



MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT

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DRAFT KENYA AGRICULTURAL DATA, INFORMATION AND DIGITAL POLICY

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FOREWORD

Agriculture remains central to Kenya's economic transformation, food and nutrition security, employment creation and climate resilience. Under Kenya's development blueprint, Vision 2030 and the Government's Bottom-Up Economic Transformation Agenda (BETA), the agricultural sector is positioned to drive inclusive growth, increase its contribution to GDP, improve rural livelihoods, raise productivity, strengthen value chains and accelerate agro-industrialization. Both the Sessional Paper No. 02 of 2021 on the National Agricultural Policy, which aims to transform agriculture from subsistence to an innovative, commercially oriented, and competitive sector, and the Agricultural Sector Transformation and Growth Strategy (ASTGS) 2019-2029, which is Kenya's 10-year framework to modernize agriculture, increase small-scale farmer incomes, and ensure food security, are the sector instruments that deliver the Vision 2030 and the BETA aspirations.

Over the past decade, Kenya has demonstrated global leadership in digital innovation, particularly in mobile connectivity, digital financial services and e-government platforms. In agriculture, a wide range of digital initiatives: farmer registries, advisory platforms, market information systems, input credit access, climate services and traceability tools have emerged. These are rapidly being adopted across national and county governments, the private sector and development partners. While these initiatives have generated important lessons and localized impact, their full potential has been constrained by data fragmentation, limited interoperability and the absence of a coherent national digital agricultural architecture.

The Kenya Agricultural Data, Information and Digital Policy therefore establishes a comprehensive framework to guide the development, governance, coordination, and scaling of digital technologies and data use across the agricultural sector. It articulates a farmer-centred, inclusive and devolved approach founded on strong data governance, interoperability, service delivery efficiency, cyber security, innovation and climate responsiveness. Central to this Policy is equally the establishment of an enabling legal, policy and institutional framework to support the effective roll-out and governance of digital agricultural innovations. Through this Policy, the Government seeks to transition the sector towards an integrated national agricultural data, information and knowledge ecosystem.

This transformation will strengthen evidence-based policy formulation, planning and budgeting, support early-warning and risk-management systems, improve targeting of subsidies and services, modernize extension and advisory delivery and enable transparent monitoring of results in line with sectoral objectives set out in the Agricultural Policy and ASTGS and the sector's contribution to Vision 2030. It will also create a predictable environment for private-sector participation and public-private partnerships, catalyzing innovation while safeguarding public interest and farmer rights.

Implementation of this Policy will require close collaboration across national and county governments, state agencies, research and training institutions, farmer organizations, the private sector, civil society and development partners. The national government will provide strategic leadership, coordination and policy guidance, while county governments and other stakeholders will be empowered through common standards, capacity development, and sustainable financing mechanisms to fully participate in and benefit from the national digital agriculture ecosystem. We therefore call upon all stakeholders to support the adoption and operationalization of this Policy. Together, we can harness data, information and digital technologies as strategic national assets to accelerate agricultural transformation, advance the objectives of Vision 2030, deliver on BETA, implement MTP-IV effectively and secure inclusive and sustainable prosperity for all Kenyans.

The Ministry is committed to providing strategic leadership and policy guidance, partnering closely with county governments and all stakeholders to drive the effective implementation of this Policy and the digital advancements required in the transformation of the agricultural sector.

**Sen. Mutahi Kagwe, EGH,
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PREFACE

Kenya's agricultural transformation agenda, spanning crops, livestock, fisheries, irrigation and cooperative enterprises, is anchored in Vision 2030, the Bottom-Up Economic Transformation Agenda (BETA), and the Fourth Medium Term Plan (MTP-IV), which collectively call for productivity growth, strengthened value chains, inclusive farmer participation, climate-resilient food systems and expanded market access. These sub-sectors remain central to national food and nutrition security, employment creation, export earnings and rural livelihoods. Achieving these objectives in a rapidly changing global environment requires a decisive shift toward data-driven planning, digitally enabled service delivery and integrated national systems that connect producers, markets, irrigation schemes, fisheries management institutions, cooperative organizations, veterinary services and public agencies.

Across the country, digital platforms for farmer registration, extension, climate services, market information, subsidy delivery, animal identification and traceability, disease surveillance, fisheries monitoring, irrigation-scheme management, agri-finance, cooperative services, insurance, and financial access are expanding at both national and county levels. These initiatives demonstrate the promise of digital agriculture; however, their effectiveness and sustainability have been limited by fragmented platforms, limited interoperability, and uneven institutional coordination. The challenge before us is therefore not only to expand digital solutions, but to organize, govern and integrate them within a coherent national framework that maximizes public value and catalyzes responsible private-sector participation.

This Kenya Agricultural Data, Information and Digital Policy provides a strategic framework for the coordinated adoption and governance of digital technologies, data, information and knowledge systems and digitally enabled services across agriculture, livestock, fisheries, irrigation and cooperative development. It is designed to strengthen national coherence while respecting and enabling Kenya's devolved system of governance. In line with constitutional principles, the national government will provide policy leadership, standards, and coordination mechanisms, while county governments remain central to frontline service delivery, including extension, animal-health functions, fisheries management, irrigation operations, and cooperative support, through context-appropriate and interoperable digital solutions aligned with national standards.

The Policy further recognizes that digital transformation will only succeed if it is farmer, fisherfolk and pastoralist centered, inclusive and demand-driven. It prioritizes approaches that address barriers faced by women, youth, persons with disabilities and communities in marginalized and ASAL areas, particularly constraints relating to connectivity, digital literacy, affordability and accessibility of services. The objective is to ensure that digital tools and platforms translate into tangible improvements in productivity, efficiency, market access, climate responsiveness, household incomes and rural livelihoods, consistent with the equity and growth ambitions of BETA and MTP-IV.

Within the State Departments, this Policy will enable more precise targeting of subsidies and services, enhance early-warning and market-intelligence systems, modernize extension and veterinary delivery, improve disease preparedness and response, enhance traceability for domestic and export markets, smarter irrigation planning and management, strengthen cooperative governance and service delivery, improve crop and fisheries monitoring and value-chain development. It will also foster predictable conditions for private investment, research collaboration, and public-private partnerships that support smallholder productivity, pastoral resilience, irrigated agriculture, blue-economy growth, cooperative enterprise development and agro-industrialization.

Equally critical is the establishment of a centralized, secure and reliable data system framework. This Policy underscores the importance of sound data governance, privacy, and cybersecurity across all digital-agriculture initiatives. It also promotes interoperability and harmonized standards to reduce duplication, improve data quality, and enable responsible information-sharing among public institutions, counties, research and training organizations, farmer groups, cooperatives, private-sector actors, and development partners. These measures are essential for evidence-based planning, early-warning and risk-management systems, efficient targeting of public support, and transparent monitoring of outcomes under Vision 2030.

Implementation will require sustained collaboration among ministries, county governments, state agencies, veterinary and fisheries authorities, irrigation managers, cooperative institutions, pastoralists, producer organizations, academia, civil society, the private sector, and development

partners. Our offices are committed to providing leadership in coordination, standard-setting, and performance oversight, while ensuring that counties, where most agricultural and blue-economy services are delivered, have the capacity and infrastructure required to integrate effectively into the national digital ecosystem.

We therefore invite all stakeholders to support the implementation of this Policy. By embedding digital technologies and data as strategic national assets, we can modernize agricultural and livestock service delivery, improve irrigation efficiency, strengthen fisheries governance, revitalize cooperative enterprises, expand market opportunities, and advance Kenya's long-term development objectives under Vision 2030, BETA, and MTP-IV.

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ABBREVIATIONS AND ACRONYMS

AFA	Agriculture and Food Authority
AHITI	Animal Health and Industry Training Institute
AIRC	Agricultural Information Resource Centre
ASAL	Arid and Semi-Arid Lands
ASTGS	Agricultural Sector Transformation and Growth Strategy
ATC	Agricultural Training Centre
BETA	Bottom-Up Economic Transformation Agenda
CBO	Community-Based Organization
CIDP	County Integrated Development Plan
CoG	Council of Governors
DAS	Department of Agricultural Services
DPI	Digital Public Infrastructure
GESI	Gender Equality and Social Inclusion
GIS	Geographic Information Systems
ICT	Information and Communication Technology
JASSCOM	Joint Agriculture Sector Steering Committee
KIAMIS	Kenya Integrated Agriculture Management Information System
KADIC	Kenya Agricultural Digital Information Centre
KALRO	Kenya Agricultural and Livestock Research Organization
KEPHIS	Kenya Plant Health Inspectorate Service
KNBS	Kenya National Bureau of Statistics
KM	Knowledge Management
KSA	Kenya School of Agriculture
MDA	Ministry, Department or Agency
MoALD	Ministry of Agriculture and Livestock Development
MoICDE	Ministry of Information, Communications and Digital Economy
MTP	Medium Term Plan
NARS	National Agricultural Research System
NCCAP	National Climate Change Action Plan

NDMA	National Drought Management Authority
NG	National Government
NGO	Non-Governmental Organization
NIMES	National Integrated Monitoring and Evaluation System
PPP	Public–Private Partnership
REC	Regional Economic Community
TVET	Technical and Vocational Education and Training

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DEFINITION OF KEY TERMS

Agricultural activities Encompass all value chain operations related to crops, livestock, fisheries, and irrigation, including production, post-harvest handling, value addition, trade and marketing. This is often facilitated through cooperatives or other farmer organizations and a range of other value chain actor organizations such as input suppliers, processors, traders, financial institutions, and service providers.

Agricultural Data Digital data generated from agricultural activities, including production, inputs, soil and climate, markets, research, extension and farmer-level operations, used to support decision- making and service delivery.

Digital agriculture infrastructure The interconnected set of systems, institutions, standards, and governance arrangements that collect, store, integrate, and share agricultural data across key actors: farmers, policy makers, markets, agribusinesses and research agencies.

Agricultural Information Systems (AIS) Integrated system used to manage agricultural data and information at the point of collection, collation, analysis, reporting, storage, usage, sharing, retrieval or archival for planning, monitoring, provision of services and decision making.

Agricultural value chain actor Any person or entity engaged in the production, aggregation, processing, distribution, financing, insuring or marketing of produce or products from the growing of crops, or the rearing of livestock or fish and fishing

AgriTech (Agricultural Technology) The application of innovative technologies, including digital tools, data-driven solutions, and advanced systems, to automate agricultural operations for improved agricultural productivity, efficiency, sustainability, and service delivery across the agricultural value chain.

Artificial Intelligence (AI) The application of computer systems and algorithms capable of performing tasks that normally require human intelligence, including learning, reasoning, prediction, and decision support, in agricultural

systems and services.

Blockchain

A digital database containing secure data and information that can be simultaneously used and shared within a large decentralized, publicly accessible network.

Data

Raw, unprocessed facts, figures, or observations relating to agricultural activities in electronic or other form.

Data Governance

The framework of policies, standards, roles, and processes that ensure data is managed responsibly, securely, and effectively throughout its lifecycle.

**Digital Advisory
Services**

Technology-enabled platforms and tools that provide timely, accurate, location-specific, and actionable agricultural advice to farmers and value chain actors through digital channels such as mobile applications, SMS, chatbots, or web platforms.

Digital Agriculture

The integration of digital technologies and data-driven innovations across the agricultural value chain to improve productivity, efficiency, resilience and service delivery.

**Digital Agriculture
Infrastructure**

The combination of physical, digital, and institutional systems including communication networks, data systems, digital platforms, interoperable frameworks, end-user devices, and supporting energy and security systems that facilitate the generation, exchange, analysis, and application of agricultural data and digital services for improved productivity, sustainability, and market access.

**Digital Public
Infrastructure (DPI)**

Shared, interoperable digital systems governed by public institutions that provide foundational building blocks such as farmer registries, data exchange standards and consent mechanisms, enabling governments, the private sector and other stakeholders to deliver agricultural digital services securely and at scale

Digital Service

Provision of public or private agricultural services through digital

Delivery platforms, enabling efficient, accessible, and user-centered access to information, advisories, and transactional services.

Digital Technologies Includes artificial intelligence, robotics, drones, remote sensing, blockchain, and other advanced or emerging technologies applied in the agricultural sector.

Disruptive Agricultural Technologies (DAT) Digital and technical innovations that fundamentally change how farming and food systems operate, enabling farmers and agribusinesses to advance traditional methods and significantly improve productivity, efficiency, or sustainability.

Information Data that has been processed, analyzed, organized, or interpreted to provide context, meaning, or insight that supports decision-making, policy formulation, research, innovation, or service delivery in the agricultural sector.

Information Management Systematic process of collecting, organizing, storing, controlling and disseminating information to ensure it is accurate, accessible and useful for decision-making and organizational efficiency.

Information System Coordinated set of resources, including hardware, software, data, personnel, and procedures, designed to collect, store, process, manage, analyze, and disseminate data and information.

Interoperability The ability of different information systems, platforms, and applications to exchange data and use the information seamlessly through common standards, secure protocols, and interfaces.

Kenya Agricultural Digital Information Centre (KADIC) The national institutional mechanism established under this Policy to coordinate agricultural data management, digital information systems, knowledge services, and digital agricultural service delivery in Kenya.

Knowledge Fluid mix of framed agricultural experience, values, contextual information, intuition, judgement and expert insight that provides a framework for evaluating and incorporating new experiences and

intelligence.

Knowledge

Management (KM)

A systematic approach to capturing, organizing, validating, sharing, and applying knowledge to enhance learning, innovation, and evidence-based decision-making.

Metadata

Data that provides descriptive information about other data, including its source, format, time of creation, geographic coverage, and conditions of use, to support effective organization and retrieval.

**National Agricultural
Data and Information
System**

An integrated framework of platforms and systems that aggregate, manage, and disseminate agricultural data and information at national and county levels.

Open Data

Data that is made publicly available in accessible formats and can be freely used, reused, and shared, subject to applicable legal, ethical, and policy restrictions.

**Public–Private
Partnership (PPP)**

A collaborative arrangement between public institutions and private sector entities for the delivery of services, infrastructure, or innovation, based on shared responsibilities, risks, and benefits.

Smallholder Farmer

A farmer operating on a relatively small scale of land and resources, often characterized by mixed farming, limited access to capital, extension services, technology and markets.

**User-Centered
Design**

An approach to the design of systems and services that prioritizes the needs, contexts, and experiences of end users, particularly farmers and extension service providers.

