traditional knowledge thus reducing uptake and utilization
- Inadequate documentation of IK
- Lack of scientific studies to validate these technologies
- Inadequate support of IK by the GoK
- Inadequate Frameworks for equitable benefit sharing and access
- Lack of a policy on indigenous knowledge
- Inadequate awareness on the potential economic value of IK among local communities

Proposed interventions

- Conduct research to document IK
- Training both the public and government institutions to enhance their use
- Raise awareness on application of IK in conservation

- IK policy formulation (Develop IK Policy)
- Awareness Creation on the potential economic value of IK among the community
- Develop IK database, inventories and documentation
- Dissemination of Information on IK
- Develop an institutional framework for IK
- Build capacity to enable the community to negotiate benefit sharing arrangements with those who need to use their knowledge.

CHAPTER 7

7.0 Governance, Legal Framework, Institutional Arrangements and Policies

7.1 Overview

Environmental governance in Kenya is through various legislations, standards and regulations together with institutions that implement them. Before the enactment of EMCA in 1999 as an overarching framework law, environmental management was scattered in various sectoral legislations and some were conflicting. Environmental Management and Coordination Act (EMCA 1999) devolve administration of a number of environmental and natural resources management issues to communities. It recognizes community rights, benefit sharing, pastoral land tenure and equitable and sustainable access to land.

Environmental Management and Coordination Act addresses land use management issues including sustainable land use, land use planning, and ecosystems protection and management. The law identifies structures that oversee the equitable distribution of benefits and devolution of decision making on natural resources. Further EMCA empowers organised communities to formulate environmental actions and conservation and management plans, through NEAPC, PECs and DEC.

7.2 EMCA structures for environmental management

Environmental governance in Kenya involves major players who are coordinated by National Environment Management Authority. There are also sectors of the government who have aspects of environmental management in their programmes and are referred to as lead agencies in the EMCA. Environmental Impact Assessment and Environmental Audit are tools used for planning and monitoring of upcoming and existing projects respectively.

Some of the Lead Agencies in the district

- Ministry of Water and Irrigation
- The Kenya Forest Service
- Water Resources Management Authority and related Companies and Boards
- Ministry of Works
- Ministry of Trade
- Ministry of Industrialization

- Ministry of Planning, National Development and Vision 2030
- Ministry of Home Affairs and National Heritage
- Ministry of Housing
- Ministry of Labour and Human Development
- Mines and Geology Department
- Ministry of Education, Science and Technology Development
- Ministry of Medical Services
- Ministry of Public Health and Sanitation
- Ministry of Energy
- Ministry of Agriculture
- Ministry of Local Government
- Kenya Wildlife Services
- Ministry of Livestock Development
- Ministry of Fisheries development

Committees under EMCA

- Public Complaints Committee
- National Environment Council
- National Environment Tribunal
- District and Provincial Environment Committees

7.3 Regulatory and Management Tools

There are various mechanisms in place in the district that ensure that the environment is conserved. EMCA1999 provided for the establishment of the District Environment Committees. The Local Authority (Town Council) has an environment Division to ensure that the environment's integrity is maintained. Some of the environmental tools being used in the district include:

- Environmental Management and Coordination Act of 1999

- Environmental Impact Assessment regulations of 2003
- Environmental Audit regulations of 2003
- Water Quality Regulations of 2006
- Public Health regulations
- Local Authority Regulations
- Waste Management Regulations of 2006
- Access and Benefit Sharing for Conservation of Biodiversity, 2007
- Noise pollution and excessive vibration 2009

CHAPTER 8

8.0 Implementation strategy

Environmental concerns are cross cutting in nature and their impacts are felt at local, district, regional, national and global levels. The overriding goal of this Environmental Action Plan is to enhance integration of environmental concerns into local development planning and implementation. The purpose of the implementation strategy is to catalyse the development enabling environment and establish synergies to achieve this goal.

