



REPUBLIC OF KENYA

MINISTRY OF INFORMATION,
COMMUNICATIONS AND THE DIGITAL
ECONOMY

NATIONAL ADDRESSING POLICY
FINAL DRAFT

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FOREWORD

The National Addressing Policy comes at a time when Kenya is undergoing unprecedented digital transformation. ICT evolutions driven by ubiquitous Internet services, skilled population, and an entrepreneurial and innovative culture have precipitated the growth of technological based start-ups. These innovative initiatives have become the basic drivers of the digital economy and influencing Kenya's e-commerce culture.

As a nation, we are witnessing a fundamental change in our way of life in contrast to the days of old. The shift into the digital sphere has affected our mode of work, conducting business, and socially interacted over the last decade. The adoption of the use of digital technologies for social and economic activities has further been accelerated during the COVID-19 pandemic because of the necessary protocols to contain the spread of the pandemic.

A growing population of consumers now shop online, and in most urban areas they are now utilizing ride-hailing companies for their movement, financial technologies for day-to-day transactions, and mobile applications for accessing services among others. The Policy, therefore, comes at a time when identification of homes and businesses has become essential to support e-commerce and last mile delivery of goods and services.

This policy calls for the development of a national addressing framework that is unique, efficient, and relevant for effective use in our country. It proposes an integrated system that will require collaboration from multiple institutions in the national and county governments. The framework will have several components, key among them the National Addressing System of Kenya (NASK). This system will be a national asset and will be vital for facilitating location identification, finance and trade, public service delivery and planning. It is also envisaged that support for growth of innovations will propel our digital transformation as a nation.

There is no doubt that the success of the roll out and implementation of the framework, will depend on the combined efforts of all citizens and require the commitment and synergies of the national and county governments and the private sector. Considering the potential impact of a National Addressing Framework on the improvement of the lives and well-being of our citizenry, my Ministry commits to driving these efforts to their full actualization.

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Cabinet Secretary
Ministry of Information, Communications and The Digital Economy

Vision

A digitally addressed Kenya by 2030

Mission

Establish an integrated National Addressing Framework for Kenya.

TABLE OF CONTENTS

FOREWORD	2
Vision.....	3
Mission	3
ABBREVIATIONS AND ACRONYMS	7
KEY POLICY DEFINITIONS.....	8
EXECUTIVE SUMMARY	10
CHAPTER 1.....	11
INTRODUCTION AND BACKGROUND	11
1.1 Introduction.....	11
1.2 Policy Background	12
1.2.1 Vision 2030	12
1.2.2 National ICT Policy 2020.....	12
1.2.3 Digital Economy Blueprint 2019	12
1.2.4 The Kenya Digital Masterplan 2022-2032	13
1.2.5 East African Community Vision 2050.....	13
1.2.6 African Union Agenda 2063	13
1.2.7 The Sustainable Development Goals	14
1.3 Rationale for National Addressing System Framework	14
1.3.1 National Addressing for Public Service Delivery.....	14
1.3.2 A National Addressing System to Support E-Commerce	15
1.3.3 National Addressing to Support other Services	15
1.3.4 National Addressing for Social Cultural Activities	16
1.3.5 National Addressing and Regional Integration.....	16
1.4 Policy Goal and Objectives	16
1.4.1 Policy Goal	16
1.4.2 Objectives	16
1.4.3 Guiding Principles and Values.....	17
1.4.4 Scope of the Policy.....	18
1.4.5 Policy Development Process	18
CHAPTER 2	20
SITUATIONAL ANALYSIS OF NATIONAL ADDRESSING IN KENYA.....	20

2.0	Introduction.....	20
2.1	Heterogeneous Addressing Systems.....	20
2.2	Lack of National Addressing for Last Mile Delivery of Goods and Services	20
2.3	Addressing Disparity between Rural and Urban Areas.....	21
2.4	Challenges of existing Postcode System.....	21
2.5	Lack of National Guidelines for Naming to Support a National Addressing System ...	22
2.6	Lack of National Standards for Address Signage	22
2.7	Multiple Holders of Address Data.....	22
2.8	Addressing is a Shared Function between the National and County Government.....	23
2.9	Constitutional, Legislative and Regulatory Framework.....	23
2.9.1	The Constitution of Kenya, 2010.....	23
2.9.2	The Kenya Information and Communications Act, 1998 (KICA).....	24
2.9.3	Postal Corporation of Kenya Act, 1998	24
2.9.4	The County Governments Act, 2012.....	24
2.9.5	The Survey Act 2012.....	25
2.9.6	Physical and Land Use Planning Act, 2019.....	25
2.9.7	The Urban Areas and Cities Act, 2011.....	25
2.9.8	The Inter-Governmental Relations Act, 2012	25
2.9.9	The Kenya Heroes Act, 2014	26
2.9.10	Land Registration Act, 2013.....	26
2.9.11	Sectional Properties Act, (No. 21 of 2020).....	26
2.9.12	National Construction Authority Act, 2011	26
2.9.13	Kenya Roads Board Act, No. 7 of 1999	27
2.9.14	Kenya Roads Act, No. 2 of 2007.....	27
2.10	Public Participation	27
2.11	Political, Economic, Social, Technological, Environmental and Legal (Pestel) Analysis	27
2.12	International Best Practices.....	30
2.12.1	Standards	30
2.12.2	International Organization for Standardization (ISO)	30
2.12.3	Universal Postal Union (UPU)	31
2.12.4	Case Studies	32
CHAPTER 3	36
POLICY STATEMENTS	36

3.0	Development of a Legal Framework for National Addressing	36
3.1	Development of a National Addressing System of Kenya Institutional Framework.....	36
3.2	Development of Unique Address Format for Addressable Objects	36
3.3	Development of National Addressing Standards	37
3.4	Development of National Guidelines for Naming	37
3.5	Review of Postal Codes by the Communications Authority of Kenya (CA).....	38
3.6	Create Awareness on National Addressing	38
CHAPTER 4		40
POLICY IMPLEMENTATION AND COORDINATION		40
4.0	Ministry of Information, Communication and The Digital Economy	40
4.1	Communications Authority of Kenya	40
4.2	Functions of County Governments	41
4.3	National Addressing Compliance	41
CHAPTER 5.....		42
MONITORING AND EVALUATION		42
5.0	Introduction.....	42
5.1	Policy Implementation	42
5.2	Policy Review	42

ABBREVIATIONS AND ACRONYMS

API	Application Program Interface
CA	Communications Authority of Kenya
CAU	County Addressing Unit
COG	Council of Governors
COVID-19	Coronavirus Disease of 2019
CS	Cabinet Secretary
GDP	Gross Domestic Product
GIS	Geographical Information System
ICT	Information and Communication Technology
IEBC	Independent Electoral and Boundaries Commission
ISO	International Organization for Standardization
KICA	Kenya Information and Communications Act
MSME	Micro, Small and Medium Enterprises
NASK	National Addressing System of Kenya
NCAP	National Communications and Addressing Plan
NLC	National Land Commission
PCK	Postal Corporation of Kenya
PESTEL	Political, Economic, Social, Technological, Environmental and Legal
P.O.	Post Office
SDG	Sustainable Development Goals
UN	United Nations
UPU	Universal Postal Union

KEY POLICY DEFINITIONS

“**Address**” means structured information that provides a verifiable, clear and simple determination of an object for purposes of identification and location.

“**Addressing**” means the assignment of names and numbers to addressable objects.

“**Address data**” means any data required by the National Addressing System of Kenya

“**Addressable Object**” means an object that may be assigned an address.

“**Address Alias**” means refers to a synonymous address set unambiguously determining the same addressable object

“**Cadastral map**” means a map or series of maps developed and maintained by the authority responsible for the survey of land in Kenya.

“**Cabinet Secretary**” means the Cabinet Secretary who is for the time being responsible for matters related to addressing, numbering and postal services.

“**Child Address**” uniquely identifies an addressable object within a parent address.

“**County Unit**” means the County Addressing Unit proposed by this Policy.

“**Data**” has the meaning assigned to it under section 2 of the Data Protection Act.

