



nema
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ICT STRATEGY

2022-2027

List of Tables	4
Abbreviations and Acronyms	5
Foreword	6
Acknowledgement	7
CHAPTER 1: Introduction	8
1.1 Background	8
1.2 Functions of ICT:	9
1.3 Key Policy and Legal Documents relevant to NEMA	9
1.4 ICT compliance with the constitution	9
1.5 Rationale for development of ICT strategy	10
1.6 Process of development of ICT strategy	10
1.7 Global, Regional and National ICT issues	11
CHAPTER TWO: SITUATIONAL ANALYSIS	12
2.0 Overview	12
2.1 Performance Review of the ICT Strategy (2013-2018)	12
2.3 Environmental scanning (PESTEL Analysis)	17
2.4 Stakeholder analysis	20
CHAPTER THREE: STRATEGIC FOCUS	22
3.1 Overview	22
3.2 Vision	23
3.3 Mission	23
3.4 Core Values	23
3.5 Key Result Areas (KRAs)	23
3.6 Strategic Objectives	23
CHAPTER FOUR: IMPLEMENTATION AND COORDINATION FRAMEWORK	24
4.0 Overview	24
4.1 Governance Structures	25
4.2 Staffing Levels:	25
4.3 Strategy Implementation:	26
4.4 Implementation Matrix	27
4.5 Risk Management	31
CHAPTER FIVE: MONITORING AND EVALUATION	32
5.1 Introduction	32

5.2 Performance Review32

List of Tables

Table 1: Key Achievements.....	7
Tables 2: Challenges and Interventions.....	8
Tables 3: Strengths and Weaknesses.....	9
Table 4: Opportunities and Threats.....	9

Abbreviations and Acronyms

AI	-	Artificial Intelligence
DG	-	Director General
ERP	-	Enterprise Resource Planning
EIA	-	Environmental Impact Assessment
EDL	-	Effluent Discharge License
E-Waste	-	Electronic Waste
GGEP	-	Green Growth & Employment Program
GIZ	-	Gesellschaft für Internationale Zusammenarbeit (German: Society for International Cooperation)
GoK	-	Government of Kenya
IoT	-	Internet of Things
ISO	-	International Organisation for Standardization
ITIL	-	Information Technology Infrastructure Library
KEPTAP	-	Kenya Petroleum Technical Assistance Project
KRA	-	Key Result Area
MoICT	-	Ministry of Information Communication and Technology
NEMA	-	National Environment Management Authority
NIE	-	National Implementing Entity
SLRM	-	Strategy Legal and Resource Mobilization
VoIP	-	Voice over Internet Protocol



Foreword

Developments in Information Communication Technology (ICT) are fundamentally changing the way we live, work and interact with the environment. The rapid increase in use of mobile phones and widespread information sharing means has resulted in not only considerable improvement in the lives of common *mwana* but also their expectations for automated government services.

It is on this basis that NEMA has been at the forefront of leveraging on technology to ensure improved compliance with regards to environmental management. The investment in technology has ensured procurement of the state-of-the-art ICT equipment, simplification of license application through to issuance processes through automation and adoption of digital payment platforms to enhance service delivery. This has played a great role in contributing specifically to Effluent Discharge License (EDL) and Waste Transport/Disposal A-in-A revenue growth from Kshs. 82,148,222.00 in FY 2014/2015 to Kshs. 92,275,300 in 2017/2018. This trend has continued over the years to Kshs. 150,577,400 in FY 2019/2020.

The Authority's Strategic plan 2019-2024 identifies opportunities and challenges on how to enhance service delivery through technology. To align itself with the Strategic Plan, the Section has developed its own interventions including implementation of Information Technology Infrastructure (ITIL) and modernization and upgrade of ICT/GIS infrastructure to support Authority's operations.

It is my hope that this Strategy will improve interaction within the Authority, satisfying and ultimately enhancing service delivery to both internal and external clientele.

