REPORT ON FIELD PRACTICE AND INDUSTRIAL ATTACHMENT CARRIED OUT AT NEMA, UASIN GISHU COUNTY, IN ELDORET TOWN FROM 5TH MAY TO 28TH JUNE 2019

DECLARATION

This attachment report is my original work and has not been altered or presented to any other institution. No part of this report should therefore be produced without my knowledge or that of NEMA Institution, Uasin gishu and University of Eldoret.

Signature……..Date……
……Biket Karen

ABSTRACT

The field attachment report is meant to contribute towards my degree in Bachelor of science in Natural resource management .The key objective of the attachment was to provide the student with an opportunity to gain more experience outside class and apply knowledge obtained from the program to solutions of practical problems in real life situation in the industry .Also ,the attachment was to offer a bridge of linkage between the learning institution and the potential employers to enhance exposure and hands on of the student such that incase of future employment the student will be able to meet job demands and expectations .The report describes the activities ,achieved objectives ,challenges and possible recommendations for betterment of such activities in future .During the attachment ,I was exposed to the organizational structure and functions of different departments in NEMA;actively engaged in the activities resulting to betterment of the environment.

ACRONYMS

EMCA	Environmental Management and Coordination Act
NEMA	National Environment Management Authority
EIA	Environmental Impact Assessment
EA	Environmental Audit
EDL	Effluent Discharge License
SAGA	Semi-Autonomous Government Agency
NEAP	National Environmental Action Plan
PEAP	Provincial Environmental Action Plan
RMA	Resource Management Act
WFD	Water Framework Directorate
SOE	State of Environment
CAA	Clean Air Act
NCA	National Construction Authority
WFD	Water Framework Directorate

PM	Particulate Matter
NPS	National Policy Statement
ROs	Regional Organizations
EU	European Union
AU	African Union
ASEAN	Association of Southeast Asian Association
USAN	Union of South American Association
UFM	Union for the Mediterranean
AIDs	Acquired Immunodeficiency Syndrome
SAARC	South Asian Association for Regional Cooperation

1 Contents

CHAPTER ONE

INRODUCTION

1.1 Introducing the course

I am a third year student at the University of Eldoret taking a Bachelor's degree in Natural Resource Management, Department of Forestry and Wood Science .The main course that prepared me for the attachment was Environmental Impact Assessment (EIA).EIA involves projects carried out on our environment and the effects that may occur due to the projects. The main objective of the attachment was to provide opportunity to gain more experience and apply knowledge obtained from the institution to the problem solving in real life situation in the industry .The attachment bridges the gap between the learning institution and the potential employers to enhance exposure and hands on the student such that incase of future employment the student will be able to meet the job demands and expectations .Other objectives of the attachment was to expose the trainee to actual environmental management issues and problems also the attachment was to enable the learner acquire practical and organizational skills.

1.2 Introducing the attachment station and its history

The National Environment Management Authority ,NEMA ,is located in Eldoret town ,UasinGishu county .It is composed of major officials led by the Director general at the national level .The regional office in Eldoret is headed by Madam Anne ;then the County Director of Environment ,Mrs. Sally Kibos.I was assigned to the compliance and enforcement department headed by Mrs. Keziah Nangira and her counterpart .NEMA has the mandate to coordinate and implement matters concerning the environment .It also advises the government on issues concerning management of the environment .The impact of NEMA to the region is that

,standards of the environment has been improved. Other services include receiving EA files and dispatching EIA files to relevant lead agencies.

NEMA is established under the Environmental Management and Coordination Act No. 8 of 1999(EMCA) as the principal instrument of Government for the implementation of all policies relating to the environment .EMCA 1999 was enacted against a backdrop of 78 sectorial laws dealing with various components of the environment, the deteriorating state of Kenya's environment ,as well as increasing social and economic inequalities , the combined effect of which negatively impacted on the environment .The supreme objective underlying the enactment of EMCA 1999 was to bring harmony in the management of the county's environment.

NEMA Service Charter

Mandate of NEMA

Section 9(1) of EMCA mandates the Authority to exercise general supervision and coordination over all matters relating to the environment and to be the principal instrument of the government of Kenya in the implementation of all policies relating to the environment.

The authority is a Semi-Autonomous Government Agency (SAGA)in the Ministry of Environment ,Water and Natural Resources and has been in operation since 1st July 2002.The Authority works closely with lead agencies and development partners, the latter who include UNEP and UNDP .Since its establishment ,NEMA has implemented three strategic plans and has been on performance contracting as required by the state Corporation Regulations ,2004 legal notice No.93 .Under these regulations ,Boards of Directors in state corporations ,among others, are required to sign performance contracts with the Government ,against which they are periodically reviewed.

Vision

‘To be a world class environment management Authority”

Mission

‘Ensure a clean, healthy and sustainable environment in Kenya through supervision and coordination of all matters relating to the environment”

Motto

Our environment, our life, Our Responsibility

Core Values

1. Professionalism

2. Equity

3. Teamwork

4. Integrity

5. Courage of conviction

STRUCTURAL ORGANIZATION OF THE MAIN ACTIVITY


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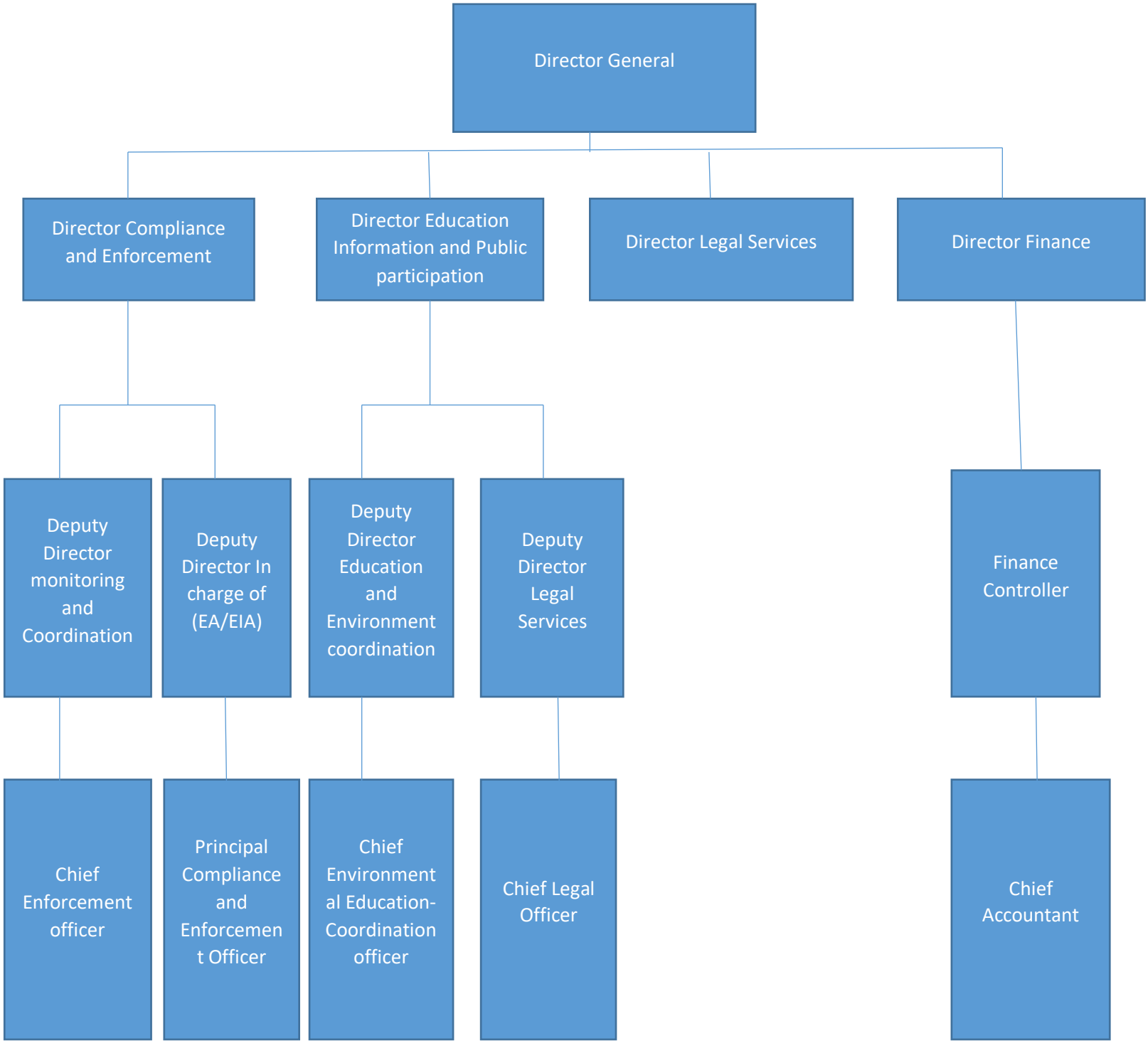
CHAPTER TWO