“**Geo-coding**” means transforming a description of a location, such as an address, coordinates, or a place name, to a location on the surface of the Earth.

“**Geographic Information System (GIS)**” means a locational/positional database system that allows for acquisition, processing, visualization, integration, analysis and presentation of geospatial data and information.

“**Geo-spatial referencing**” means reference to an object by a specific location either on, above or below the earth’s surface.

“**Holders of Address Data**” means any person that possesses address data.

“**Information**” has the meaning assigned to it under section 2 of the Access to Information Act (2016).

“**National Addressing Framework**” means the National Addressing Framework proposed by this Policy.

“**National Addressing System of Kenya**” means the information system to be created and managed by the Communications Authority of Kenya for purposes of addressing in Kenya.

“**National Addressing System of Kenya Address**” means a unique alphanumeric address assigned to an addressable object.

“**Nyumba Kumi**” means the/a strategy adopted by the Government of Kenya of anchoring Community Policing at the household level or any other generic cluster. These households

can be in a residential court, in an estate, a block of houses, a manyatta, a street, community of interest, a gated community, a village or a bulla.

“Parent Address” means an address that fully incorporates one or more other addressable objects.

“Thoroughfare” A designated route along which a delivery point can be accessed, either directly or via a secondary or tertiary route or other access route.

EXECUTIVE SUMMARY

Addressing is accepted as an essential tool for economic and social development globally. Accurate and reliable addressing information is critical to modern-day service delivery, planning and spurs business growth. It is anticipated that Kenya's national addressing system will formalize mainstream economy and add to the nation's digital transformation ecosystem.

This National Addressing Policy seeks to promote the benefits of a National Addressing Framework to provide for the naming, numbering and allocation of addresses for addressable objects such as streets and properties. The Framework will also provide for the development of standardized and verifiable naming and addressing data that will among other activities promote the uptake of e-Commerce, e-Trade and improve overall service delivery by the public and private sector.

This policy provides the foundation for developing the legal, institutional, and regulatory framework for Addressing in Kenya. The policy recommends the development and adoption of a National Addressing Framework, including standards, and a National Addressing System of Kenya (NASK). The latter will be the foundation for the roll-out of National Addressing in Kenya. The policy calls for the establishment of a scalable, resilient, and secure National Addressing System, whose custodian will be the Communications Authority of Kenya (CA).

The successful implementation of a National Addressing Framework will rely on collaborative engagement among national and county governments and other stakeholders.

This policy sets the stage for developing a vital ecosystem that will enhance trade and inclusivity in service delivery and contributing positively to the country's GDP by both the public and private sectors.

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 Introduction

The concept of national addressing is recognized world over, as an essential tool for economic and social development. Under the auspices of the World Bank, the concept of addressing has been defined as an exercise that facilitates identification of the location of a parcel of land or dwelling on the ground using a system of maps and signs that give the numbers or names of streets and buildings.

The foregoing definition implies assignment of an address – a derivative of addressing that has equally received international recognition. For instance, the United Nations Economic Commission for Africa (UNECA) defines an address as a primary means to identify and locate a unique spatial object through parameters of identification such as name, number or other descriptor.

On its part, the International Organization for Standardization (ISO) defines an address as comprising structural information that facilitates unambiguous identification and location of an object for purposes of identification and location. The Universal Postal Union (UPU), on the other part, states that addresses can take the form of direct or indirect references to places. An address, therefore, shows where people live, work, do business and get services. It identifies the site of a spatial object and allows for understanding of and ability to navigate between addresses.

The implementation of addressing does not adopt a one-system-fits-all approach and is largely founded on history, culture, traditions, and other localized practices in any given nation. The commonality in implementation of national addressing systems is the adoption of standards and an information system that guides the process. The development of a National Addressing Framework is, therefore, aimed at creating a single policy and legal framework that will guide creation, management, and utilization of addressing in Kenya.

The scope of this Policy is to guide on the unique identification of addressable objects and establishment of a National Addressing System that contains a database to hold data on addressable objects.

Development of a national addressing system for Kenya provides for an opportunity to build a centralized database of addresses for socio-economic development. The ongoing efforts on Kenya National Spatial Data Infrastructure (KNSDI), which is provided for in the National Spatial Plan, 2015-2045, further creates an opportunity for the development of an addressing system that is integrated with other national data sets and is geo-coded. This will give the country's addressing system the potential to be an asset that can be used for various applications and services for the benefit of the population, national and county governments and other stakeholders.

1.2 Policy Background

The development of this national addressing policy in Kenya is informed by national, regional and global policies and strategies.

1.2.1 Vision 2030

The Kenya Vision 2030 is the national long-term development blueprint that aims to transform Kenya into a newly industrialized, middle-income country providing a high quality of life to all its citizens by the year 2030. The Vision comprises of three key pillars: Economic; Social; and Political. The Economic Pillar aims at achieving an average economic growth rate of 10 per cent per annum and sustaining the same until 2030. The Social Pillar seeks to engender just, cohesive and equitable social development in a clean and secure environment, while the Political Pillar aims to realize an issue-based, people-centered, result-oriented and accountable democratic system. The three pillars are anchored on the foundations of macroeconomic stability; infrastructural development; Science, Technology and Innovation (STI); Land Reforms; Human Resources Development; Security and Public-Sector Reforms.

Effective addressing and integrated quality address data are seen as an important part of the nation's infrastructure. Kenya's Vision 2030 is implemented using medium term plans (MTP). Currently Kenya is implementing MTP 4 (2023-2027) where a national addressing system is identified to be rolled out within this time period.

1.2.2 National ICT Policy 2020

Kenya's National ICT Policy provides a framework that promotes the realization of Kenya's digital economy and its benefits, by creating an enabling environment for all citizens and stakeholders. The policy provides Kenya's vision for various aspects in the ICT sector and specifically seeks to facilitate the creation of infrastructure and frameworks that support the growth of the digital economy. The policy further acknowledges the structural and legal inadequacies that hinder the development and evolution of digital transactions and calls for the establishment of a homogenous National Addressing System.

1.2.3 Digital Economy Blueprint 2019

Kenya's Digital Economy Blueprint 2019 is anchored on five key pillars: providing affordable, accessible, and reliable infrastructure; development of digital government; development of digital business; development of digital skills and values; and creation of an ecosystem that enables and cultivates innovation-driven entrepreneurship. Achieving affordable, accessible, and reliable digital infrastructure for businesses and households is a foundational requirement for unlocking the potential of the digital economy of which a national addressing framework is considered as a basic infrastructure.

Kenya, which is regarded as Africa's Silicon Savannah, continues to benefit from the

transformative power of innovation and digital technologies as evidenced by the remarkable growth of e-commerce and the gig-economy. If utilized optimally, the National Addressing System of Kenya will open up new avenues for innovation. This will, in turn, support a digital government and digital business ecosystem which are key components of Kenya's digital economy agenda.

1.2.4 The Kenya Digital Masterplan 2022-2032

The Kenya National Digital Masterplan 2022-2032, identifies four key pillars for leveraging and deepening the contribution of ICT to accelerate economic. The pillars include: digital infrastructure; digital services and data management; digital skills; and digital innovation for entrepreneurship with cross cutting issues on Policy, legal and Regulatory. The Masterplan launched in 2022 equally identifies and recognizes the importance of the National Physical Addressing System to accelerate e-commerce initiative in the Country. The National physical addressing system is expected to provide street addressing, numbering and coding of all properties and physical locations thereby providing a clear logistical support for economic activities.

1.2.5 East African Community Vision 2050

The overall aspiration of the East African Community (EAC) Vision 2050 is to transform the EAC Bloc into an upper middle-income region within a secure and a politically united economies based on principles of inclusiveness and accountability. The key pillars of the Vision include infrastructure development, industrialization, tourism, trade and services development, among others. The policy acknowledges the Visions' quest to provide access to modern, fast and affordable infrastructure which will promote cross-border trade and investments, enhance inclusiveness in development and promote socio-economic transformation.

