ENVIRONMENT SECTOR E-LEARNING STRATEGY

2010-2014

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FOREWORD

The need to balance environment and development could no longer be assumed and led convergence of the global community at the Earth Summit Rio de Janeiro in 1992. The Conference commonly referred to as the United Nations Conference on Environment & Development called upon nations to assess the nexus and balance between environment and development which could only be addressed through sustainable development. As such, the conference adopted sustainable development as the rallying call for holistic approach to sound environmental management. This recognised the need for current generations to meet their needs without compromising the ability of future generations to meets their own.

The Agenda 21, an outcome of Rio Summit provided the blue print for the implementation of sustainable development in the 21st Century. The aspects of education, training and public awareness were prioritized as a tool for enhancing the attainment of sustainable development. Kenya has remained steadfast in the implementation of sustainable development with major milestones attained since 1992.

To date, the country boosts of clear environmental legislation and institutional arrangements for sound management of the environment. While the Ministry of Environment & Mineral Resources provides an oversight role and policy directions on environmental management, the National Environment Management Authority(NEMA) under my Ministry is the custodian and enforcer of all environmental legislation.

Ten years after, Kenya shared her experiences in the implementation of sustainable development with the global community during the Rio+ 10 World Summit on Sustainable Development (WSSD) held in South Africa in 2002. Kenya like other global governments reiterated her commitment to the continued implementation of sustainable development and put in place the necessary structure. Further commitment was expanded in designating the years 2005-2014 as the UN Decade on Education for Sustainable Development (UNDESD). As such, education for Sustainable Development (ESD) was identified as a key tool to understanding the importance and need to implement sustainable development.

In response to this international commitment, my Ministry has developed the Education for Sustainable Development Implementation Strategy. The strategy proposes the use of Information Communication Technology (ICT) and as one of the implementation strategies for creating opportunities for communities to develop their knowledge and understanding of environmental conservation and sustainable development. In this regard, my Ministry will provide the necessary oversight role in the implementation of all resolutions Decisions of African Ministerial Conference on the Environment (AMCEN) related to environment.

The E-Learning Strategy for the Environment Sector for the period 2010-2014 to aid implementation of AMCEN Decision 6. Further, the formulation of a e-Learning Policy for the Environment sector is underway to address the need to use TSL in dissemination of environmental information in all levels. This comes at an opportune time when the sector is already sensitised and embracing e-learning with the necessary structures in place.

The government of Kenya has adopted the use of Information Communication Technology (ICT) in all its operations to enhance dissemination of sector-based information and services. This has reduced the use of paper and the subsequent deforestation. It is estimated that forest cover in Kenya was at 10% at independence but has since reduced to a mere 3% over the decades due to unsustainable exploitation. As such, the introduction e-Government is an appropriate intervention to reduce forest degradation.

It is therefore, my expectation that other sectors will similarly embrace e-learning and the use of ICT as tool for dissemination of information and enhance conservation of forest resources in the country.
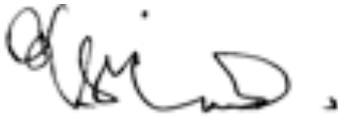
Hon. John N. Michuki, EGH, MP.
Minister for Environment & Mineral Resources

PREFACE

The decline in forest cover and forest resources has been experienced in Kenya due to unsustainable human activities. These include: illegal logging, deforestation, human encroachment into gazetted forest land, among others. Forests provide a wide range of products including raw materials for production of paper for use in printing, compilation of reports and documentation to aid information dissemination including environmental information. The situation has been compounded by limited options for recycling used paper or application of other communication alternatives thus putting immense pressure on forest resources which results in reducing forest cover in the country.

A survey conducted by UNEP in the year 2006 revealed low levels of awareness on technology supported learning (TSL) in the environment sector. Based on these findings, African Ministerial Conference on Environment (AMCEN) in its 12th session passed a resolution (AMCEN Decision 6), to promote the mainstreaming of TSL amongst environmental institutions. This measure is aimed at safeguarding the over-exploitation of forest resources. This decision mandated Governments to promote TSL commonly referred to as e-learning through formulation of appropriate strategies spearheaded by their relevant Principal Environmental Authorities and inter-ministerial cooperation for the environment sectors across Africa.

In Kenya, the Ministry of Environment & Mineral Resources is the focal point for the implementation of Decision 6 related activities. In this regard, the Ministry has put in place the necessary structures to support e-learning related activities with the Ministerial e-Learning Development Committee (MeLDC) providing an oversight role. Further, Institutional e-Learning Committees have been established in all institutions in the Environment Sector to promote e-learning in the sector. The National Environment Management Authority (NEMA) provides the Secretariat coordinating all e-learning activities in the country.

So far, the MeLDC has spearheaded the development of an e-Learning Strategy and Action Plan for the Environment Sector for the period 2010-2014. The e-Learning Strategy will guide development of relevant digital content for e-learning materials relevant to all institutions in the Environment Sector; build capacity; establish the necessary infrastructure; and undertake monitoring and evaluation of the e-learning process.