2 MANAGEMENT

2.1 Management structure



2.2 Duties and Responsibilities

Directorate Department

The Directorate Department, being the one in charge of all activities in the industry; oversees and facilitates programs and activities of other departments including linkage with external agencies. Its duties are to;

- Ensure effective and efficient coordination of all activities undertaken by NEMA departments and lead agencies.
- Coordinate all Field Operations
- Identify and create good working relations with all development partners
- Prepare press releases, media liaison, conferences, supplements and press briefs on NEMA programs and activities;
- Coordinate and implement government policies on environment;
- Ensure maintenance of accountability, high audit standards and proper development and supervision of staff in the authority;
- Perform such other functions as the Government may assign to the Authority or as are incidental or conducive to the exercise by the authority of any or all the functions provided under EMCA;
- Promote positive image of the Authority through effective Public Relations.

Compliance and Enforcement Department

The department identifies projects and Programmes or types of projects and Programmes, plans and policies for which environmental audit or environmental monitoring must be conducted under the Act and ensures EIAs and EAs are conducted. Other duties of the department include;

- To initiate and evolve procedures and safeguards for the prevention of accidents which may cause environmental degradation and evolve remedial measures where accidents occur;
- To promote effective and efficient management and use of cleaner production technologies;
- To ensure compliance of environmental regulations, standards and guidelines;
- To ensure enforcement of environmental regulations and standards;
- To formulate regulations, standards and guidelines on environmental management (and evolve procedures and safeguards for the prevention of accidents which may cause environmental degradation and evolve remedial measures where accidents occur.

Environmental Planning and Research Coordination Department

Functions of the department

- Promote the integration of environmental consideration into development policies, plans programs and projects;
- Ensure rational utilization and management of environmental resources for sustainable development;
- Take stock of natural resources of Kenya and their utilization and conservation;

- Coordinate the preparation of State of Environment (SoE) Report for Kenya;
- Undertake policy research and analysis to support the integration of environmental concerns into development plans;
- Mobilize financial and human resources foe environmental management;
- Monitor and assess activities being undertaken by NEMA and relevant lead agencies;
- Implement relevant MEAs and other agreements in the field of environment;
- Identify and coordinate the restoration and rehabilitation of degraded areas;
- Prepare and issue National Environmental Action Plan (NEAP) and Provincial Environmental Action Plan (PEAP)

Finance and administration Department

The Finance and Administration supports other departments of the Authority by ensuring effective services of the Authority's core departments through provision of administrative financial and logistical support and other requirements. The department;

- Manages and controls use of NEMA funds;
- Ensures timely processing of all financial reports;
- Ensures revenues are collected promptly, banked and accounted for and where revenue collectable is not fixed, ensures that the pre-audit of the relevant document is carried out.
- Ensures procurement of all supplies meet both quality and quantity standards.

- ❖ Ensures effective procurement through competitive tendering and efficient stores management.
- ❖ Ensures efficient management of organizational resources, including vehicles, office equipment and buildings,
- ❖ Undertakes annual human resource reviews.
- ❖ Ensures effective deployment and prudent development of human resources.

Duties and responsibilities of the attaché

We were expected to report on time on a daily basis from Monday to Friday in order to gain adequate skills and exposure. Working hours were from 8 AM to 5 PM. With the Help of our supervisor Mrs. Keziah Nangira we were assigned different duties namely;

- ➢ Receiving EIA files at the reception;
- ➢ Reviewing EIA and EA files;
- ➢ Dispatching EIA and EA files to the relevant lead agencies which included; National Construction Authority (NCA), Kenya Urban Roads Authority, Ministry of Housing, Ardhi House and Public Health
- ➢ Researching on various NEMA activities
- ➢ Carrying out various site visits with the help of our supervisors
- ➢ Carrying out tree planting on holidays relating to the environment such as World Environment Day; which was on 6th June
- ➢ Collection of illegal plastic bags by the help of our supervisor.
- ➢ Attending brief lessons on issues regarding NEMA

- Going out for field work.

CHAPTER THREE

3 ENVIRONMENTAL MANAGEMENT

3.1 Fresh water ecosystem

3.1.1 Fresh water ecosystem resources management

Fresh water is any naturally occurring water except seawater and brackish water. Fresh water includes water in ice caps, glaciers, ponds, bogs, icebergs, lakes, rivers, streams and groundwater.

Types of fresh water ecosystems

There are basically three types of fresh water ecosystem namely;

1. Lentic-Slow moving water, including pools, ponds and lakes

2. Lotic-Faster moving water, for example streams and rivers.

3. Wetlands-Refers to areas where soil is saturated or inundated for at least part of the time.

The reliable monitoring and assessment of water resources is fundamental for effective management of water quality and aquatic ecosystem. Traditionally, physicochemical parameters have been used to assess the quality of water resources. However, they have a limitation in grasping the wholeness of water systems, particularly with reference to ecosystem health and integrity. Various approaches are applicable to ecosystem health assessment at different levels of the biological hierarchy. Many countries conduct nationwide monitoring programs on aquatic organisms for effective fresh water ecosystem management. For example, in Europe, such

programs are carried out under Water Framework Directorate (WFD). The (WFD) monitoring program aims at collecting data for status assessment and controlling the efficiency of applied water protection measures. Databases obtained fin the monitoring Programmes provide many opportunities for various advanced comparative and synthetic studies, policy making and ecological management.