1.2.6 African Union Agenda 2063

Africa Union (AU) Agenda 2063 dubbed "The Africa We Want" is Africa's blueprint and master plan for transforming Africa into the global powerhouse of the future. It is the continent's strategic framework that aims to deliver on its goal for inclusive and sustainable development. The agenda identifies key activities to be undertaken in its 10-year Implementation Plans which will ensure that it delivers both quantitative and qualitative transformational outcomes for the continent. A key activity within Agenda 2063 is the establishment of the Africa Continental Free Trade Area (AfCTA) which aims to accelerate intra-African trade and boost Africa's trading position in the global marketplace.

The national addressing system is a critical infrastructure that will support this agenda. The case for addressing in Africa is further supported by AU's Africa Digital Transformation Strategy which calls for strengthening of ICT and postal policy reforms. The Strategy calls for African nations to "accelerate and intensify policy reforms and speed up the implementation of existing decisions

from the AU policy organs on reform, universal postal service, financial inclusion, post codes and addressing systems.”

1.2.7 The Sustainable Development Goals

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The set of 17 SDGs cover issues of ending poverty in all its forms, everywhere; promoting economic and social prosperity, fighting inequality and injustice, and tackling climate change by 2030.

Addressing systems support the achievement of SDGs by promoting the development of robust infrastructure for socio-economic development.

1.3 Rationale for National Addressing System of Kenya

A national addressing system conceptualized and designed for Kenya will put in place a national framework which considers local contexts such as culture, traditions and norms. In addition, it will provide for an authoritative and immutable addressing digital registry that will have multiple use cases for individuals, businesses, and government. The national addressing framework is envisaged to create a user-friendly environment that facilitates free movement of goods and services through unambiguous address data. A national addressing system will further facilitate socio-economic development through greater uptake of e-commerce and improved service delivery.

Kenya’s guiding and strategic documents underpin the need for a national addressing system as a core infrastructure to promote socio-economic development. An addressing system has also been identified as an important tool for the effective disaster management in emergency situations such as flooding, landslides and pandemics. The lessons learnt during Covid-19 pandemic further highlighted the need for a reliable addressing system. Pandemic mitigation measures such as contact tracing, lockdown and containment as well as the provision of efficient emergency assistance, all emphasize the need for a functional addressing system. It is amidst this backdrop that this Policy has been developed and it is envisioned that its implementation will be an additional tool in the management of pandemics.

1.3.1 National Addressing for Public Service Delivery

A national addressing system is critical to support quick identification of locations especially in the response to emergency and provision of utility services, among others. The efficiency of these services is measured by how quickly they can be offered. As these services are usually required under crisis conditions, accurate and quick identification of their destinations is essential. With a proper addressing system, the response time for these services is considerably reduced.

1.3.2 A National Addressing System to Support E-Commerce

To support e-commerce, an effective addressing system ensures effective delivery of mail, courier and provision of transport services. Comprehensive street names and property addresses reduce delays in delivery and make e-commerce services more efficient. The benefits of efficient delivery services are not, however, restricted to individuals, as businesses equally rely on addresses to operate efficiently and effectively, especially in the distribution and delivery of goods and services.

1.3.3 National Addressing to Support other Services

The development of a national addressing framework in Kenya will support the following additional functions:

1.3.3.1 Identification

A functional address system can be integrated with other databases to allow for an individual or business to be linked to a physical location, which is useful for legal, security and billing purposes. An address lends credibility to and complements other forms of identification such as drivers' licenses, electoral records, and property records as these can be cross-referenced to check for validity. For example, each voter can be matched to an address which can be physically verified, thereby eliminating ghost names in the voters register.

Furthermore, an address system supports trust in an ecosystem through which a verified address can be identified. Micro, Small and Medium Enterprises (MSMEs) in developing countries also find it difficult to access credit because they are considered high risk investment and operate under greater financial uncertainty. This difficulty of accessing credit is a major hindrance in the growth of MSMEs. An address will, simply put, place a small business on the map. With a reliable addressing system based on spatial referencing, financial institutions are more likely to offer credit to individuals and small businesses as it reduces the risk factor.

1.3.3.2 Planning

Information on location of land allows planning to proceed with ease and in a coordinated manner as planners have information which enables them draw up relevant plans for the area. In addition, information on the population residing in different areas of the town and its characteristics can be known and appropriate measures taken to address issues concerning the population. For instance, demographic patterns can be determined, and appropriate actions taken to address it. Therefore, a national addressing system is a useful tool for managing and organizing information about people and activities within a given area (urban or rural) and is helpful in promoting the successful implementation of representative democracy.

1.3.3.3 Revenue Collection

A national addressing framework can be a useful tool for revenue mobilization and debt collection. With a clear system of addressing, individuals, companies and properties can be identified for administration and enforcement of taxation. Therefore, more than ever, authorities need a system to identify businesses and property locations to help improve the revenue collection and distribution.

1.3.4 National Addressing for Social Cultural Activities

Social and cultural activities form a vital part of the fabric of daily activities undertaken by residents, visitors and tourists. For instance, businesses in the hospitality sector, such as hotels, cinemas, restaurants and holiday destinations, need reliable addresses to help customers easily access them.

1.3.5 National Addressing and Regional Integration

The secondary effects of a functional, accessible, and continuously update of national addressing framework will not only have national significance but regional implications as Kenya's increased economic growth will have far reaching effects in neighboring countries. NASK will support Kenya's aspirations of active participation in the regional and continental trading blocs which strive for a single digital market. An addressing system will provide the primary source of addressees and boost Kenya's digital transformation as envisioned in Kenya's Digital Economy Blueprint.

1.4 Policy Goal and Objectives

1.4.1 Policy Goal

The overarching goal of this policy is to develop frameworks, principles and strategies for assigning a unique and verifiable address to all addressable objects in Kenya. In line with the Vision 2030, the policy seeks to work towards ensuring the optimum capitalization of the economic, social and cultural rewards associated with a national addressing framework.

1.4.2 Objectives

The general objective is to provide a standardized framework for addressing in Kenya. It seeks to ensure harmony in the legislative and regulatory framework governing addressing and promote an enabling environment for the development, management and utilization of a National Addressing System of Kenya (NASK).

Three specific objectives have been identified as follows:

a) Legislative, Regulatory and Institutional Framework

Develop a policy, legal, regulatory and institutional framework for National Addressing in Kenya.

b) Infrastructure

Develop a secure, immutable national repository that leverages on technology for addressing as the foundation for national addressing that serves as the primary source of all address data and addressing information.

c) Collaborative Framework

Provide a framework for Addressing within the national and county governments, and leverage on the input of primary and auxiliary addressing data providers for the benefit of developing an authoritative Kenyan national addressing system.

1.4.3 Guiding Principles and Values

The development of this policy is guided by the following principles:

a) Collaboration

Successful implementation of a National Addressing System in Kenya will require collaboration between multiple stakeholders including the national and county governments. It will require the establishment of conditions and relationships between the central administration unit for NASK and the multiple agencies and county governments to facilitate the collaborative processes and approaches.

b) Inclusivity

Addressing will be implemented in all parts of Kenya with the goal of ensuring every Kenyan citizen and resident has an address.

c) Constitutional Principles

The Constitution of Kenya, 2010 prescribes that the State shall provide social and economic rights to Kenyans. Social and economic rights are referred to as “second generation rights” in the human rights naming system and are one of the most significant achievements of the Constitution. One of the ways of enhancing economic and social rights in Kenya, is by establishing a National Addressing Framework. The establishment of an address infrastructure helps individuals to access their legal rights and encourages people to take advantage of equality before the law.

d) Devolved Governance

Kenya is divided into 47 counties and the Fourth Schedule of the Constitution of Kenya places the responsibility of county planning and development to the counties to manage land survey

and mapping, boundaries and fencing, which are a key component of national addressing.

e) Public Good and Interoperability

This Policy promotes addressing as a public good that will serve the interests of all Kenyans. This means that addressing should not be a burden to the taxpayer and address data should be made accessible to those who need to exploit it for public good, to the extent permitted by the Laws of Kenya. Therefore, the national addressing framework will seek to provide utilization mechanisms for both private and public users to plug into NASK for innovation and enhanced delivery of services.

f) Private Sector, Innovation, Research and Development

This Policy recognizes the catalytic impact of a National Addressing Framework to the private sector and will aim to boost digital trade and encourage innovation around addressing solutions through research and development for socio-economic benefits.

g) Sustainable Development

Addressing will spur economic growth and human development through economic, environmental and social accountability. Implementing the National Addressing Framework should contribute to the achievement of the following sustainable goals (SDGs): SDG-9 on Industry, Innovation and Infrastructure - Build Resilient Infrastructure, Promote Inclusive and Sustainable Industrialization and Foster Innovation; and SDG-11 on Sustainable Cities and Communities - Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable.