Mamo B. Mamo, EBS
Director General

Acknowledgement

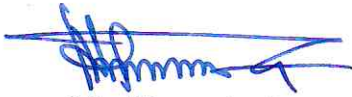


As we launch our second ICT Strategy for the period 2019 – 2024, we look back and celebrate our achievements powered by dedicated staff and committed Board of Management. This Strategy will provide a roadmap for use of Information, Communication and Technology (ICT) to assist National Environment Management Authority (NEMA) deliver on its mandate. During the last implementation period, the Authority automated its key business processes among them application, processing and issuance of various licenses. Additionally, all forty-seven (47) counties were connected to the Internet. The success is attributed to goodwill from Board of Management, increased budgetary support from GoK and donor partners such as GGEP, KEPTAP and NIE and NEMA staff who embraced use of Technology.

I wish to thank the entire ICT Steering Committee and Management for their enormous contribution, commitment to the development of content and shaping of this Strategy.

The ICT Strategy has incorporated measures to ensure comprehensive Monitoring and Evaluation to achieve intended objectives.

I urge all staff to play their role in the implementation of this Strategy and look forward to digital transformation in Environmental Management during this Strategy's implementation period.



Mr. Kennedy O. Ochuka

Director, Corporate Services.

CHAPTER 1: Introduction

1.1 Background

The National Environment Management Authority (NEMA) is established by section 7 of the Environmental Management and Coordination Act (EMCA), 1999, and has been in operation since 1st July 2002.

The object and purpose for which NEMA is established under EMCA is : to ensure sustainable management of the environment through exercising general supervision and coordination over matters relating to the environment and; to be the principal instrument of government in the implementation of all policies relating to the environment.

Over the past 20 years, ICT has revolutionized almost all spheres of our well-being globally, including but not limited to automation of business processes, service delivery, social-economic development, research and communication.

ICT has been identified as an enabler in Kenya's vision 2030. ICT is a critical tool in Kenya's vision of knowledge-based economy of innovation, adoption and adaptation of which are key for economic growth. Some of the key approaches adopted by the country include:

- a) Upgrading the national ICT infrastructure;
- b) Improving public service delivery;
- c) Developing the ICT industry; and
- d) Upgrading ICT capacity

In line with global and national trends, the authority has leveraged on ICT in its operations towards achieving its mandate of a clean, healthy and sustainable environment. This has been achieved through automation of business processes, provision of ICT infrastructure and internet access, knowledge management and provision of communication tools for efficient and effective service delivery .

1.2 Functions of ICT:

The functions of the ICT department are:

1. Formulation and implementation of the Authority's ICT policies, plans and strategies;
2. Conceptualize information systems, coordinate development, implementation and maintenance;
3. Maintenance of Information Communication Technology equipment;
4. Promote ICT literacy
5. Enforcing appropriate ICT standards during the acquisition of hardware, software and systems development.
6. Risk management and disaster preparedness.
7. Helpdesk and technical user support services.

1.3 Key Policy and Legal Documents relevant to NEMA

There are various policies and laws which directly or indirectly impact on information technology. Some of those laws and policies include:

1.3.1 Policies:

1. National ICT policy 2019.
2. The Kenya National ICT Masterplan 2014-2018.
3. The Kenya vision 2030.

1.3.2 Laws:

1. The constitution of Kenya, 2010
2. Data protection Act no. 24, 2019
3. The Kenya Information and Communications Act, 1998.
4. Computer misuse and cybercrimes Act, 2018.
5. Public procurement and asset disposal Act, 2015.
6. Access to information ACT, 2016.
7. The Environmental Management and Coordination Act, 1999.

1.4 ICT compliance with the constitution.

Kenya enacted a new Constitution in 2010. ICT is one of the most effective methods to attain some of the objectives of the Constitution. This includes realizing efficiency of the Government; effective method to provide public service; and citizen's right to know.

Specifically, ICT is imperative for the cost-effective achievement of constitutional requirements.

NEMA's ICT department in the discharge of its mandate is particularly guided by; Article 6 (3) on equitable delivery of public services to Kenyan citizens regardless of their domicile; Article 232 on quality service delivery by the public service; Article 35 on the correctness of information held by the state as well as ensuring public access to the information.