Benthic macro invertebrates are commonly used for biological assessment of aquatic ecosystems owing to their taxonomic diversity, sedentariness in habitat range and suitable lifetime.

Impacts of the run –of –river scheme on the in stream habitat and macro invertebrate community in a mountain river are likely to lead to poor habitat conditions and decrease both the abundance and the diversity of macro invertebrates in reaches influenced by water diversion.

Evaluating ecological health of a river by using an integrated health responses model based on chemical water quality, physical habitat and biological parameters indicates composition and abundance of fish communities are determined by Lake Insolation gradient, physicochemical parameters and water stage, suggesting that lateral connectivity between the main channel and floodplain lakes is of utmost importance.

3.1.2 Biodiversity and fresh water ecosystem sustainable management plans and practices

When fresh water is managed sustainably, Lake, river and stream ecosystem are in good health. Importance of fresh water sustainability at this pace will ensure basic water, food and energy security. Practices for fresh water ecosystem sustainable management include;

1. Reclaiming water, or water recycled from human use, can also be a sustainable source of water supply. It's an important solution to reduce stress on primary water resources such as surface and ground water.

2. Wetland restoration ecology –Developing knowledge on novel restoration measure. Examples include; building new Islands and rehabilitating stream valley marshes.

3. Stream restoration –This can be achieved through wood and sand addition and re-introduction of ecosystem engineers in stream restoration, which mitigate global and climate change.

4. Water Quality assessment.

3.1.3 Activities leading to degradation of fresh water ecosystems

1. Due to temperature rise that causes alteration of water thus reducing the oxygen in its composition thus leading to degradation of fresh water ecosystem.

2. Deforestation which causes sediments and bacteria to appear under the soil and therefore contaminating ground water.

3. Dumping of industrial wastes in water sources

4. Marine dumping.

5. Accidental oil leakage in water sources

6. Pesticides used in agricultural fields filter through underground channels and reach the consumption networks; and as a result causing fresh water degradation.

7. Mining activities

3.1.4 Prevention of fresh water ecosystem degradation

1. Responsible use of Fertilizer, Herbicides, and Pesticides- surface runoff of pesticides, herbicides, and fertilizers into water bodies changes a water body's natural ecosystem.

2. Reducing chemical use- This will minimize entry of harmful substances into fresh water ecosystems.

3. Proper waste disposal –This will ensure toxic substances like unused chemicals, pharmaceuticals, paint and other substances do not interfere with fresh water ecosystems.

4. Minimal use of bleach or detergents.

5. Minimize Storm Water Runoff

6. Filter Runoff – Where storm water runs in ditches or culverts, check dam or Ditch check can be used to filter the runoff preventing sediment pollution and trash from exiting the property.

7. Protect curb inlets and Drains –Storm drains are just for rain! Water that flows into storm drains and down curb inlets usually runs directly into streams, rivers, and other water bodies. This makes protecting storm drains extremely important because that water is not only a habitat to animals and plants, but is also used to supply our drinking water.

8. Capture and filter Sediment Laden Water in Waterways –Shoreline construction projects disturb and expose soil, creating situations where exposed soil is washed into the nearby

water body. This creates murky sediment laden (turbid) water that has significant negative impact on the marine environment. It harms all aquatic life in the area. Turbid water can also be created by events that stir up the sediment of the marine floor. For example, a pipe or stream that discharges into a water body at a high velocity stirs up the sediment on the floor and creates turbidity.

3.1.5 Laws and regulations governing fresh water ecosystem sustainable exploitation

The main purpose of the regulations is to provide for the conservation and sustainable use of wetlands and their resources in Kenya.

EIA and EA as required under the EMCA shall be mandatory for all the activities likely to have adverse impact on the management of fresh water ecosystem.

The regulations are;

1. Wetland resources should be utilized in a sustainable manner compatible with the continued presence of wetlands and their hydrological, ecological, social and economic services and functions.

2. EIA and EIs as required under the Act shall be mandatory for all the activities likely to hade and adverse impact on fresh water ecosystem.

3. Sustainable use of fresh water ecosystem shall be integrated into the National and local land use to ensure sustainable use and management of the Resources.

4. Principal of Public Participation in the management of fresh water ecosystem.

3.2 Land and associated natural resources

3.2.1 Land resource survey

Land surveys are used to determine land boundaries for a variety of reasons, including the selling or buying a property, putting up a fence or larger scale projects such as building roads and highways. While there are many different land surveying techniques, there are five fundamental ones that are used the most often. These five techniques can be used alone or, most often, in a combination of some form or another.

1. Triangulation

This technique uses a series of fixed points or stations in the area to be measured. These stations are connected as triangles, joining and overlapping each other. From these points, angles are measured. This is the most commonly used of the land surveying techniques and is also the most efficient in that it minimizes the number of different measurements that are needed.

2. Trilateration

Using the same principles as described in the triangulation method of land surveying techniques, trilateration adds electronic distance measuring equipment .This allows for faster and easier mapping of uneven and rough terrain.

3. Leveling

This technique is used to determine land elevations. It begins with a fixed point such as metal pole and uses a leveling instrument to move up and down an area, determining heights at specific points along the way. Each one of these points provides part of the calculation, which are determined using trigonometry methods. The most common use for this type of land surveying technique is in determining information for elevation maps.

4. Traverse

The method in which a series of lines with predetermined and measured distances and lengths are used to connect together at various points in determined location. These traverse lines can be open or closed and can be easily moved around uneven terrain obstacles that are in the way .This technique is the most often used in the surveying for new roads ,railroads and other such linear projects .

5. Radiation

Most commonly used along with a plane table, this land surveying technique is often used in conjunction with triangulation and traverse methods of measurement. This method takes a fixed position above a ground location in which various points are taken along the boundary line then drawn out on paper. Once drawn out, the distance is measured and converted to the necessary scale on the survey sheets.

Land surveying is important in the clarification of land boundaries, whether for residential or commercial use. By having proper land surveys on file, there is no need to worry about boundary disputes.

3.2.2 Forest land assessment and conservation practices

Forest conservation is the practice of planning and maintaining forested areas for the benefit and sustainability of future generations. Forest conservation involves the upkeep of the natural resources within a forest that are beneficial to both humans and the ecosystem. Forest provides wildlife with a habitat for living along with filtering groundwater and preventing runoff .Some of the conservation practices include;

1. Regulated and planned cutting of trees

2. Control over forest fire;

3. Reforestation and afforestation;

4. Protection of forest at large;

5. Proper utilization of forest products and forest.

3.2.3 Land use, guidelines, practices and patterns

Land use is the function of land –what it is used for. Land use is determined by factors like; relief, climate, soil, density of population, technical and socio-economic factors.

Types of land use include; recreation, agricultural, residential and commercial. Transport land is used for roads, railways, subways or airports.

A Land use pattern is the utilization of the available lands in a city as dictated by urban and regional planning and also the social, economic, political and geographical conditions of an area.

3.2.4 Land degradation, causes and management practices.

Land degradation is a process in which the value of the biophysical environment is affected by a combination of human-induced processes acting upon the land. It is viewed as any change or disturbance to the land perceived to be deleterious or undesirable.