1.4.4 Scope of the Policy

This policy applies to all addressable objects in Kenya. It has been developed for adoption by the National and County governments, and all other relevant stakeholders.

1.4.5 Policy Development Process

The Ministry of Information and Communication and The Digital Economy set up a National Addressing System Steering Committee that comprised of representatives of various key actors from Government as well as from the private sector during the 2016/17 financial year.

The policy development followed a participatory and consultative process among the key industry stakeholders including the County Governments. The process was championed by the Ministry of Information, Communications and The Digital Economy through the NASK Steering Committee. Two national workshops were held to create awareness about NASK, and seven regional workshops were conducted to get the buy-in from the County Governments. Expert inputs were obtained through International and local efforts. Due to COVID-19 restrictions, several stakeholder consultations and public participation were conducted online through interactive video conferencing platforms, websites, social media and e-mail which elicited views

on existing challenges and opportunities facing the sector, with stakeholders covering all the 47 counties.

Further stakeholder consultations were held in 2023 to validate the draft Policy and the accompanying Bill before submission of the same to the Cabinet Secretary for further action.

CHAPTER 2

SITUATIONAL ANALYSIS OF NATIONAL ADDRESSING IN KENYA

2.0 Introduction

Currently, there is no consolidated, unique and harmonized legal and policy framework on addressing in Kenya. However, the lack of a national addressing framework has not inhibited addressing efforts within Kenya. Various government and private sector initiatives have been undertaken in Kenya with the aim of providing addressing and locational services. This section highlights the situation analysis that underpins Kenya's social, legal and institutional realities for national addressing.

2.1 Heterogeneous Addressing Systems

There exists multiple addressing and locational services that are in use. In urban areas, some residential communities have developed addressing systems and installed fixtures on the same. There have also been various attempts by multiple county governments to develop addressing systems and signage's. Some of these efforts date back to pre- independence. In 1964, after Kenya had gained independence, a street naming sub- committee was formed under the town planning committee of the then Nairobi's City Council. This subcommittee came up with address names or received naming suggestions from the public. There was then a vetting process and proposals were eventually sent to the Minister of Local Government for approval. Some of these earlier interventions helped set a foundation for addressing. Estates in Nairobi's Eastlands such as Buru Buru, Kaloleni and Ofafa Jericho utilized these early attempts. Through the years multiple efforts have been established by different entities to guide the naming and numbering of streets and properties. These for the most part have been ad-hoc and have created an uncoordinated addressing systems.

Historical efforts have been supplemented with innovative private sector addressing systems primarily driven by technology. The use of smart phones and web mapping technologies have made in-roads in filling the gap that exists with the absence of an authoritative national addressing framework. These systems cover a broad range of solutions from traditional property number sequences which are hand painted on the exterior of buildings, ad hoc building names as well as widespread use of descriptive and postal address elements as part of a single address.

2.2 Lack of National Addressing for Last Mile Delivery of Goods and Services

As a result of the heterogeneous addressing systems at play in Kenya, delivery of goods and services and identification of properties is limited and challenging, especially for people who are not familiar with specific geographical area, resulting in delays, increased inefficiencies and high costs. The Couriers Industry Association of Kenya (CIAK) reports that the lack of a unified addressing system translates to delays in delivery due to increased time in tracing locations,

and costs for mobile calls as they seek directions from both senders and recipients of goods. CIAK reports indicate that of all mis-deliveries, 17% are as a result of the wrong addresses on the label; 58% are delayed pending further information from sender/recipient and 25% are not delivered at all.

A simple, coherent, and readily understandable addressing system is essential for the proper and timely deployment of police, fire and ambulance services as well as military troop deployments, particularly in emergency situations. Unreliable address data is a major obstacle to the positive and prompt deployment of emergency services, including national security services. Police responses to criminal activities, emergency medical and fire services, and the deployment of anti-terrorism personnel all rely, in some form or another, on reliable and effective addressing systems to expeditiously locate those in need of the services.

2.3 Addressing Disparity between Rural and Urban Areas

The addressing systems that have been rolled out in Kenya have mostly been adopted by urban communities. Consequently, this has led to a marked disparity between formal and informal settlements in both urban and rural areas. In rural parts of Kenya where many settlements are unplanned and/or do not have roads, the *Nyumba Kumi* cluster system is sometimes used as a way of locating households with varying degrees of success.

The *Nyumba Kumi* cluster system defines groups of people by physical location and divides settlements into blocks which are then further subdivided into roads and sectors. Within rural areas it is understood from stakeholders that the existence of official street names is almost non-existent, and it is common for roads to be unofficially named by locals based on where it goes to and comes from.

2.4 Challenges of existing Postcode System

Kenyans have traditionally utilized post offices for delivery of mail with an option of engaging courier service providers for last mile delivery services. However, this mode of last mile delivery has been overtaken by modern day, door to door services primarily driven by technology, yet postal services remain an essential tool for communication. At the inception of Post Offices in Kenya the then postal operator introduced P.O. Box numbers but owing to the structure and format of this numbering scheme, the numbering was exhausted in the year 2000. The Postal Corporation then introduced five-digit postcodes in 2001, even though limitless, are linked to the geographical postal delivery office location rather than a coding system that identifies counties, groups of properties or individual properties and are thus insufficient for the development of a national addressing system.

Secondly, the existing system no longer represents the administrative structures of the country, having moved from a province/region structure to a county structure. It is further noted that this design contravenes one of the fundamental principles of postcode design, being that there

should be no leading zeros. The reason for this is that in most databases, unless specified as text strings, these zeros fall away. A related reason is that zeros are often reserved to indicate uncertainty of data elements or pre-verification for data quality certification. It is also noted that a postcode system should have a life of at least twenty years, though preferably closer to fifty. Some postcodes have been around since the late 1960s, although these are in developed countries where data is stable. This policy therefore calls for the Communications Authority of Kenya to review Kenya's postcode systems and develop one that will promote effective last mile delivery and mail routing.

2.5 Lack of National Guidelines for Naming to Support a National Addressing System

Though limited, there exists street naming and property numbering within Kenya. Street names that do exist are largely a result of historical activities and/or urban expansion that created a need to identify specific locations. Many street names in urban areas appear to be in honor of famous people who have been associated to Kenya, however, there are no national standards for the display or assignment of official street names. There are also instances of similar names assigned to multiple roads. Creation of national guidelines and standards will assist in the implementation of a harmonized national addressing initiative.

2.6 Lack of National Standards for Address Signage

There are no commonly adopted standards in place in Kenya in relation to the design and placement of address nameplates. There is evidence in many urban areas that ad hoc street name plates have been erected. However, the presence of street name plates or street signage is not ubiquitous or on every street and are at best aimed at pedestrian navigation rather than vehicular use. Many roads in rural areas and informal settlements in Kenya are both unnamed and unmarked. This provides a blank canvas to introduce a systematic approach to property naming and numbering. In doing so, care should be taken to ensure local context, culture, tradition and engagement activities are fulfilled with the introduction of any new system.

The existing street signage in Kenya is based on the 1975 Traffic Signs Manual legalized by Kenya Gazette supplement No. 90 of 20 December 1974. Some efforts to review the traffic signs manual was initiated in 2005 but is still in draft form. The manual is broken down into two parts; Part 1: Road Markings; and Part 2: Manual for Traffic Signs.