Implicit in this strategy is the recognition that significant activities are already ongoing and will ultimately lead to the realization of the EAP goal. This implementation strategy seeks to support the initiatives and develop new activities. Accordingly, the strategy outlines a wide range of strategic catalytic actions to achieve each objective, without presenting them as an exhaustive list since environmental issues are expected to remain dynamic, responsive and catalytic to specific needs that may arise in the course of time before the review of this DEAP.

The implementation strategy is composed of division, location, issue category, problem statement, actions and time frame and lead agencies involved.

8.1 Stakeholder involvement

The implementation Strategy of Environment Action Plans will involve lead agencies, policy makers, communities, civil society, private sector, learning institutions, and development partners (Table 11). Engagement of stakeholders in the implementation process will be guided by their statutory mandate, their capacities and priorities. The target will be to develop District Programmes and Projects from the EAP framework. The recently formulated Public Private Partnership strategy sets the framework for private sector involvement. Stakeholders will be involved at all stages of project preparation and implementation including monitoring and evaluation. Measures will also be explored to enable donors finance various projects.

8.2 Resource requirements

Implementation of the District Environment Action Plan requires a deliberate and targeted allocation of resources (financial, human, and technological) that calls for resource capacity assessment. The impacts from various interventions in integration of environmental concerns often take time to be realised hence the need for prioritisation as resources for allocation are usually

scarce. Potential sources of funding should include locally available resources as well as Local Authorities Transfer Fund; Constituency Development Fund; Government Budgetary allocations; support from NGOs; CBOs; religious organizations, private sector and development partners.

It is recognized that Bungoma district has considerable technical capacities in various disciplines. These capacities are found within specialized departments of government, state corporations, private sector research and learning institutions. There may be access to capacities from international research institutions and regional development organizations. It is expected that the preparation and implementation of the District Environment Action Plan may seek technical support from these sources.

8.3 Monitoring and evaluation

The purpose of monitoring and evaluation of the District Environment Action Plan is to ensure their effective and efficient implementation as well as ensuring that environmental concerns are addressed and integrated in the development process. In order to evaluate the implementation of this DEAP, a monitoring and evaluation plan has been formulated. The set parameters will be monitored on an annual basis to evaluate impacts so that a pro-active action can be taken

Monitoring and evaluation will be undertaken by lead agencies. However, other actors/stakeholders in the respective sectors will be considered key in the implementation of the EAP. It will involve documentation of 'Best Practices' for the purpose of replication. Monitoring will be undertaken on continuous basis and an annual report prepared. There will be a review of the DEAP after five years.