Causes of land degradation

The causes of land degradation can be divided into *Natural hazards

*Direct causes

*Underlying causes

Natural hazards are conditions of physical environment which lead to existence of a high degradation hazard, for example steep slopes as a hazard for water erosion.

Direct causes are unsuitable land use unsuitable land use and inappropriate land management practices, for example cultivation of steep slopes without measures for soil conservation.

Underlying causes are the reasons why these inappropriate types of land use and management are practiced; for example, the slopes may be cultivated because the landless poor need food, and conservation measures not adopted because these farmers lack security of tenure.

Natural degradation hazards

For water erosion .1, Steep slopes of the mountain and hill lands

2. Soils with low resistance to water erosion.

For water logging 1; alluvial plains or interior basins which restrict outward drainage of ground water

For salinization 1; Soils which are naturally saline.

2. Semi –arid to aria climates with low leaching intensity

Direct causes of degradation

1. Deforestation of unsuitable land

2. Overcutting of vegetation.

3. Shifting cultivation without adequate fallow periods

4. Overgrazing.

5. Improper crop rotations.

6. Unbalanced fertilizer use

Underlying causes of degradation

1. Land shortage.

2. Poverty

3. Population increase together with land shortage, the basic cause of degradation is on the rise in the rural, agriculture population.

3.3 Air

3.3.1 Assessment of air quality

Air quality assessment is an important technique for determining the relative contribution to ground level pollutant concentrations of specific current or future source of emissions at receptor sites.

Air quality assessment tool

To assess the air quality impact of the hypothetical emissions controls implemented under the final NAAQS, EPA would ideally use a detailed air quality model that simulates the dispersion and transport of lead to estimate local ambient lead concentrations. Although models is with such capabilities are available for pollutants for which EPA frequently conducts air quality analyses ,regional scale models are currently available nor appropriate .Dispersion or plume based models , are recommended for compliance with the Pb NAAQS and were used for the Pb NAASQ risk assessment case studies In general ,air quality analyses conducted in support

of the Agency Pb NAAQS review focused on the Pb-TSP monitoring sites represented in the Air Quality System (AQS) database.

3.3.2 Sources of air pollution, prevention and control services

There are four main types of air pollution sources, namely;

1. Mobile services –such as cars, buses, planes, trucks and trains. They all produce harmful gases that ruin the atmosphere and also directly or indirectly affect us.

2. Stationary sources-these sources include power plants, oil refineries, industrial facilities and factories.

3. Area sources-Such sources of air pollution include; cities that produce a lot of harmful gases from factories and industries that pollute the air and also from fumes from motor vehicles.

4. Natural sources-A good example includes wild fires and volcanoes.

Mobile sources account for more than half of the air pollution. Stationary sources, like power plants emit large amount of pollution from a single location, these are also known as Point sources of pollution.

Area sources are made up of lots of smaller pollution sources that are not a big deal by themselves but when considered as a group can be.

Natural sources can sometimes be significant but do not usually create ongoing air pollution problems like other sources types can

Prevention of air pollution and control services

1. Reducing toxic emissions from industrial sources.

2. Reducing emissions from vehicles and engines through new stringent emission standards and cleaner burning of gasoline.

3. Addressing indoor air pollution through voluntary programs thus sensitizing the public.

4. Reducing or eliminating fireplace and wood stove use.

5. by not using gas powered lawn and garden equipment.

3.3.3 Laws, regulations and policies involved in proper management of air

The Clean Air Act as amended is the federal statute that governs air pollution. The CAA authorizes regulatory programs, including standards for ambient air quality to protect public health and welfare, special measures for regions that have not attained those standards, operating permits for stationary sources of air pollution, control technologies for new sources of air pollution, and measures to control hazardous air pollutants.

The Clean Air Act (CAA) defines “air pollution” as “any pollution agent or combination of such agents, including any physical, chemical, biological, radioactive substance or matter which is emitted into or otherwise enters the ambient air. Such term includes any precursors to the formation of any pollutant”(42 USC 7602 g) . “Criteria pollutants” and the “hazardous air pollutants” are the major focus of regulation .

“The centerpiece of the Clean Air Act has been the national ambient air quality standards (NAAQS) program”(Brownell ,2001).The CAA prescribes that “national primary ambient air

quality standards shall be ambient air quality standards the attainment and maintenance of which in the judgment of the (EPA) Administrator ,based on such criteria and allowing adequate margin of safety ,are requisite to protect the public health"(42 USC 7409 (1))Secondary ambient air quality standards ,when enacted ,should be designed to protect the public welfare .EPA has established primary NAAQS for the six "criteria pollutants" identified by EPA ,they are ;Nitrogen dioxide, particulate matter(PM), carbon monoxide , ozone and lead .Hazardous air pollutants can be modified by EPA regulation ,which regulates a total of 188 hazardous air pollutants .

3.4 Environmental Impact Assessment

3.4.1 Assessment on impact of human activities to fresh water ecosystems

Fresh water ecosystems near towns and cities face threat s from runoff and pollution. Industrial dumping ,particulate pollution from combustion engines and agricultural fertilizers and pesticides ,in many cases end up in rivers and streams ,either falling there directly or carried to the water way by wind .The impacts include;

1. Habitat alteration through industry-Humans activities can alter or even destroy fresh water ecosystems through the construction of hydroelectric dams or irrigation projects. Dams create reservoirs of water while artificially limiting the flow of water downstream of the project which can significantly change the ecosystem on both sides of the construction .Similarly, diverting water for irrigation can also reduce the available water for region's wildlife and can alter the natural flow of water through the aquifer.

2. Overuse of freshwater.

Human activities can have a major impact on freshwater systems through water overuse .The same waterways that support wildlife and plants also provide water for municipal ,cities and towns and when consumption outstrips the natural regeneration of these waterways ,it can negatively affect the ecosystem .Reducing the amount of water in lakes and other reservoirs puts pressure on aquatic population ,reducing the amount of living space available ,and in some cases, it dries up streams.

3. Chemical runoff and pollution

Fresh water ecosystems near towns and cities face treats from runoff and pollution .Industrial dumping ,particulate pollution from combustion engines ,and agricultural fertilizers and pesticides ,in many cases end up in rivers and streams .Toxic pollutants are the most harmful since may wipe out an ecosystem entirely ,but even small amounts of less lethal compounds can have an impact on wildlife .Some of these toxic substances can even cause genetic mutation ,altering the life cycle of fish ,amphibians and other wildlife and causing birth defects that can destroy a population over time .

3.4.2 Assessment on impact of human activities to land resources

Humans carry out different activities that deteriorate land resources thus causing effects such as;*Leaving the land bare due to over cultivation thus making it prone to erosion.

*Due to over cultivation over a long period of time, sometimes the land tends to lose its fertility thus leading to low yields.

*After carrying out mining activities often the land is left bare and those pits become breeding sites for mosquitoes and also leave the land untidy.

*Use of fertilizers and chemicals on land can affect it making it less productive.