1.5 Rationale for development of ICT strategy

The ICT work plan activities in the last 5 years were guided by the ICT Strategy 2013-2018. At the end of that planning period, there was need to establish a planning framework for the next implementation period. The development of this Strategy is therefore informed by the need to:

- a) Provide NEMA's ICT strategic direction for the period (2022-2027);
- b) Align the ICT Strategy with the NEMA strategic plan (2019-2024);
- c) Provide an overall framework for prioritization, allocation of resources and implementation of ICT strategies.
- d) Implement recommendation of the Information systems audit (2021).

1.6 Process of development of ICT strategy

The ICT Strategy was developed through a consultative and participatory approach that ensured involvement of all key stakeholders namely; Board of Management, management, staff and stakeholders. The review was undertaken through a process involving the following stages:

- a) Desk review of NEMA's relevant documents;
- b) Development of a working document;

- c) Interactive workshop with ICT Committee;
- d) Interactive workshop with Management and ICT Committee;
- e) Presentation of draft ICT Strategy to internal and external stakeholders
- f) Presentation of draft ICT Strategy to the Board for approval and adoption; and
- g) Printing of the ICT Strategy Final Draft - ICT Strategy 2022-2027.

1.7 Global, Regional and National ICT issues.

The nature of ICT issues traverses global, regional and national levels. Key global regional and national ICT issues include: Cyber security and data protection, pace of technological change, Integration and interoperability of ICTs, Management and disposal of electronic waste, unequal distribution of ICTs, Data sharing, Difference in ICT related standards and legislations.

CHAPTER TWO: SITUATIONAL ANALYSIS

2.0 Overview

This chapter provides an internal and external assessment of NEMA's ICT focussing on a critical review and analysis of achievements, challenges and lessons learnt.

2.1 Performance Review of the ICT Strategy (2013-2018)

An assessment of the status of implementation of the 2013 – 2018 ICT Strategy was undertaken and key achievements, challenges and lessons learnt identified.

2.1.1 Achievements

The automation of key business processes such as EIA, EDL, Waste Transport Licensing, Procurement and Payment of goods and services and their successful implementation was a major milestone for ICT in the 2013 – 2018 period. The success is attributed to support from NEMA Management and Board of Directors and commitment from staff who completely embraced use of technology.

Other key achievements of the Section include:

Table 1: Key Achievements

Strategic Objective	Achievements
21.2 Leverage ICT in all Operations.	• Provision of Internet connection to 40 counties.
	• Upgrade of Firewall.
	• Implementation of Wireless Network.
	• Upgrade and Modernization of NEMA's Data Centre.
	• Implementation of Power Backup system.
	• Adoption of Voice over Internet Protocol (VoIP)
	• Provision of communication tools/infrastructure to enhance NEMA's brand image (Social media, Website Redesign).
	• Automation of ISO processes through implementation of Q-Pulse System.
	• Adoption of Virtualization which allows for optimal usage

	of existing ICT physical resources amongst various ICT services.
	<ul style="list-style-type: none"> Automation of key business processes including Summary Project Report (SPR), Air Quality, Plastic Clearance, Procurement and Contracts Management.
	<ul style="list-style-type: none"> Roll-out of the NEMA's Licensing System to all 47 counties.
	<ul style="list-style-type: none"> Procurement and Roll-out of a Biometric System to all 47 counties.
	<ul style="list-style-type: none"> Automation of Auditing processes through implementation of Teammate System.
	<ul style="list-style-type: none"> Integration with E-Citizen payment platform to ensure easy payment of licenses and permits
	<ul style="list-style-type: none"> Upgrade of NEMAs ERP from NAV 2009 to NAV 2015.

2.1.2 Challenges

The Key challenges faced during the implementation of 2013 – 2018 ICT Strategy period and their interventions are outlined in Table 2.