Table 10: Implementation Matrices

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
District Wide	District Wide	Air	Air pollution	1	Establish air treatment systems in factories & Industries	Min. of trade	
	Mumias sugar factory			2	Enforce air standards requirements	Min. of trade	
	District Wide	Climate & related environmental hazards	Destruction of property by thunderstorms and strong winds	3	Install lightening arresters	Min. of energy, Min. of public works	
				4	Afforestation and re-afforestation	KFS, Min. of Agric	
				5	Undertake public awareness on disaster preparedness	Dist. Disaster preparedness committee	
				6	Strengthen District Disaster Preparedness Committee	Dist. Disaster preparedness committee	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				10	Enrich riparian areas with suitable vegetation cover	Min. of Agriculture, KFS, WRMA	
District Wide	District Wide	Crop production & Soils	Soil erosion	11	Construct terraces	Min of Agriculture,	
				12	Plant Napier grass	Ministry of agriculture	
				13	Afforestation & Re-afforestation	KFS, LBDA	
				14	Practice contour farming	Min. of Agriculture, KFS,	
				15	Build gabions	Min of Agriculture	
District Wide	District Wide	Crop production & Soils	Soil erosion	16	Rehabilitate and restore gullies	Min of Agriculture, Min of special	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
						programmes	
				17	Protect and conserve water catchments	KFS, LBDA, WRMA	
				18	Increase awareness on agriculture act	Min. of Agriculture	
				19	Construct storm drains	Min. of special programmes, local authorities	
				20	Sensitisation of community on global MEAs		
			Poor crop yields	21	Promote Agroforestry in sloppy areas	Min. of Agriculture, KFS	
				25	Promote Integrated Pest Management	Min. of Agriculture	
			Water Pollution	26	Promote proper use of fertilizers and farmyard manures	Min. of Agriculture	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				27	Training on safe handling of agrochemicals	Min. of Agriculture, Pesticide control board	
		Energy	Deforestation	28	Afforestation and re-afforestation	KFS, LBDA	
				29	Hold seminars on good forestry practices	KFS, LBDA	
				30	Promote use of renewable sources of energy such as Biogas, solar and wind	Min. of energy	
District Wide	District Wide	Energy	Deforestation	31	Promote use of energy efficient devices	Min. of energy	
				32	Re afforest hilltops	KFS, Local authorities	
		Environmental Education & Awareness	Low awareness on sustainable environment management	33	Establish Adult Literacy Centres with a focus on environmental issues	Min. of culture and social services	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				34	Collect data through baseline surveys on level of awareness	Min. of planning and national development	
				35	Enhance documentation of Indigenous Knowledge	National museums of Kenya	
District Wide	District Wide	Fish & Fisheries	Shortage of fish	38	Construct water control structures	LBDA, WRMA, Min. of Public Works	
				39	Reclaim encroached water systems to encourage natural fish production	Min of Fisheries, Min of Lands, WRMA	
				40	Adopt modern/artificial control measures to discourage predators	Min. of Fisheries	
				41	Reclaim wetland ecosystems to ensure increased water volumes	Min of Fisheries, Min of Lands, WRMA	
				42	Apply and enforce the Fisheries Act	Min. of Fisheries	
		Forests & Trees	Deforestation	43	Plant agroforestry trees	KFS, Min. of Agriculture	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				44	Promote education awareness on good forestry practices	KFS	
District Wide	District Wide	Forests & Trees	Deforestation	45	Promote sustainable use of forests	KFS	
Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				46	Afforestation and re-afforestation programmes	KFS, LBDA	
				47	Identify and rehabilitate hill tops prone to erosion	KFS, Local Authorities, Min of Agriculture	
				48	Initiate alternative income generating activities	Min of trade, Min of Youth	
				49	Protect and Re-afforest hill tops and slopes	KFS, Local Authorities	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
		Health	High incidences of air and water borne related diseases	50	Promote public health education	Min of Public Health and Sanitation	
				51	Apply and enforce public health and sanitation Act	Min of Public Health and Sanitation	
				52	Promote use of treated mosquito nets	Min of Public Health and Sanitation	
				53	Apply and enforce the Physical planning Act	Min of Lands	
				54	Apply and enforce Water quality and Waste management regulations	WRMA, Local Authorities	
				55	Establish proper drainage infrastructure	Local Authorities	
				56	Improve conditions at work places particularly lighting and ventilation	Min of Industry, Min of Public Health and Sanitation	
				57	Provide personal protective	Private sector	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
					equipments		
District Wide	District Wide	Industries and other Business Activities	Water pollution	58	Protect water springs	WRMA, Local Authorities	