3.4.3 Assessment on impact of human activities on air

Human activities contribute to climate change by causing changes in Earth's atmosphere in the amounts of greenhouse gases, aerosols and cloudiness. The largest known contribution comes from burning of fossil fuels, which releases carbon dioxide gas into the atmosphere. The effects of human activities on air include;

Ozone layer depletion

One of the major problems caused by air pollution is depletion of the ozone layer. Ozone is found in the stratosphere of the atmosphere .The ozone layer protects the earth from the harmful radiations from the sun thereby preventing it from entering the earth's atmosphere. Emissions of CFCs alongside low temperatures is the major cause of ozone depletion

Greenhouse gas emissions

Greenhouse gases and aerosols affect climate by altering incoming solar radiation and outgoing infrared radiation that are part of Earth's energy balance. Changing the atmospheric abundance or properties of these gases and particles can lead to a warming or cooling of climate system.

Global warming

Global warming is a slow and steady rise in Earth's surface temperature. Temperatures today are 0.74 degrees Celsius higher than 150 years ago. Global warming is projected to have a

number of effects on the oceans. Ongoing effects include rising in sea levels due to thermal expansion and melting of glaciers and ice sheets, and warming of ocean surface, leading to increased temperature stratification. The major greenhouse gases are water vapor, carbon dioxide, methane and ozone.

3.4.4 International, regional, National and Local agencies involved in Environmental impact

International EIA activity has two regions .First ,there is an increasing concern over conflict between developmental and environmental interests within the economic development system .Second ,EIA appeals to International Agencies and governments as a well –defined ,internally integrated procedure and planning tool.EIA activities involve political ,institutional ,and technical motivations and goals for the international bodies and the governments of countries received aid .Three criteria may be used to evaluate international EIA from the prospective of policy makers and administrators in the countries ;political support ,institutional strengthening and technical capability.

3.5 Licensing Development Projects

3.5.1 Categorization of different development projects by NEMA

NEMA mandate is to ‘exercise general supervision and coordination of all matters relating to the environment and to be the principle instrument of government in the implementation of all policies relating to the environment.

Development projects may consist of a single transformative project to address a specific problem or a series of projects targeted at addressing several problems. One of the key success factors of development projects is when their planning involves people who will benefit or be affected by the project.

The development projects are:

1. Urban development including; *Designation of new townships

*Establishment of industrial wastes

*Establishment of recreational areas

2. Aerial spraying.

3. Issuance of licenses to already approved projects.

3.5.2 Laws, policies and regulations governing implementation of development projects

There are different laws and policies governing how fresh water is managed.

RMA governs how local councils manage water

The resource management act 1991 {RMA} is the main piece of legislation that sets out how we manage our environment. It covers both water use {how water is taken, used, dammed or diverted} and discharges {how pollutants enter the water}. It sets out requirements that local council needs to meet, processes they need to follow, and things they need to consider when making decisions. It also sets out the roles and responsibilities of central government.

Central government sets direction for local government to follow

The government is responsible for making regulations that councils and water users have to follow. As well as administrating the RMA {including making amendments to it on occasion}, the government provides "national direction" for water through regulations such as national policy statements, national environmental standards and other regulations.

Fresh water NPS provides national direction about managing water.

The National Policy Statement for freshwater management 2014 {Freshwater NPS} is the main source of national direction about how councils should carry out their responsibilities for managing fresh water. It directs regional councils to consider specific matters and to meet certain requirements when they are developing regional plans for water.

We also have different policies governing use of land resource. The phrase land policy encompasses to all policies that deal with land –agricultural land, forest land, land for housing and infrastructure. It typically includes laws and regulations as well as administrative structures and programs. Some land policies include;

1. Equitable access to land

2. Security of land rights.

3. Sustainable and productive management of land resources.

4. Transparent and cost effective administration of land.

5. Sound conservation and protection of ecologically sensitive areas

6. Elimination of gender discrimination law, customs and practices related to land and property in land.

7. Encouragement of communities to settle land disputes through recognized local community initiatives consistent with this Constitution.

3.5.3 Stages of obtaining a license for a development project

A license is an official permission or permit to do, use or own something. A license can be granted by a party to another party as an element of an agreement between those parties. NEMA is a body in charge of issuing licenses and has different stages to be followed in order for a party to obtain the license. The following explains the stages.

NEMA has automated the entire licensing process since 2013.Applicants now submits everything online. The facility is only available for all NEMA licenses. The applicant is expected to visit to visit the NEMA website .Go to the licensing portal .For you to use the portal ,you are supposed to register your details and press submit .All license applications can be submitted online for Nairobi region but this facility is not available at the counties currently .Hence one has to submit hard copies at the counties for consideration .Within 24 hours ,NEMA will send the applicant a user name and password to his/her email .One is expected to keep the username safely as the same will be used during application of new licenses or renewal provided log in.One should select the kind of license you need and submit all relevant documents as prompted by the system .Once you submit ,the system give you a user ID which you can use to track progress in licensing process. The SMS and email to acknowledge receipt is sent to the project

proponent and the EIA expert immediately. In the processing stage, every movement is recorded and is continually recorded in the system .When the license is ready ,an SMS is sent from NEMA to request the applicant to collect the license .

3.6 Research on environment sustainable practices

3.6.1 Research on use of fresh water ecosystem

Fresh water ecosystems are a subset of Earth's aquatic ecosystems. They include; lakes, ponds, rivers, streams, springs, bogs and wetlands. They can be contrasted with marine ecosystems, which have a larger salt content.

Different types of fresh water ecosystems.

There are three basic types of freshwater ecosystems namely;

1. Lentic –these includes slow moving water, including pools, ponds and lakes.

2. Lotic –fast moving water, for example streams and rivers.

3. Wetlands-areas where the soil is saturated or inundated for at least part of the time.

Methods for Freshwater ecosystem management

The framework for Freshwater Ecosystem Management {hereafter referred to as framework} identifies the main activities for countries to sustainably manage freshwater ecosystems. It is laid out in four phases with underlying steps.

The steps follow a logical progression for protection and restoration of fresh water ecosystems.

Overview of the Framework Phases

Invitation Phase

Assess capacity: Assesses national capacities to sustainably manage fresh water ecosystems, including all aspects of governance {e.g. policies, plans, laws, institutions, monitoring programs and financing}.

Set visions and objectives: Agrees on a broad national vision and objectives for fresh water ecosystem and Involves relevant stakeholders.

Design classification frameworks: Designs classification systems for ecosystem types {e.g., rivers, lakes, wetlands}, defines the potential ecosystem services for each ecosystem type, and identifies potential indicators that could be used as proxies for the provision of ecosystem services.

Identification phase

This phase draws an existing data and information to identify, categorized and undertakes preliminary assessment of fresh water ecosystems.

Identifies ecosystems and classifies by type: Using the classification frameworks designed in the Initiation Phase, identifies and categorizes fresh waters ecosystems, their services and any key variables that are likely to influence the provision of ecosystem services.

Set Basin Context: Identifies the hydrological drainage basin for each ecosystem, facilitates an assessment of the main pressures on them, as well as the main recipients of the ecosystem services they provide.

Assessment Phase

Set Ecological Status Thresholds and Targets: Involves the identifications of ecological status classes e.g. good or bad, the design of indicators and threshold values for each indicator to classify ecosystems into status classes. Finally, targets can be set {with the involvement of stakeholders} for an acceptable ecological status for each ecosystem.