EXECUTIVE SUMMARY

The Kenya Agricultural Data, Information and Digital Policy provides a comprehensive framework for transforming Kenya's agricultural sector through the coordinated use of digital technologies, data, information, and knowledge systems. Agriculture remains a cornerstone of Kenya's economy, contributing approximately 22.5% of Gross Domestic Product and supporting over 70% of rural livelihoods. However, the sector is yet to achieve the national goal of 100 percent food and nutrition security, reduction of food imports dependency, increasing exports and farmers' earnings, youth employment and resilience to emerging climate change threats.

In order to transform the agricultural sector and achieve sustainable rapid growth, there are increasing advocates for the adoption of needs-driven innovations that address the underlying agri-food systems challenges, especially in the developing economies. Therefore, digital agriculture has emerged as one of the best options for countries to embrace besides other traditional food systems development approaches. Digital agriculture is about digitization of the different aspects of the farming value chain. Digital agriculture uses emerging digital tools and innovations to provide farmers with timely information, more efficient services, and new opportunities to increase productivity, profitability and climate change mitigation. While Kenya has made significant progress in digitalization, particularly in mobile connectivity, digital finance, and e-government, the adoption of digital agriculture innovations has been slow, especially amongst the majority rural-based smallholder farmers. There are several institutional, governance, infrastructural and capacity challenges facing the development, scaling and realization of the desired impacts of the digital agricultural technologies. In order to address these challenges comprehensively and strategically, there is a need to look into the root causes, which include addressing the challenges of agricultural data and knowledge resources that form the foundational backbone of digital innovations.

This Policy therefore addresses the barriers facing rapid adoption of digital innovations by smallholder farmers by providing a coherent national framework for governance and institutional support, as well as strengthening of agricultural data, information and knowledge ecosystems. Central to the Policy is the establishment of an administration and implementation institution for digital agriculture. This institution will serve as the national hub for stakeholders' coordination, orderly governance, resource mobilization and capacity building for the development of usable digital innovations through harmonized agricultural data collection and management, as well as enhanced generation and

packaging of research-based knowledge and information.

The Policy aligns with the Constitution of Kenya (2010), Kenya Vision 2030, the Fourth Medium Term Plan (2023–2027), the Kenya Agricultural Policy (2021), the Agricultural Sector Transformation and Growth Strategy (ASTGS 2019–2029), the Digital Economy Blueprint, and relevant legal and regulatory frameworks, including the Data Protection Act (2019). It adopts a farmer-centric, inclusive, and devolved approach, while promoting interoperability, data privacy, climate resilience, innovation and sustainability.

Through coordinated implementation by national and county governments, state agencies, the private sector, development partners, and civil society, this Policy aims to establish a trusted, integrated and future-ready digital agriculture ecosystem that enhances productivity, resilience, competitiveness, and food security for all Kenyans.

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CHAPTER I: INTRODUCTION

I.1 Background

The agriculture sector plays an important role in Kenya's economy and is a central pillar for food and nutrition security. This is affirmed under the economic pillar of Kenya Vision 2030, which identifies agriculture as a key driver of economic growth, poverty reduction and employment creation. The sector contributed 22.5 percent to national Gross Domestic Product (GDP) and supported over 70 percent of the rural population in 2024, with most production undertaken by smallholder farmers operating within rain-fed and climate-sensitive systems (KNBS Economic Survey, 2025). While the agricultural sector is key to economic growth, improved livelihoods, employment creation and well-being of the society, inherent challenges have hindered the optimal productivity, resilience and competitiveness of the sector. To address these challenges, the Fourth Medium Term Plan (MTP IV) 2023–2027, as well as the Agricultural Sector Transformation and Growth Strategy (ASTGS 2019-2029) recognize the roles of science, technology and innovation and have placed digitalization and creative economy as key pillars. The MTP-IV and ASTGS explicitly recognize agriculture as a priority sector for digitalization and data linked to research innovations as key enablers of the envisaged transformation.

The combination of effective use of agricultural data and information, agricultural knowledge management, and digital agriculture is central to modern economies and transforms how decisions are made, risks are managed, and how value chain actors connect to markets and services. Agricultural data enables evidence-based planning, precision-farming choices, and early-warning systems that boost productivity and reduce losses. Agricultural information transforms data into meaningful insights and actionable intelligence that support policy formulation, extension service delivery, market access, innovation, and informed decision-making across the sector. Agricultural knowledge management ensures that scientific research, indigenous know-how, and lessons from practice are systematically captured, shared, and applied by farmers, extension workers, other value chain actors and policymakers, thereby strengthening innovation, resilience, and competitiveness in the sector.

Digital agricultural innovations form the most impactful by-products of data, information and knowledge management. The digital solutions including mobile advisory services, satellite imagery, farm-management applications, digital markets, and e-extension integrate data, information and knowledge resources into scalable, low-cost tools that improve efficiency, transparency, and inclusiveness in food systems, particularly in developing economies where economic development is highly dependent on agriculture.

Digitalization has the potential to rapidly transform agricultural sector growth. It connects agricultural value chain actors to real-time data on weather, prices, pests, and best practices through mobile applications, e-extension, and digital advisory platforms, enabling faster, evidence-based decisions that raise yields and reduce losses. At the same time, digital marketplaces, traceability systems, and financial technologies (e-payments, mobile credit, and insurance) cut transaction costs, improve market access, and strengthen resilience against climate and price shocks. Digital technologies also provide an efficient platform for real-time access to local and global markets, moving beyond the low-monitoring and localized restrictions of the past to create a more inclusive sector that is significantly more attractive to all generations, including youth and vulnerable in society.

When bundled with supportive policies and infrastructure, digital systems can accelerate agricultural productivity, modernize value chains, and integrate rural producers into national and global markets, positioning agriculture as a dynamic engine of economic growth in modern economies.

1.1.1 Global Context

Globally, digital agriculture has transitioned into a new era, driven by high-tech innovations and predictive analytics to meet the food demands of a growing population. According to OECD (2023), these technologies add value by transforming raw data into actionable intelligence, enabling climate-adaptive strategies and early-warning systems that safeguard production yields against unpredictable weather conditions. This is affirmed by a report by the World Bank (2024) that digital tools not only increase

efficiencies and productivity along the value chains but also provide the accountability needed to unlock insurance and financing mechanisms for value chain actors.

South Korea's Rural Development Administration (RDA) system stands out globally as a leading integrated agricultural information system, delivering ICT-enabled services such as real-time weather updates, market prices, pest alerts, and expert advice to over 100,000 farmers monthly via mobile and web platforms. The Consultative Group on International Agricultural Research (CGIAR) Platform for Big Data in Agriculture provides a global benchmark by unifying datasets from satellite imagery, weather, and field trials across CGIAR centers, enabling scalable analytics for crop modeling and decision support in developing regions. India's e-Choupal integrates farmer data hubs with ICT for market information, input supply, and knowledge sharing, empowering millions of farmers. The Netherlands FMIS combines IoT sensors, drones, and AI for crop monitoring, yield prediction, and adaptive irrigation, yielding 20-30% gains.

Other systems include the United States (John Deere Operations Center, Climate Field View), which integrates satellite imagery, Machine Learning (ML) pest detection, and blockchain for supply chains, enabling insurance/financing, while the EU's (GDPR-aligned EUCC) enforces data minimization, portability, and farmer sovereignty for smart farming analytics with privacy safeguards.

1.1.2 Regional Perspective

Regionally, East Africa is deploying digital solutions as the African Union and the Commonwealth are accelerating their *Digital Agriculture Strategies* to combat climate-driven food insecurity. Countries like Ethiopia and Rwanda have become hubs for these advancements, integrating high-impact platforms such as *DigiFarm* and *Arifu*, which provide smallholders with mobile-based insurance and interactive learning. In Ethiopia, the Digital Agriculture Roadmap (DAR) aims to reach 30 million farmers with real-time advisory services.

1.1.3 National Perspective

Kenya, dubbed the 'Silicon Savannah' is at the digital forefront. Both the public and private sectors are leveraging digital technologies for improved agri-business development and agricultural service delivery to raise agricultural productivity, create more jobs and ultimately improve rural incomes. By 2020, thirty percent of Africa's Disruptive Agricultural Technologies (DATs) startups were based in Kenya (Kim et al., 2020), and Kenya ranked second among African countries in the 2021 Global Startups Ecosystem Index (StartupBlink, 2022).

Kenya has made notable progress in digitalization, particularly in mobile money, e-government, and digital entrepreneurship (Republic of Kenya, 2019). In the agricultural sector, the digitalization leadership has been solidified, making the sector the "Ag-Tech" leader by successfully merging state-led digital agriculture infrastructure support with private-sector innovations.

At the heart of this digitalization leadership is the establishment of the Big Data center infrastructure for the agricultural sector as well as the development of the Kenya Integrated Agriculture Management Information System (KIAMIS). KIAMIS has been adopted by the MoALD, counties and other stakeholders as the overarching system for harmonizing agricultural data collection and establishment of a digital database that can be used to onboard various digital services and products. The KIAMIS digital infrastructure has been built on the principles of openness, interoperability, and scalability with several modules. The first module used for registration of farmers has generated a digital register of over 7.2 million farmers as at the end of 2025 (Source: FAO/Ministry of Agriculture, 2026). The digital register is being used to roll out digital farm inputs, E-voucher subsidy, and livestock vaccination programmes in collaboration with private actors. To further advance digitalization, Kenya is finalizing its Digital Agriculture Roadmap (DAR). Besides the public use-cases, there are several private sectors, youth-led Ag-tech digital innovations such as the Safaricom's *DigiFarm* that provides a holistic marketplace for credit and insurance, Twiga Foods that uses *Soko Yetu* to streamline supply chains for farm products, Digicow platform that supports the dairy

sub-sector, among others.

Despite the progress that has been made in the agricultural sector, the digital agriculture initiatives face many challenges affecting adoption and scaling by farmers, while most of them are largely project-based, donor-driven and uncoordinated, lacking a unified national architecture (MoALD, 2023).

1.2 Policy Rationale

With the foregoing background, the formulation of an Agricultural Data, Information and Digital Policy is necessitated by the need for an enabling environment for both the public and non-public actors to collectively and legitimately institutionalize processes of addressing the agricultural data, information and knowledge management. This will facilitate a sustainable ecosystem of digital technologies and innovations within the agricultural sector.

The absence of a clear policy and legal framework covering agricultural data, generation and use of research information and knowledge, as well as digital agriculture has led to institutional and governance gaps. This has fostered duplication of efforts, poor stakeholder coordination, lack of integrated and interoperable systems and limited scalability of digital initiatives. In addition, the existing institutional mechanisms at the national, counties and wider stakeholders have been deprived of policy guidance, a formal legal mandate and technical capacity to oversee a modern data, information, knowledge management and digital agriculture ecosystem.

The investment in the KIAMIS Big Data infrastructure, further reflects the Government commitment to strengthening the agricultural data ecosystem as foundational step towards sustainable digital agriculture support (MoALD, 2024). KIAMIS has several modules and is designed to use the first model to support continuous farmer registration, paving way for other integrated and interoperable modules focusing on e-voucher systems, e-extension, routine data collection, and secure data sharing in compliance with the Data Protection Act, 2019. In order to maximize the KIAMIS data infrastructure, a Data Governance Framework has been developed, and highlighting the need for coordination, standardized rules,

harmonized processes, and protocols. These cannot be realized without a supportive policy and legal environment.

This policy therefore provides a framework for the development of an integrated digital agriculture ecosystem and institutional framework that facilitates data sharing, information and knowledge management among stakeholders. This will strengthen coordination and enhance farmer access to tailor-made digital advisories. This policy therefore guarantees the institutionalization and scalability of digital agriculture, technologies and innovations for long-term sectoral transformation.

1.3 Scope of the Policy

This policy applies to all agricultural stakeholders in Kenya, including relevant government agencies at both levels of government, farmers, pastoralists, fisherfolk, cooperatives, agribusinesses, research institutions, and technology providers. It provides guidance on the development, adoption and utilization of digital technologies and innovations in the crops, livestock, fisheries, irrigation and cooperative subsectors by agricultural value chain actors. It further provides an enabling policy, legal, administrative and institutional framework for the development of a comprehensive, integrated and secure agricultural data, information and knowledge management system and promotion of an inclusive, affordable and sustainable adoption of digital agricultural technologies.

1.4 Approach and Methodology for Policy Development

The development of this Policy adopted a participatory, evidence-based and consultative methodology to ensure that it reflects national priorities, sector needs and emerging developments in digital agriculture. The process involved a review of relevant national, regional and international policy and legal frameworks, existing sector strategies, technical reports, research findings and best practices in agricultural data governance and digital transformation.

This Policy was developed through a nationally coordinated, consultative and participatory process involving the National Government, County Governments, State Departments,

State Corporations, research and academic institutions, development partners, private sector actors, farmer organizations, civil society and other stakeholders across the agricultural value chains and the digital ecosystem. Stakeholder consultations were undertaken through technical working sessions, consultative meetings and validation workshops to identify policy issues, build consensus on strategic priorities and validate the proposed policy interventions.

The draft Policy underwent iterative technical review and refinement based on stakeholder feedback before being subjected to a final validation process and approval by the sector leadership.

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CHAPTER TWO: KENYA'S CURRENT AGRICULTURAL DATA, INFORMATION, KNOWLEDGE AND DIGITAL ECOSYSTEM

2.1 Overview

Agricultural data and statistics form a sound basis for evidence-based decision making, planning and policy interventions in the agricultural sector. The scope, accuracy and robustness of agricultural data define its usefulness to end-users. The generation of agricultural data entails systematic processes of planning, collection, analysis, compilation and eventual utilization by stakeholders across the agricultural value chain.

Beyond agricultural data and statistics is agricultural information and knowledge products derived from processed and analysed data. When anchored on accurate and reliable data, such information provides a strong foundation for informed decision-making among agricultural value chain actors, thereby enhancing productivity, efficiency and profitability. This calls for planned development, production, packaging and dissemination of information and knowledge products that meet the needs of value chain actors and stakeholders.

It is worth noting that the development and dissemination of information and knowledge products keep evolving. The knowledge products were previously developed and disseminated using traditional techniques that keep eroding the integrity and usefulness of agricultural information amongst end-users, hence the advent of digital agriculture technologies. Digital agriculture has revolutionized the development, packaging and sharing of agricultural information and knowledge to targeted beneficiaries (especially youth) in the recent past.