2.7 Multiple Holders of Address Data

National addressing is a function that relies on multiple holders of address data. These range from boundaries data, road names and classifications to land parcel data. The availability of large-scale digital mapping and aerial imagery for the whole of Kenya will be an important requisite for addressing. The availability of such data will permit a higher degree of data quality and accuracy of address information. Kenya's National Addressing Framework will therefore be dependent on various stakeholders and will require institutional collaboration and integration with initiatives such as the Kenya National Spatial Data Infrastructure; the aggregate system for

Kenya's geo-spatial data. Alignment with Kenya's National Spatial Data Infrastructure will be important to ensure that the NASK can provide one of the essential base data layers. Furthermore, the mandates for mapping and developing GIS lie within other institutions and therefore, a collaboration framework will be crucial for the actualization of the National Addressing System for Kenya.

2.8 Addressing is a Shared Function between the National and County Government

The implementation of street and property naming, and numbering is a function of the counties. Typically, county governments are responsible for uniformity of street naming and property numbering within their jurisdictions while utilizing the established procedures and being guided by various county and national statutes. The implementation role for addressing is however interwoven with multiple national functions that govern lands, mapping, boundaries and naming. This policy notes that critical elements that are necessary for addressing are found in several legal instruments at both the national and county levels. It is therefore essential to first outline the various prevailing statutes in Kenya that will guide the creation of a national framework for the roll-out and management of NASK by both national and county governments.

2.9 Constitutional, Legislative and Regulatory Framework

The function of addressing in Kenya is governed by multiple legal and policy frameworks outlined below. There is however no legal statute that provides for an integrated National Addressing System. The proposed National Addressing Framework will therefore be guided by the following constitutional, legislative and regulatory provisions, among others:

2.9.1 The Constitution of Kenya, 2010

The Constitution of Kenya 2010 sets the foundation for sustainable urban and rural development in Kenya. Article 10 of the Constitution prescribes the national values and principles to include inclusiveness, equality, human rights, non-discrimination, and protection of the marginalized, and sustainable development.

Article 35 further outlines that every citizen has the right to access to information, and the State is obligated to actualize this right. In addition, the Constitution provides for the economic and social rights of every citizen. In this respect, the Constitution in Article 46 provides for consumer protection in respect of goods and services offered by both public entities and private persons.

The Constitution apportions responsibility of physical planning to both national and county governments and defines planning as a concurrent function. Articles 67(2) (h) and 186(1) of the Constitution, and the Fourth Schedule assign physical planning functions to both the national and county governments. The Articles delineates the respective functions and powers of the national government and the county governments, which are as set out in the Fourth Schedule.

Article 260 defines "land" as 'the surface of the earth and the subsurface rock'. In Article 67, the

National Land Commission (NLC) is established with several functions which include, to monitor and have oversight responsibilities over land use planning throughout the country, general principles of land planning and the coordination of planning by the counties. In addition to the National Land Commission, Article 258 also lists the Independent Electoral and Boundaries Commission (IEBC) among the Chapter 15 Commissions and Independent Offices. In this regard, Article 188 outlines the role played by IEBC in review of boundaries of counties.

2.9.2 The Kenya Information and Communications Act, 1998 (KICA)

The Act establishes the Communications Authority of Kenya (CA) with a mandate to license and regulate information and communication services which include postal and courier services.

The Kenya Information and Communications (Numbering) Regulations of 2010 mandates the Communications Authority of Kenya to carry out the following functions:

- a) Establish a National Communications and Addressing Plan (NCAP) for electronic communication numbers and addresses, postal codes, in liaison with international organizations dealing with numbering and addressing matters.
- b) Ensure that the NCAP among other details shall include geographical postal points of delivery.
- c) Appoint, if necessary, a person or an organization to manage or maintain an integrated number or address database.

2.9.3 Postal Corporation of Kenya Act, 1998

The Postal Corporation of Kenya is a Public Commercial Enterprise operating under the Postal Corporation of Kenya Act, 1998. Its mandate includes the provision of accessible, affordable and reliable Postal Services to all parts of Kenya as the Public Postal Licensee, in line with the 1948 United Nations Charter on Universal Human Rights that obligates Governments to guarantee unfettered access to communication by all citizenry. The Corporation is mandated to:

- a) Provide and operate postal services, and perform incidental services relating to the receiving, collecting, sending, dispatching and delivering of postal and courier articles and electronic mail;
- b) provide and operate postal financial services; and
- c) provide logistics and warehousing services

2.9.4 The County Governments Act, 2012

The Act contains some key elements in regard to urban management and planning. Section 104(1) provides that a county government shall plan for the county, and no public funds shall be appropriated outside a planning framework developed by the county executive committee and

approved by the county assembly. Section 107(1) prescribes that to guide, harmonize and facilitate development within each county there shall be the following plans:

- d) County integrated development plan;
- e) County sectoral plans;
- f) County spatial plan; and
- g) Cities and urban areas plan as provided for under the Urban Areas and Cities Act.

2.9.5 The Survey Act

The Survey Act establishes the Standing Committee on Geographical Names. The duties of the Committee are but not limited to advise the Minister as to the spelling of all names on maps of Kenya, and in so doing the Committee shall have due regard to historical, orthographical and ethnic considerations. The names shall be published in such manner, and as often as the Minister may direct, lists or maps containing the approved spelling of all such names.

The Act will be useful in guiding the naming of geographical names.

2.9.6 Physical and Land Use Planning Act, 2019

The Act provides for preparation and implementation of physical development plans and for connected purposes as well as the basis for physical planning and development control. The policy relies on the Act in referencing the importance of planning upon which property numbering and street naming is anchored.

2.9.7 The Urban Areas and Cities Act, 2011

Section 36 of this Act provides for integrated development planning of Urban Areas and Cities. This shall be the basis for the preparation of environmental management plans including preparation of a geographic information system for a city or a municipality. Section 37 provides for the alignment of integrated development plans of cities and urban areas to the development plans and strategies of county governments. These are easily achieved with a complete and correct addressing system that maps out all the areas in the city.

2.9.8 The Inter-Governmental Relations Act, 2012

The Act establishes a framework for consultation and co-operation between the national and county governments and amongst county governments. It also establishes mechanisms for the resolution of intergovernmental disputes pursuant to Articles 6 and 189 of the Constitution, and for connected purposes.

2.9.9 The Kenya Heroes Act, 2014

The Act provides a legal framework for the recognition and honor of national heroes. The objects and purpose of this Act are to: provide for the recognition of heroes; Establish criteria for the identification, selection and honoring of national heroes; provide for the categories of heroes; and Provide for the establishment of the National Heroes Council and for connected purposes.

2.9.10 Land Registration Act, 2013

The Act consolidates and rationalizes the registration of titles to land to give effect to the principles and objects of devolved government in land registration. In furtherance of this object, Section 15 of the Act provides for the preparation and maintenance of a cadastral map for every registration unit. The said provision further requires geo-referencing and survey of the parcel boundaries on such maps to such standards as to ensure compatibility with other documents required under the law. Considering that the National Addressing System will largely be applicable to all addressable objects ordinarily found on the parcels of land registered in line with this Act, the said Act would underpin the system significantly. Besides, standardization envisaged in the map provides a point of convergence between addressing and mapping that ought to proceed harmoniously.

2.9.11 Sectional Properties Act, (No. 21 of 2020)

The Sectional Properties Act provides for the division of buildings into units owned by individual proprietors and common property to be owned by proprietors of the units as tenants in common and to provide for the use and management of units and common property and for connected purposes. Accordingly, an existing structure may be designated a building containing a unit or part of a unit or divided into two or more units by the registration of a sectional plan prepared, by a surveyor, from a building plan that has been approved by a county government. Such units can be considered as addressable objects in need of addresses.

2.9.12 National Construction Authority Act, 2011

The Act provides a legal framework for co-ordination and standardization of the buildup environment. Its main functions in as far as national addressing is concerned include but are not limited to:

- a) assist in the exportation of construction services connected to the construction industry;
- b) promote and ensure quality assurance in the construction industry;
- c) initiate and maintain a construction industry information system;
- d) accredit and register contractors and regulate their professional undertakings;
- e) accredit and certify skilled construction workers and construction site supervisors

- f) Develop and publish a code of conduct for the construction industry.