Monitor: Involves the design of the monitoring program, the collection of data, quality assurance and data management.

Evaluate and report: Involves analyzing the monitored data, comparing them against the defined indicators threshold, and assigning each ecosystem to an ecological status class.

Response Phase

This Phase concerns the management action for sustainable fresh water ecosystems

Designs Response: Based on the assessment result in the previous Phase, refines the objectives for each ecosystem, Identifies and prioritized management actions, and undertakes detailed designed of the selected management options.

Implement Response: Implements the management actions designed in the previous step.

Review: Reviews the effectiveness of the management actions as well as the entire Framework, and Identifies stapes that requires revisions.

3.6.2 Research on land use system.

Land use involves the management and modification of natural environment or wilderness into built environment such as settlements and semi-natural habitats such as arable fields, pastures, and managed woods. Land use by humans has a long history, first emerging more than 10,000 years ago.

Importance of Land Use

1. Land use might not seem like the most exciting topic, but it's important to study. First, it tells us a great deal about the governments making the decisions for land use and the priorities they hold. Also, the better we understand the way the world has been adapted to human needs, and in what patterns, the more we can predict future trends. And, the better we can predict the future of land use, the more we can prepare for negative impacts.

2. For example, if humans will continue to need huge amounts of wood and paper, it is likely that deforestation will continue. Since the human need for food isn't likely to ever go away, only a change in population or efficiency could cause agricultural land to decrease. Studying this topic allows us to better prepare for the future.
3. Land use is also related to the study of human trends and movements. The trend of **urbanization**, the idea that people who once lived in the country (or rural areas) are moving increasingly to cities (or urban areas), has a big impact on land use. Homes

are becoming arranged in denser patterns, and our human population centers are changing shape all the time

Types of Land Use: There are many **types of land use** we need to consider when studying the topic. Those **types** include recreational, transport, agricultural, residential, and commercial. Recreational **land** is used for human pleasure.

3.6.3 Research on air quality

Assessment of the air quality; Air quality impacts both the environment and health. Air quality management aims to limit negative impacts through a variety of activities, including; legislation, policies and plans to manage emissions and monitor ambient air quality.

Air quality assessment informs air quality management activities by providing an understanding of how pollutant sources, emission characteristics, topography, and meteorological conditions contribute to local air quality. Specific air quality assessment tools can help answer a variety of questions which are integral to air quality management activities, including:

•How can frequently poor air quality be improved?

•Which source(s) or source sectors contribute to poor air quality?

•How can air quality impacts be minimized?

•Which regions are most affected?

•Should existing sources be targeted for emissions reductions?

•What location, for new sources, could minimize air quality impacts?

•Will emissions from a proposed new source result in a substantial degradation in air quality?

Although air quality assessment tools are valuable when informing decisions that impact local air quality, their use may be overlooked by public health practitioners. The information conveyed by these tools is often highly technical and typically accessible only to trained air quality management personnel. As a result, useful information may not be available to support decisions on emissions permitting, industrial siting, and land use, as well as the development of public Health messages. The objective of this guide is to increase the understanding and accessibility of these tools to better support public health responses and policy decisions on local air quality. The Specific assessment tools discussed in this guide are: (1) emissions inventories, (2) dispersion Modeling, (3) source apportionment, (4) mobile monitoring, and (5) land use regression. Health impact Assessment is discussed as a direct application of information provided by air quality

Assessment tools

A brief overview of key sources and pollutants in British Columbia (BC) and their health impacts is provided to give context to the tools. A description of the BC air quality monitoring network, current practices in BC, regarding land use, emissions permitting, and health messaging, follows. The remainder of the guide provides a description of each tool, as well as advantages and limitations of their use. Finally, local examples are provided for each tool, to highlight their use in air quality management in the province.

3.7 ENVIRONMENT MANAGEMENT BODIES AND THEIR MANDATE

3.7.1 International, regional, National, and Local bodies and, treaties and agreements relevant to NEMA activities

Activities of NEMA

1. NEMA has the mandate of undertaking and coordinating various environmental management activities being undertaken by lead agencies.

2. Promote the integration of environmental considerations into developmental considerations into development policies, plans, programs and projects with a view to ensuring the proper management and rational utilization of environmental resources, on sustainable yield basis, for the improvement of the quality of human life in Kenya.

3. To take stock of the natural resources in Kenya and their utilization and conservations.

4. Examine land use patterns to determine their impact on the quality and quantity of natural resources.

5. Carry out surveys, which will assist in the proper management and conservation of the environment.

6. Mobilize and monitor the use of financial and human resources for environmental management.

7. Identify projects and programs for which environmental audit or environmental monitoring must be conducted under this Act.

Environmental Management Funding Bodies

The most common way to receive funding is to approach an Environmental Funding Body who distributes funds on behalf of one or more Landfill Operators. These Funding bodies require your organization to meet certain conditions. This is because they must sure expenditure complies with the Landfill Tax Regulations and our guidance.

Mandate of funding bodies.

1. To give accurate funding compliance information and license section information where applicable.

2. Collect relevant information from research institutions.

Mandates adopted by state Legislatures confer exact and enforceable requirements, financial authority, modal or regional requirements.

Legislative mandates vary considerably from state to state given to range of activities undertaken by an agency.

CHAPTER FOUR

4 ENVIRONMENT MANAGEMENT FUNDING SOURCES

4.1 International funding organizations

Funding procedures for organizations

NGOs can get organize and raise funds from various methods, processes, Programmes, projects, and activities:

1. Getting grants from funding agencies through Projects.

2. Funding from International Funding Agencies.

3. Funding from Government Schemed.

4. Fund raising from Corporate.

5. Fund raising using internet techniques

4.2 Regional Funding Organizations

Regional organizations (**ROs**) are, in a sense, international organizations (IOs), as they incorporate international membership and encompass geopolitical entities that operationally transcend a single nation state. However, their membership is characterized by boundaries and demarcations characteristic to a defined and unique geography, such as continents, or geopolitics, such as economic blocs. They have been established to foster cooperation and political and economic integration or dialogue among states or entities within a restrictive geographical or geopolitical boundary. They both reflect common patterns of development and history that have been fostered since the end of World War II as well as the fragmentation inherent in globalization, which is why their institutional characteristics vary from loose cooperation to formal regional integration.[1] Most ROs tend to work alongside well-established multilateral organizations such as the United Nations.[2] While in many instances a regional organization is simply referred to as an international organization, in many others it makes sense

to use the term *regional organization* to stress the more limited scope of a particular membership.

Examples of ROs include, i.e., the African Union (AU), Association of Southeast Asian Nations (ASEAN), Arab League (AL), Caribbean Community (CARICOM), Council of Europe (CoE), Eurasian Economic Union (EEU), European Union (EU), South Asian Association for Regional Cooperation (SAARC), Asian-African Legal Consultative Organization (AALCO), Union for the Mediterranean (UfM), Union of South American Nations (USAN).