Table 2: Challenges and Interventions

S/No	Challenges	Interventions
1	Outdated Licensing System (MS SharePoint 2010).	<ul style="list-style-type: none"> Procurement of a new licensing system or Upgrade of the current system from Microsoft SharePoint 2010 to 2013.
2	Lack of Integration between various systems	<ul style="list-style-type: none"> Investment in Application Programming Interface (APIs). Procurement of Maintenance Support contracts for the installed APIs.
3	Inadequate Internet Bandwidth across 47 county offices	<ul style="list-style-type: none"> Upgrade of Internet Bandwidth to a minimum of 5mbps across 47 county offices.
4	Inadequate Storage Resources	<ul style="list-style-type: none"> Procurement of adequate Network Access Storage (NAS) associated with rising data collected/stored from key

		<p>systems.</p> <ul style="list-style-type: none"> • Completion and Operationalization of Disaster Recovery site.
5	Inadequate Networking tools (Monitoring System, Switches etc)	<ul style="list-style-type: none"> • Procurement of switches • Procurement of a Network Monitoring tool.
5	Outdated Mailing Software (MS Exchange 2010)	<ul style="list-style-type: none"> • Procurement and Installation of latest mailing software which will ensure access to security updates and patches.

2.1.3 Lessons Learnt

Key lessons learnt from the ICT Strategy 2013 – 2018, include:

- I. The Authority's mandate presents a unique opportunity for ICT to tap into various donor funding programmes e.g. Green Growth and Employment Program (GGEP), Kenya Petroleum Technical Assistance Programme (KEPTAP) and GIZ;
- II. There is need to enhance engagement with other key government ICT agencies such Ministry of ICT (MoICT) and ICT Authority in order for us to ensure implementation of best ICT standards;
- III. The staff in ICT are its greatest asset, and by continuously investing in them through training, they are able to continuously achievement of set objectives.
- IV. There is need to put in place E-Waste handling procedures;
- V. There is need to incorporate mechanisms ensuring safeguarding of all ICT equipment against loss and/or theft;
- VI. There is a great risk poised with continued maintenance of physical files in our NEMA offices and herein lies an opportunity for ICT to tap into data digitization.
- VII. There is need for continuous ICT training of NEMA staff.

2.2 SWOT Analysis

Strength	Strategic Implication	Strategic Response
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Established unit within NEMA	The ICT division is anchored in the NEMA structure.	Execute mandate within the Authority.
Improved automation level of business processes.	Effective and efficient service delivery.	Ease of doing business.
Adoption of latest ICT technologies.	State of the art ICT infrastructure	Continuously leveraging on latest ICT technologies
Skilled ICT staff to execute the departments mandate.	Effective and efficient service delivery.	Continuous training and development
Top management support to business transformation and innovation.	Provides strategic direction	Enhance engagement between NEMA and stakeholders

Weakness	Strategic Implication	Strategic Response
Inadequate financial resources	Low level of programme implementation	Lobby for increased budget from NEMA's budget committee
Inadequate human resource	Inadequate capacity to deliver on the division's role	Recruit additional staff.
Inadequate physical storage space of ICT equipment.	Hazardous working environment. Increased breakdowns , wear and tear of equipment.	Allocation of adequate storage space. Disposal of obsolete equipment.
Inadequate hardware and software.	Inefficiency in service delivery.	Equip staff with appropriate working tools.
Slow internet speed	Delayed service delivery	Upgrade internet bandwidth to match service requirements.
Inadequate information security	Risk of cyber-attacks ,data and equipment loss	Implement Information Security Management

		Systems (ISMS).
Current systems unfit for purpose.	Inefficiencies, breakdown and prone to security vulnerabilities .	System overhaul. Ensure integration and interoperability of all systems.

Opportunities	Strategic Implication	Strategic Response
Technological advancement	Improved service delivery.	Leverage on available technology to improve service delivery.
The Kenya Vision 2030 aligned ICT initiatives.	Effective and efficient service delivery.	Establish and nurture partnerships with flagship projects.
E-Government services (e-citizen, data centres, fibre connectivity, one stop service centres, IFMIS, KESWS etc).	Access to shared e-Government resources.	Leverage on existing e-government services. Establish partnerships with MCDAs .
Widespread adoption of mobile devices and universal connectivity	Quick and convenient access to online services	Leverage on existing mobile technology ecosystem and available infrastructure

Threats	Strategic Implication	Strategic Response
Cyber security threats	Loss of data	Implement Information Security Management Systems (ISMS).
Dependency and lock-in by 3rd party service providers	Overdependence on the 3 rd party service providers.	Preparation of detailed Terms Of Reference (TORs). Proper project and contract management.
High levels of technology	High cost associated with	Proper inventory

obsolescence, necessitating frequent investment	acquisition and upgrading of technologies.	management and budgeting. Continuous investment in ICT infrastructure.
High cost of technology licensing.	Unsustainable maintenance cost.	Adopt optimal technologies.
Difference in standards .	Incompatibility of hardware and software .	Ensure compliance with the set standards.
Change in government and international laws and policies.	High cost associated with compliance with the directives. Disruption of services. High generation of e-waste.	Ensure robust and dynamic ICT systems architecture.