The increased adoption of e-learning by different sectors in the country is expected to equally increase the generation of e-waste as a result of enhanced use of electrical and electronic devices. To address this challenge, the Ministry through NEMA has formulated and published *National e-Waste Guidelines* for the handling and disposing e-waste arising from use of electrical and electronic appliances which was not addressed in the already gazetted Waste Management Regulations of 2006. The Guidelines provided a categorization of e-waste, the target audience and modalities of collection, storage and recycling of the same. Through these Guidelines, it is now possible to embrace proper e-waste management in the country even as the relevant regulations on e-waste management are formulated.

The e-learning process is versatile with the possibility of numerous products such as the new innovation commonly known as I-CALL Mentor Mobile Learning. The initiative targets the use of mobile phones to disseminate environmental information through a specifically allocated toll free number **0-800-636200** by the Ministry of Information through the Communications Commission of Kenya. The Safaricom Company Limited, has hosted this number in its server and has therefore met the initial costs through partnership with the Ministry. The number facilitates the use of mobile phones in the dissemination of environmental information to local communities, technical experts and policy makers.

The Kenya government is committed to the implementation of AMCEN 12 Decision 6 with regular country progress reports and updates on implementation being prepared. The opportunities provided by e-learning process and other related initiatives, provide a useful tool for accelerating dissemination of environmental information at all levels for the benefit of all Kenyans, while safeguarding forest resources and at the same time minimising the generation of e-waste in the country.

Mr. Ali D. Mohammed, CBS
Permanent Secretary
Ministry of Environment & Mineral Resources

MESSAGE FROM THE CHAIRMAN, NEMA BOARD OF MANAGEMENT

As the Principal Instrument of Government in the implementation of all policies relating to the environment, the National Environment Management Authority (NEMA) continues to develop legal instruments and strategies to address various aspects of environment. The Authority has so far developed 7 regulations which have been gazetted and currently being enforced alongside the Environmental Management & Coordination Act 1999 to ensure sound environmental management.

In this regard, the Authority is enforcing the Environmental Impact Assessment/Environmental Audit Regulations 2003, Waste Management Regulations 2006; Water Quality Regulations 2006; Biodiversity Regulations 2006; Controlled Substances Regulations 2007, Wetlands Regulations 2009 and Noise & Excessive Vibrations Pollution Control Regulations 2009. In addition, the Authority has formulated National Guidelines to provide procedures for the management of e-waste in the country; strategic environmental assessments for development projects cutting across several policies, Land use and sand harvesting activities.

The Authority is expected to offer appropriate technologies and options that are environmentally friendly aimed at promoting sound environmental management. The E-Learning Strategy for the Environment Sector is a major milestone which is encouraging the use of technology supported learning (TSL) and other information communication technologies for dissemination of environmental information. The adoption of e-learning is therefore aimed at reducing the use of paper thus safeguarding forest resources. All the sector institutions will be expected to formulate their key messages and disseminate to the public through e-learning and ICT.

Through the NEMA Revised Strategic Plan (2010-2013) the Authority has developed robust programmes and actions that focus on ways and means of improving the environment. This is enabling the implementation of flagship environmental programmes as stipulated in the Vision 2030 and the first Medium Term Plan (2008 – 2012).

The E-Learning Strategy is therefore in-line with the Strategic objective No.6 of the Authority *"To build and strengthen NEMA's Capacity to Undertake its Mandate".* This will enhance the capacity of the Authority to promote the adoption of TSL in line with Decision 6 of African Ministerial Conference on Environment (AMCEN). In response to this AMCEN commitment, the Ministry of Environment & Mineral resources in collaboration with NEMA developed the E-Learning Strategy for the Environment Sector. The Strategy proposes the use of ICT and specifically e-Learning as a tool for promoting dissemination of environmental information with the potential to reach large numbers of stakeholders at the same time. This is expected to influence a positive change of attitude towards the environment.

The adoption of e-learning by all institutions in the environment sector will reduce the use of paper and help safeguard forest resources. The expected outcome of the adoption of e-learning will be a highly educated and informed society on environmental issues for sound environmental management through coordinated dissemination of information and materials. Further, there will be coordination in the documentation of environmental information and dissemination of the same within the sector while promoting synergy among institutions.

I look forward towards a successful implementation of this Strategy and the transformation of the Environment Sector into a vibrant user of technology supported learning.

Hon Francis Ole Kaparo, EGH, SS
Chairman – Nema Board of Management

ACKLODGEMENT

This e-learning strategy for the environment sector is the outcome of the tireless efforts of many individuals and organizations.

The document owes much to the leadership of the Hon. Minister, Ministry of Environment and Mineral Resources (MEMR), encouragement and support of the Permanent Secretary MEMR, and the Ministerial e-learning Development Committee who were responsible for mobilizing resources and expert inputs for the early drafts.

NEMA acknowledges, with great appreciation, the technical and financial support provided by UNEP for preparing this strategy. Indeed the content and organisation of the strategy was also informed by reference documents obtained from UNEP.

I wish to convey my sincere gratitude to all the contributors and partner organizations from government, private sector, academia, NGOs and research institutions in the environment sector who tirelessly drafted the contents of this document.

