THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF INFORMATION, COMMUNICATION AND INFORMATION TECHNOLOGY

NATIONAL ICT POLICY 2024

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FOREWORD

BY THE MINISTER

As we embark on a new decade, the digital economy presents both opportunities and challenges that require strategic navigation. The launch of this Digital Economy Strategic Framework signifies our unwavering commitment to fostering prosperity and digital inclusivity. While drawing from global pillars of a robust digital economy, our Tanzanian strategy is uniquely tailored to our essence, reflecting our distinct mission and soul.

Our Tanzanian mission is clear: to integrate the digital realm deeply into our economy and society, leveraging technology as an enabler, connector, and equalizer. As the Minister leading this transformative journey, I acknowledge the significant responsibility we bear – to utilize digital technology as a bridge between present aspirations and future accomplishments.

In recent years, Tanzania has made notable technological advancements, from expanding mobile connectivity to enhancing sectors such as Agriculture, Finance, Tourism, and Governance. These achievements pave the way for the monumental transformation outlined in this strategic framework.

Our mission transcends mere technology adoption; it entails crafting a digital narrative intertwined with our cultural identity, resonating with the Tanzanian spirit, and uplifting individuals across urban centres and rural landscapes alike.

The road ahead is both thrilling and challenging. While a thriving digital economy promises substantial gains in job creation and trade capacities, we are mindful of the hurdles we face. Addressing these challenges will necessitate robust policies, strategic investments, and, most importantly, synergy among government, private sector, civil society, and the people of Tanzania.

Together, let us stride towards a brighter, digitally empowered Tanzania!

Hon. Nape Moses Nnauye (MP)

Minister of Information, Communication and Information Technology

And Chairman of TNBC's Ministerial Public-Private Dialogue (MPPD)

PREFACE

BY THE PERMANENT SECRETARY

Over the past decade, Tanzania has experienced a remarkable transformation in the lives of its citizens, propelled by technological advancements in mobile communications and broadband internet. As we stand on the cusp of a digital revolution, the government is dedicated to ensuring that all necessary elements are in place to expedite our journey into the digital economy. The NICTP-2024 is strategically designed to stimulate economic growth by promoting innovation, enhancing productivity, and opening new business avenues as the digital economy gradually gains a solid footprint in our society.

This policy champions initiatives that promise substantial benefits ensuring no one is left behind in the unfolding digital revolution. It promotes an enabling technological environment that includes access to a broadband digital infrastructure in rural areas, ensuring inclusive and equitable participation in the digital economy. Accelerating an inclusive digital economy requires the foundational support of a solid ICT infrastructure. Key initiatives include the nationwide expansion of advanced broadband fibre-optic networks, the modernization of mobile communication systems, and the creation of cutting-edge data centres

In addition, the ICT policy objectives outlined in this document, besides presenting strategic direction that governs the use of ICT in the public and private sector, will set the foundation for promoting a startup ecosystem. Startups are generally the birthplace of groundbreaking technologies and innovative solutions. Digital innovation and startups are not just participants in the digital economy but its primary drivers, continually pushing the boundaries of what's possible.

The NICTP-2024 framework underscores the significance of periodic evaluations to ensure alignment with government objectives and technological advancements. These evaluations are indispensable for identifying and implementing potential corrective actions, including the reallocation of resources.

Mohammed Khamis Abdulla
Permanent Secretary
Ministry of Information, Communication and Information Technology and
Chairman of TNBC's Digital Transformation Working Group (DTWG)

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INTRODUCTION AND SITUATION ANALYSIS

1.1 Introduction

1.1.1 Background

This National Information and Communications Technology (ICT) Policy of 2024 presents strategic directions that govern the use of ICT in the public and private sectors. Essentially, the National ICT Policy presents a framework that outlines the role of ICT in support of the Nation's digitalization objectives in all aspects of socio-economic development. This Policy begins with the review of the National ICT Policy of 2016 (NICTP-2016) which marked the country's second ICT policy, following its predecessor the National ICT Policy of 2003 (NICTP-2003).

The NICTP2016 was developed in accordance with Tanzania's Development Vision 2025, which aimed at transforming Tanzania into a semi-industrialized economy. It acknowledged the potential of cutting-edge and emerging technologies to catalyse economic and social development and was formulated within the realms of development-oriented and poverty-reduction frameworks. The NICTP-2016 policy defined numerous ICT goals and strategies to achieve an ICT-enabled and knowledge-based economy through the prudent development and sustainable exploitation of ICT.