2.9.13 Kenya Roads Board Act, No. 7 of 1999

The Kenya Roads Board Act established the Kenya Roads Board to oversee the road network in Kenya, coordinating its development, rehabilitation and maintenance and to be the principal adviser to the Government on all matters related thereto. This includes advising the Government in policy formulation, allocation of financial resources, monitoring of the operations of road agencies, and the specifications, design standards and classification of roads across Kenya. Roads are considered as addressable objects in need of addresses and the Kenya Roads Board will play a critical role in facilitating this.

2.9.14 Kenya Roads Act, No. 2 of 2007

The Kenya Roads Act creates the Kenya National Highways Authority, the Kenya Urban Roads Authority and the Kenya Rural Roads Authority as the implementing agencies for national, urban and rural road policies in Kenya, including but not limited to their construction, upgrading, rehabilitation and maintenance. Additionally, these agencies are assigned control of national, urban and rural roads and road reserves as well as access to roadside developments, as well as advising the Minister responsible for roads, on all issues related to these roads. All national, urban and rural roads are considered addressable objects that will need addresses and these agencies will have a critical role to play in facilitating this.

2.10 Public Participation

The National Addressing Framework will provide a unique location identifier for all households and residents in Kenya. For many citizens, their address is part of their identity and forms part of how they may describe themselves for both social interactions and interactions with governmental and commercial service providers. The provision of a formal and standardized address for each citizen will be a significant change to a large proportion of the population. Therefore, it is paramount that stakeholder engagement with all citizens is targeted correctly and appropriately to the various types of citizens in a way that meets their requirements for accessing and understanding what a formal address means to them and others.

Public participation will be undertaken in line with the Constitution and applicable legislation

2.11 Political, Economic, Social, Technological, Environmental and Legal (Pestel) Analysis

This section presents a PESTEL analysis of the macro-environment that influences and impact that have led to the development of this policy.

POLITICAL	ECONOMIC	SOCIAL
<ol style="list-style-type: none"> 1. There is goodwill from the political leadership in the development of a homogenous national addressing framework. 2. Political stability which has enabled consistent growth in the Country's GDP with all economic indicators remaining fairly stable. 3. Kenya promulgated a new Constitution in 2010 that introduced reforms in Government administration and political boundaries. 4. The Government is currently spearheading a war against corruption, especial relating to land titling. 5. Legacy systems and processes have led to bureaucracies that hinder efficient delivery of projects that require collaboration of multiple stakeholders. 6. The Council of Governors was established in 2012 and provides a mechanism for consultation amongst County Governments, sharing of information, as well as promoting intergovernmental cooperation on national and county interests amongst other functions. 	<ol style="list-style-type: none"> 1. There are regional and continental institutions such as the East African Community and African Union that are spearheading integration within the African Continent to spur economic growth. 2. The African Union is championing the implementation of a Continental Free Trade Area. 3. Africa is yet to realize the potential of connectivity in stimulating its economy and bettering the lives of its citizens. 4. Kenya is ranked 56 out of 190 economies in the World bank ease of doing business. 5. Kenya's economy is driven by high mobile penetration as per the statistics provided by the Communications Authority of Kenya. 6. The internet has broken traditional global barriers allowing for trade and realization of big-tech that enjoy consumer numbers larger than anyone- country's population. 7. There is high levels unemployment amongst the youth, growth in innovation and entrepreneurship is critical to address unemployment. 8. There is inadequate funding and calls for more support of the startup and innovation sector by the youth. 	<ol style="list-style-type: none"> 1. A significant proportion of Kenya's population is youthful. They are agile and adaptive to new lifestyles driven by technology that calls for standardized addressing as an infrastructure backbone 2. Changes in demographics (age, growth rate, education level, etc.). 3. Due to lack of a uniform national addressing framework, Kenyans have embraced international mapping platforms and local innovations to define their addresses. 4. Work has been decentralized to offshore, outsourcing, freelancing and crowdsourcing modes that demand for identification of locations and people. 5. The country has a growing innovative culture. 6. With a majority of Kenyans connected through their mobile phones, it increases the risk of cyber-crimes, fraud and fake news.

TECHNOLOGICAL	LEGAL	ENVIRONMENTAL
<ol style="list-style-type: none"> 1. In 2019, Kenya embarked on geo- spatial mapping of its entire land mass to address a lack of current spatial data and updating of cadaster maps. 2. There is a need for capacity building and acquisition of staff with the requisite skills needed to roll out an efficient national addressing framework; this includes but isn't limited to Geospatial engineers and cyber security experts etc. 3. Kenya has several submarine cables providing global connectivity to the country. As of April 2023, there were 6 submarine cables and 11 international satellite gateways 4. The government and the private sector has rolled out substantial amounts of fibre optic across the country. 5. There is rapid adoption and change in technologies which impacts demand for Government services and innovations in the private sector. 6. There is a need for more focus and funding for Research and Development incentives. 7. National and County levels technological advancements and solutions are being rolled out in environments with inadequate laws and regulations for digital trade and transactions 	<ol style="list-style-type: none"> 1. Vision 2030, the National ICT Policy and the Digital Economy Blueprint all call for a national addressing system that stimulates a digital economy 2. There are structural and legal inadequacies that have hindered the development and implementation of a national addressing framework. 3. Lack of laws and standards governing the Addressing both at National and County levels 	<ol style="list-style-type: none"> 1. Climate changes have increased the occurrence of natural disasters which require accuracy in providing emergency response services. 2. There is a need for adequate e-waste policy, laws and regulations that require a clear understanding of our landmass and potential. 3. Every Kenyan is entitled to basic human rights, of which, the right to have an address facilitates government interventions to guarantee their rights.

2.12 International Best Practices

2.12.1 Standards

Addressing practices differ essentially from country to country with more than 200 address formats in the world, 200 database structures and at least 20 language scripts are officially used to write addresses. This means that there are diverse addressing schemes adopted in various parts of the world that reflect the local and cultural characteristics and environment. In this regard, there is not a “one-size fits all” when it comes to adopting address assignment schemes. Further, there is a need to design, implement and maintain address schemes and standards that are reflective of national heritage, culture, traditions, language, citizen aspirations and existing systems.

Standardization of addresses improves the efficiency of their usage across sectors. In a highly globalized world, the standardization of addresses across different countries has become increasingly important and the adoption of International Standards can provide guidance for the development of standards to be adopted at a national level. As countries move towards single digital markets and citizens trade on e-commerce platforms the need for address interoperability has also become increasingly important.

There are various International Standards that should be considered in the development Kenya's National Addressing Standards. This policy recommends the development of National Standards aligned to the International Standards Organization and Universal Postal Union addressing standards in collaboration with the Kenya Bureau of Standards (KEBS).

2.12.2 International Organization for Standardization (ISO)

The International Organization for Standardization (ISO) developed a suite of international standards for addressing and representation of geographic point location by coordinates. These are outlined in ISO 19160 and ISO 6709 highlighted below as updated from time to time:

The ISO 19160 International Address Standard suite provides guidance on the following parts, under the general title ‘Addressing’:

- a) Part 1: Conceptual Model - The model provides a common representation of address information, independent of actual addressing implementations. It is not intended to replace conceptual models proposed in other specifications but provides a means to cross-map between different conceptual models for address information and enables the conversion of address information between specifications. This Part defines key terms for postal addressing, postal address components and constraints on their use.
- b) Part 3: Quality management for address data – The Objective of this part was to provide guidance to ensure address data quality is maintained and/or improved by

establishing a set of address data quality measures.

- c) Part 4: International postal address components and template languages - This Part defines key terms for postal addressing and postal address components. The UPU S42 adopts the ISO 19160.4.

The ISO 6709 is the international standard for the interchange of coordinates describing geographic point locations as a representation of latitude, longitude and altitude. It specifies the representation of coordinates, including latitude and longitude, to be used in data interchange and additionally specifies representation of horizontal point location using coordinate types other than latitude and longitude. It also specifies the representation of height and depth that can be associated with horizontal coordinates. Representation includes units of measure and coordinate order. This standard supports point location representation through the eXtensible Markup Language (XML) that allows computer data interchange of longitude and latitude through the use of a single alpha-numeric string to describe point locations.