2.3 Environmental scanning (PESTEL Analysis)

PESTEL analysis is an external environmental analysis tool outlining the analysis of operating environment informing the development of the 2nd ICT Strategy.

2.3.1 Political Factors

Political Factor	Strategic Implication	Strategic Response
Changes in Government.	Changes in government policies.	Align ICT policies to those of government .
Political influence and goodwill	Slow pace in implementation of e-government services.	Lobby for political goodwill and support.
Centralization of all ICT procurements by ministries, and MDAs to the ICT Authority (ICTA).	This may slow down the Authority's ICT procurement processes.	The Authority shall engage the ICTA to minimize delays on procurement.

2.3.2 Economic Factors

Economic Factors	Strategic Implication	Strategic Response
Constrained financial	Disruption of planned	Lobby for more resources.

resources.	activities.	Develop proposals for funding.
Taxation on ICT equipment ,software and services.	High cost of ICT equipment. Disruption of supply chain.	Lobby for tax subsidies.

2.3.3 Social Factors

Social Factors	Strategic Implication	Strategic Response
Widespread adoption to e-services.	Opportunity to improve service delivery.	Automate all the services and make them available on e-platforms.
Networking with other stakeholders.	Ease of access to information and resources	Integration with third party systems
Increased access to our online services	Increased demand from online customer support	Establishment of a dedicated Customer Relationship Management (CRM) system.
Resistance to change.	Low adoption of available technologies.	Capacity building, sensitization and awareness. Top management support on adoption. Build user friendly system designs.

2.3.4 Technological Factors

Technological factors	Strategic Implication	Strategic Response
Internet connectivity	<ul style="list-style-type: none"> Increased demand 	leverage on technologies to

	<ul style="list-style-type: none"> for improved internet speeds. Enhanced customer experience. 	innovate and support the achievement of the Authority's goals.
Cyber security threats	<ul style="list-style-type: none"> Data loss. Infringement on data privacy. Interrupted services. 	Implement Information Security Management Systems (ISMS).
Information and communication technologies	<ul style="list-style-type: none"> Increased work efficiency Increased demand for ICT literacy Enhanced access of key services by public. 	<ul style="list-style-type: none"> Upgrade systems in line with emerging ICT technologies. Increased budgetary allocation towards procurement /replacement of ICT equipment. Continuous ICT training for all staff and stakeholders
Increase in shift to digital service delivery and automation.	<ul style="list-style-type: none"> Enhancement of environmental compliance. Improved customer satisfaction. 	<ul style="list-style-type: none"> Ensure system uptime. Digitization of all business processes and services.

2.3.5 Environmental Factors

Environmental factors	Strategic Implication	Strategic Response
E-waste management and	<ul style="list-style-type: none"> Increased E-waste 	<ul style="list-style-type: none"> Encourage purchase

pollution control.	<p>generation.</p> <ul style="list-style-type: none"> Increased cost of e-waste management. Public health risks from e-waste. 	<p>of sustainable efficient ICT products and services.</p> <ul style="list-style-type: none"> Consolidating and rationalising servers and data centres . Ensure compliance with e-waste management regulations and guidelines
Increased energy consumption	<ul style="list-style-type: none"> Increased carbon footprint Increased electricity bills. 	<ul style="list-style-type: none"> Purchase star rated energy saving ICT equipment. Undertake energy audits.

2.3.6 Legal Factors

Legal factors	Strategic Implication	Strategic Response
Legislative gaps to support usage of emerging technologies	limited exploitation of emerging or new technologies.	Partnerships with Ministry of ICT and ICTA to ensure appropriate policies are in place to enhance utilization of the emerging technology
Compliance with ICT laws	Legal liabilities and associated costs.	Align ICT policies with the existing legal and policy framework. Implement Information Security Management Systems (ISMS).