Key outcomes of the NICTP-2016 policy include the establishment of a Ministry of Information, Communication and Information Technology (MICIT) on 12th September 2021 by the President of the United of Republic of Tanzania. The Ministry is mandated to formulate and monitor the implementation of policies and laws that regulate standards and services in the ICT and Postal services in the country. The ministry is envisaged to drive the digital transformation agenda in Tanzania as well as fostering innovation and smooth flow of information.

Another notable development was the creation of the ICT Commission of Tanzania (ICTC), which plays an important role in providing advice in strategic planning, implementation, and investment in ICT, Monitor, and coordinate National ICT initiatives, and provide foresight on trends and opportunities for ICT uptake for the nation's socio-economic development. Also, the establishment of e-Government Authority through the Act of Parliament No 10 of 2019, which gave the Authority the mandate to enforce relevant policies, laws, regulations, standards, and guidelines across public institutions.

Since the formation of these entities and the launch of numerous ICT initiatives, there has been substantial and meaningful progress in the development and promotion of ICT applications to bolster socio-economic progress. This includes creating dynamic and effective ICT platforms, solutions, and services that now play a key role in propelling and supporting the country's digital transformation agenda. However, the NICTP-2016 is silent about the country's need and readiness for the rapidly emerging digital economy.

1.1.2 ICT policy and the digital economy

The Government acknowledges the leading role of the ICT sector as a catalyst and a major force in driving the economy. Statistics from the last five years indicate that ICT has averaged a contribution of 1.5% to the Gross Domestic Product (GDP). Working in partnership with various public and private organizations, the Government has persistently facilitated the use of ICT across all productive sectors, thereby strengthening the overall innovation ecosystem.

Digitalization has profoundly impacted all sectors of Tanzania's economy, much like in other emerging and developing countries. It has revolutionized how citizens receive government services, make payments, work, pursue education, foster innovation, shop, and socialize. These significant developments in digital technologies have marked the beginning of a new digital economy era, visible across numerous sectors. The continued rapid growth of these technologies is likely to exert a greater influence on the economy as a whole.

One of the most significant societal developments attributed to the rapid technological changes is the move towards a cashless economy. Digital platforms and technologies have played a crucial role in enabling the creation, storage, and exchange of digital money. Individuals in Tanzania can create digital wallets with major Mobile Network Operators (MNOs) to perform financial transactions directly from their mobile phones. Users can send and receive money, pay bills, purchase airtime, and receive payments and salaries. Additionally, the government can make direct deposits into these mobile wallets.

Mobile wallets have garnered significant popularity among Tanzanian consumers, boasting an impressive usage rate of 72% among mobile users. According to the Tanzania Communication Regulatory Authority (TCRA) quarterly report of September 2023, there were 51.4 million mobile money accounts in Tanzania. This remarkable success is directly attributed to the widespread adoption of mobile phones in Tanzania, along with the convenience and cost-effectiveness of mobile wallet payments, which offer ease of use and often lower fees compared to traditional banking services.

In Tanzania, the predominant method for online payments for goods and services is through mobile payment platforms, rather than using credit or debit cards. Therefore, the ability to monitor and track mobile money transactions directly from the source could significantly increase the country's tax revenues through the elimination of tax

leakages. This would require upgrading the Tanzania Revenue Authority's (TRA) domestic revenue collection system, incorporating the Tanzania Unique Digital Identifier (Jamii Namba), which has been introduced under the digital economy initiative. The Jamii Namba will enable TRA to associate each mobile transaction with the individual making the payment and classify the transactions for tax eligibility. This goal will be achieved by employing advanced technologies such as Artificial Intelligence (AI), Machine Learning (ML), and Robotic Process Automation (RPA) to track revenue collection at the source.

1.1.3 ICT Policy 2024 Presentation Outline

The encouraging outcomes of NICTP-2016 underscore the transformative power of ICT. This revised National ICT Policy of 2024 builds on this momentum, outlining a strategic framework to further integrate ICT for a robust, resilient, and inclusive digital economy. The document comprehensively outlines key strategic goals for maximizing the benefits of information and communication technologies (ICT) in Tanzania's socio-economic development.

Chapter One presents an analysis of the current national ICT policy landscape; Chapter Two delves into the rationale, vision, and mission statement that underpins the need for this updated policy; Chapter Three outlines specific policy issues, including clearly defined objectives and associated policy statements; Chapter Four details the legislative framework upon which successful policy implementation will be anchored. Chapter Five outlines the institutional framework for policy implementation, assigning specific responsibilities to key government institutions and stakeholders. It includes a monitoring and evaluation plan to track the NICTP-2024's progress and ensure the achievement of its targets.