2.12.3 Universal Postal Union (UPU)

The relevant international address standards of the UPU are:

- a) UPU S42 International Postal Address Components and Templates. The UPU S42 International Address Standard contains the address format templates for all countries that have registered address systems and postcode systems and adopts ISO 19160.4.
- b) UPU S53 International Standard for exchange of name and address data. UPU S53- as an extension of the S42 elements - facilitates exchange of name and address data between postal authorities, businesses, mailers and other organizations. It incorporates the S42 elements and templates.

It is desirable to compare what is adopted with best practices and to note global practices as may be adopted or standardized, to facilitate harmonization, interoperability as well as enable data exchange where this may be required.

This policy recommends adoption of these standards to assist in application of existing knowledge from experiences of the practices in other countries, cooperative information processing with other countries and will assist Kenya to tap into the resources of global or regional agencies.

2.12.4 Case Studies

In addition to ISO and UPU standards, the policy recommends other reference models which have been applied in other jurisdictions such as the European Union, Australia and New Zealand, South Africa, Ghana, United Kingdom and the United States of America.

2.12.4.1 Infrastructure for Spatial Information in the European Community

Infrastructure for Spatial Information in the European Community (INSPIRE) is an European Union initiative to establish an infrastructure for spatial information in Europe that is geared to help to make spatial or geographical information more accessible and interoperable for wide range of purposes which include address generation. INSPIRE provides data specification on addresses standard that defines the data specifications for addresses within the European Union member states. The specific Data Specification on Addresses standard harmonizes the complexities resulting from different administration and management of addresses in the various EU member states by providing a homogeneous data specification and application schema for addressing within the European Community.

2.12.4.2 Ghana

In 2010, Ghana launched the National Policy Document and Operational Guidelines on Street Naming and Property Addressing System. These documents provide local metropolitan, municipal and district assemblies (MMDAs) with guidance to develop land-use plans for their cities as well as to name existing thoroughfares.

2.12.4.3 South Africa

The South African Bureau of Standards (SABS) developed a South African National Standard (SANS) in 2004 for 'a standard framework for South African addresses', subsequently designated as SANS1883. The standard established a geographical information system (GIS) based addressing system with a national address database and consists of three parts:

- a) SANS/WD 1883-1, Geographic Information – Address Standard, Part 1: Data format of addresses.
- b) SANS/WD 1883-2, Geographic information Guidelines for addresses in databases, data transfer, exchange and interoperability.
- c) SANS/WD 1883-3, Geographic information – Guidelines for address allocation and updates.

The objective of the SANS 1883-1:2009 is to enable interoperability in address datasets that will facilitate developing a national address database. This standard specifies and defines the data elements, as well as the address types that can be constructed from the data

elements for South African addresses. The standard further defines terms and definitions related to addresses in South Africa. The SANS 1883-1:2009 supports:

- a) the allocation and management of addresses.
- b) the recording.
- c) the geo-coding and spatial representation of addresses.
- d) the delivery of services throughout South Africa; and
- e) the national developmental objectives.

2.12.4.4 United Kingdom

In the United Kingdom, street naming and property numbering is a statutory Council function. The relevant powers for local authorities are contained in Sections 64 and 65 of the Towns Improvement Clauses Act 1847, and Sections 17, 18 and 19 of the Public Health Act of 1925. These Acts require the local authority to prepare street naming and numbering schemes and to maintain a good standard of street nameplates.

The Public Health Act 1925, Section 19 gives authorities the power to insist that the name of every street shall be shown in a conspicuous position and, also alter or renew if it becomes for any reason illegible. This section also makes it illegal to pull down or remove a street name, which has been lawfully set up, or to fix a notice or advertisement within close proximity to the sign. These acts also give the Council the ability to produce regulations concerning the erection of signs for the names of public streets and ensure that the names and numbers of all buildings are displayed by their owners in accordance with these regulations.

2.12.4.5 Australia and New Zealand

The AS/NZS 4819:2011 standard for Rural and Urban Addressing provides requirements and guidance for addressing authorities to use for assigning addresses, naming roads and localities, recording and mapping the related information, and related signage in Australia and New Zealand. This Standard provides requirements and guidance relating to:

- a) assigning addresses;
- b) naming roads and localities;
- c) recording and mapping the related information; and
- d) signage related to the above.

Western Australia developed an Address Management Policy authorized under Public Sector Commissioner's Circular 2013-03 Policy Framework and Standards for Address Management in Public Sector Entities. The purpose of the policy is to enable agencies to

better capture, store, manage and exchange information that includes an address component. The policy defines the authoritative sources of address information and gives the standards that define the address data components.

2.12.4.6 United States of America (USA)

The Federal Geographic Data Committee (FGDC), is a United States government committee which promotes the coordinated development, use, sharing, and dissemination of geospatial data on a national basis. FGDC has published the United States Thoroughfare, Landmark and Postal Address Data Standard. The Standard which was endorsed in 2011 was created to:

- a) Provide one standard that meets the diverse address data management requirements for local address administration, postal and package delivery, emergency response (and navigation generally), administrative recordkeeping, and address data aggregation;
- b) Support the use of best practices in address data management;
- c) Provide a systematic, consistent basis for recording all addresses in the United States;
- d) Define the elements needed to compose addresses and store them within relational databases and geographic information systems;
- e) Define the attributes needed for address documentation, mapping, and quality testing, including address ID's, coordinates, and linear reference locations. Provide a complete taxonomy (systematic classification) of US addresses that is useful to address data managers;
- f) Introduce the idea of the address reference system—the formal description of the local address assignment rules, both spatial and non-spatial—and define its elements and attributes, as a basis for address assignment and quality testing;
- g) Define tests and procedures for address data quality testing, error-trapping, and anomaly identification;
- h) Support seamless exchange of address information, and foster consistent implementation of the standard, by defining XML models for every address element, attribute, and class, integrated into a single XML Schema Document;
- i) Offer a migration path from legacy formats to standards-compliant ones;
- j) Recognize, as a practical matter, that different business purposes and different data sources will require different levels of complexity in address data records, files and

repositories; and

- k) Build on existing addressing publications and standards from other federal agencies such as the United States Postal Services, the Census Bureau TIGER, the FGDC Content Standard for Digital Geospatial Metadata, the FGDC's National Spatial Data Infrastructure (NSDI) Framework Data Content Standard, and previous FGDC address standard efforts.

The Standard covers thoroughfare, landmark, and postal addresses within the United States, including its outlying territories and possessions and contains four parts: address data content, data classification, data transfer, and data quality:

- a) Address Data Content, the standard provides semantic definitions of a set of objects. It specifies and defines the data elements that may appear in or describe street, landmark, and postal addresses, and address reference systems.
- b) Data Classification, the standard provides groups or categories of data that serve an application. It defines classes of addresses according to their syntax, that is, their data elements and the order in which the elements are arranged.
- c) Data Quality, the standard describes how to express the applicability or essence of a data set or data element and include data quality, assessment, accuracy, and reporting or documentation standards. It specifies tests and measures of address data quality.
- d) Data Transfer, the standard describes how to produce or consume packages of data, independent of technology and applications, to facilitate moving data between agencies and systems. It provides a complete XML schema description for exchange of address data.

The Standard covers each of the main types of addresses found in the United States, and provides a framework for classifying them, understanding their component parts and attributes, testing their quality, and organizing them for exchange with other agencies and the public.

These examples provide Kenya with reference models for application in the conceptualization of Kenya's National Addressing System Framework. Key to note is the adoption of national or common standards that offer guidance to multiple layers of administrative units as envisioned in Kenya's addressing framework – a national framework to guide the role out of addressing in all 47 counties.