4.3 National Funding Organization

Community programs for youth are funded in a variety of ways. The funding structure of a program often relates directly to the institution that administers it (for example, if it is administered by a public or private agency), but in most cases programs patch together funding from many sources. The nature of program funding affects its design and stability, which in turn affect the extent to which it can promote developmental outcomes. Is the program public, private, or quasi-public? Who funds it? What is the annual program budget? What are the primary sources of money? If these sources are public, how much is federal, state, and local? For public sources, what is the funding by sector (e.g., health—including mental health and physical health—education, labor, justice, and agriculture)? If privately funded, is the funding primarily from philanthropies (e.g., foundations, United Way, a local business/service organization), membership dues (e.g., Boy Scouts), or user fees? Is funding stable over time or is it short-term temporary funding that must be raised from new sources periodically?

Programs face a variety of challenges related to funding. Youth Build, for example, has been involving young people in leadership development and job training through housing

rehabilitation since 1978. The program has grown from 10 to 4,600 participants and has received funding from a variety of sources, including Congress, federal agencies, and foundations. Because funds can fluctuate dramatically, they have also initiated local fundraising in order to increase the sustainability of local programs (Dahlstrom, 1998).

Smaller autonomous organizations are particularly affected by the challenges of funding development and funding management, since the smaller the organization, the more likely it is that the program and administrative functions are inextricably linked. In interviews with 26 grassroots youth programs, service practitioners indicated that the time and resources devoted to fundraising represent their biggest administrative burden (Quern and Raider, 1998).

4.4 Environment Funds Management

The Environment Fund is our core source of flexible funds, provided by our Member States. The Fund provides the bedrock for our work worldwide, as we support countries to deliver on the environmental dimensions of the 2030 Agenda.

The Environment Fund is used for:

- Implementation of our seven thematic sub-programmes;
- Keeping the environment under review. For example, our flagship scientific publications such as the Global Environment Outlook, the Global Chemicals Outlook and the Emissions Gap Report translate the best available scientific knowledge into information relevant for decision makers, who then can turn policy into action;
- Identification of new emerging environmental issues (such as through our Frontiers-series);

- Our work on several science-policy platforms that bring together scientists, governments, industrial and international organizations, and civil society;
- Innovation for addressing environmental challenges;
- Advocacy and awareness raising on environmental issues;
- Capacity building and transfer of technological innovations;
- Results-based planning and management;
- Bringing together governments, the private sector and civil society in advancing the global environmental agenda, for example through the UN Environment Assembly;
- Robust oversight.

CHAPTER FIVE

5 EXTENSION SERVICES

5.1 Description of extension services and specific target beneficiaries

Extension services may refer to: Cooperative State Research, Education and Extension Service {CSREES},a USDA office .Agricultural extension services, education services offered to farmers and other growers .Church extension service ,one church that meets at multiple locations.

Importance of extension services

1. Extension services use democratic methods in educating the farmers.

2. Extension helps in adoption of innovation.

3. Extension services helps in studying and solving the rural problems.

4. Increases farm yields and improve standards of living of farmers.

5. Makes good communities better and progressive.

6. Extension services contribute to national development programmes.

Objectives of Extension services

1. To raise standards of living to the rural people by helping them in the right use of their resources.

2. To help in planning and implementing the family and village plans for increasing production in various occupations.

3. To provide facilities for better family living.

We are able to see that the beneficiaries of these extension services is mainly farmers especially those living in the rural areas.

CHAPTER SIX

6 PROBLEMS

6.1 Problems facing main activities and management structure

NEMA being an organization that coordinates activities concerning the environment, the body faces different challenges that hinder it from achieving its goals. The main problems facing the organization are;

- Inadequate funding from the exchequer to support activities.
- Inability to mobilize resources from partners.
- Untimely disbursement of funds from the Exchequer to NEMA as well as from HQs to field staff.
- Inadequate personnel to perform different duties.
- Inadequate publicity on gazette of regulations and other topical issues due to financial constraints.
- Limited infrastructure including office space and equipment at both NEMA Headquarters and field.
- Conflicts of roles and mandate between NEMA and some lead agencies.
- Litigation against NEMA decisions.
- Inadequate number of vehicles for effective operations, in that there was only one vehicle in the Institution thus limited exposure during field work since only two students could go for fieldwork.

6.2 Problems facing agricultural extension services

There is already ample evidence that the epidemic has changed the very fabric of the farming population, bearing implications for agricultural extension services. Apart from the routine difficulties faced in daily work in rural areas by agricultural extension staff in developing countries, the challenges that most agricultural extension services face are mostly of a technical and logistic nature. Some examples are insect pest invasions, outbreaks of serious diseases, locust attacks, severe climatic effects, natural disasters, or intensive campaigns for an increase in agricultural production. The challenge currently posed by the HIV/AIDS epidemic to agricultural extension organizations in sub-Saharan Africa, however, is quite unusual as it affects both staff

and clientele and involves human emotions to a depressing degree, that is, in addition to technical aspects. This challenge has at least three major dimensions: First, the very nature of the extension work; second, the impact of the epidemic on the extension organization itself and its staff; and third, the impact of HIV/AIDS on the clientele of extension services. A brief analysis of these three dimensions is in order.

Nature of the extension work

Since most of the population of the countries, hardest hit by AIDS, lives in rural areas, a large number of people affected by HIV/AIDS in sub Saharan Africa are, directly or indirectly, engaged in farming. The workers, who have the most frequent contact with the small-scale farmers, are the field extension agents. The extension services, by their very mandate and character, are supposed to deal with traditional, mostly illiterate rural households, in order to provide them with technical advice not only on agricultural technologies but also on relevant subjects like farm input supply, credit, marketing and farm management. Most of the extension staff themselves have their genetic roots in rural families. They travel frequently in rural areas, many times spending nights away from home, and being offered “hospitality” in villages due to their status. Also, they are in touch with so many widows forced into farming because of their husbands’ death, who need extension advice. Thus, the extension workers have ample opportunities of getting involved with multiple sex partners. All these factors expose the extension staff to the maximum risk of HIV infection, especially with their very limited knowledge of the epidemic.

Impact on extension and partner institutions

Effects on extension workers as individuals

Extension staff apart from being more exposed to the risk of contracting the HIV infection due to their frequent visits to HIV/AIDS infected rural areas is themselves suffering from the pandemic in many ways. Many of them are sick, some chronically. A number of their colleagues have already become victim to the disease, and more bad news is feared almost every day. The talk of colleagues' demise is common in office meetings more than ever before. Then, they have the unbearable burden, in terms of time, money and energy, of taking care of their close sick relatives and visiting sick neighbors. Some of them have lost their spouses, thus leaving them not only grieved but also with the responsibility of taking care of minor children. The situation has forced some workers to pull their children out of school. Unlike in the past, the attendance of funerals is now a frequent thing, and it involves heavy costs due to ceremonies such as slaughtering of precious animals and serving meals to large number of persons. Low morale, depression, economic worries, and less productivity are now common in extension organizations due to HIV/AIDS. Extension workers who by training are required to motivate farmers to try and adopt new agricultural technology are themselves depressed and frustrated, and this affects their output.