Ag. Director General
National Environment Management Authority (NEMA)

ACRONYMS

AMCEN	African Ministerial Conference on Environment
AU	Africa Union
CBO	Community-Based Organisation
CD-ROM	Compact Disc Read Only Memory
CSO	Civil Society Organisation
DESD	Decade of Education for Sustainable Development
EE	Environmental Education
ESD	Education for Sustainable Development
GoK	Government of Kenya
ICT	Information Communication Technologies
IEC	Information, Education and Communication
IK	Indigenous Knowledge
KIE	Kenya Institute of Education
KESSP	Kenya Education Sector Support Programme
KNBS	Kenya National Bureau of Statistics
M & E	Monitoring and Evaluation
MeLDC	Ministerial e-Learning Development Committee
MEMR	Ministry of Environment and Mineral Resources
MDGs	Millennium Development Goals
MoE	Ministry of Education
MoU	Memorandum of Understanding
NEMA	National Environment Management Authority
NGO	Non-Governmental Organisation
TSL	Technology-Supported Learning
TOT	Trainer of Trainers
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WBT	Web-Based Training
WSSD	World Summit for Sustainable Development

DEFINITION OF TERMS

Technology Supported Learning (or **TSL**) refers to the support of any learning activity through technology. Electronic learning (or e-Learning or e-learning) is a type of Technology supported learning (TSL) where the medium of instruction is through computer technology, particularly involving digital technologies. Normally content is transported via Internet or Intranet or CD-ROM.

Electronic learning (e-Learning) is a type of Technology Supported Education/Learning (TSL) where the medium of instruction is computer technology. It is empowered by digital technology and is suitable to distance learning as well as flexible learning and can be used in conjunction with face-to-face teaching, as blended learning approach.

Environment sector refers to institutions whose mandate includes activities dealing with or related to the environment (Annex II)

EXECUTIVE SUMMARY

The 12th session of the African Ministerial Conference on Environment (AMCEN) was held in Johannesburg, South Africa in June 2008. This session adopted Decision 6 that mandated Governments, through their principal environmental authorities to facilitate inter-ministerial cooperation to undertake an assessment of existing needs and challenges facing Governments and develop a strategy to mainstream technology-supported learning. This was aimed at promoting environmental education and technology-supported learning at the national level after the realization that there was low awareness of e-Learning among institutions in the environment sector across Africa. For this reason, the Government of Kenya through the Ministry of Environment and Mineral Resources (MEMR) constituted the Ministerial e-Learning Development Committee (MeLDC) to oversee implementation of decision 6. One of the priority actions of MeLDC was to develop an e-learning strategy and action plan

Kenya is faced with myriad environmental challenges that include waste management, land degradation and climate change. Education is vital to instil values, knowledge and skills necessary to overcome the challenges. It is expected that the quality of education will be enhanced through e-learning. E-learning is also expected to contribute towards the mitigation of environmental challenges

This E-learning strategy 2010-2014 document gives a snapshot of e-learning activities in Kenya highlighting the various policy initiatives relevant to ICT and e-learning. Its broad objectives are creating a collaborative environment for information sharing and dissemination and building capacity to promote and adopt use of TSL in the institutions in the environment sector. The strategy has identified broad outcomes that implementation of this strategy promises as its contribution to the sustainable development agenda for the people of Kenya. It also points out the strengths, weaknesses, opportunities and threats of implementing the strategy.

In order to effectively implement e-learning, an organizational framework has been designed to enhance the smooth coordination and implementation of e-learning activities within the sector. This document also, identifies four broad areas to be addressed. These include; Content Development, Capacity Building, Infrastructure & Connectivity and Quality Assurance (Monitoring and Evaluation). For each of the areas objectives are presented and strategies for achieving the objectives. Activities, actors and timeframe have been stated.

In conclusion, the strategy highlights four main strategic objectives i.e. enhancing awareness on the use of TSL, building capacity for the use of e-learning, mainstreaming e-learning into the strategic planning process and strengthening synergies among institutions, to enable institutions to effectively and efficiently roll out e-learning in environment sector within their respective mandates.

CHAPTER 1: INTRODUCTION

1.1   BACKGROUND

The issue of education in environment has been addressed in a number of international environmental meetings dating back to the 1972 Stockholm Conference on the Human Environment which laid the foundation for the establishment of UNEP. The United Nations Conference on Environment and Development (UNCED) held in Rio-de-Janeiro in 1992 recognized environmental education as a tool for enhancing the attainment of sustainable development. Chapter 36 of Agenda 21 on Education and Public Awareness adopted by the Rio Earth Summit prioritized environmental education and training, and included concrete activities for implementation.

In the past, the face to face traditional method of teaching and learning has been the only way of knowledge dissemination. However, with development and growth of Information and Communication Technologies (ICT), e-learning as a medium of learning has been introduced in many fields, where the learners and tutors rarely or never meet face-to-face, nor access on-campus educational facilities.

There are several formats of e-learning: These include Web-based learning, where presentation of content is done via the web or Internet, computer based learning where presentation of content is done through media such as CD-ROMs and blended learning where one or more eLearning formats are used in conjunction with face-to-face learning.