Therefore, these aspects of data need to be reviewed and understood with a view to obtaining their current status, analyzing emerging trends to inform the development of necessary policy interventions and enabling environment for their improvement. This chapter reviews the status and trends in agricultural data, information and digital agriculture, and highlights the challenges and opportunities that exist to inform appropriate policy interventions.

2.2 Status, Challenges and Opportunities

2.2.1 Agricultural Data Ecosystem

Current Status

Kenya's agricultural data ecosystem is shaped by a wide range of actors. Key agricultural data public institutions include the Ministry of Agriculture and Livestock Development (MoALD) and its state corporations, as well as other relevant Ministries and Departments such as the State Department for Irrigation, Cooperatives, Fisheries and Livestock. Other government agencies including the Kenya National Bureau of Statistics (KNBS), National Drought Management Authority (NDMA), Kenya Meteorological Department (KMD), and the Kenya Revenue Authority, among others. Following the devolution of agriculture under Schedule IV of the Constitution of Kenya and the County Governments Act, 2012, the county governments play critical roles in the collection and management of county level data. Other players include the research and academic institutions such as KALRO, International Livestock Research Institute (ILRI), Centre of Agriculture and Bioscience International (CABI), universities and agricultural training, TVETs, as well as the private sector, including farmers' supporting NGOs and CBOs, financial and insurance agencies, agribusinesses and agri-tech service providers and telecommunication companies.

Agricultural data are generated from the farming systems, ranging from farming resources (soils, weather, water, irrigation) to production (inputs, agronomy, pests, diseases, production, yields, livestock numbers, livestock products, fish produced, fish captured, postharvest, stocks), socio-economic data (gross-margins, prices, markets, trade), geospatial (satellite, NDVI, land maps), and experimental data from researchers.

Most of the official data used in Kenya is administrative data generated by field extension officers and state corporations. The national and county statistics officials work together to compile routine and annual agricultural production reports. To improve harmonized, integrated and interoperable agricultural data collection and management, the MoALD and county governments have developed and adopted the Kenya Integrated Agriculture Information Management System (KIAMIS) as the overarching agricultural sector system.

The available data are shared through the Kilimo Stat open data platform on the Ministry website, through the established data governance framework aligned with the Data Protection Act, 2019 (MoALD, 2023; Government of Kenya, 2024).

Challenges

- i. Data fragmentation remains a major constraint, driven by institution-specific data models, silo data management systems, and non-harmonized approaches to data collection and reporting. The lack of unified data frameworks including standardized definitions, reporting units, coding systems, and metadata results in inconsistent, duplicated, or conflicting datasets, while also undermining the development of a single source of truth for official agricultural data.
- ii. The country has not undertaken a comprehensive census of agriculture, although a minor census of agriculture was conducted in 2019. The lack of a scheduled census of agriculture has led to the lack of an agricultural master sampling frame and base year necessary to support standard reliable data collection through sample-based surveys.
- iii. The country largely relies on administrative data that has many gaps due to limited surveys. Field level data collection is not yet fully digitized and the modern data collection methods through satellite, GIS and other remote sensing tools have not been fully embraced.
- iv. Limited database infrastructure due to inadequate resources to digitize old, historical data and records.
- v. Limited integration and interoperability between KIAMIS and other information systems

Opportunities

- i. establishment of a single source of truth and a supportive data governance framework.
- ii. Carry out census of agriculture on a scheduled basis and using standard sampling survey methods to improve data quality and reliability in liaison with KNBS and other actors.

- iii. Existence of agricultural digital systems and modern technologies for the collection and sharing of reliable agricultural data.
- iv. Availability of agricultural historical data and records for digitization.

2.2.2 Agriculture Information and Knowledge

Current Status

Agricultural information and knowledge are strategic resources for agricultural transformation, food and nutrition security, climate resilience, market access, extension service delivery, policy formulation and evidence-based decision-making. In the agricultural sector, information and knowledge exist in multiple forms, including but not limited to; research findings, technical manuals, extension messages, training materials, indigenous knowledge, farmer innovations, market information, climate advisories, policy briefs, audiovisual materials, field reports, lessons learned, statistical products, and practical experience generated across crops, livestock, fisheries, irrigation and cooperatives. Increasingly, agricultural information and knowledge systems are leveraging on AI/ML, robotics and other digital innovations to enhance information and knowledge generation, service delivery and decision-making across the agricultural value chain.

Kenya has a wide source base for agricultural information and knowledge. National and international research institutions, such as KALRO and CGIAR partners, lead the generation of “scientific” knowledge through trials on soil, seeds, pests, and climate adaptation, often conducted in collaboration with local farmers. Farmers themselves generate indigenous or experiential knowledge by observing weather patterns, undertaking farming through trial and error in their own fields. In the agricultural sector, the Agricultural Information Resource Centre (AIRC) has historically performed a central role in agricultural information and knowledge management. Its mandate has included collecting, processing, packaging, storing and disseminating agricultural information; documenting and publishing technical agricultural materials; supporting mass media-based extension through radio, video and publications; maintaining agricultural documentation and library services; and providing training and capacity building for agricultural service providers. These functions have

supported farmers, extension workers, researchers, policymakers and other agricultural stakeholders.

Other sources of agricultural information and knowledge include Agricultural Training Centres (ATCs), agricultural extension service providers, farmer organizations, private sector actors, development partners, media institutions, cooperatives, pastoralist and fisherfolk organizations, and farmers themselves. However, this information and knowledge are housed in various institutions, programmes, platforms and projects, with varying levels of documentation, validation, accessibility and use.

Agricultural information and knowledge are developed by experts drawn from AIRC, research institutions, extension agencies and NGOs through several methods, including the extraction and summarization of information from published materials, video documentation, radio programmes and public libraries, among others. The information and knowledge are disseminated to farmers via farmer-field days, demo plots, radio talk shows, extension leaflets, and mobile platforms (SMS, applications, hotlines). Private companies and projects complement this by packaging agronomic advice around demonstration farms, input guidance, and climate-adaptation tips tailored to key cash and food crops. Kenya has developed the national Knowledge Management Policy that recommends a package of institutional, technological, and cultural changes to make knowledge usable and to support a knowledge-based economy. In this regard, the agricultural information and knowledge management is expected to move beyond the passive storage of information to a structured system for knowledge generation, documentation, validation, dissemination, learning, reuse and institutional memory. This requires clear standards, coordinated institutional roles, sustainable financing, trained personnel, appropriate infrastructure, and functional linkages between knowledge producers and users at national, county and community levels.

Challenges

- i. Agricultural information and knowledge remain fragmented across public and private sector players, which creates duplication, weakens institutional memory and prevents the emergence of a single trusted national source of agricultural information

and knowledge.

- ii. Lack of a fully operational national agricultural information and knowledge repositories on agricultural publications, training materials, advisories, manuals, audiovisual content, research outputs, indigenous knowledge, farmer innovations, extension messages, grey literature, project reports and lessons learned for easy access and use.
- iii. Unsystematic documentation, archiving, updating and accessibility for reuse of agricultural information and knowledge generated especially through public investments, donor-funded projects, research programmes and field extension work. Consequently, valuable lessons are often lost when projects close, staff are transferred, or institutional priorities change.
- iv. Weak linkages between research, extension, training, communication and policy systems limit the translation of technical knowledge into practical, farmer-friendly advisory products. Research findings and technical reports are often produced in formats that are not easily understood or applied by farmers, pastoralists, fisherfolk, cooperatives and agribusinesses.
- v. There are inadequate standards and protocols for validating, approving, packaging, updating and disseminating agricultural information and knowledge. Many materials are not sufficiently translated into local languages, simplified for different literacy levels, adapted to different agro-ecological zones, or designed for women, youth, persons with disabilities, pastoralist communities, fisherfolk and marginalized groups. This exposes value chain actors to inconsistent, outdated, duplicated or unverified messages, particularly where multiple actors operate without harmonized technical guidance.
- vi. Indigenous knowledge, farmer innovations and local adaptation practices are not adequately captured, validated or integrated into formal agricultural knowledge systems. This limits the sector's ability to learn from local experience and community-based solutions.
- vii. The information and knowledge sharing within agricultural institutions remains weak. There are limited communities of practice, weak feedback loops, inadequate incentives for documentation, and insufficient mechanisms for peer learning between

national institutions, county governments, extension workers, researchers and farmers.

Opportunities

- i. Establishment of a national institution to undertake coordination of stakeholders, minimize duplication of efforts and build synergy around information and knowledge management.
- ii. The development of a comprehensive national agricultural information and knowledge repository to improve agricultural information and knowledge functions.
- iii. Strengthen the linkage between institutions and actors who generate, process, package, disseminate and consume information and knowledge. AIRC, with existing infrastructure, can be supported to revamp the repackaging of technical agricultural information and knowledge into accessible formats such as radio programmes, videos, print materials, infographics, local language advisories, extension guides, training modules, e-learning products, call-centre scripts and mobile-friendly knowledge products.
- iv. Establishment of communities of practice to support information and knowledge management.
- viii. Leveraging on public-private-research partnerships to strengthen information and knowledge generation, content validation, dissemination channels, media production, digital knowledge products, agricultural training and innovation uptake.

2.2.3 Digital Agriculture

Status of Digital Agriculture

Digital agriculture represents a paradigm shift in how food systems function, driven by the integration of digital technologies across the entire agricultural value chain. It is enabled by digital infrastructure such as connectivity, data systems, cloud platforms, and geospatial tools, and supported by digital innovations and solutions like mobile advisory services, precision agriculture, remote sensing, AI, IoT, digital finance, e-commerce, and traceability systems that enhance access to information and strengthen agricultural performance.

a) Digital Agriculture infrastructure

Kenya has made progress in establishing foundational digital public infrastructure relevant to agriculture, including sector information systems, government data platforms, digital identification systems, digital payment systems and shared government ICT infrastructure. Digital agriculture infrastructure comprises of physical, digital, and institutional systems that support interoperable data systems and security, communication networks, end-user devices, digital platforms and reliable energy systems.

i. Interoperable data systems and security

Within the agricultural sector, the Kenya Integrated Agriculture Information Management System (KIAMIS) provides an overarching platform intended to support integration of agricultural data generated by national and county governments and other actors. Several agricultural and agriculture-related systems exist across crops, livestock, fisheries, irrigation, cooperatives, meteorology, trade, finance and county governments. Emerging efforts toward interoperability include the use of shared data standards, metadata protocols, registries, digital identifiers, and system integration approaches to enable controlled data exchange across institutions, but these efforts remain weak due to a lack of sector-wide governance that supports a more integrated agricultural digital ecosystem.

At the computing infrastructure level, digital agriculture increasingly depends on secure and scalable computing systems that support data capture, storage, processing, analytics and decision support. These include cloud computing infrastructure, government and private data centres, servers, application programming interfaces (APIs), geospatial systems, remote sensing platforms, artificial intelligence and machine learning tools, and analytical dashboards capable of generating insights for planning, extension, risk management, early warning and market intelligence. These capabilities provide the foundation for moving from fragmented data storage toward predictive, real-time and intelligence-driven agricultural services.

Data security is central to trust and resilience in digital agriculture systems. Security considerations include privacy protections, informed consent, cybersecurity safeguards, identity and access management, encryption, audit trails, secure data exchange protocols, backup and recovery systems, and physical security of data centres and critical infrastructure. Resilience considerations include business continuity arrangements, redundancy, disaster recovery, uptime reliability and protection against cyber threats, data loss and service disruptions. In addition, data governance is defined by national policy, law and regulatory frameworks which are cross-cutting in data, information and knowledge as well as digital agriculture.

Despite this progress, institutional interoperability remains limited, computing infrastructure for advanced analytics remains inadequate in some institutions, and implementation of common standards, secure data exchange protocols and sector-wide governance arrangements is still evolving.

ii. Communication networks and end-user devices

Kenya has continued to expand communications infrastructure through mobile broadband networks, fibre-optic backbone connectivity and last-mile access investments. National fibre infrastructure, private fibre networks and expanding 4G coverage, alongside gradual 5G rollout in selected areas, have improved the environment for the delivery of digital services. The country also has a competitive market of licensed internet service providers and mobile network operators that support broadband access for individuals, institutions and enterprises. Communication networks are increasingly supporting agriculture-specific digital applications such as remote advisory services, digital finance, geospatial monitoring, precision agriculture, digital traceability and early warning systems. In addition to conventional broadband and mobile services, digital agriculture is increasingly enabled through Internet of Things (IoT) technologies, including connected sensors, automated weather stations, GPS-enabled devices, telemetry tools, smart irrigation systems, drones and remote sensing technologies that support monitoring, data collection and precision decision-making.

As of 2023, internet penetration in Kenya stood at 32.7%, with 17.86 million users and 63.94 million active mobile connections (KIPPRRA, 2024) and total mobile subscriptions reached approximately 73.2 million connections, translating to a mobile penetration rate of about 139.7%; smartphone penetration further increased to approximately 83.5% by mid- 2025, broadening potential access to digital services (CA, n.d.). This expanding connectivity provides an important foundation for digital agriculture service delivery. End-user devices serve as the last-mile interface through which agricultural value chain actors access digital services. Basic mobile technologies continue to support inclusion through voice, SMS and USSD channels, while smartphones increasingly support application-based advisory, digital transactions and multimedia knowledge services.

However, access to connectivity and devices remains unequal. Rural connectivity gaps, affordability constraints, poor network quality in underserved areas, limited access to smart devices, and inadequate maintenance and replacement of digital equipment continue to affect uptake. Access to agriculture-oriented IoT equipment and precision devices remains limited due to cost, technical complexity and weak support ecosystems.

iii. Digital platforms

Several digital platforms in Kenya have reinforced the digital agriculture ecosystem and improved service quality. Examples include agricultural mechanization platforms such as Hello Tractor that use mobile and GPS-enabled systems to improve access to equipment. Digital finance and insurance platforms, including FarmDrive, Apollo Agent and Digifarm. Digital agricultural marketing platforms that link farmers to markets include Twiga Foods and M-Farm. Digitized auction systems such as the Mombasa Tea Auction and the Nairobi Coffee Exchange have enhanced price discovery, traceability, and buyer–seller coordination (UNCTAD, 2022; GSMA, 2021).