				59	Promote cleaner production technologies	Min of Industry,	
				60	Apply and enforce Water quality and Waste management regulations	Min. of Public Heath and Sanitation, Local Authorities	
				61	Promote environmental education awareness among business community	Min. of Public Heath and Sanitation, Local Authorities	
			Air pollution	62	Incinerate industrial waste	Local Authorities	
				63	Apply and enforce Waste management regulations	Min. of Public Heath and Sanitation, Local Authorities	
				64	Afforestation and Re- afforestation	KFS	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				65	Enforce air quality regulations	Min. of Public Health and Sanitation, Local Authorities	
			Land degradation resulting from brick making activities	66	Improve brick making production technology	Min of industry, Civil Society	
				67	Restore/rehabilitate degraded sites	Local Authorities	
				68	Standardize the brick sizes	Min. of Industry, KEBS	
				69	Encourage formation of brick making groups	Min of Culture and Social services	
District Wide	District Wide	Livestock & Grazing	Soil erosion	70	Control livestock numbers	Min. of Livestock a	
		Mining & Quarrying	Land Degradation	71	Rehabilitate and restores mined sites	Mines and Geology Dept	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				72	Apply and enforce EMCA 1999	Mines and Geology Dept, local Authorities	
			Accidents & Deaths	73	Apply and enforce mining Act	Mines and Geology Dept	
				74	Fence mining areas	Mines and Geology Dept	
	Urban areas	Settlements & Infrastructure	Poor sanitation	75	Construct pit latrines	Min. of Public Health and Sanitation, Local Authorities	
				76	Construct sewerage systems/septic tanks in urban areas	Min. of Public Health and Sanitation, Local Authorities	
				77	Enforce physical planning Act	Min. of Public Health and Sanitation, Local Authorities	
Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
							2009 - 2013
				78	Promote proper hygiene & sanitation	Min. of Public Health and Sanitation, Local Authorities	
				79	Apply and enforce the public health and sanitation Act	Min. of Public Health and Sanitation, Local Authorities	
District Wide	District Wide	Waste Management & Sanitation	Poor waste disposal	80	Construct sanitary landfills/ garbage pits	Min. of Public Health and Sanitation, Local Authorities	
				81	Promote waste recycling	Min of Industry, Local Authorities	
				82	Apply and enforce the public health and sanitation Act	Min. of Public Health and Sanitation, Local	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
						Authorities	
				83	Apply and enforce Waste management regulations	Min. of Public Health and Sanitation, Local Authorities	
				84	Regular garbage/refuse collection in temporary holding bins	Local Authorities, Min. of Public Health and Sanitation	
				85	Apply and enforce municipal council by laws	Min. of Public Health and Sanitation,	
				86	Apply and enforce the Physical Planning Act	Min of lands	
				87	Promote public awareness on proper disposal of waste	Min. of Public Health and Sanitation, local Authorities	
				88	Promote the use of biodegradable packaging materials	Min. of Trade, Min of Industry	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				89	Privatise waste collection and recycling	Min. of Public Health and Sanitation	
		Water Resources	Shortage of water for domestic and Agriculture use	90	Promote water harvesting – tanks/dams	WRMA, Local Authorities, Min of Agriculture	
				91	Plant suitable tree species along water sources	KFS, Min of Agriculture, WRMA	
				92	Establish indigenous tree nurseries	KFS	
				93	Drill wells/boreholes	WRMA	
				94	Apply and enforce the Water Act 2002	WRMA	
				95	Promote education awareness on environmental laws	Provincial Adm. KFS, Min of Agriculture, WRMA	
				96	Protect springs	WRMA	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				97	Protect and restore water catchments areas through re-forestation	WRMA, KFS	
Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
			Water pollution	98	Apply and enforce waste management and Water quality regulations	Local Authorities, WRMA	
				99	Construct effluent treatment plants	Local Authorities	
				100	Construct proper waste water drainage systems	Local Authorities	
				101	Protect and conserve water sources	WRMA	
				102	Increase public awareness on water pollution control	WRMA	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
				103	Remove blue gum from waterways and sources	WRMA, Min of Agric., KFS	
District Wide	District Wide	Wetlands	Degradation of wetlands	104	Protect, Conserve and rehabilitate wetlands	WRMA, Local Authorities	
				105	Create public awareness on values of wetlands	WRMA	
				106	Establish District Wetland Conservation and Management committees	WRMA	
				107	Promote sustainable use of wetland resources	WRMA,	
				108	Develop and strengthen community wetland conservation programmes	Min. of Culture and Social Services, WRMA	
				109	Apply and enforce EMCA 1999	Community	
				110	Apply and enforce Water Act 2002	WRMA	