E-learning provides benefits for organizations in many ways. It increases capacity and quality of learning hence improving performance. It increases access to information at minimal costs. It is self-paced and therefore convenient and flexible to learners. It enables learners to develop essential skills for knowledge-based work by embedding the use of information and communication technologies within the curriculum

In Kenya, the driving forces behind the adoption of this mode of learning include: Growth in population with more people in need of education under limited facilities; Increase in cost of face to face learning where few people can afford to physically attend school or university for education; pressure of work meaning more time devoted to working; and the evolution of ICTs. E-learning is now emerging as the most outstanding mode of teaching and learning through which Kenya can attain the Millennium Development Goals, Vision 2030 and sustainable development.

In 2002, the United Nations launched the Decade of Education for Sustainable Development (UNDESD: 2005-2014), which is a crystallization of the consensus amongst the international community that education is fundamental to the achievement of sustainable development. Education for Sustainable Development (ESD) enables the society to develop the knowledge, skills, understanding and values to participate in decisions that will improve the quality of life now without compromising the needs of future generations.

In response to this international commitment Kenya, through NEMA, developed a national ESD Implementation Strategy. The said document was adopted by the National Environment Council (NEC) in 2008. This strategy proposes the use of ICT, and specifically E-learning as one of the implementation strategies for promoting quality education and public awareness for improved quality of life and productive livelihoods. E-Learning as a tool in ESD can create opportunities for communities to develop their knowledge and understanding of environmental conservation and sustainable development.

The Benefits the environment sector will accrue from e-learning include:

- Environmental information becomes will become more readily available
- There will be greater outreach of EE/ESD programmes
- It will enhance networking, sustaining research and participatory exchange on environmental issues in the country and outside world
- It will save on costs by enabling trainees/users to learn from where they live or work
- It will facilitates cross-cultural communication and networking
- Increased know-how of different technological tools available
- Institutions in the Environmental sector and lead agencies can use to build capacity of their own staff
- development of joint study programs which will increase the number of curriculum subjects and ensure recognition of competence
- E-learning will enable us to reach the un-reached who are excluded in information, knowledge and skill empowerment.
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1.2: PROBLEM STATEMENT

Since the Rio Summit, there have been a lot of efforts to promote Environmental Education & Awareness in all sectors through training curriculum reorientation environmental correction activities among others. This type of outreach has been focused on the groups leaving many people unreached. Consequently, much more needs to be done in terms of creating environmental awareness among the different target groups within the society. E-learning has the potential to fill the gap in reaching out a significant portion of the society due to the fact that it would be used to increase access of information. There is therefore need to develop skills in e-learning to facilitate the achievement of this goal through creating, promoting and enhancing awareness on environmental education and the use of technology supported learning. In addition, there is also need to develop and enhance the infrastructure that will support e-learning by facilitating availability of low cost connectivity and promoting private sector participation in the provision of infrastructure facilities. Environmental Educational will be delivered through CD-ROM or DVD, intranets, the Internet, and even satellite and web broadcasts of classes and conferences.

The environmental education awareness is geared towards practical solutions to environmental challenges including emerging issues at local, national & international level such as climate change, and degradation of the Mau forest.

E-learning will be used as a delivery of teaching material electronically with the added value of maintaining standards and quality across the board without the limitation of a specific location. It will not replace traditional mode of teaching as learning will naturally evolve to utilize technological progress to improve learning efficiency. It has the power to enormously enrich the learning experience through the use of interactivity and multiple media, both of which are shown by education theory to greatly enhance learning effectiveness.

This strategy lays out the mechanism to coordinate efforts and resources from different stakeholders in offering environmental awareness and education to different community target groups in addressing different challenges.

1.3 RATIONALE FOR THE STRATEGY

At regional level AMCEN decision 6 requests African governments to develop strategies and action plans on the use of TSL

In Kenya, E-learning is being rolled out in 3 sectors environment, health and education. The sectors need to develop strategies to facilitate and regulate the development of e-learning programmes in their institutions. They also need to position and devise their strategies to suit their unique environments.

There are a few initiatives of e-learning among environmental institutions but there are insufficient resources available for up scaling. The e-learning strategy is needed to help focus scarce resources for e-learning development in environment sector. The framework must have a clear vision, mission and objectives

1.4: VISION

A well educated and informed society on environmental issues for sustainable development

1.5: MISSION

To support, encourage and coordinate the use of Technology Supported Learning to promote targeted research, documentation and dissemination of environmental education, information and awareness creation to the general public.

1.6: GOAL

To provide a coordinating mechanism through which various synergies will be built to further develop and implement e-learning in the environment sector.

1.7: OBJECTIVES OF THE E-LEARNING STRATEGY

1.7.1 BROAD OBJECTIVES OF THE E-LEARNING STRATEGY

To create a collaborative environment for information sharing and dissemination of information.
To build capacity to promote and adopt use of TSL in the environment sector institutions
To build capacity to promote the use of TSL in environmental education for sustainability.

1.7.2: SPECIFIC OBJECTIVES

1. To enhance awareness on use of technology supported learning.
2. To build skills of environment stakeholders on the use of e-learning.
3. To improve the technical infrastructure.
4. To mainstream e-learning into strategic planning processes.
5. To strengthen synergies among institutions.