2.4 Stakeholder analysis

2.4.1 EXTERNAL

S/No	Stakeholder category	Stakeholder	NEMA Expectation
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		Expectation	
	Government – Ministries, Departments and county governments	Information access Compliance with the laws, standards and regulations Realignment with the government policies	Compliance assistance Partnerships System Integrations Access to information
	Private sector/ Service providers	Public- private partnerships Business opportunities Access to information. Timely payments for goods and services	Partnerships Quality Service delivery
	Educational/Research institutions	Partnerships Access to data	Partnerships Information sharing
	General public and customers	Data protection and privacy Access to services Good customer experience	Customer experience feedback Partnership
	Civil society	Information access	Partnerships Information sharing
	Development partners	Information sharing and reporting Partnerships Investment opportunities	Partnerships Information sharing Resource mobilization Capacity building

2.4.2 INTERNAL

S/No	Stakeholder category	Stakeholder Expectation	NEMA Expectation
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2.4.2 INTERNAL

S/No	Stakeholder category	Stakeholder Expectation	NEMA Expectation
	Board of Management	Improved corporate image Access to information leading to better decision making	Information sharing Capacity building
	Staff	Improved corporate image Access to information leading to better decision making	Information sharing Capacity building

CHAPTER THREE: STRATEGIC FOCUS

3.1 Overview

This chapter provides the ICT intent which includes the Vision and Mission.

3.2 Vision

A dynamic ICT powering a clean and healthy environment.

3.3 Mission

To provide innovative, quality and sustainable ICT services that contribute to a clean, healthy and sustainable environment.

3.4 Core Values

Professionalism, Integrity, Teamwork, Customer focus, Dependability, Innovativeness and Agility.

3.5 Key Result Areas (KRAs)

1. Business Process Automation and Data analytics
2. Information Security
3. Infrastructure and Service Development

3.6 Strategic Objectives

The Key Result Areas will be achieved through the following strategic objectives:

<u>S/No</u>	<u>KRA</u>	<u>Strategic objective</u>	<u>Strategy</u>
1	Business process automation and data analytics	1.1 To enhance business systems integration and interoperability.	1.1.1 System overhaul
			1.1.2 Automate all business processes.
			1.1.3 Consolidate and integrate of business systems.
			1.1.4 Improve efficiency of business systems.

		1.2 To Enhance user experience and IT service delivery	1.2.1 Standardize IT services
2	Information Security	2.1 To enhance business systems security, reliability, availability and continuity.	2.1.1 Improve information security function 2.1.2 Enhance business continuity .
3	Infrastructure and Service Development	3.1 To optimize the cost of ICT operations.	3.1.1 Utilize shared government infrastructure (data centres, web hosting, software fibre connectivity etc).
		3.2 To facilitate widespread infrastructure and services deployment.	3.2.1 Improve ICT inventory management 3.2.2 Upgrade of ICT infrastructure 3.2.3 Promote the Rollout of New and Emerging Technologies

CHAPTER FOUR: IMPLEMENTATION AND COORDINATION FRAMEWORK

4.0 Overview

The ICT department will seek to strengthen its institutional capacity and put in place the requisite implementation and coordination frameworks to be able to successfully implement this strategy.

4.1 Governance Structures

The Authority has a board of management that is responsible for policy and strategic guidance. The Director General (DG) is responsible for the day-to-day management of the Authority. ICT division is under the Directorate of Corporate Services.