Division	Location	Issue Category	Problem Statement	Action No.	Actions Needed	Stakeholders	Time Frame 2009 - 2013
		Wildlife, Biodiversity & Tourism	Loss of biodiversity due to habitat destruction	111	Protect Hill tops	KFS, Local Authorities	
				112	Apply and enforce existing regulatory and management instruments on biodiversity	KFS, National Museums of Kenya	
				113	Practice proper land use planning	Local Authorities, Min. of Lands	
				114	Afforestation and re- afforestation	KFS	
				115	Control charcoal burning	KFS, Provincial Administration	
				116	Reclaim wetlands	Min. of Lands, Local Authorities, WRMA	
				117	Apply and enforce biodiversity regulations on access and benefit sharing	KFS, National Museums of Kenya	

APPENDICES

APPENDIX 1:

EXTRACT FROM EMCA, 1999

PART IV OF THE ENVIRONMENTAL MANAGEMENT AND COORDINATION ACT (1999) – ENVIRONMENTAL PLANNING (National Environment Action Plan Committee)

1. There is established a committee of the Authority to be known as the National Environment Action Plan Committee and which shall consist of:

- a) the Permanent Secretary in the Ministry for the time being responsible for national economic planning and development who shall be the chairman;
- b) the Permanent Secretaries in the Ministries responsible for the matters specified in the First Schedule or their duly nominated representatives;
- c) four representatives of the business community to be appointed by the Minister;
- d) representatives of each of the institutions specified in the Third Schedule;
- e) five representatives of non-governmental organizations nominated by the National Council of Non-Governmental Organizations;
- f) representatives of specialized research institutions that are engaged in environmental matters as may be determined by the Minister; and
- g) a Director of the authority who shall be the secretary.

2. The National Environment Action Plan Committee shall, after every five years, prepare a national environment action plan for consideration and adoption by the National Assembly.

38. Provisions of the National Environment Action Plan

The national environment action plan shall: -

- a) contain an analysis of the natural resources of Kenya with an indication as to any pattern of change in their distribution and quantity over time;

- b) contain an analytical profile of the various uses and value of the natural resources incorporating considerations of intergenerational equity;
- c) recommend appropriate legal and fiscal incentives that may be used to encourage the business community to incorporate environmental requirements into their planning and operational processes;
- d) recommend methods for building national awareness through environmental education on the importance of sustainable use of the environment and natural resources for national development;
- e) set out operational guidelines for the planning and management of the environment and natural resources;
- f) identify actual or likely problems as may affect the natural resources and the broader environment context in which they exist;
- g) identify and appraise trends in the development of urban and rural settlements, their impacts on the environment, and strategies for the amelioration of their negative impacts;
- h) propose guidelines for the integration of standards of environmental protection into development planning and management;
- i) identify and recommend policy and legislative approaches for preventing, controlling or mitigating specific as well as general adverse impacts on the environment;
- j) priorities areas of environmental research and outline methods of using such research findings;
- k) without prejudice to the foregoing, be reviewed and modified from time to time incorporate emerging knowledge and realities; and
- l) be binding on all persons and all government departments agencies, state corporations or other organs of Government upon adoption by the National assembly.

39. Provincial Environment Action Plans

Every Provincial Environmental Committee shall, every five years, prepare a provincial environment action plan in respect of the province for which it is appointed, incorporating

the elements of the relevant district environment action plans prepared under section 40 and shall submit such plan to the chairman of the National Environment Action Plan Committee for incorporation into the national environment action plan.

40. District Environment Action Plans

Every District Environmental Committee shall, every five years, prepare a district environment action plan in respect of the district for which it is appointed and shall submit such plan to the chairman of the Provincial Environment Action Plan committee for incorporation into the provincial environment action plan proposed under section 39

41. Contents of Provincial and District Environmental Action Plans.

Every provincial environment action plan and every district environment action plan prepared under section 30 and 40 respectively shall contain provisions dealing with matters contained in section 38 (a), (b), (c), (d), (e), (f), (g), (h), (i), and (j) in relation to their respective province or district.

REFERENCES

GoK: Vision 2030, Government Printer, Nairobi, 2008.

GoK: Medium Term Plan, Government Printer, Nairobi, Kenya. 2008,

GoK National Development Plan, Government Printer, and Nairobi, Kenya. 2002.

GoK: Annual Report Livestock Department, Nandi North, 2007.

Nandi North District PRSP: Consultation Report (2001 – 2004)

Nandi North District Development Plan 2002 –2008

Nandi North District State of Environment Report 2004