1.8: EXPECTED OUTPUTS

By the end of the 2015 it is envisaged that:

1. E-learning is firmly embraced in the environmental sector as a means of enhancing the awareness and knowledge on sustainable development.

2. E-learning is firmly embraced in the environmental sector as a means of meeting institutional vision and responding to the needs of the workplace

3. Environment sector institutions have strategies in place that ensure adequate provision for the IT infrastructure, digital resources and user support necessary to underpin use of new learning technologies

1.9: EXPECTED OUTCOMES

Implementation of the e-learning strategy is expected create a better place for Kenyans by contributing to the sustainable development/ sustainable environment agenda to deliver the following outcomes:

1.9.1: PEACE:

E-learning will be used to promote peaceful co-existence amongst Kenyan communities under the social pillar of sustainable development. This is through faster and cheaper information access to empower communities for sound decision making to reduce mistrust, and bridge the knowledge divide. It should counter ethnic chauvinism, and gender inequity.

1.9.2: EMPLOYMENT CREATION:

E-learning will be used to create jobs and generate income for several players especially the youth under the economic pillar. There will be avenues opened in the areas of software development, systems management, tutors and other specialized cadres.

1.9.3: CLIMATE CHANGE ADAPTATION AND MITIGATION:

E-learning will be used to help promote aspects of climate change adaptation and mitigation in the Kenyan context to be in line with the current global processes. It is expected that the widespread dissemination of accurate environmental information will lead to individuals and institutions making conscious decisions to reduce their ecological footprints. One quick win will be through the reduction of paper and energy consumption

CHAPTER 2

2.1 SWOT ANALYSIS

A SWOT analysis has been done to provide insights that will enable the implementing institutions to take advantage of the existing opportunities build on the strengths and improve or mitigate on the weaknesses and threats.

Strengths

Factors that constitute the strengths of implementing e-learning in the sector include:

- General willingness to share information in the environment sector

- Current issue of climate change makes environment issues a priority and development partner interested

- ESD decade is current and hence there is a lot of relevance

- Vision 2030 and its emphasis on education and use of alternative methods of delivery to increase access

- Enabling government policies that are in favor of technology supported learning

- Government's commitment to the full use of technology in its operations through e-government services

- Existing Human Resource capacity (personnel already trained in e-learning)

Weaknesses

On the other hand, the strategy appreciates that there are various weaknesses and challenges that may affect its implementation. These include:

- Inadequate Funding

- Inadequate infrastructure in the institutions, communities in regard to ICTs and connectivity

- Low awareness on the concept and benefits of e-learning

- Conflicting policies that may be unsupportive

- Cultural and traditional mode of teaching that society has been used to

- Inadequate skills in e-learning development and implementation

- Lack of online content for easy and economical access in the environment and information sector

- No harmonized and coordinated approach to dissemination of environmental education

- Irrelevant online environment Education content and information

- Increased and unregulated dumping of electronic waste

- No monitoring and Evaluation mechanism in ensuring quality and relevant environmental education content

- Inadequate mechanisms on information sharing

- Content of research is still low

Opportunities

The strategy recognizes that it has various opportunities it could build on in order to leverage and deliver its objectives and goals better. These opportunities include:

- Existing polices and legislations for ICT

- Existing information in the environment institutions that can be shared among the institutions

- Opportune time coinciding with the roll out of the fiber optic cable

- Current focus from the top on the use of technology for information sharing, learning and communication

- Wide coverage to the last mile by technology as exhibited through Mobiles phones, Radios, TVs, Computers mobile Cinemas

- Political goodwill and various sources of funding

- Improved infrastructural growth- the ongoing Rural Electrification Programme

Threats

The strategy also recognizes the threats that may jeopardize its work, including:

- Poverty
- Competing priorities resulting to desperate socio-economic challenges which may take precedence
- Championship of e-learning by the environment sector
- Conflicts with political/Personal interests
- Dynamic nature of ICT sector
- Inability to coordinate all programmes

2.2: STATUS OF E-LEARNING IN THE ENVIRONMENT INSTITUTIONS

Knowledge and skills are very important in increasing efficiency and effectiveness of an organisation to achieve its business objectives. However, acquiring them is expensive and time consuming.

NEMA carried out an e-readiness status survey in 10 environment institutions which revealed the certain issues as hindering the embracing of e-learning in the institutions in environmental institutions (government institutions, nongovernmental organization, research institutions and universities).

The survey confirmed that although several institutions (40%) have infrastructure inform of computer hardware and connectivity, they lack e-learning software, servers and high bandwidth connectivity. On content development the survey revealed that there were issues such as lack of guidelines and skilled human resources to develop e-learning courses,

Most institutions (90%) confirmed that lack of awareness by the senior management made the implementation of e-learning programmes difficult.

The findings revealed that the status of e-learning in the environment institutions was very low with only 20% having an e-learning strategy, 90% lacking funds to implement e-learning. The results showed that the organizations offering some form of e-learning were mainly universities whose mandate is to teach and carry out research

The survey concludes that environmental institutions dealing with natural resource conservation and management and/or research have not embraced e-learning in their programs to enhance the delivery of environmental education, training and awareness-raising. Moreover they don't have an e-learning policy in place.