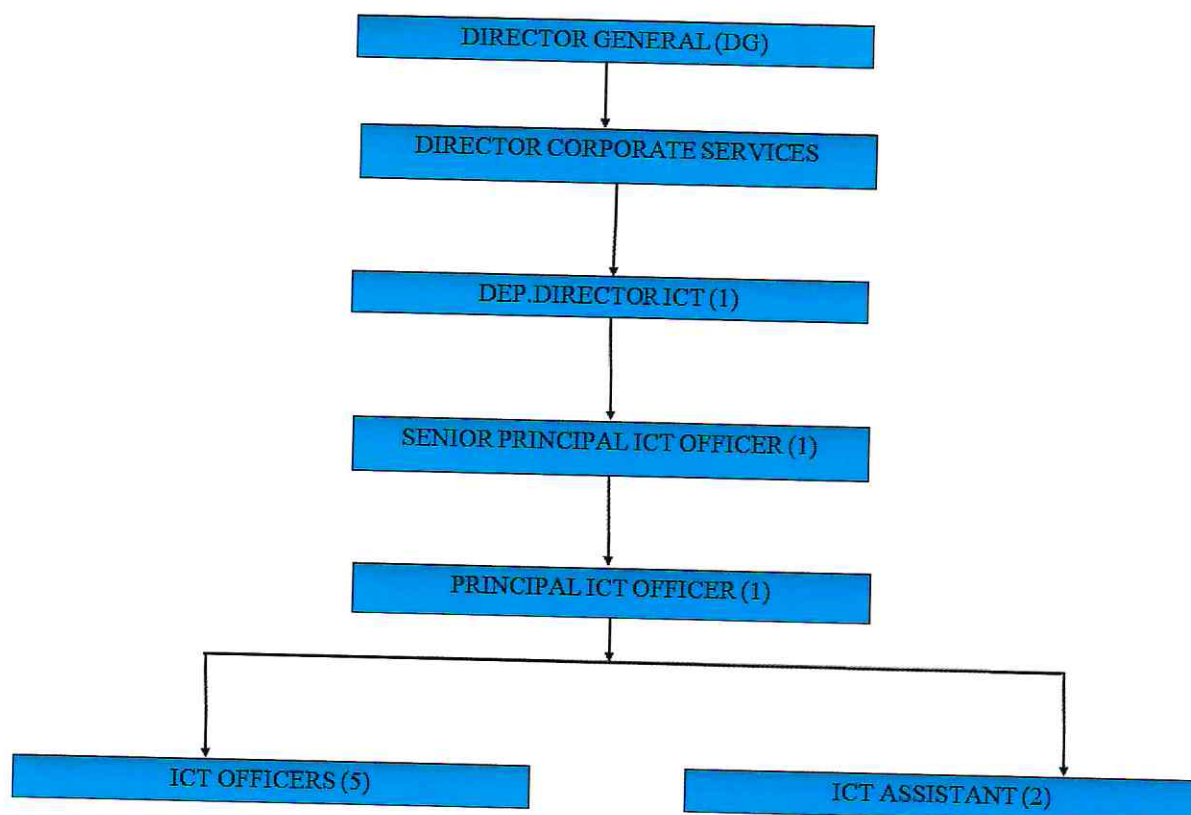
4.2 Staffing Levels:

The department currently has 5 staff against the required 10 in the approved structure. To effectively implement this strategy, recruitment of optimal human resource shall be given priority. The proposed staffing level for the next five years is provided in table xxxx.

Department	Optimal	In Post
Deputy Director ICT	1	-
Senior Principal ICT	1	-
Principal ICT	1	-
ICT Officer	5	5
ICT Assistant	2	-
Total	10	5

4.2.1 Staffing Structure:

A staffing structure to implement this strategy is under implementation. The current ICT staffing structure is presented in the following organogram:



4.3 Strategy Implementation:

4.3.1 Financial Implication

Key Result Area	Strategic Objective	Financial Resource Requirements Estimate (KES. Million)				
		2022/2023	2023/2024	2024/2025	2025/2026	2026/2027
Business process automation and data analytics	1.1 To enhance business systems integration and interoperability.	0.5	101	5	101	5
	1.2 To Enhance user experience and IT service	5.5	5	-	-	-

	delivery					
Information Security	2.1 To enhance business systems security, reliability, availability and continuity.	5	6	15	15	20
Infrastructure and Service Development	3.1 To optimize the cost of ICT operations.	1	1	-	1	-
	3.2 To facilitate widespread infrastructure and services deployment.	7	7	17	7	17

4.4 Implementation Matrix

The Implementation Matrix is presented below and consists of:

- a) Strategies;
- b) Key Activities;
- c) Sub-activities;
- d) Performance Indicators;
- e) Reporting Schedules;
- f) Targets and
- g) Budgets