Reductions and disruptions in staff

Discussions with government extension service officials reveal that their capacity for delivering satisfactory services is being affected by HIV/AIDS. This is due to disruptions in their programmes caused by deaths, protracted sickness and frequent absences of staff. For example, in Uganda, between 20 and 50 percent of all working time of extension staff is lost due to the attendance of funerals of AIDS victims and for the caring of sick relatives. A considerable number of skilled and experienced persons have died of AIDS. In the Central Province of

Zambia, during the period 1991 to 1998, as many as 66 staff died due to HIV/AIDS-related causes, representing almost 20 percent of the loss of staff due to different illnesses. The same is true for many other provinces. In Malawi, where there has been a freeze on staff recruitment since 1995, a considerable number of vacancies have resulted from the death of front-line staff, worsening the already unsatisfactory extension agent to farmer ratio. For example, in one district, a Field Assistant is required to cover an area of about 400 square kilometers where 4 000 farm families live. The organizations, including public and non-public, are faced with time-demanding tasks of identifying, recruiting and training of new staff. The result of delays in replacing the deceased and very sick staff is that the reduced number of staff are not only psychologically depressed due to the loss of colleagues but they also have to handle a far heavier workload both within the office and outside in the field. This situation is bound to adversely affect the performance of agricultural extension organizations.

Increased organizational costs

Both public and private extension organizations and some relevant institutions have reported increased costs due to HIV/AIDS. The additional expenditure is related to payments for treatment of sick staff and their relatives, funerals of dead staff, compensation, salary advances, early retirements, recruitment and training of new staff, and for buying insurance coverage. According to the estimates provided by different private organizations engaged in extension work in Malawi, the cost of a funeral per death, depending on the status of the deceased staff members, could range between MK 1 000 and MK 50 000 (One US$ = approximately 70 MK). The increased costs are bound to affect the performance of public extension departments as most of them already suffer from very low operational budgets. The frequency of visits to the field

will dwindle further and the few in-service training opportunities the staff have will also disappear.

Established technical practices going obsolete

The years old administrative, strategic, policy and operational practices of almost all relevant organizations, including public, private and NGOs, seem to be outdated due to drastic changes in the social structure including, income levels, patterns of life, and types of clientele, all caused by HIV/AIDS. Extension services, whether government, semi government, private, or NGOs, are linked to many other institutions and organizations such as those responsible for providing credit, technology packages, marketing facilities, land tenure, and plant protection. These organizations will also be affected in their operations and practices due to the effect of HIV/AIDS on the farming population. For example, there are now applications for agricultural credit from orphan- and widow-headed households, which are often not eligible according to the existing criteria for the approval of credit applications. The extension staff who, in general, are supposed to support the applications for rural credit, feel lost in the absence of the new criteria needed for this new clientele. The staff of rural credit institutions may be faced with a dilemma of their own since the applications for credit cannot be approved unless a revised policy is in place and a new set of criteria is available for the applicants to qualify. Similarly, the organizations and firms responsible for recommending farming systems and manufacturing farm equipment would soon find themselves wondering whether their recommendations and products are still as useful and in demand as they were before the epidemic hit.

Drastic change in the composition of clientele

The epidemic is changing the traditional composition of the clientele for extension services. In the areas of high HIV prevalence, the category of healthy and able-bodied men, women and youth, in the late adolescence to middle age range, is the one that has been most affected by high levels of morbidity and mortality. One finds more women, children and elderly persons now engaged in farming due to prolonged illness and/or death of their spouses, parents, guardians and other members of the family. Paradoxically, the struggle for feeding a large number of children left behind by their parents who have died young, has forced many very old persons back into farming who had retired from active farming long ago. The emerging target population for extension services increasingly includes more physically weak, sick, and elderly persons, widows and young orphans. For example, according to UNAIDS estimates, in 2001, the number of AIDS orphans in Mozambique was 420 000, and by 2010, was expected to jump to one million. Zimbabwe currently has 700 000 AIDS orphans. These newcomers, who even though they are exposed to farming due to living in rural areas, have relatively less experience in agronomic practices, as compared to their elders, and have limited physical and technical capacities for the use of heavy tools, farm machinery and animal-drawn farm equipment..

Distraction from farming activities

While travelling by road in the rural areas of the sub-Saharan African countries hardest hit by HIV/AIDS, the scenes of funerals are quite common. Both men and women, who should normally be busy in farming activities, are now forced by traditional customs, to frequently spend considerable time on attending the funerals and relevant ceremonies. These funerals are not only attended in their own villages but also in the surrounding villages for which they have to cover large walking distances. The situation does not only cause serious distraction from their

normal farming operations, but also results in reduced contacts with the extension agents, and less participation in technology demonstration and training activities. The farms are being ignored and so are the contacts with extension staff.

Farmers' increasing queries on HIV/AIDS

The notoriously persistent denial and "conspiracy of silence" about HIV/AIDS, common among rural communities, is gradually giving way to relative openness. The stigmatism, denial and secrecy are still prevalent, but so many and so frequent deaths occurring in the area among relatives and friends can no longer be simply ignored. The escape from HIV/AIDS has understandably become as important a priority for farmers as the once eagerly sought technical advice on increasing agricultural production. The farmers 'questions are no longer limited to farming. There are so many queries related to HIV/AIDS. However, the extension staff who know little about the epidemic and have not received any special training in this subject, feel helpless and embarrassed in front of the farmers. They are not in a position to offer any useful information or meaningful advice.

Worsening supply of farm labour, food insecurity, and poverty

There is low labor supply for farmers thus they overwork in order to achieve their main objective. Also poverty is on the rise thus people living in the rural areas live in poverty and most communities try to survive with the little they have to meet both ends.

6.3 Possible solutions to problems facing NEMA

- There is need to prioritize activities to suit the limited budget provided.
- Need to establish an award scheme as an incentive for good environmental practices for all stakeholders.
- Enhancement of compliance and enforcement capacity of regulatory lead agencies.
- There is need to quantify in economic terms the contribution of environmental conservation.
- There is need for capacity building of lead agencies on regulations.
- There is need to decentralize operations to the field offices.
- There is need to improve health and safety of environmental investors.
- Better enumeration of staff is important for staff retention to prevent them from leaving the authority for greener pastures elsewhere like in the recent past.

CHAPTER SEVEN

7 CONCLUSION AND RECOMMENDATION

CONCLUSION

Generally, attachment was a really good learning program. It helped to enhance and develop my skills, abilities and knowledge. It was a good experience and memories as not only had I gained experience, but also new friends and knowledge. NEMA also a good place to do the attachment since it provided numerous benefits and advantages to the students. We were provided with midday tea, car for site visit use and Wi-Fi access. The treatment by the company was just, equitable and professional. I have learnt from different units and people. I am grateful and thankful to my supervisor, Mrs. Jennifer Rono for experiences and tutoring since she helped me handle my weaknesses and provided guidance to me whenever I was in need. I gained different skills and with the knowledge obtained will help me identify strengths, abilities, weaknesses and more.

RECOMMENDATION

Although NEMA provided room for learning and exposure, some actions need to be put to place for future betterment of students and the organization at large. First and foremost, there should me more field trips to the students which enable enough exposure for learners. Secondly, there was only one vehicle for transporting learners and this was inconveniencing other learners since only a few students could go out on field trips. Therefore, more vehicles should be bought by the company. If these actions are put into place, then learners will gain adequate skills, knowledge and exposure.