Many institutions in environment sector cannot afford to invest their scarce resources to training and building skills of its employees , stakeholders and lead agencies distributed all over the country. The institutions must only use their resources to train personnel.

The desire to improve our cost effectiveness is therefore one of the major reasons why environment institutions support the development of e-learning programmes to disseminate knowledge for the management and conservation of natural resources. Such initiative will avoid waste of time and money in facilitating people to a particular place for face to face training. Environment Institutions need to improve on the quality and efficiency of delivery of learning, training or education. E-learning is a form of teaching where presentation of content paired with interaction between learners and tutors, often using Internet based learning facilities has shown to increase professional flexibility and can enable us to reach the unreached that are excluded in information, knowledge and skill empowerment. E-learning can also be blended learning where web-based training combined with face to face has shown to have high level of human interactivity and reaching desired learning outcomes.

The survey recommends that to effectively address the need to embrace e-learning in environment institutions, the following issues need to be considered:

- National E-learning policy should be put in place
- Guidelines for development of web content.
- Create awareness on e-learning to senior management staff at environmental institutions to enable them embrace the idea
- There is need for a regional strategy, national strategy, sector strategy and institutional strategy for easier implementation of e-learning activities
- Build capacity by training more staff on e-learning
- Need to fundraise and have adequate funds for e-learning programmes in institutions
- e-learning concept should be captured in the Medium Term Expenditure Framework (MTEF) in order to gain budgetary allocation
- A more comprehensive e-readiness survey needs to be done to cover all environment institutions countrywide to present a whole picture of the status of e-learning.

2.3 EXISTING ICT-RELEVANT POLICIES AND LEGISLATION

The government has enacted several policies and pieces of legislation to help promote ICTs and e-learning in various sectors. These include; Vision 2030, National ICT policy, e-Government strategy, Education policy, ICT Education policy and KESSP.

2.3.1: VISION 2030

Under social pillar of Vision 2030 on the section on education and training, Kenya will provide globally competitive quality education, training and research to her citizens for sustainable development. In order to improve access to education, the following specific strategies have been highlighted and include; Introducing open and distance learning in universities, Introducing e-learning and blended learning as an alternative delivery system

2.3.2: DRAFT NATIONAL ICT POLICY

Kenya's draft national ICT policy 2006 sets out the nation's aims, principles and strategies for the delivery of ICT. The ICT policy advocates for growth and implementation of e-learning in Kenya through; promoting the development of e-learning recourses; facilitating Public - Private Partnerships (PPP) to mobilize resources; and promoting the development of integrated e-learning curricula to support and provide affordable infrastructure to facilitate dissemination of knowledge and skill through e-learning platforms. It promotes e-Learning as a tool for disseminating environmental information and awareness creation for the public to mitigate environmental challenges.

2.3.3: KENYA COMMUNICATION (AMMENDMENT) ACT 2009

The Kenya Communications (amendment) Act of 2009 seeks to give a legal framework for emerging technologies in broadcasting and communication. Public, private and community broadcasting is given a more comprehensive framework to carter for new methods of broadcasting such as content delivery via subscription and the use of web portals. The Act also recognizes the use of electronic transactions such as email as legally binding means of carrying out transactions. Validity of electronic contracts, domains and recognition of electronic records provides a legal cushion for the use of e-Learning in public education.

2.3.4: E-GOVERNMENT STRATEGY

E-Government is the use of information technology to support government operations, provide for investments that are needed in people, tools, policies, processes, engage citizens, and provide government services. The E-Government strategy encourages the use of a range of information technologies, such as the Wide Area Networks, Internet, and Mobile Computing, by government agencies to transform government operations for improved effectiveness, efficiency, service delivery and to promote democracy. Under the 'Communication with Citizens' pillar, the strategy recognizes the use of online technologies to support public education. E-Learning was identified as an enabler in public education.

2.3.5: EDUCATION POLICY

The policy is articulated in the Sessional paper No. 1 of 2005, as a blue print which led to the launch of Kenya Educational Sector Support Programme (KESSP) in July 2001. The document clearly lays out roles and budget-lines to support eLearning. IT also emphasizes the development of partnerships in order to speed up and enhance the use of ICT in education.

2.3.6: ICT EDUCATION POLICY

The Ministry of Education recognizes the use of ICT as an important avenue to support and improve the delivery of quality education in Kenya. This policy seeks to address access of e-content development, introducing ICT in training colleges in Kenya, provision of computers in schools and in-service teacher training programmes.