Other digital traceability and innovations platforms use AI, blockchain, and mobile communication tools for improving quality assurance, disease surveillance and subsidy targeting across key value chains (OECD, 2023). Farmers' advisory platforms include KALRO mobile applications and the Kilimo Call centre. Whereas Kenya has in existence

several platforms that offer agricultural related services, these suffer from low outreach and adoption due to inadequate awareness and digital literacy. In addition, reliability with regard to content, fragmented platforms, cost of access, affordability, subscription fees/costs, weak business models and sustainability persist.

iv. Supporting energy systems

Digital infrastructure ranging from cloud data centers to widespread telecommunications networks requires highly stable, scalable, and resilient energy systems to maintain continuous uptime. These systems must handle fluctuating power demands while ensuring high availability through redundancy, such as uninterruptible power supplies (UPS), backup generators, and smart grid integration. Because digital transformation is inherently energy-intensive, the modern standard is shifting toward sustainable power sources that reduce carbon footprints while simultaneously lowering operational costs and increasing energy security. Kenya has emerged as a leader in leveraging its abundant renewable energy resources to power its growing digital economy.

The Kenya Power and Lighting Company (KPLC) national connectivity has expanded significantly, reaching over 76% access by 2026 (IEA, 2026). There is also the existence of green energy solutions such as the use of solar energy and wind power. Despite the connectivity and availability of green energy solutions, challenges related to grid stability, high electricity and solar acquisition costs and inadequate electrification in some parts of the country negatively affect digital agriculture infrastructure. This necessitates increased investment in energy and power systems to address power outages and connectivity.

b) Digital Innovations and Solutions

Kenya targets to have 1,450 Digital innovation Hubs (one per Ward level) through the Ministry of Information, Communications & the Digital Economy (MoICDE), while the County Government Act 2012 stipulates that each county shall have a GIS lab. By September 2025, 15 community-based Digital Innovation Hubs had been completed. FAO is supporting counties to establish GIS labs and by 2025 Vihiga County had a complete model GIS Centre. Both the public and private sector are leveraging digital technologies for improved agri-

business development and agricultural service delivery to raise agricultural productivity, create more good jobs and ultimately improve rural incomes. Thirty percent of Africa's Disruptive Agricultural Technology startup firms (DATs) are based in Kenya (Kim et al., 2020), and Kenya ranks second among African countries in the 2021 Global Startups Ecosystem Index (Startup Blink, 2022).

These digital services continue to support farmers across production, markets, finance and innovation by addressing persistent constraints such as limited access to agronomic information, inputs, credit, insurance and reliable market opportunities. This has improved productivity, resilience and inclusivity (FAO, 2022; World Bank, 2023). Extension and advisory services are central to this effort, providing guidance on crops, livestock, climate- smart practices, and post-harvest management (IFAD, 2021).

Challenges

- (i) Limited rural broadband infrastructure, unequal internet connectivity and high cost of internet coupled with high cost of end-user devices, sensors, GPS tools and precision agriculture equipment, restricts agricultural value chain actors, especially farmers in rural areas from access to digital agricultural services.
- (ii) High cost of energy solutions, low connectivity and grid instability especially in rural areas are limiting digital agriculture adoption and use.
- (iii) Weak adoption of common interoperability standards, digital identifiers, metadata protocols and secure data exchange mechanisms limits seamless integration among public and private sector systems. For instance, limited interoperability of KIAMIS with other agricultural data and information systems due to inadequate appropriate technologies such as DPI, formal standardization of hardware and data frameworks to promote data exchange with public and private actors.
- (iv) Inadequate cybersecurity preparedness, limited data stewardship capacity and

weak institutional safeguards expose agricultural systems to risks related to unauthorized access, data misuse, service disruptions and loss of trust.

- (v) Limited leveraging of the established digital hubs to support agriculture innovations and offer digital agriculture solutions.
- (vi) Limited computing capacity to support advanced agricultural data analytics and use cases, and accelerating data innovations through private sector engagement.

Opportunities

- (i) Adoption of green energy solutions
- (ii) Strengthening of an e-commerce platform including operationalization of KOMEX.
- (iii) Promote use of Digital Public Infrastructure (DPI) approaches and trusted shared registries to support scalable, interoperable and inclusive digital agriculture services.
- (iv) Leveraging on innovative financing to support digital agriculture.

2.2.4 Capacity for Agricultural Data, Information and Digital Agriculture

Institutional, human, physical, operational, and financial capacities are foundational enablers for effective management and use of agricultural data, information and knowledge, as well as for adoption and scaling of digital agriculture. Equally important is the capacity of farmers, pastoralists, fisherfolk, cooperatives and other agricultural value chain actors to effectively access, understand and utilize digital technologies and digitally enabled services. Strengthening these capacities is therefore critical for building a coherent, integrated, inclusive and scalable digital agriculture ecosystem across Kenya.

a) Institutional capacity

Institutional capacity for data, information and knowledge management (DIKM) and digital agriculture in Kenya is constrained by weaknesses in human resources, physical and operational resources, and financial resources.

Human resource capacity remains weak both within formal institutions and across the wider market and practice. Across sector ministries, departments, agencies and county agricultural offices, there is a shortage of qualified technical staff in data management, ICT, digital agriculture, and knowledge management. While some data and ICT staff are seconded from the Ministry of ICT, this arrangement is not supported by adequate in-house capacity development aligned with specific workloads, technical needs, and continuity. Critical skills for functions such as data engineering, media technical editing, video documentation, materials archiving, mass-media and multimedia production, content translation, and knowledge brokering are not routinely found within agricultural ministries or county offices. This shortage is brought about by the inability to attract and retain technical staff for digital hubs and GIS labs, as well as qualified trainers and support staff for digital agriculture, especially in non-urban and marginalized areas where salaries and working conditions are less attractive.

Training budgets in both national and county agricultural offices are limited, constraining staff re-skilling and retooling in emerging fields such as data analytics, artificial intelligence, GIS, remote sensing, and digital platform design. This hinders the development of specialized career pathways in digital agriculture and limits the professionalization of staff assigned to data and ICT roles without relevant training. Additionally, tools and equipment that support data collection, such as digital weighing scales, moisture meters, livestock weight bands, lactometers, and Mid-Upper Arm Circumference (MUAC) tapes for nutrition-related data, are often in low supply, limiting the quality, timeliness, and reliability of agricultural data and information generated at the sector level.

Financially, institutional capacity is constrained by inadequate and unstable funding streams. Public financing for agricultural research and information systems is often project-based and short-term, leading to fragmented initiatives and weak integration of outputs into national and county digital platforms. The case of the Agricultural Information Resource Centre (AIRC) illustrates the financial constraints facing DIKM institutions. Despite its strategic mandate as the national reference centre for agricultural information and knowledge management, AIRC has historically suffered from limited and irregular funding, which has

constrained its staffing, modernization of media production, transport for field documentation, and investment in ICT and digital infrastructure. The AIRC revolving fund, intended to support the commercialization and sustainability of information products, has not been sufficiently capitalized, limiting its ability to generate reliable income streams. As a result, AIRC remains heavily dependent on budgetary allocations and project funding that are vulnerable to fiscal pressures and policy shifts.

At the national government level, recurrent budget allocations for agricultural data, ICT, and information management are limited, and capital budgets for digital infrastructure, GIS labs, digital hubs, and data platforms are often inadequate or inconsistently programmed. At the county level, financial constraints are more pronounced, as counties face competing priorities and limited own-source revenues. Public financing for agricultural research and information systems is frequently project-based and externally funded, without building long-term institutional capacity or sustainability. This undermines continuity and integration of digital systems across county boundaries.

Additionally, agricultural training institutions such as AHITI, KSA, Bukura Agricultural College, and ATCs have limited capacity to deliver training in data collection and management, knowledge creation and sharing, development of digital application platforms, or ICT-enabled extension. Curricula remain heavily oriented to traditional production and extension methods, with only minimal coverage of data-driven agriculture, digitalization, and related skills. Financial constraints further limit curriculum reform, staff re-skilling, and investment in data and ICT infrastructure, especially in county-managed ATCs. Similar constraints are observed in research institutions such as KALRO and universities, which generate substantial agricultural data but often lack the internal capacity and resources to manage, curate, and integrate these data into national and regional digital agriculture systems.

b) Human resources

In the market and practice, the supply of human resources with combined expertise in agriculture, data governance, and public-sector digital service delivery is limited. Many private digital agriculture service providers depend on external expertise or short-term project

staff, and some lack a deep understanding of farmers' real needs, leading to solutions that are not easily accessed or used by smallholders. Training opportunities in the country that are relevant to DIKM and digital agriculture include short courses and degree programs at universities, research institutions, and specialized centers such as KALRO, ILRI, and ICIPE. However, these are often concentrated in Nairobi and a few major towns, and do not systematically address the needs of county extension staff, farmer-based organizations, or community-based digital service providers. As a result, the human resource pipeline for DIKM and digital agriculture remains narrow, with particular gaps in rural and marginalized areas, among women, and in pastoral and fisherfolk communities.

c) Farmer and Agricultural Value Chain Actor Capacity

The successful adoption of digital agriculture depends not only on the availability of digital technologies but also on the capacity of farmers and other agricultural value chain actors to effectively utilize them. Although Kenya has experienced rapid growth in digital technologies and mobile connectivity, significant disparities remain in digital literacy, awareness, affordability and access, particularly among smallholder farmers, pastoralists, fisherfolk, women, youth, persons with disabilities and communities in Arid and Semi-Arid Lands (ASALs).

Many farmers continue to rely on traditional extension approaches and have limited knowledge of available digital advisory services, digital financial products, e-commerce platforms, traceability systems and other emerging digital solutions. Limited digital skills, inadequate access to smartphones and internet services, language barriers and low confidence in digital technologies continue to constrain adoption and effective utilization of digital agriculture services. Farmer organizations, cooperatives and producer groups similarly require enhanced capacity to support digital service delivery, data management, digital marketing and value chain coordination.

Strengthening digital literacy, promoting continuous farmer training and integrating digital competencies into agricultural extension services will be essential to accelerate adoption, improve productivity and ensure that digital transformation delivers tangible benefits to

agricultural value chain actors.

d) Physical and operational resources

Physical and operational resources which include land, buildings, warehouses, offices, and equipment are essential for the effective generation, management, and dissemination of agricultural data, information, and knowledge, as well as for the deployment of digital agriculture services. Across the sector, there is a general shortage of physical and operational resources. The absence of these resources' compromises DIKM and the delivery of digital agriculture services.

In addition, there is an inadequate provision of ICT equipment such as laptops, tablets, and smartphones for field and office use, often with limited connectivity and outdated software. Modern mass-media equipment for audio-visual production, radio broadcasting, and digital content creation is also lacking or expensive to maintain, constraining the production of high-quality, locally relevant agricultural information products. Overall, the absence of integrated, well-resourced physical and operational systems hinders the sector's ability to move towards a modern, data-driven digital agriculture model.

e) Financial capacities

For the private sector and non-state actors, financial capacity is shaped by the availability of venture capital, donor funding, and commercial revenue. Many digital agriculture service providers depend on short-term pilots and grants, which limit their ability to scale services, integrate with public systems, and achieve long-term financial sustainability. Some service providers are not well aligned with farmer-based organizations or local markets, leading to solutions that are not financially sustained.

Challenges

- i. Shortage of skilled human resources in data, information and knowledge management and digital agriculture across national and county institutions and the private sector.

- ii. Low levels of digital literacy, awareness and technical capacity among farmers, pastoralists, fisherfolk, cooperatives and other agricultural value chain actors limit the adoption and effective utilization of digital agriculture technologies and services.
- iii. Inadequate physical and operational resources, including field tools, ICT equipment, and specialized facilities such as GIS centers and data centers, weaken the quality and reliability of agricultural information.
- iv. Limited and unpredictable financial resources at national and county levels, coupled with dependence on donor-funded projects that constrain long-term investment in DIKM and digital agriculture systems.
- v. AIRC's financial capacity remains weak and limited alternative revenue-generation models constrain its ability to function effectively as a central node in Kenya's agricultural information and digital agriculture ecosystem.

Opportunities

- i. Review agricultural TVETs and university and extension curricula to incorporate data literacy, digital agriculture, GIS, artificial intelligence and ICT enabled extension, thereby building a stronger pipeline of skilled personnel.
- ii. Strengthen continuous digital literacy and capacity-building programmes for farmers, pastoralists, fisherfolk, cooperatives and other agricultural value chain actors.
- iii. Leverage extension services, farmer organizations, cooperatives and digital innovation hubs as platforms for scaling digital agriculture knowledge and adoption.
- iv. Expand public-private partnerships to co-finance digital infrastructure, data platforms, and farmer-centric digital services, reducing over-reliance on donor-funded pilots.

2.2.5 Policy, Legal and Institutional Framework

Status of Policy, Legal and Institutional Framework

a) Policies

i. African Union Digital Agriculture Strategy 2024 – 2030

The AU Digital Agriculture Strategy (DAS) aims to guide AU Member States and Regional Economic Communities (RECs) in using digital technologies to improve productivity, resilience, and inclusiveness across food systems. The strategy emphasizes the need for coordinated action, investment, and effective partnerships to shift from isolated success stories to scalable, integrated solutions that can reach millions. Kenya has not domesticated the AU strategy due to the absence of a policy framework to support the proposed digital agriculture interventions.

ii. Vision 2030 and Medium-Term Plan IV (2023–2027)

Vision 2030 identifies ICT and innovation as key enablers of economic growth and productivity, including in the agricultural sector. The Medium-Term Plan IV prioritizes digital transformation, data-driven governance, agricultural productivity, and value chain development. However, digital interventions in agriculture remain fragmented and insufficiently coordinated, limiting integration of value chains and achievements envisioned under the Plan.

iii. Sessional Paper No. 2 of 2021 on Agricultural Policy

Sessional Paper No. 2 of 2021 provides the overarching framework for agricultural development. The Policy recognized information and data management as critical and therefore seeks to empower agricultural value chain actors through effective communication, storage and sharing of information. The policy proposes conducting an agricultural census every ten years. It also promotes the use of ICT in crop, livestock, and fisheries services. In addition, the policy supports the development of communication strategies to improve information sharing, public education, and emergency response within the agricultural sector. It further advocates for the establishment and management of an agricultural data and information database to support planning, research, and effective

programme implementation.