1.2 National ICT Policy Status

In the past two decades, the implementation of NICTP-2003 and the NICTP-2016 has significantly contributed to the growth of the ICT sector and the country's socio-economic advancement. In particular, the structuring and formalizing of the ICT sector, along with investments, innovations, and the rollout of legal and regulatory frameworks, have markedly propelled the fulfilment of the Tanzania Development Vision 2025.

The primary focus of NICTP-2003 was to deploy a broad-based national strategy to address the country's developmental agenda in the realm of ICT. This policy was established to tackle issues such as the lack of overall policy direction and poor harmonization of ICT initiatives within the country. These issues had previously led to random adoption of different systems and standards, unnecessary duplication of efforts, and the waste of scarce resources. Essentially, the policy aimed to streamline and effectively utilize ICT as a tool for national development and progress.

NICTP-2016 focus was to accelerate socio-economic development, aiming to transform Tanzania into an ICT-driven middle-income economy and an information society. During its implementation, the country achieved lower middle-income status in July 2020 – a milestone that was reached five years ahead of the target set in the country's Tanzania Development Vision 2025. Key objectives of the Policy included enhancing human capital for ICT, promoting public participation in ICT, strengthening strategic ICT leadership, and ensuring access to affordable and reliable broadband services. The policy also aimed at developing sustainable ICT infrastructure, promoting local content and innovation in e-services, and strengthening the legal and regulatory environment for ICT in the country.

The sections that follow present the status and progress made in diverse areas of ICT developments and associated challenges by focusing on the following areas:

- Strategic ICT Leadership and Human Capital Development
- Infrastructure Development
- Frequency Spectrum Management
- E-Services and Local Content Development
- Regional and International Cooperation and Collaboration
- ICT Governance
- E-Governance Services
- ICT Security, Safety, and Standardization
- ICT Sector Development
- Productive Sector Development
- Cross-cutting issues.

1.2.1 Strategic ICT Leadership and Human Capital Development

1.2.1.1 Strategic ICT Leadership

Strategic ICT leadership is crucial for implementing complex ICT solutions, and its significance cannot be understated. Such leadership necessitates a synergistic approach among various government institutions and stakeholders, guiding organizations towards success. Strategic leaders play a crucial role in setting the vision and strategic direction, ensuring alignment with the organization's core values and mission. Highly trained and skilful strategic leaders are central to setting the organization's direction and determining its long-term goals.

The NICTP-2016 concentrated on enhancing the strategic leadership skills of individuals in governance and managerial positions through specifically tailored human capital development efforts. Training sessions were conducted for over 1,345 participants, which included leaders, managers, and senior technical officers from several sectors. In addition, a diverse group of political leaders and senior executives took part in multiple workshops and discussions, which were focused on advancing the country's agenda for digital transformation.

The e-Government Act of 2019 laid the foundation for ICT governance and management across various Ministries, Departments and Agencies(MDAs) Regional Secretariats (RS), and Local Government Authorities (LGAs). This structure has greatly facilitated the integration and efficient utilization of various digital platforms, such as e-Bunge, e-Cabinet, Government Mailing System (GMS), e-Office, Human Capital Management Information System (HCMIS), Fleet Management Systems, and the Tanzanite Portal. The private sector's contribution has been noteworthy in augmenting digital and leadership skills through the provision of specialized training, the organization of numerous forums and workshops, and offering substantial opportunities for industrial engagement.

Despite these accomplishments described in the previous section, there remains a pressing need for more targeted interventions in strengthening strategic leadership and human capital development. These interventions are required to build leadership capabilities and digital skills, which are critical in an inclusive digital transformation environment both at public and private sector.

1.2.1.2 Human Capital Development

As the country moves forward with its inclusive digital transformation agenda, the presence of qualified ICT professionals becomes increasingly vital. These professionals have a key role in accelerating the effective development and integration of ICT systems and applications for providing different services across production sectors.

Various initiatives have been launched to support the development of ICT professionals that include the strengthening of ICT training in universities and colleges. According to the TCU, by 2022, there were about 161 ICT programmes that were being offered by various accredited institutions. The Ministry of Education has also taken a proactive step by incorporating ICT subjects into the educational programs of primary and secondary schools. This move is designed to prepare students in advance for the technological demands they will face in their future professional lives.

The establishment of an ICT scheme of service by the Government is another important achievement in the implementation of the NICTP-2016. The establishment has led to the expansion of the recruitment of ICT officers in the public sector from 913 in 2013 to about 2,400 in 2023.