CHAPTER 3:

3.1: ORGANIZATIONAL FRAMEWORK

To ensure that E-learning is anchored in national priorities and has the support and approval at the highest levels of decision-making, an organizational framework and structure has been put in place to oversee and coordinate the implementation of e-learning in the environment sector. The framework is as outlined below

Organizational Framework of E-Learning Implementation
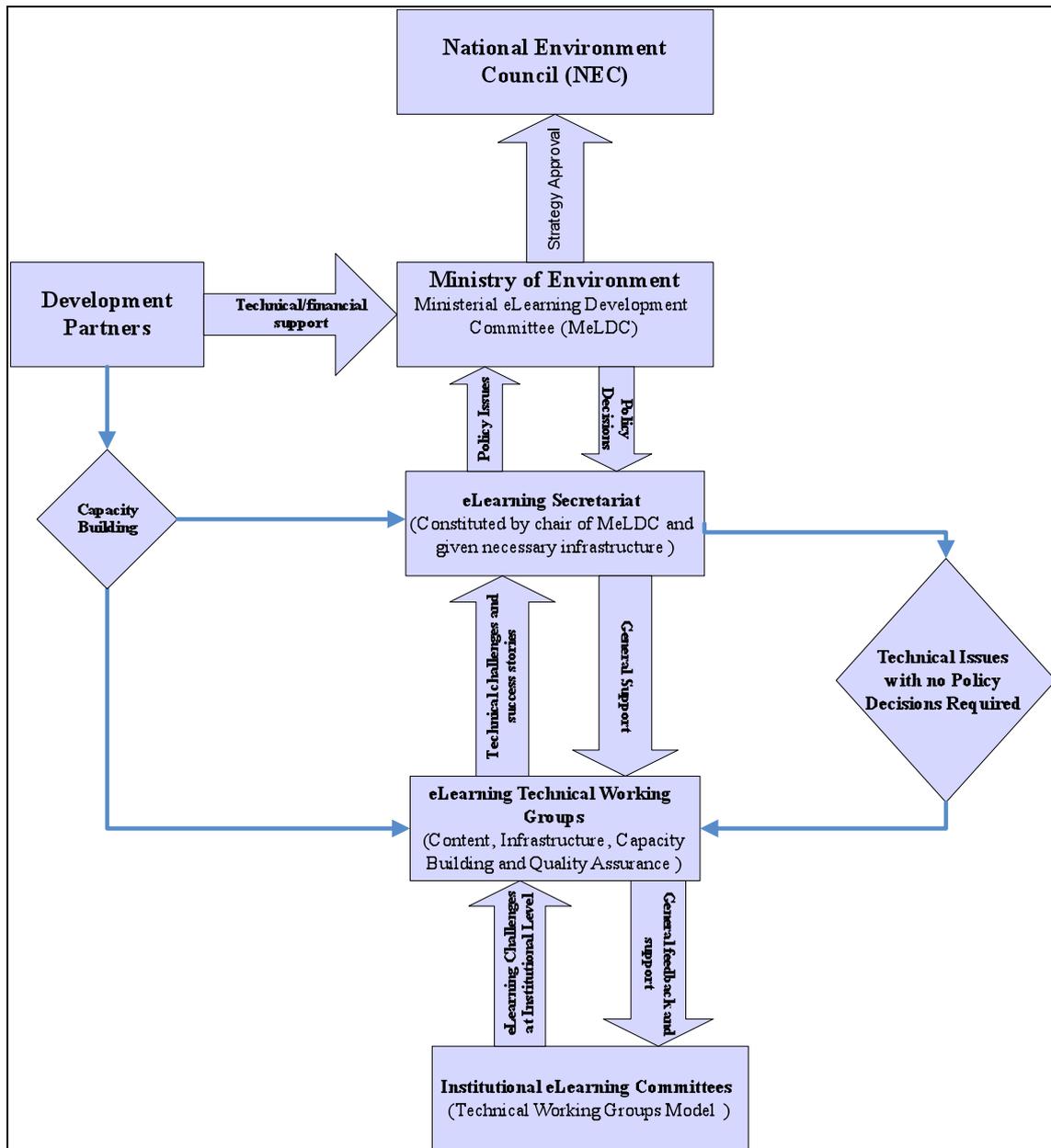
Ministerial e-Learning Development Committee (MeLDC) will coordinate the implementation of the AMCEN decision 6 and other e-learning initiatives within their mandates

e-learning Secretariat will coordinate the activities of the working groups.

UNEP will provide both technical and financial support

e-learning technical working Groups will address issues related to content, capacity, infrastructure & connectivity and quality assurance. The following working groups have been identified: Content Development, Capacity Building, Infrastructure & Connectivity and Quality Assurance (Monitoring and Evaluation). These working groups have the following objectives and activities.

Content Development Working Group

This group will look into all matters related to e-content development and develop a common database for all e-learning programs in Kenya. It will have the following

Objectives:
1. To establish the status of e-learning content in Kenya.
2. To develop guidelines for the e-learning environmental education digital content.
3. To establish a repository for e-learning programmes

Activities
1. Conduct a baseline review of e-learning content in Kenya
2. Develop guidelines for e-learning content.
3. Develop an evaluating and monitoring tool for the e-learning content
4. Build a repository of model e-learning content

Capacity Building Working Group
Objectives
1. Develop e-learning policy
2. Identify e-learning training needs among the stakeholders
3. Build capacity on the use of e-learning among the stake holders
4. Develop a database of trainers of trainers in e-learning.
5. Develop linkages with end users

Activities
1. Carry out e-learning training needs assessment.
2. Coordinate the development of training materials.
3. Train trainers.
4. Coordinate training.
5. Monitor and evaluate e-learning capacity building activities.