The proposed interventions have not been achieved due to the lack of a policy framework to guide on digital agriculture and provide responsibility for overall data and information management.

iv. Livestock Policy 2020

The policy recognizes quality and timely livestock data and information as essential for planning and development of the sector. The policy provides that the government support a comprehensive livestock census to provide baseline data for planning and development of the sector and establish a livestock data center to manage all livestock data and information. In addition, it provides for livestock identification and traceability. The sector still does not have a coordinated mechanism for data collection, analysis, storage, retrieval and dissemination. The low disaggregation of available data on livestock players makes analysing social inclusion trends challenging.

v. Fisheries Policy 2020

The policy provides for the Government to establish a database which holds information on fish stocks, fish production, marketing, credit and investment opportunities and make it available to the users and promote information, communication and outreach programmes. The fisheries datasets have not been integrated into a national agricultural database.

vi. National Cooperative Policy 2019

The policy promotes the adoption of ICT in cooperatives such as e-co-op platforms to enhance service delivery to the cooperative movement and integration of the cooperatives data and statistics into the national data.

vii. Irrigation Policy 2020

The policy provides for the development and maintenance of an irrigation database and

integrates systematic monitoring and evaluation. The irrigation database has not been digitized.

viii. Agricultural Sector Transformation and Growth Strategy (ASTGS) 2019–2029

The ASTGS recognizes digital agriculture as crucial to agricultural transformation. The strategy targets to onboard 1000 farmer-facing SMES to digital platforms to provide services to farmers; set up an open data platform for national and county-level data; digitization of subsidy programmes to E-voucher and automation of the buy/sell decisions of the Strategic Food Reserves. Despite this emphasis, implementation has been constrained by the absence of a unified digital agriculture policy framework and lack of an open data platform for national- and county-level data.

ix. Kenya Digital Economy Blueprint (2019)

The Kenya Digital Economy Blueprint promotes the adoption of digital government, integrated platforms, data-driven decision-making, and interoperability across public systems. In the agricultural sector, data and information systems remain fragmented, with limited interoperability, constraining evidence-based planning, traceability, and market transparency.

x. Kenya National Digital Master Plan 2022–2032

The Kenya Digital Master Plan is a digital blueprint that seeks to leverage ICT to accelerate the economic growth of the country. It provides for clear intervention including support for digital innovation and enterprise development including in the agriculture sector through the establishment of a national commodity exchange. This blueprint does not specifically recognize the challenges facing digital agriculture.

xi. Kenya Artificial Intelligence Strategy 2025-2030

The strategy's key objectives include establishing a robust governance framework for AI;

enhancing adoption in key sectors such as agriculture, security, healthcare, education, and public service delivery; and fostering the growth of local AI ecosystems. Agriculture has not fully embraced AI due to inadequate/low adoption of the Kenya AI Strategy.

xii. National ICT Policy 2019

The Kenya National ICT Policy provides the overarching framework for the development, deployment, and use of information and communication technologies across the economy. It aims to promote digital infrastructure, innovation, data management, cybersecurity, and universal access to ICT services. In the agriculture sector, the policy provides an enabling environment for digital platforms, information systems, and technology-enabled service delivery. However, it does not provide dedicated provisions for digital agriculture, resulting in limited guidance on agricultural data governance, interoperability, digital extension services, and coordinated adoption of emerging technologies.

b) Legal framework

Kenya has established a relatively strong constitutional and legislative foundation that supports the advancement of digital agriculture and information and knowledge management (IKM). The Constitution of Kenya provides overarching principles that are directly relevant to these domains, including the right to access information (Article 35), the right to privacy (Article 31), equitable access to services (Article 6), and public participation (Article 10). These provisions collectively enable the development of inclusive, transparent, and citizen-centered digital agricultural systems while safeguarding farmer data and promoting participatory governance.

Existing legal provisions implicitly support knowledge generation, storage, and dissemination but lack explicit frameworks tailored to agricultural data, information and knowledge systems. There is inadequate policy guidance on data standardization, information and knowledge repositories, intellectual property in digital agriculture, and open data ecosystems, which limits the scaling of innovations and the efficient use of agricultural information.

A range of sectoral laws and policies further operationalize these constitutional guarantees. The Access to Information Act facilitates the availability and dissemination of agricultural data, information and knowledge resources, supporting evidence-based decision-making by farmers, researchers, and policymakers. The Data Protection Act establishes principles for lawful processing, storage, and sharing of personal data, which is critical for digital farmer registries, e-extension platforms, and agri-tech services. In addition, the Computer Misuse and Cybercrimes Act and the Kenya Information and Communications Act provide legal backing for cybersecurity, digital infrastructure governance, and safe use of ICT systems within agriculture and knowledge ecosystems.

c) Institutional framework

The responsibilities for managing agricultural data are spread out among various institutions. The Ministry of Agriculture and Livestock Development takes the lead in coordinating the collection, management, and application of agricultural data. Meanwhile, KNBS plays a key role in establishing standards for agricultural statistics, aligning methodologies, and ensuring that the official agricultural data is both high-quality and consistent within the national statistical framework. County governments are tasked with gathering and reporting data on agricultural production and service delivery related to devolved functions. Additionally, KALRO is responsible for generating research data. Regulatory bodies, such as AFA and the KEPHIS, are also involved in collecting and managing agricultural data.

Challenges

- (i) The sector lags behind in the prioritization and implementation of national policies related to agricultural data, information and knowledge.
- (ii) Agricultural data is collected by many institutions based on their legal mandate without a framework for coordination, collaboration and the policy, regulation, guidelines and standards for DIKM and digital agriculture.
- (iii) Absence of clear legal framework dedicated to agricultural DIKM and digital agriculture.

Opportunities

- (i) Develop agricultural data, information and knowledge and digital agriculture in line with the existing enabling policy and legal landscape.
- (ii) Reform and strengthen AIRC as a national hub by investing in modern media production, digital content platforms, and a Fund to support the commercialization and sustainability of information products.
- (iii) Stronger linkage between research, DIKM and users to improve adoption of innovations and strengthen evidence-based agricultural development.

2.2.6 Cross-Cutting Issues

a) Data governance, privacy and security

In Kenya, data governance, privacy and security in the agricultural sector are evolving but remain unevenly implemented. The Data Protection Act, 2019, provides a legal foundation for managing personal data, requiring lawful processing, informed consent, access controls and accountability, which is increasingly relevant for digital agriculture platforms handling farmer profiles, geospatial records, production data, transaction records and sensitive commercial information. However, governance arrangements for non-personal agricultural data, such as clear protocols on data ownership, access and sharing, licensing, and benefit-sharing among farmers, cooperatives, governments and private firms, remain weak and fragmented, constraining innovation and responsible data use.

At the same time, cybersecurity of platforms and systems is a major concern, as many digital agriculture tools and government data platforms face limited technical safeguards, patchy connectivity and weak internal security practices, heightening risks of data breaches and unauthorized access. Privacy and protection of data are further undermined by low awareness of data-protection requirements among farmers, field agents and some local implementers, as well as limited enforcement capacity by the Office of the Data Protection Commissioner in rural and agricultural contexts. There is also growing discussion on ethical use of data and AI, including fairness, transparency and inclusivity, to ensure that

AI-driven advisory tools, credit-scoring models and remote-sensing applications benefit smallholders rather than entrenching bias or excluding marginalized groups.

Challenges

- i. Weak or ambiguous governance frameworks for data ownership, access and sharing of non-personal agricultural data, limiting clarity on who owns, controls and benefits from shared datasets.
- ii. Limited technical cybersecurity safeguards for digital agriculture platforms and government data systems increase vulnerability to breaches and misuse.
- iii. Low awareness and limited enforcement of data protection and privacy provisions in rural and agricultural settings, especially among smallholders and frontline implementers.
- iv. Inadequate capacity among institutions and practitioners to interpret and apply data-governance and AI-ethics principles in practice.
- v. Risk of unethical or biased use of data and AI, particularly in credit-scoring and advisory systems, which may exclude women, youth and marginalized groups if not deliberately designed for fairness.

Opportunities

- vi. Encouraging adoption of AI-ethics and fairness standards in digital agriculture, ensuring that AI-driven tools are transparent, auditable, inclusive and aligned with smallholder needs.
- vii. Deepening farmer participation in data-governance dialogues so that ownership and access arrangements reflect the realities and priorities of smallholders, cooperatives and other producer groups.

b) Social Inclusion and Equity in Agricultural Data, Information, and Digital Agriculture

Participation in agricultural data, information, and digital agriculture in Kenya remains uneven across key groups. Women, despite being central to agricultural production, are often excluded from agricultural data, information and digital services and decision-making.

Youth engagement in technology-based agriculture is growing, but it is constrained by limited access to finance, high costs of digital tools and connectivity, inadequate digital skills and training, lack of certification frameworks, restricted access to land and collateral, and weak institutional support for scaling agritech enterprises.

Persons with disabilities (PWDs) and marginalized communities, including those in ASAL regions, continue to face challenges related to accessibility, affordability, limited connectivity, and lack of inclusive digital solutions and user-friendly digital solutions such as assistive technologies, local language interfaces, and low-literacy-friendly tools further limit their ability to effectively access and benefit from digital agriculture.

Challenges

- i. Limited access to digital tools due to high cost especially affecting youth and women.
- ii. Low digital capacity and skills gaps due to low digital literacy, inadequate training, and the absence of standardized certification systems for digital agriculture competencies.
- iii. Digital exclusion and inequality of women, PWDs, and marginalized groups from digital agriculture services due to biased targeting approaches and socio-economic barriers.
- iv. Lack of inclusive and scalable DIKM systems that are user-friendly and tailored to diverse user needs.

Opportunities

- i. Leveraging on the rising youth interest and the expansion of agritech innovation and entrepreneurship.
- ii. Scale up the delivery of digital agriculture services through the high mobile phone usage
- iii. Use of emerging inclusive technologies such as AI/ML and blockchain to reach underserved populations.
- iv. Integration of digital skills training through education and county-level innovation initiatives.

2.3 Summary of Key Issues and challenges

a) Agricultural Data Ecosystem:

Key Issue/Challenge: *Fragmented data collection and management with limited interoperability among platforms leading to inadequate, low-accuracy agricultural data.*

The primary causes of this challenge stem from institution specific data models and silo-based management systems that foster non-harmonized collection and reporting approaches, resulting in inconsistent, duplicated, or conflicting datasets and the absence of a single source of truth. Compounding this is the heavy reliance on administrative data plagued by gaps due to infrequent surveys, incomplete digitization of field-level collection, and limited adoption of modern tools such as satellite imagery, GIS, and remote sensing. Furthermore, the lack of comprehensive, scheduled agriculture censuses has prevented the establishment of a robust master sampling frame and baseline data, while inadequate infrastructure and resources hinder the digitization of historical records, perpetuating overall data inadequacy.

b) Agriculture Information and Knowledge

Key Issue/Challenge: *Fragmentation and weak coordination resulting in dispersed, poorly documented, and inaccessible agricultural information and knowledge.*

This fragmentation arises from the absence of a centralized national repository, leading to duplication among public and private actors and the erosion of institutional memory, with knowledge from sources like KALRO, development partners, and academia remaining unsystematically documented, archived, or updated. Weak linkages between research, extension, training, and policy systems further impede the translation of technical outputs into practical, farmer-friendly advisories, exacerbated by inadequate standards and protocols for validation, packaging, and dissemination in accessible formats, including local languages and adaptations for diverse agro-ecological zones, genders, and marginalized groups. Additionally, indigenous knowledge and farmer innovations are insufficiently captured or integrated, while limited communities of practice, feedback loops, and incentives constrain internal sharing and peer learning within institutions.

c) Digital Agriculture

Key Issue/Challenge: Inadequate adoption of digital technologies due to high costs, limited literacy, poor infrastructure, and support systems.

Key impediments include persistent rural broadband deficits, high costs of internet access, end-user devices, sensors, and precision equipment, as well as grid instability and elevated energy expenses that restrict access for smallholder farmers and value chain actors. Interoperability challenges persist due to weak adoption of common standards, digital identifiers, and secure data exchange protocols, notably limiting integration of platforms like KIAMIS with broader systems. Additionally, inadequate cybersecurity measures, data stewardship capacities, and institutional safeguards heighten risks of breaches and erode trust, while low platform outreach stems from insufficient awareness, fragmented services, unsustainable business models, and underleveraging of digital innovation hubs to deliver scalable solutions.

d) Capacity for Agricultural Data, Information and Digital Agriculture

Key Issue/Challenge: Insufficient human, equipment, and financial capacities hinder data, information, and digital agriculture management.

Capacity shortfalls are evident in the scarcity of qualified personnel skilled in agriculture data management, ICT, knowledge brokering, and digital agriculture across the sector ministries, county agriculture departments, and private agricultural service providers, compounded by low digital literacy among farmers and users, and difficulties in attracting/retaining talent to rural digital hubs and GIS labs. Physical and operational deficiencies include inadequate field tools, ICT devices such as laptops and tablets, and specialized facilities, which undermine agricultural data quality and service delivery. Financial constraints manifest in unstable, project-dependent funding that disrupts long-term investments, particularly affecting institutions like AIRC, alongside outdated training curricula in agricultural TVET that fail to address emerging needs in data analytics, AI, and ICT-enabled extension.

e) Policy, Legal and Institutional Framework

Key Issue/Challenge: Weak, non-comprehensive frameworks with overlapping mandates impede digital agriculture rollout.

The challenges originate from incomplete domestication and implementation of key policies, such as the AU Digital Agriculture Strategy, Vision 2030, Sessional Paper No. 2 of 2021, and sector-specific frameworks for crops, livestock, fisheries, cooperatives, and irrigation, which propose critical interventions like censuses, databases, and ICT promotion but lack dedicated digital agriculture guidelines and accountability mechanisms. Overlapping institutional mandates among ministries and counties, coupled with insufficient coherence in agricultural data governance, privacy enforcement under the Data Protection Act, and alignment with national ICT blueprints, create regulatory gaps. This results in fragmented execution, limited interoperability, and unfulfilled targets like open data platforms and digitized subsidy support programmes outlined in the Agricultural Sector Transformation and Growth Strategy.

f) Cross-cutting Issues

Key Issue/Challenge: Persistent gaps in data governance, privacy, security, and social inclusion that undermine the DIKM and Digital Agriculture ecosystem.

These issues arise from ambiguous rules governing the ownership, sharing, and governance of non-personal agricultural data, alongside weak cybersecurity frameworks and enforcement, which expose systems to unauthorized access, misuse, and disruptions, further eroding stakeholder trust. Low awareness of data protection rights in rural areas, coupled with risks of bias in AI-driven tools, exacerbates vulnerabilities, while high costs and poor accessibility of digital solutions systematically exclude women, youth, persons with disabilities, pastoralists, and fisherfolk. The absence of inclusive design standards and user-friendly interfaces perpetuates inequities, hindering equitable benefits across the agricultural data, information, and digital ecosystem.