Responding to the critical need for digital proficiency, a series of specialized training and capacity building programs have been rolled out under the guidance of the ICT Commission of Tanzania (ICTC). These initiatives have focused on enhancing digital competencies across the country. They have garnered substantial attention from government ICT professionals, culminating in the successful accreditation of around 1,515 professionals.

Between 2013 and 2022, the Government initiated comprehensive training programs, reaching around 400 public institutions. These programs covered a range of e-Government services and technical skills, including network management, e-services,

and website development. Additionally, 1,388 ICT officers were trained in areas like ICT strategic management. A notable aspect of these training efforts was the inclusion of diverse groups, such as girls and people with disabilities, to promote greater diversity and inclusion in the ICT space.

Notwithstanding the interventions and strides made by the Government to develop the human capital, the country's position in the 2022 Global Digital Skills ranking indicates a relatively low skill level among ICT professionals and a limited awareness of digital skills, especially in comparison to its East African neighbours. To bridge this gap, a concerted effort is required between the Government, higher education institutions, private sector and the industry to create a robust framework that focuses on the skills and technical know-how required for the evolving job landscape in the ICT sector. Such collaborative efforts are significant as the country is transforming into a sustainable and inclusive digital economy. This transformation hinges on strengthening digital education, fostering innovation, boosting investment, and cultivating the necessary skills to actively engage in the digital age.

1.2.2 Infrastructure Development and Broadband Access

One of the priority areas of the NICTP-2016 was the aspiration to provide broadband connectivity to at least 80% of the population by 2025. Broadband connectivity covers mobile, fixed and satellite technologies. The plan included the construction of the 13,000 km of the National ICT Broadband Backbone (NICTBB) that had already connected all regional headquarters and several districts. The NICTBB is also terminated at 10 border points of Kenya, Uganda, Rwanda, Burundi, Malawi, Mozambique and Zambia. This initiative is meant to make the country a regional hub that connects neighbouring countries to the international submarine cables for global connectivity.

The government formed a consortium with MNOs to support the construction of metro and last mile broadband infrastructure that covered an additional 27,912 km of Optic Fibre Cable (OFC) country wide. The Policy influenced the implementation of ICT projects under sectorial ministries such as Tanzania Railway Corporation (TRC) and Tanzania Electric Supply Company Limited (TANESCO) to further expand of broadband connectivity in the country.

Specific achievement may be summarized as follows:

- By mid-2023, Tanzania was connected to four active submarine cables which land in Dar es Salaam: SEACOM, Eastern African Submarine Cable System (EASSy), Seychelles East Africa System (SEAS) and 2Africa Cable. By mid-2023, the country had six (6) Internet Exchange Points (IXPs) operated by Tanzania Internet Service Providers Association (TISPA) located in Dar-es salaam, Dodoma, Mwanza, Arusha, Mbeya and Zanzibar that ensure all local traffic remain locally routed.

- There were six (6) data centres infrastructure which qualify to host mission critical systems namely National Internet Data Centre (NIDC), Government Data Centre (GDC), National Identification Data Centre (NIDC), TiGO Data Centre, VodaCom Data Centre, and Wingu Data Centre.
- The 3G broadband penetration increased up to 72% and 4G coverage reached 55% of the population. Smartphone ownership was about 27%. By June 2023, Internet subscriptions were more than 34,047,407 and mobile phones subscriptions stood at 64,088,651.
- Investment was done in Higher Education and Research Institutions Network (HERIN) which has connected 28 institutions and 15 Teachers Training College (TTCs). Also, the last mile infrastructures connectivity was deployed to Local Government Authorities (LGAs), hospitals, schools, and some of the government offices.
- The NICTP-2016 facilitated the implementation and successful operationalization of other national critical ICT infrastructures. These included the National Identity platform which provides a comprehensive digital identification registry for every Tanzanian. Up to December 2023 the National Identification Authority (NIDA) had registered and issued 24,250,833 unique personal identification numbers.
- Payment platforms such as the Tanzania Interbank Settlement System (TISS) have been developed to facilitate payment clearing in the banks; the Government Electronic Payment Gateway (GePG); and interoperable mobile payment services operated by MNOs.
- Instant Payments System (TIPS), which is an interoperable digital payment platform, was developed by the Bank of Tanzania (BOT) to offer real-time transfers or payments of funds between Financial Service Providers (FSPs), for banks and non-banks. As of April 2023, the volume per month has reached 12 million with value of TZS 585 billion.