S/No	Strategy	Key Activity	Performance Indicator	Reporting Schedule	Target for 5 years	Annual Targets					Budget (Kshs. Millions)					Total Budget	Responsible
						Y1	Y2	Y3	Y4	Y5	Y1	Y2	Y3	Y4	Y5		
KRA I :Business process automation and data analytics																	
Strategic Objective 1.1: To enhance business systems integration and interoperability.																	
1.1.1	System overhaul	Reengineer the ERP and licensing system	No. of reengineered systems.	Annually	2		1		1			90		90		180	ICT
1.1.2	Automate all business processes.	Map out all business processes.	Report of business processes mapped.	Annually	1	1					0.5					0.5	ICT
		Innovate and implement business systems with mobile, GIS, Big data analytics and Business Intelligence	Percentage of automated business processes.	Annually	100		25	25	25	25		3	3	3	3	12	ICT
1.1.3	Consolidate and integrate of business systems.	Implement application Programming Interfaces(APIs) for internal and external integration.	No. of APIs	Annually	2		1		1			5		5		10	ICT
1.1.4	Improve efficiency of business systems.	Optimize systems for mobile interfaces.	No. of systems optimized.	Biennially	2		1		1			3		3		6	ICT
		Develop service delivery channels (Apps, SMS query service)	No. of service delivery channels developed.	Biennially	2		1		1			2		2		4	ICT
Strategic Objective 1.2: To Enhance user experience and IT service delivery																	
1.2.1	Standardize IT services	Implement Information Technology Infrastructure Library (ITIL) standards.	Gap analysis report	Annually	1	1					0.5					0.5	0.5

Strategic objective : 3.2 To facilitate widespread infrastructure and services deployment.																		
3.2.1	Improve ICT inventory management	Establish and implement an ICT inventory management plan	ICT inventory management plan	Annually	1	0.2	0.2	0.2	0.2	0.2	0.2	2	2	2	2	2	10	ICT
3.2.3	Upgrade of ICT infrastructure	Procure hardware , software and internet bandwidth	Report of ICT infrastructure upgraded	Annually	5	1	1	1	1	1	5	5	5	5	5	5	20	ICT
3.2.4	Promote the Rollout of New and Emerging Technologies	Innovate, develop and adopt solutions based on emerging technologies	No. of solutions developed	Periodically	2			1		1				10		10	20	ICT
	TOTAL															310		

4.5 Risk Management

The Information Security sub-committee will ensure the implementation of the Risk Management Action Plan. Some of the Key possible risks and an action plan to mitigate against the same are presented below:

S/No	Risk	Cause	Likelihood	Mitigation	Impact
1	Constrained financial and human resources	<ul style="list-style-type: none"> Under-funding and limited revenue generation Under-staffing 	High Critical	Sustainable resource mobilization Staff the department as per the approved establishment	Unable to implement our planned activities
2	Exposure to cyber-security threats	<ul style="list-style-type: none"> Vulnerable systems Outdated and obsolete systems 	Critical Critical	Implement the ICT policy and strategy Procure/Upgrade systems.	Loss of information integrity and confidentiality Denial of service System failure Data loss Financial loss
3	Disasters and natural hazards	Electrical Faults; Combustible materials Natural disasters and climate change	High	Upgrade server room by installation of a fire detection and suppression system Capacity building on disaster and risk preparedness, reduction and response Operationalization of a Disaster recovery site	Loss of data Service delivery disruption

CHAPTER FIVE: MONITORING AND EVALUATION

5.1 Introduction

The ICT Department in collaboration with the ICT steering committee will review the implementation of this Strategy through collection of data, aggregation, analysis and reporting

on ICT workplans. Performance indicators will be measured against targets and reporting done on quarterly and annual basis.

5.2 Performance Review

Performance Review shall be undertaken annually, mid-term and at the end of the Strategy period.

- a) Annual Performance Review; The review will be undertaken at the end of each financial year.
- b) Mid-Term Evaluation and Review; The review will be undertaken after two and a half years.
- c) End-Term Review; The review will be undertaken at the end of Strategy implementation period.