CHAPTER THREE: POLICY DIRECTION AND INTERVENTIONS

3.1 Overview

The Kenya Agricultural Data, Information and Digital Policy positions agricultural data, information, knowledge systems and digital technologies as strategic enablers for agricultural transformation, addressing systemic challenges of data fragmentation, weak information and knowledge management systems, infrastructure gaps, capacity constraints, and institutional coordination. This Chapter articulates the overall objective of creating an integrated, interoperable agricultural data, information, knowledge and digital agriculture ecosystem alongside six specific objectives spanning data management, information and knowledge systems, digital agriculture development, capacity building, enabling legal and institutional frameworks, and inclusive access to digital agricultural services.

3.2 Objectives of the Policy

3.2.1 Overall Objective

The Kenya Agricultural Data, Information and Digital Policy aims to provide an enabling environment for a well-coordinated, integrated and interoperable agricultural data, information and knowledge ecosystems, as well as the adoption of inclusive and sustainable digital innovations to accelerate Kenya's agricultural sector growth and transformation.

3.2.2 Specific Objectives

The specific objectives of the Policy are to:

- i. Establish a well-coordinated and interoperable agricultural data ecosystem to support the collection of reliable data, routine updates, data analytics, data sharing and data infrastructure management
- ii. Support processing, packaging, validation and dissemination of agricultural information and knowledge for both public and non-state actors within the agricultural sector;
- iii. Promote the development and scaling of the utilization of innovative digital agriculture technologies;
- iv. Strengthen institutional capacities, human resources, financial capacity and physical and operational resources of the national, county governments and private actors

- for the development and management of effective data, information and management as well as digital agriculture systems;
- v. Provide an enabling policy and legal framework to promote coordinated governance and utilization of agricultural data, information, knowledge and digital technologies as public goods across national and county levels
 - vi. Promote inclusive, equitable, and accessible digital agriculture systems to enhance the participation of all actors including women, youth, and persons with disabilities across agricultural value chains.

3.3 Guiding Principles

Implementation of this Policy will be guided by the following principles, aligned across its key themes of agricultural DIKM and digital agriculture

- (i) **Farmer-Centric and Demand-Driven Approach:** *Interventions in data, information, knowledge and digital agriculture will be designed around the real needs, priorities and capacities of farmers, pastoralists, fishers and agribusinesses, ensuring relevance across diverse agro-ecological and socio-economic contexts.*
- (ii) **Social Inclusivity, Equity, and Leaving No One Behind:** *Equitable access to data systems, digital platforms and services, and capacity programs will target all stakeholders including women, youth, persons with disabilities, pastoralists, ASAL communities, and marginalized groups, addressing digital divides through inclusive design and targeted training.*
- (iii) **Devolution and Subsidiarity:** *County governments will lead localized data collection, extension services, infrastructure deployment, and capacity building, with national coordination ensuring the establishment of national-level backbone infrastructure, standardization, interoperability, and integration consistent with Kenya's devolved governance framework.*
- (iv) **Interoperability and Integration:** *All systems, including data platforms, information hubs, infrastructure, services, and innovations, will adhere to the ICTA.6.002:2019 standards for seamless connectivity across government levels and sectors, discouraging silos and positioning the national agricultural data institution as the compliance hub.*

- (v) **Data Governance, Privacy, and Security:** the handling of agricultural data will comply with the Data Protection Act, 2019, incorporating GDPR-aligned principles for ownership, consent, minimization, and security across data management, services, and emerging AI applications.
- (vi) **Evidence-Based Decision Making:** Integrated data, information systems, and analytics will drive planning, M&E, performance management, and policy refinement, supporting ASTGS and Vision 2030 MTPs outcomes through real-time insights and scalable digital tools.
- (vii) **Innovation and Private Sector Engagement:** Public-private partnerships will foster AgriTech startups, research, and solutions in innovations, infrastructure, services, and capacity development, with safeguards for data sovereignty and equitable benefit-sharing.
- (viii) **Sustainability, Scalability, and Resilience:** Interventions will embed climate-responsive features (e.g., early warnings, adaptive tools, insurance and risk mitigation) across all themes, ensuring long-term viability through institutional anchoring, scalable infrastructure, and avoidance of unsustainable pilots.
- (ix) **Capacity Development and Institutional Enabling Environment:** Continuous training, digital literacy, and skills-building will support all data, information and knowledge management underpinned by robust legal, regulatory, and institutional frameworks that address cross-cutting issues like cybersecurity, gender equity, and emerging technologies.

3.4 Focus Areas, Policy Statements and Interventions

This section translates the Policy's six specific objectives into six interconnected focus areas addressing the systemic challenges identified in Chapter 2. Each area includes a targeted introductory statement outlining strategic focus, clear policy statements establishing government commitment, and devolution-aligned interventions specifying roles for National Government, County Governments and shared interventions mechanisms. Interventions respect CoK 2010 Fourth Schedule functions while ensuring interoperability (ICTA.6.002:2019), data governance (DPA 2019), and farmer-centric scaling across crops, livestock, fisheries, irrigation, and cooperatives.

3.4.1 Agricultural Data Management

Agricultural data management in Kenya remain constrained by fragmentation across institutions, where siloed systems, non-harmonized data models, and inconsistent standards for definitions, coding, and reporting result in duplicated and sometimes conflicting datasets, undermining the development of a single trusted source of agricultural data. In addition, the absence of a regularly scheduled agricultural census has hindered the development of a comprehensive master sampling frame and reliable baseline data, thereby affecting the quality and consistency of sample-based surveys. Modern data collection approaches such as satellite imagery, GIS, and remote sensing are still not fully mainstreamed. Although efforts such as the Big Data Centre exist, inadequate resources have slowed the digitization of historical records and the development of a fully integrated national agricultural database. Furthermore, while KIAMIS provides a central platform for agricultural data management, full interoperability with county systems, private sector platforms, and other national digital systems remains limited, hindering seamless data exchange and integration across the broader digital ecosystem. To address these constraints, the Government will establish a well-coordinated and interoperable agricultural data ecosystem to support the collection of reliable data, routine updates, data analytics, data sharing and data infrastructure management

Policy Statement

The Government will establish and maintain a coordinated, interoperable agricultural data management ecosystem that ensures reliable collection, standardization, integration, and secure sharing of data as a public good, creating a single authoritative source of truth for planning, early warning, targeting, and performance monitoring across all agricultural sub-sectors.

Policy Interventions

National Government will:

- i. Develop, maintain, and operationalize Kenya Integrated Agricultural Management Information System (KIAMIS) as the central national agricultural data and information management system interoperable with other data systems including the County

Government agricultural data and information systems, Integrated Population Registration System (IPRS), the Electronic Single Registry (ESR), Ardhi Sasa, and other e-government systems.

- ii. Coordinate aggregation and governance of multi-source agricultural data from Ministries, Departments and Agencies, County Governments, the private sector, and research institutions into a central KIAMIS database.
- iii. Lead periodic agricultural censuses and nationally representative sample-based agricultural surveys in collaboration with the Kenya National Bureau of Statistics and other relevant actors.
- iv. Develop and maintain national agricultural data standards and statistical compendia by defining key indicators, harmonized codes, reporting units, metadata standards, and standard operating procedures to ensure nationwide consistency, comparability, and interoperability of agricultural data.
- v. Promote adoption of modern agricultural data collection technologies and methods, including mobile-based systems, geospatial technologies, satellite imagery, remote sensing, and Internet of Things applications, to improve the timeliness, coverage, accuracy, and validation of agricultural data.
- vi. Implement national capacity-building programmes for County Governments, other public institutions and relevant stakeholders on agricultural data collection, management, analysis, interoperability, governance, and use of digital technologies.
- vii. Develop data governance frameworks that comply with the Data Protection Act, 2019, ensuring ethical data sharing and adherence to FAIR (Findable, Accessible, Interoperable, Reusable) principles.

County Governments will:

- i. Facilitate continuous registration and regular updating of farmers and other county-level agricultural actors, and collect county-level data on production, value addition, markets, service delivery, and other relevant agricultural activities for integration with KIAMIS.
- ii. Maintain dynamic county-level agricultural digital records, including digitizing historical records and continuous updating of administrative datasets, to support

- county planning and real-time sharing of data with national systems for aggregation and analysis.
- iii. Deploy modern digital tools and technologies, including mobile platforms, GIS, remote sensing, and Internet of Things applications, for routine field surveys, production and market data collection, validation, and gap-filling to reduce overreliance on administrative data.
 - iv. Establish county-level data verification, quality assurance, and validation mechanisms to improve the accuracy, completeness, consistency, and reliability of county agricultural datasets prior to national aggregation.
 - v. Promote use of standardized agricultural data for evidence-based county planning, budgeting, extension and advisory services, performance monitoring, traceability, market access, climate resilience, quality assurance, and investment decision-making.

Both National and County levels of Government will:

- i. Strengthen institutional coordination and interoperability of agricultural data systems to support harmonized collection, sharing, integration, and use of agricultural data, information, and knowledge generated by public institutions, county governments, the private sector, and research organizations.
- ii. Foster public–private–research partnerships for resource mobilization, technology deployment, data sharing, innovation, capacity building, and development of digital advisory and decision-support services.
- iii. Undertake joint monitoring, evaluation, and feedback mechanisms for data quality assurance, verification, continuous improvement, and adaptive learning, incorporating inputs from policymakers, farmers, researchers, private sector actors, and other data users.
- iv. Establish participatory feedback and learning mechanisms through which farmers, service providers, researchers, policymakers and other data users can contribute to improving agricultural data collection, management, governance, accessibility, and usability.
- v. Promote agricultural data as a public good by advancing open, trusted, and responsible data-sharing practices.

3.4.2 Agricultural Information, Knowledge Management and Communication System

Agricultural information and knowledge remain fragmented, poorly documented, and weakly shared across institutions, limiting the development of a trusted national knowledge base. Weak linkages between research, extension, and policy systems, together with inadequate standards for validation, packaging, and dissemination, reduce the accessibility, relevance, and effective use of agricultural information and knowledge by farmers and other value chain actors. This policy aims to support the processing, packaging, validation and dissemination of agricultural information and knowledge for both public and non-state actors within the agricultural sector.

Policy Statement

The Government will strengthen agricultural information, knowledge management and communication system through coordinated institutional arrangements and frameworks that systematically capture, validate, document, package, preserve, and disseminate agricultural information and knowledge generated by public institutions, county governments, research organizations, development partners, the private sector, and farming communities.

Policy Interventions

The National Government will:

- i. Establish and maintain a unified national agricultural information, knowledge and communication framework and a repository under KIAMIS to consolidate, digitize, index, preserve, and provide access to agricultural information and knowledge.
- ii. Coordinate agricultural information and knowledge generated by public institutions, county governments, research organizations, training institutions, development partners, private sector actors, and farmer organizations to reduce fragmentation, minimize duplication, and strengthen coherence across the agricultural knowledge ecosystem.
- iii. Develop standards, guidelines, and protocols for agricultural information and knowledge management covering documentation, validation, technical review,

approval, updating, translation, packaging, communication, archiving, and reuse in order to improve quality, consistency, credibility, and interoperability of agricultural information and knowledge products.

- iv. Support the production, validation and communication of agricultural information and knowledge through diverse formats and channels, including radio programmes, print materials, videos, infographics, local language advisories, extension guides, training modules, e-learning products, mobile-friendly content, and other appropriate media.
- v. Digitize and preserve historical agricultural publications, technical reports, manuals, extension materials, audiovisual content, project records, and other legacy knowledge resources to strengthen institutional memory and support long-term learning, benchmarking, and evidence-based decision-making.
- vi. Strengthen linkages among research, extension, training, communication, and policy systems, including the promotion of communities of practice to improve information and knowledge flows, feedback loops, and the effective translation of technical knowledge into advisory and decision-support services.
- vii. Promote the capture, validation, documentation, and integration of indigenous knowledge, farmer innovations, local adaptation practices, and field-based learning within formal agricultural knowledge systems.

County Governments will:

- i. Strengthen county-level agricultural information and knowledge management systems and align them with national standards, protocols, and sector guidelines.
- ii. Facilitate the collection, documentation, validation, packaging, and communication of localized agricultural information and knowledge, including county-specific advisories, indigenous knowledge, farmer innovations, extension lessons, market information, climate advisories, and field feedback.
- iii. Operationalize agricultural communication systems that translate national and local knowledge into locally relevant messages, and disseminate them through county extension, community platforms, and local media to support farmer uptake and feedback.

- iv. Strengthen Agricultural Training Centres, the capacity of county officers and extension workers, cooperatives and farmer organizations in knowledge capture, documentation, communication, advisory content development, and farmer feedback collection.
- v. Facilitate continuous feedback from farmers and other value chain actors to improve the relevance, usability, and responsiveness of agricultural advisories, training materials, and knowledge products.

National and County Governments will:

- i. Establish mechanisms for regular review, updating, validation, and quality assurance of agricultural knowledge products to ensure relevance, accuracy, usability, and credibility.
- ii. Build institutional capacity in agricultural information and knowledge management, communication, documentation, archiving, translation, content design, advisory development, and knowledge-sharing.
- iii. The national and county governments will collaborate to strengthen agricultural communication through joint content development, harmonized messaging, feedback mechanisms, and multi-stakeholder information-sharing platforms that ensure timely, accurate, and accessible communication across all agricultural value chains.
- iv. Promote communities of practice, peer learning, and structured feedback mechanisms among researchers, extension workers, county officers, training institutions, communication officers, farmer organizations, and other agricultural knowledge actors.
- v. Foster public–private–research partnerships to strengthen agricultural data generation, information and knowledge management, content validation, dissemination channels, agricultural training, digital knowledge products, and innovation uptake and the development and scaling of digital agricultural solutions and services.