Infrastructure & Connectivity Working Group

Objectives:

1. Identify the needs of the stakeholders for e- learning infrastructure among key stakeholders
2. Develop e-waste policy.
3. Provide a framework for the development of the required infrastructure that will enable dissemination of environmental information

Activities

1. Carry out a needs assessment in the area of e-learning infrastructure.
2. Identify a team of experts to deal with the required infrastructural and connectivity issues.
3. To prioritize the infrastructural needs of the stakeholders.
4. Carry out an e- learning pilot test on infrastructure and connectivity.

Quality Assurance (Monitoring and Evaluation) Working Group

Objectives

1. Develop quality standards for e-learning in the environment sector
2. Monitor e-learning programmes.
3. Identify and recommend best practices.

Activities

1. Develop quality standards (QS) and indicators for e-learning
2. Develop quality standards monitoring schedule for the environment sector
3. Monitoring and evaluation of QS in the infrastructure development
4. Monitoring and evaluation of QS in the content according to the guidelines
5. Monitor the dissemination of information about quality enhancement activities to ensure the sharing of best practices in e-learning across the institution in the environment sector.
6. Monitor current development in ICT and its potential usage in learning and teaching

Institutional e-learning committees: These will coordinate e-learning activities at institutional level

3.2: TARGET GROUPS

All target groups in the environment sector have a function to play in the implementation of this strategy. Each of these actors will have their specific roles in tandem with their institutional mandates and policies: The target groups in the implementation of this strategy can be divided into two groups namely implementers who will implement e-learning programmes and facilitators who will provide enabling environment to implement these programmes.

Implementers

1) Learning institutions
2) Civil society organization-international and national
3) Government ministries, Departments and parastatals
4) Provincial and District Environment Committees and constituency groups
5) Media

Facilitators

1) Policy decision makers
2) Development partners
3) Private sector firms

This Strategy urges all target groups in the environment sector to deliberately collaborate and create synergies; this will ensure smooth operation of e-learning programmes within the sector.

3.2.1: LEARNING INSTITUTIONS

Learning institutions in collaboration with the Kenya Institute of Education (KIE) and other recognized institutions will develop e-learning curricula for primary, secondary and tertiary levels. Universities will develop their own e-learning policies and curricula. These will be used to enhance the quality of environmental learning experiences and improve public understanding on environmental issues. These institutions will be expected to adopt the use of ICTs in learning and teaching at all levels within an environment in which benefits will be derived from a blend of traditional and new learning and teaching methods that will lead to a better informed and responsible society on environmental management.

3.2.2: CIVIL SOCIETY ORGANIZATIONS

Civil society organizations play a vital role in advocacy to influence policy and decision making through online forums, chats and other avenues. They will be expected to use ICT to disseminate environmental information and enhance awareness. This process shall influence national and global policy though advocacy campaigns and mobilization of people and resources and encourage North-South and south-south collaboration.

3.2.3: PROVINCIAL ENVIRONMENT COMMITTEES AND DISTRICT ENVIRONMENT COMMITTEES (PECS & DECS) AND CONSTITUENCY GROUPS

The Provincial and District Environment Committees will be expected to disseminate environmental information and create awareness through the use of e-Learning within their respective provinces and districts. This is in accordance with their mandates as enshrined in EMCA as the custodians of environmental affairs within their areas of their jurisdiction.

At the constituency level women and youth groups can use e-learning to pass knowledge in conserving and managing the environment with financial support from the constituency development funds.

3.2.4: GOVERNMENT MINISTRIES, DEPARTMENTS AND PARASTATALS

They will develop appropriate institutional policies and regulations to strengthen e-Learning structures within ministries, departments and public institutions. They will ensure availability of e-Learning infrastructure, content and material to be used in implementation of the e-Learning strategy. They will also be expected to implement, monitor and evaluate the policies

3.2.5: MEDIA

The media will use ICTs to structure environmental education and information and make the public aware of environmental issues around them through multimedia and other automated methods such as documentaries, movies, videos and broadcasted forum. The media will also profile the importance of e-learning as a tool for environmental education

3.2.6: POLICY AND DECISION MAKERS

The policy makers at the national level will be expected to develop and monitor sectoral policies that support creation of structures that will enable the relevant authorities to implement e-Learning. Their interventions will promote the integration and mainstreaming of e-learning activities. They will also be expected to provide and mobilize resources.

3.2.7: PRIVATE SECTOR

Public –private partnerships will be encouraged to ensure that the private sector is actively involved in infrastructure development and ensure that e-learning programs are affordable and accessible to the public .

3.2.8: DEVELOPMENT PARTNERS

They will be expected to play an advisory role by offering relevant consultancies to the relevant environmental institutions. They will also be expected to mobilise resources.

3.3 FINANCIAL AND RESOURCE MOBILIZATION

The e-learning strategy requires financial resources for its implementation. There is therefore need for the institutions in the environment sector and those others that will implement it to raise funds through the national budget, development partners and the private sector.

3.4 MONITORING AND EVALUATION

Monitoring and evaluation will be used to assess the progress of the implementation of e-learning strategy and attainment of its objective. Each institution will be expected to   document the activities carried out in their individual institutions and report to the e-learning secretariat. This will be done through use of appropriate tools. The   evaluation will be done on yearly basis.