CHAPTER 3

POLICY STATEMENTS

3.0 Development of a Legal Framework for National Addressing

The aim of this Policy and subsequent legal framework is to promote appropriate quality practices, enhance service delivery, as well as promote competitiveness of the country. The framework will ensure that compliance and enforcement of the use of national addressing can be achieved. In order to provide a conducive legal and regulatory framework for National Addressing, this policy recommends the following interventions:

- a) Formulate laws to guide effective national addressing in the country
- b) Develop and implement regulations for national addressing and naming

3.1 Development of a National Addressing System of Kenya Institutional Framework

The country requires an institutional framework to manage the various players and components of national addressing. This policy recommends the following interventions:

- a) Establishment of an institutional framework to manage addressing in Kenya;
- b) Establishment of mechanisms to guide access and sharing of addressing data among institutions;
- c) Development of procedures to govern addressing operations within and among institutions; and
- d) Establishment of mechanisms to ensure seamless connection of services between devolved and national government in sharing of addressing data.

3.2 Development of Unique Address Format for Addressable Objects

The Government will develop a unique address format for addressable objects. The National Addressing System of Kenya address will be geo-coded to enable its spatial location. This policy stipulates that National Addressing System of Kenya addresses will be issued to all addressable objects in Kenya. Therefore, the policy calls for the following:

- a) Design, development and adoption of a unique address scheme for all addressable objects;
- b) Development of mechanisms and procedures to allocate and issue addresses;
- c) Development of a digital National Addressing Information System (NAIS); and

- d) Development of a framework to offer NAIS as service to other systems through API's to support services such as e-commerce, navigation and ride hailing services.

3.3 Development of National Addressing Standards

The addressing standards will serve as guidelines to assist in development, coordination, implementation, and management of National Address System. The Standards will define the numbering system to be adopted and other relevant parameters to be observed in the generation of addresses. The policy recommends registration of addresses for every person who owns or occupies a property, building or other physical feature in Kenya. It also provides for assignment of addresses, principles of a national addressing which includes assigning in a unique address to each property, building or other physical feature which distinguishes it from all other addresses in the country. The policy further calls for development of a format and structure of addresses that is consistent throughout the country, to ensure ease of use and accuracy and verification.

The policy recommends the design and establishment of the following standards:

- a) National Addressing Standards of Kenya
- b) NASK Data Standards will provide the following;
 - (i) Guidelines that define the data elements for addressing in Kenya. The guidelines and standards will ensure a common addressing data format for the data that will be used by National Addressing System of Kenya;
 - (ii) Addressing Data Specifications that will define the terms and definitions related to addressing data in Kenya including: their attributes, metadata, and conformance specifics on the addressing data semantic requirements that are mandatory for the various government agencies and organizations; and
 - (iii) Provide a framework for verification of addressing data;
 - (iv) Create procedures and processes for address data exchange and sharing

3.4 Development of National Guidelines for Naming

Names are an important component for the development of a NASK Addresses. This policy therefore recognizes that the mandate of naming is within various institutions. The Government will under-take the following policy measures:

- c) Develop national naming guidelines based on legislative and regulatory frameworks that consider principles of public participation as guided by the Constitution, national heritage, local culture and languages.

- d) This policy provides the following naming guidelines at the national and county levels.
- i. Historical names of places, people, and events from Kenya and selectively from the rest of Africa.
 - ii. Names of African insects, birds, animals, plants etc. either in Swahili or local languages.
 - iii. Geographical names of Kenyan and, selectively, African rivers, mountains, plains, hills, water bodies, villages, towns, marketplaces, etc. Names of African countries could also be used.
 - iv. Names of departed freedom fighters and other Kenyans of known repute who either gave up their lives for Kenya or whose life contribution assisted substantially in the fight for our independence.
 - v. In consultation with the National Heroes Council, names of modern-day heroes who have lost their lives in service for the country.
 - vi. Other names may be used depending on the circumstances
 - vii. Important cultural artifacts like various traditional attires, customs, social events, etc. either in Swahili or local languages.
 - viii. Abstract names in Swahili which have special national significance such as Umoja, Amani and Shujaa.
 - ix. Names that have national significance and denote Kenyan pride. The policy discourages the usage of names of living political figures but encourages the use of names of living heroes as identified by Kenya's Heroes Act, 2014.

3.5 Review of Post Codes by the Communications Authority of Kenya

This policy calls for CA, in consultation with Postal Corporation of Kenya and other relevant stakeholders to review Kenyan post codes to align with international standards and to reflect the administrative and structure changes that have occurred.

3.6 Create Awareness on National Addressing

The National Addressing System of Kenya is designed for all Kenyans as a public service to aid in Kenya's socio-economic development. The government will create awareness on the National Addressing System by undertaking the following:

- a) Promote and support the creation of mechanisms that contribute to high levels of awareness and knowledge dissemination; and

- b) Develop effective awareness programs for industry especially MSMEs and establish awareness programs that are inclusive.

CHAPTER 4

POLICY IMPLEMENTATION AND COORDINATION

Various government agencies at both the national and county levels will play significant roles in the implementation and management of national addressing. The following agencies will be responsible for rollout addressing;

4.0 Ministry of Information, Communication and The Digital Economy

The Ministry's role will be to provide an enabling policy, legal and regulatory framework to implement the national addressing system of Kenya.

4.1 Communications Authority of Kenya

This policy assigns responsibility for National Addressing, Naming and Numbering Management to the Communications Authority of Kenya. The role of the CA will include:

- c) Establish, manage, maintain, and act as custodian of the National Addressing System;
- d) Implement the roll out of the National Addressing in Kenya through pilot programs with county governments and implementation of the program in all parts of Kenya;
- e) Interface with national and county governments to ensure that all addressable objects in Kenya can be identified by an allocated and assigned address;
- f) Develop, implement, and monitor guidelines and standards for Addressing in Kenya in consultation with Kenya Bureau of Standards (KEBS);
- g) Manage the use of shared national addressing infrastructure for the purposes of proper implementation of addressing and implementation of a robust and secure National Addressing Information System;
- h) Promote dialogue on addressing to facilitate alternative dispute resolution mechanisms;
- i) Advise the National and County Government and other stakeholders on matters related to national addressing;
- j) Collaborate with holders of address data to collect, share and harmonize addresses;
- k) Promote international cooperation in matters naming and addressing;
- l) Manage National Addressing System of Kenya as a service;
- m) Collaborate and build capacity with other stakeholders to ensure effective

implementation, monitoring and management of addressing;

- n) Promote and raise awareness on national addressing in Kenya; and
- o) Entering partnerships for example public private partnership arrangements for the financing, establishment, management or maintenance of the National Addressing System as may be necessary

4.2 Functions of County Governments

The County governments will be the interface, user and contributors of address data for NASK at the county level. For this purpose, they shall be responsible for ensuring address data provided and signage is compatible with required standards.

Each County shall establish an administrative mechanism for implementing addressing and ensuring effective stakeholder engagement within the county.

4.3 National Addressing Compliance

Overall custody of the National Addressing System of Kenya will be under the Communications Authority of Kenya, which will be responsible and accountable for the overall development, maintenance and utilization of the system. This includes monitoring and enforcement of the prescribed standards.

The authority to enforce national compliance with the NASK Standards will be vested in the Communications Authority of Kenya and will ensure the National Addressing System of Kenya is adopted as set out in the Standards.

At the county level, the County Addressing Unit shall have authority to enforce local compliance with National Addressing System of Kenya, including the authority to:

- a) Approve any changes to existing street names;
- b) Approve all applications made by property developers for new access ways and related street names;
- c) Ensure conformity with the standards set out for street name signage and property addressing;
- d) Require service providers within a county to adopt the NASK address set out in the Standards;
- e) Require any non-compliance to be remedied within a specified timeframe; and
- f) Institute mechanisms for sanctions in respect of non-compliance.

CHAPTER 5

MONITORING AND EVALUATION

5.0 Introduction

The Communications Authority in conjunction with the Ministry will monitor and evaluate the status of implementation of the policy, through the following interventions:

- a) Build human and institutional capacity within the relevant institutions to effectively undertake monitoring and evaluation;
- b) Establish sector-wide monitoring and evaluation frameworks and plans to ensure policy interventions are achieved; and
- c) Undertake monitoring through continuous data and information collection during policy implementation period.

5.1 Policy Implementation

The implementation of this Policy and shall be vested in the Communications Authority of Kenya.

5.2 Policy Review

This Policy may be reviewed after five (5) years, or as the need may arise.