3.4.3 Digital Agriculture Development

Digital agriculture enables data-driven decision-making and service delivery across the entire agricultural value chain, from input supply and on-farm production to value addition, processing, trade, and market access. Its operating environment is rapidly evolving due to technological advances, emerging data ecosystems, and shifting policy frameworks, with diverse stakeholders such as farmers, extension agents, platform developers, and service providers influencing adoption based on varying incentives, capacities, and access levels. Effective digital agriculture development therefore requires an integrated ecosystem anchored on unified data systems, knowledge platforms, robust infrastructure, scalable innovations and services, and coordinated governance, supported by capacity building and interoperability standards. Despite this potential, adoption remains constrained by low digital literacy, high costs, limited rural connectivity and energy access, weak interoperability and cybersecurity frameworks, underutilization of innovation hubs, and inadequate computing capacity, all of which limit the transformation of agricultural value chains into inclusive, resilient, and data-driven systems. This policy aims to promote the development and scaling of the utilization of innovative digital agriculture technologies.

Policy Statement

The Government will promote inclusive, secure, and scalable digital agriculture ecosystem by strengthening enabling infrastructure, interoperability frameworks, and digital public systems that support affordable connectivity, efficient data exchange, innovation, and adoption of digital technologies and services across agricultural value chains. This will be achieved through improved connectivity, energy access, digital literacy, and institutional capacity to ensure that farmers and other value chain actors can effectively participate in and benefit from the digital economy.

Policy Interventions

National Government will:

- i. Expand and strengthen rural digital infrastructure and connectivity, including broadband networks, last-mile internet access, affordable digital services and end-user devices, to reduce the rural–urban digital divide and enhance access to digital agriculture solutions.

- ii. Promote adoption of green and reliable energy solutions for digital agriculture, including solar and other renewable energy systems, to support consistent operation of digital platforms, devices, sensors, and farm-level technologies in rural areas.
- iii. Develop and enforce interoperability frameworks and Digital Public Infrastructure (DPI) standards, including common digital identifiers, metadata protocols, and secure data exchange systems to enable seamless integration of Kenya Integrated Agricultural Management Information System (KIAMIS) with other public and private sector platforms.
- iv. Strengthen cybersecurity infrastructure to safeguard agricultural digital systems from unauthorized access, data misuse, service disruption, and loss of trust, in line with national digital governance standards.
- v. Enhance adoption and utilization of digital hubs and innovation ecosystems to support incubation, scaling, and deployment of agricultural digital solutions, innovation services, and agritech entrepreneurship.
- vi. Promote development and use of scalable digital platforms for agriculture, including e-commerce such as KOMEX, Kenya Agricultural Market Information System (KAMIS), e-extension, among others.
- vii. Facilitate innovative financing mechanisms for digital agriculture, including blended finance, public-private partnerships, and digital investment models to reduce cost barriers for adoption of digital tools, devices, and services.
- viii. Strengthen national computing and agricultural data analytics capacity, including cloud infrastructure, high-performance computing, and partnerships with the private sector, to support advanced agricultural analytics, artificial intelligence applications, and data-driven innovation.

Promote widespread adoption and utilization of digital agricultural technologies and services through awareness creation, digital literacy programmes, affordable access strategies, and support for sustainable and inclusive digital business models.

County Governments will:

- i. Support the expansion of last-mile connectivity and digital infrastructure in rural and farming areas to improve access to digital agricultural services.

- ii. Promote uptake of renewable energy solutions to support digital agriculture tools, extension services, and farm-level technologies in off-grid and weak-grid areas.
- iii. Facilitate the establishment and utilization of county digital hubs and innovation spaces to support agritech development, farmer digital literacy, and access to digital agriculture services.
- iv. Promote digital literacy and awareness among farmers and value chain actors to enhance the adoption of digital agricultural technologies and services.

National and County Governments will:

- i. Promote coordinated adoption of Digital Public Infrastructure (DPI) approaches to ensure interoperable, scalable, and inclusive digital agriculture ecosystems.
- ii. Strengthen collaboration with the private sector and development partners to mobilize investment for digital agriculture infrastructure, innovation, and service delivery.
- iii. Promote inclusive access to digital agriculture technologies and services by addressing affordability barriers for devices, connectivity, and digital tools, particularly for rural farmers and marginalized groups.
- iv. Enhance capacity building and digital skills development for farmers, extension officers, and agricultural institutions to support effective use of digital agriculture technologies.

3.4.4 Capacity for Data, Information, Knowledge Management and Digital Agriculture

Agricultural Data, Information, Knowledge Management and Digital agriculture are constrained by systemic capacities in institutional, human, financial and physical, operational and financial capacities across national and county governments and other actors within the agricultural ecosystem. These gaps undermine coordination, skills development, sustainability of digital initiatives, and inclusive adoption, particularly within devolved agricultural systems (IFPRI & ReSAKSS, 2014; MoALF, 2017). Effective implementation of this policy will require targeted capacity enhancement across human skills, financial sustainability, equipment provisioning, and operational processes to

operationalize data, knowledge, and digital systems by national and county governments, working jointly with non-state actors and the private sector. The policy objective on capacity enhancement therefore focuses on strengthening the institutional capacities, human resources, financial capacity and physical and operational resources of the national, county governments and private actors for the development and management of effective data, information and management as well as digital agriculture systems.

Policy Statement

The Government will strengthen institutional, human, physical, operational and financial capacities required to develop, manage and sustain an integrated, secure, inclusive and resilient agricultural data, information, knowledge management and digital agriculture ecosystem.

Policy Interventions

The National Government will:

Develop, attract and retain specialized human resource capacity in data, information and knowledge management, digital agriculture, advanced analytics, data science, artificial intelligence, geospatial technologies, cybersecurity, systems integration and digital advisory services to strengthen institutional and sector performance.

Support continuous professional development, certification and specialized technical training for public officers responsible for agricultural data, information, knowledge management and digital agriculture

- i. Strengthen awareness and capacity of stakeholders on the availability, value, and use of digital agriculture services to enhance uptake and effective utilization across the agricultural sector.
- ii. Reform agricultural education and training systems by integrating digital agriculture, data literacy, GIS, ICT-enabled extension, and emerging technologies into agricultural TVET institutions and university curricula to strengthen the skills pipeline.
- iii. Provide adequate physical and operational resources to support key public institutions and the County Governments to effectively undertake planned activities that support DIKM and Digital Agriculture

- iv. Strengthen digital research and innovation capacity by supporting data science, digital systems development, and improved linkage between research outputs and national digital agriculture platforms.
- v. Promote sustainable financing and public–private partnership models to support digital agriculture infrastructure, platforms, and farmer-centric digital services, reducing reliance on donor-funded initiatives.
- vi. Strengthen awareness and digital literacy among agricultural stakeholders to promote informed adoption and effective utilization of agricultural data, information and digital agriculture services.

County Governments will:

- i. Build the capacity of county staff and local stakeholders in data collection, database management, digital agriculture tools, and information sharing to improve service delivery.
- ii. Develop the technical capacity of county officers and local stakeholders in agricultural data collection, data quality assurance, database management, digital advisory services, information management and use of digital agriculture technologies.
- iii. Allocate adequate resources for digital agriculture implementation, including staffing, training, infrastructure, system maintenance, and operational costs to support sustainable digital transformation at the county levels.
- iv. Strengthen organizational readiness to adopt national digital agriculture platforms through targeted capacity-building and institutional support.

National and County Governments will:

- i. Implement continuous capacity development programmes, including training, certification, mentorship, and communities of practice for officers involved in data, agricultural knowledge management, and digital agriculture.
- ii. Coordinate and harmonize capacity building initiatives to ensure alignment, interoperability, and efficient use of resources across institutions and levels of government.
- iii. Promote integrated capacity-development approaches that link training institutions,

- research organizations, extension services, and digital service providers.
- iv. Establish sustainable financing mechanisms through aligned planning and budgeting frameworks to reduce dependence on fragmented and donor-driven funding.
 - v. Strengthen collaboration with the private sector, civil society, and development partners to leverage expertise, innovation, and investment while ensuring public accountability and sustainability.
 - vi. Monitor and periodically review capacity development initiatives to ensure responsiveness to emerging technologies and evolving needs of the digital agriculture ecosystem.
 - vii. Promote communities of practice, professional networks, mentorship programmes and knowledge exchange platforms for continuous learning and innovation.

3.4.5 Enabling Policy, Legal and Institutional Framework

The development of digital agriculture in Kenya is currently constrained by fragmented institutional arrangements, weak coordination across data, information and knowledge systems, and the absence of a comprehensive legal and regulatory framework to guide its implementation. Multiple actors collect and manage agricultural data under different mandates, often without harmonized standards, interoperable systems, or clearly defined governance structures. This has resulted in duplication of efforts, inefficiencies, and limited integration of agricultural data, information, knowledge, and digital innovations into a unified ecosystem. Strengthening the policy, legal, and institutional environment is therefore critical to provide clear direction, enhance coordination, and enable the sustainable development and scaling of digital agriculture solutions across the sector.

Policy Statement

The Government will establish and operationalize a comprehensive legal, institutional, and coordination framework for agricultural data, information, knowledge management, and digital agriculture to ensure harmonized development, integration, and sustainable implementation of digital systems across the agricultural sector. The framework will define roles and responsibilities, standards, data sharing arrangements, intellectual property and benefit-sharing norms, and accountability mechanisms to promote coordinated

development, integration, and sustainable implementation of digital systems across the agricultural sector.

Policy Interventions

National Government will:

- i. Transform the Agricultural Information Resource Centre (AIRC) into the Kenya Agricultural Digital Information Centre (KADIC) as an autonomous national institution responsible for integrating agricultural data management, information and knowledge systems, and digital agriculture coordination across the sector. .
- ii. Establish a comprehensive governance framework for agricultural data, information, knowledge, and digital agriculture, including provisions for data ownership, sharing, interoperability standards, cybersecurity, ethical use, and emerging technologies.
- iii. Develop and operationalize a national framework for integration of digital agriculture platforms and systems, including open data systems and sharing arrangements, intellectual property and benefit-sharing norms, and accountability mechanisms to support data integrity, planning, research, monitoring, innovation, and service delivery across the sector.

County Governments will:

- i. Align County agricultural policies, strategies, and digital initiatives with the National digital agriculture policy and legal framework to ensure coherence and interoperability.
- ii. Adopt standardized data governance and collection frameworks developed by KADIC to enable consistent aggregation, sharing, and integration of County agricultural data into national systems.

National and County Governments will:

- i. Establish coordinated governance mechanisms for joint planning, implementation, monitoring, and evaluation of agricultural data, information and digital agriculture initiatives across all levels of government.

- ii. Develop and implement interoperability frameworks for digital agriculture systems to enable seamless data exchange among national and county governments, as well as with non-state actors.
- iii. Strengthen multi-stakeholder collaboration with the private sector, research institutions, development partners, and civil society to promote innovation, scalability, sustainability, and impact of agricultural data, information and digital agriculture solutions.

3.4.6 Cross-Cutting and Emerging Issues

a) Data governance, privacy, security and ethical AI

Data governance, privacy, cybersecurity and ethical use of emerging technologies are increasingly critical to the development of a trusted, secure and inclusive digital agriculture ecosystem. Addressing these issues is essential for safeguarding agricultural data, strengthening institutional trust, promoting responsible innovation and ensuring compliance with national legal and regulatory frameworks.

Policy Statement

The Government will strengthen agricultural data governance, cybersecurity and AI ethics frameworks for agricultural data and digital systems, these measures will clarify data ownership and custodianship, establish secure data handling and access controls, prescribe consent and purpose-limitation practices, and set ethical standards for the development and deployment of AI and automated decision systems in agriculture.

Policy Interventions

National Government will:

- i. Establish and operationalize a clear agricultural data governance framework that defines data ownership, custodianship, access, sharing, classification, retention, quality assurance, and benefit-sharing arrangements among public and private stakeholders.
- ii. Develop and enforce interoperable data standards, metadata rules, and secure data exchange protocols to enable trusted sharing across digital agriculture platforms and

institutions.

- iii. Strengthen cybersecurity, privacy, and data protection controls for all digital agriculture systems, including access management, authentication, audit trails, incident response, and compliance with national legal and regulatory standards.
- iv. Develop and implement AI ethics and responsible data-use guidelines for digital agriculture applications, covering transparency, fairness, accountability, explainability, human oversight, and safeguards against bias and harmful automated decisions.
- v. Establish clear governance arrangements for consent management, permitted use, secondary use, anonymization, and cross-institutional data sharing to protect farmer rights and public trust.
- vi. Build institutional capacity across national and county agricultural institutions in data governance, cybersecurity, AI literacy, and ethical technology oversight to support effective implementation and enforcement.
- vii. Provide for continuous risk assessment, compliance monitoring, and periodic review of governance and AI ethics frameworks to keep pace with evolving technologies and threat landscapes.

County Governments will:

- i. Implement county-level agricultural data governance arrangements for data generated, collected, or managed within county agricultural systems, including local data stewardship, internal access rules, and county data quality practices based on national standards and guidelines.
- ii. Support secure use of digital agriculture platforms at county level by enforcing proper user access controls, safe handling of farmer data, and compliance with applicable national privacy and data protection requirements in county-operated systems.
- iii. Deliver county-based digital literacy, farmer training, and extension support on responsible use of digital agriculture tools, including awareness on data privacy, safe platform use, and basic AI literacy.
- iv. Participate in county-to-county and national coordination mechanisms for data sharing, interoperability, and implementation feedback to ensure county systems align with national standards and can exchange data effectively.

National and County Governments will:

- i. Build the capacity of National and county agricultural officers, extension staff, and county system administrators in data handling, cybersecurity hygiene, and ethical use of digital tools to improve implementation at the local level.
- ii. Promote inclusive stakeholder participation in data governance processes, including farmers, private sector, researchers, and civil society.
- iii. Ensure fairness, transparency, and inclusivity in digital agriculture systems, preventing bias and exclusion in data-driven services.

b) Social Inclusion and Equity in Agricultural Data, Information, and Digital Agriculture

Social inclusion in digital agriculture is essential to ensure that Kenya's digital transformation delivers equitable and sustainable outcomes.

Policy Statement

The Government will promote inclusive and equitable access to agricultural data, information and digital agriculture by strengthening affordability, digital skills development, and inclusive digital information, data and knowledge systems.

Policy Interventions

National Government will:

- i. Reduce barriers to accessing digital agriculture tools and services by promoting affordable digital devices, connectivity solutions, and scalable service delivery models targeting youth, women, and marginalized groups.
- ii. Strengthen digital agriculture skills development frameworks by integrating standardized digital agriculture competencies, certification systems, and training programs into national education, TVET, and agricultural extension systems.
- vi. Promote inclusive DIKM systems through digital and non-digital channels that are user-friendly, accessible, and tailored to diverse user needs, including farmers, value chain actors and marginalized or disadvantaged sections of the community and those

without reliable internet access, digital devices, or advanced literacy.

- iii. Leverage emerging technologies such as AI, machine learning, and blockchain to enhance inclusive service delivery, improve targeting, and expand access to underserved populations.

County Governments will:

- i. Implement localized digital skills training and capacity-building programmes targeting youth, women, and marginalized groups in collaboration with extension services and training institutions.
- ii. Support county-level agritech innovation and entrepreneurship ecosystems to harness youth participation and promote digital agriculture startups.
- iii. Facilitate access to digital agriculture services through county innovation hubs and extension networks, ensuring inclusion of rural and underserved communities.

National and County Governments will:

- i. Scale up digital agriculture service delivery through mobile-based platforms and applications, leveraging high mobile phone penetration across rural and urban areas.
- ii. Promote inclusive design and accessibility standards in all digital agriculture systems to ensure equitable access for all users.
- iii. Collaborate with the private sector, development partners, and innovation ecosystems to support inclusive agritech solutions and expand the reach of digital agriculture.

CHAPTER FOUR: POLICY MANAGEMENT AND REVIEW

4.1 Overview

To effectively implement the proposed policy interventions, this Chapter provides the institutional structures for management and implementation as well as linkages with all actors in the agriculture sector. It also provides for monitoring, evaluation, reporting and review mechanisms.

4.2 Institutional Framework

4.2.1 National Level Actors

At the national level, the Ministry responsible for Agriculture will provide policy direction for agricultural data, information and knowledge as well as digital agriculture. In order to effectively implement this policy, the current AIRC will be restructured and strengthened with a view to positioning it as the central node in Kenya's transformation of agricultural data, information and digital agriculture ecosystem. The new entity, the Kenya Agricultural Digital Information Centre (KADIC) will be responsible for:

- i. Managing KIAMIS as the agricultural sector's integrated DIKM system;
- ii. Developing and manage the national data and digital agriculture infrastructure;
- iii. Facilitating the exchange of agricultural data, information and knowledge among the Ministries, Departments and Agencies, County Governments, and other stakeholders;
- iv. Providing tailor-made, insightful, data-driven digital advisories to agricultural value chain actors;
- v. Providing access to reliable agricultural information for farmers, county governments, researchers and other stakeholders;
- vi. Collating and disseminating data, information and knowledge generated by the Ministries, Departments and Agencies, County Governments, and other stakeholders;
- vii. Collaborating with Kenya National Bureau of Statistics in undertaking census of agriculture and periodic survey;
- viii. Developing and operationalizing a data governance framework for the agricultural sector;

- ix. Validating and incubating digital agricultural solutions and innovations;
- x. Building the capacity of county governments and other stakeholders in relation to digital agriculture;
- xi. Collaborating with county governments in establishing county-specific digital agriculture incubation units;
- xii. Collaborating with county governments in establishing county-specific data, information and knowledge management units;
- xiii. Advising the Cabinet Secretary on policies and strategies related to digital agriculture and information; and
- xiv. Perform any other function for the better discharge of its mandate.

Further, a Technical Advisory Committee will be established and anchored under JASSCOM and will be responsible for:

- (i) Provide expert guidance to ensure that KADIC's digital systems, data and services remain accurate, reliable and aligned to national agriculture goals.
- (ii) Advise on compliance with policies and standards.
- (iii) Recommend innovative technologies and best practices.
- (iv) Provide feedback on user needs and centre's performance.
- (v) Linkage with actors in digital agriculture including intergovernmental coordination.

The membership of the Technical advisory committee will include the following areas and interests: Departments for crops, livestock, fisheries, cooperatives, irrigation, ICT at the national level, Data Protection Commission, KADIC CoG, representatives from the private sector, farmer organization, Research and academia and co-opted members to address gaps in technical expertise that may be required.

Other Ministries

Other Ministries will:

- (i) Provide ICT infrastructure and data protection.
- (ii) Funding digital transformation and ensuring accountability.
- (iii) Support integration of climate and weather data.

- (iv) Support integration of agricultural data, information and knowledge.

Other National Government Agencies

The agencies listed in *Annex 2* will:

- (i) Provide agricultural data, information and knowledge to KADIC for collation into the National agricultural information system.
- (ii) Collaborate with KADIC in agricultural data collection and analysis.
- (iii) Support integration and interoperability of agriculture data and digital services with KADIC systems.
- (iv) Promote the adoption of digital technologies in the subsectors.

4.2.2 County Level Actors

At the County level, County Governments will establish County Agricultural Data, Information and Knowledge Management Units within the County Agricultural Department responsible for crop, livestock, irrigation, cooperatives and fisheries. The units will be responsible for:

- i. Undertaking agricultural data collection and analysis in collaboration with KADIC.
- ii. Managing the established agricultural data and information system at the County level.
- iii. Capturing, document and disseminate agricultural data and information innovations and best practices.
- iv. Using the data governance framework provided by KADIC to ensure interoperability with KIAMIS.

County Governments

The County Governments will:

- i. Establish the County Agricultural Data, Information and Knowledge Management Units comprising relevant line Departments reporting directly to the Agriculture sector CECM

- ii. Develop an integrated agricultural data and information system that is interoperable with the KADIC system.
- iii. Allocate budget to support agricultural data collection, analysis, reporting and information and knowledge management.
- iv. Coordinate the data submission of agricultural data and information to KADIC at the National level for collation.

4.2.3 Private Sector

The private sector will:

- i. Support the integration of digital agricultural services
- ii. Disseminate agricultural advisories and market information to value chain actors.
- iii. Promote adoption of improved technologies and best practices
- iv. Collaborate and share agricultural data, information and technology to KADIC.

4.3 Financing Policy Implementation

The implementation of the Kenya Agricultural Data, Information and Digital Policy will be financed through a coordinated and multi-source financing framework at both the National and County Government levels. At the National level, the Ministry of Agriculture and Livestock Development will allocate resources through the established KADIC to support the implementation of this policy. Financing will also be mobilized through conditional grants, intergovernmental fiscal transfers, and special purpose funds targeting digital transformation within the agricultural sector. Additional resources will be leveraged from national ICT programs implemented in collaboration with the Ministry of Information, Communications and the Digital Economy to strengthen connectivity, digital infrastructure and cybersecurity systems supporting agricultural digitization.

At the County level, County Governments will mainstream digital agriculture priorities within County Integrated Development Plans (CIDPs) and Annual Development Plans (ADPs), with dedicated budget allocations under agriculture, ICT, trade, and cooperative development departments. Counties will finance localized digital extension services, farmer data management systems, innovation hubs, and capacity-building initiatives to enhance

digital literacy among farmers and agribusinesses.

To complement public financing, both levels of government will mobilize external resources from development partners, climate and innovation funds, and multilateral financing institutions. Public–private partnerships (PPPs) with agritech companies, telecommunications providers, financial institutions, and producer organizations will be promoted to expand investment in digital platforms, e-commerce systems, precision agriculture technologies, and digital financial services. The mechanisms of blended finance models will support the sustainable implementation and scaling of digital agriculture initiatives across the country.

4.4 Monitoring, Evaluation and Learning

A comprehensive Monitoring, Evaluation, and Learning (MEL) framework will be established to oversee the implementation of the Kenya Agricultural Data, Information and Digital Policy, ensuring systematic tracking of progress, measurement of results, and continuous improvement of digital agriculture interventions. The M&E function will be coordinated at the national level by KADIC in collaboration with the agricultural data, information and innovation actors. Clear and measurable key performance indicators (KPIs) will be developed across all policy pillars, including digital infrastructure development, data governance, e-extension services, digital financial inclusion, innovation ecosystems, capacity building, and institutional strengthening. Indicators will capture technological adoption, socio-economic outcomes, service efficiency, market access, inclusivity, and governance performance.

4.5 Policy Communication

The Ministry responsible for agriculture will within six (6) months of this Policy's commencement, in collaboration with KADIC, develop and operationalize a digital communication framework aligned with the Kenya Agricultural Data, Information and Digital Policy to enable real-time information sharing, inclusive stakeholder engagement and effective intergovernmental coordination across the agricultural sector.

4.6 Risk Analysis and Mitigation

The key risks likely to affect policy implementation and mitigation measures proposed are outlined in the table below:

S/No	Risk	Level of Impact (1-low;2-medium;3-High)	Mitigation measures
1	Delayed financing	3	Mobilization of additional resources to supplement the exchequer
2	Insecurity in some areas affecting data collection	2	Collaboration with the ministry responsible for security where necessary
3	Political goodwill	3	Sensitization and awareness
4	Cybersecurity	2	Implement best practice protection safeguards
5	Stakeholder collaboration	2	Establishment of proposed structures in the policy for collaboration

4.7 Policy Review Cycle

. The Kenya Agricultural Data, Information and Digital Policy will be subject to periodic review to ensure its continued relevance, effectiveness, and responsiveness to the evolving agricultural and digital landscape. A comprehensive review shall be undertaken after ten (10) years of implementation or earlier where necessitated by significant changes in the policy environment, emerging issues, technological advancements, evolving digital innovations, legal and regulatory frameworks, or national development priorities. This will ensure that the Policy remains aligned with emerging trends, global best practices, and advances in digital technologies, while continuing to support the transformation of Kenya's agricultural sector.

ANNEXES

ANNEX I: IMPLEMENTATION MATRIX

Policy objective	Priority interventions (summary)	Lead (national)	Lead (county)	Key partners	Timeframe	Indicative indicators
1. Establish a coordinated data, information and knowledge ecosystem.	Harmonise standards; strengthen KIAMIS interoperability; develop agricultural statistics compendium; improve knowledge management tools and workflows	MoALD (State Departments), KADIC/AIRC, KNBS, ICT Authority/ Ministry of ICT	County Departments of Agriculture/Livestock/Fisheries; County Digital Agriculture Units	CoG; ODPC; Research institutions; private platforms; development partners	Short–Medium term	Adopted data standards; Interoperable systems connected; updated farmer register; published compendium.
2. Promote inclusive, affordable, and sustainable adoption of digital technologies.	Expand rural connectivity and power; improve access to devices; support farmer- centred innovation and learning hubs.	Ministry of ICT & Digital Economy; MoALD; Energy agencies	County Governments (connectivity facilitation; Local infrastructure support)	Private telecoms; CoG; development partners	Medium term	Coverage in priority zones; reduced; Access costs; increased adoption rates disaggregated by gender/youth/PWD.
3. Enhance effectiveness,	Integrate advisory,	MoALD; KADIC;	County extension services; county	AgriTech providers;	Short–Medium	Active digital service users;

Policy objective	Priority interventions (summary)	Lead (national)	Lead (county)	Key partners	Timeframe	Indicative indicators
accessibility and usability of digital agricultural services.	market, finance, and climate services; establish/strengthen service support centres; awareness and user capacity building.	Relevant regulators/agencies	service centres/call centres	farmer organisations; KENAFF	term	response times; service satisfaction; increased extension reach.
4. Strengthen institutional, human, and financial capacity for digital agriculture.	Skills development (data governance, analytics, KM); curriculum reform; sustainable financing for platforms; joint capacity programmes.	MoALD; National Treasury; training and research institutions	County Governments; ATCs and county training institutions	Universities; private sector; development partners	Medium term	Number trained; updated curricula; budget lines for digital agriculture; reduced reliance on pilots.
5. Provide an enabling policy, legal and	Clarify coordination mechanisms; align sector	MoALD; Intergovernmental Secretariat; Ministry of ICT;	County Governments; CoG	Regulators; Attorney-General's	Short term	Functional coordination structures; adopted

Policy objective	Priority interventions (summary)	Lead (national)	Lead (county)	Key partners	Timeframe	Indicative indicators
institutional environment for coordinated governance and scaling.	initiatives; establish operational governance arrangements for interoperability, privacy, and cybersecurity.	ODPC		Office (as needed for alignment)		interoperability guidance; compliance mechanisms operational.
6. Promote inclusive, equitable, and accessible digital agriculture systems.	Mainstream GESI and accessibility; targeted capacity for women/youth/PWD; universal design standards and localized delivery.	MoALD; relevant GESI institutions	County Governments; community structures	CSOs; PWD associations; youth and women organisations	Short–Medium term	Disaggregated access metrics; accessible platforms; participation rates of target groups.

ANNEX 2: AGRICULTURAL DATA, INFORMATION AND INNOVATION ACTORS (PUBLIC AND PRIVATE)

S/No.	Institutions
,Ministries, Department and Agencies	
1.	Agricultural Development Corporation
2.	Agricultural Finance Corporation
3.	Agriculture and Food Authority (AFA)
4.	Commodities Fund
5.	County departments of Agriculture
6.	Kenya Animal Genetics Resource Centre (KAGRIC)
7.	Kenya Agricultural Livestock Research Organization (KALRO)
8.	Kenya Dairy Board (KDB)
9.	Kenya Sugar Board (KSB)
10.	Kenya Plant Health and Inspectorate Service (KEPHIS)
11.	Kenya Tsetse and Trypanosomiasis Eradication Council (KENTTEC)
12.	Kenya Veterinary Board (KVB)
13.	Kenya National Bureau of Statistics
14.	Kenya Veterinary Vaccines Production Institute (KEVEVAPI)
15.	National Biosafety Authority
16.	National Irrigation Board (NIA)
17.	National Cereals and Produce Board (NCPB)
18.	Pest Control Products Board (PCPB)
19.	Tea Board of Kenya (TBK)
20.	Kenya Genetic Resource Centre (KAGRC)
21.	National Livestock Development Promotion Services (NLDPS)
22.	Veterinary Medicines Directorate (VMD)
Research and Academia	
23.	Universities
24.	Agricultural TVETs
25.	The Consultative Group on International Agricultural Research (CGIAR)
26.	Kenya Institute for Public Policy Research and Analysis (KIPPRA)

27. Tegemeo Institute of Agricultural Policy and Development
28. International Livestock Research Institute (ILRI)
29. International Centre of Insect Physiology and Ecology (ICIPE)
30. Kenya Marine and Fisheries Research Institute (KEMFRI)

Development Partners

31. Development Partners
32. Non -Governmental Organizations and Civil Society Organization

Private Sector

33. Private Sector
34. Farmer Organizations and Cooperatives

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The Ministry remains committed to working closely with all partners to ensure effective, coordinated, and sustainable implementation of this Policy. Through shared responsibility and sustained collaboration, digital agriculture will serve as a catalyst for productivity growth, innovation, climate resilience and inclusive economic development.