However, the NICTP-2016 is silent about the country's readiness to develop high-speed digital infrastructures to accommodate emerging technologies. Also, the policy did not articulate the role of basic infrastructures, such as roads and electricity, in impacting the investment cost of expanding the ICT infrastructure. The quality and reliability of telecommunication infrastructure and their impact on digitalization were also not adequately addressed. Particularly, the policy missed strategies for addressing the challenges of limited coverage of the digital infrastructure to enable active participation in the digital transformation agenda and building of the global digital economy.

Among users, the limited ownership of smartphones and low levels of internet subscriptions contribute to a digital divide, hindering access to electronic services. This gap limits the ability to access electronic services, thereby constraining opportunities in education, economic growth, and the enhancement of healthcare service. While urban centres benefit from relatively robust and well-developed broadband networks,

remote and rural areas face substantial connectivity challenges due to limited infrastructure, hindering their access to high-speed internet services. Bridging the gaps identified above is essential for the country to fully engage in the digital economy and leverage digital transformation for inclusive socio-economic development.

1.2.3 Frequency Management and Scarce ICT Resources

Mobile communication technologies are numerically categorised in generations chronologically from the First Generation (1G), going upward, indicating the advancement of the technology. The 4G remains the prevalent mobile broadband technology, offering expansive coverage across numerous cities, towns, and rural regions in the country. While 5G is slowly making its way into the market, its presence is available in a few urban areas. Its uptake has been gradual, largely due to the high costs associated with 5G devices and the limited range of 5G services. Additionally, the extensive network infrastructure required for 5G connectivity in rural and urban areas needs a substantial investment cost.

The 4G technology is currently the top choice for mobile internet access in areas not connected to the fibre optic broadband cables. However, in the coming years, 5G is expected to progressively make its mark, likely becoming the dominant broadband wireless technology in the country. This transition is likely to take place as the government development agenda promotes the expansion of the digital wireless infrastructure to rural areas and 5G devices become more widely available and economically affordable.

The NICTP-2016 policy has empowered the TCRA to develop a strategic spectrum management system, prioritizing spectrum utilization for public services. TCRA has successfully auctioned off spectrum licenses across the 700MHz, 2300MHz, 2600MHz, and 3500MHz frequency bands to extend broadband internet coverage. This initiative has been instrumental in allowing mobile operators to escalate their investments in 5G infrastructure.

The relentless pace of technological innovation in the digital sector, exemplified by the migration from internet protocol version 4 (IPv4) to internet protocol version 6 (IPv6), has sparked a need for more efficient and transparent management of scarce ICT resources, notably frequency spectrum. To meet this challenge, in 2021, COSTECH and TCRA solidified their cooperation through a Memorandum of Understanding (MoU) to bolster digital innovation and research by offering spectrum and telecommunications resources at no cost, to support research, education, and innovative projects.

Notwithstanding the development made in spectrum management, the existing Government policy and regulatory framework for spectrum distribution and utilization exhibit certain shortcomings. Notably, there is a lack of clear guidelines on the ongoing management of spectrum for future applications. Additionally, there is an absence of well-defined policy and legal frameworks for the use of spectrum resources in

research, education, and innovation, activities. This situation underscores the necessity for TCRA to explore appropriate improvements in policies that govern frequency spectrum management and allocation.

1.2.4 e-Services and Local Content Development

1.2.4.1 e-Services

e-Services are services that are delivered electronically primarily via the internet and mobile channels. They have revolutionized and enriched the interactions among different stakeholders by offering a broader and higher quality of services to citizens. The government commitment to utilizing ICT to enhance the efficiency and effectiveness of public service delivery is evident. Both public and private institutions are steadily adopting modern ICT-driven solutions to deliver services, transitioning from traditional practices.

The Government is promoting numerous functional specific and sectorial strategic e-services that include:

- Civil Registration and Identification (National Identification System from NIDA)
- Billing, Tax and Revenue (Tax portal from Tanzania Revenue Services)
- Business Registration and Licensing Online registration system from Business Registration and Licensing Agency (BRELA)
- Land and Property Registration (Online Self-Assessment system from Ministry of Land Housing and Settlement)
- Social Health (Online Application for the National Health Insurance Fund)
- Education (Learning Management Systems for various learning Institutions)Data exchange platforms (Government Enterprise Service Bus - GovESB)
- Police Services and Safety systems (Online Traffic Check for the Tanzania Police)
- Government office management and support (Office);
- Social Security (Members Portal from Public Services Social Security Fund)
- Mifugo services (Mifugo Integrated Management Information System from Ministry of Livestock and Fishery).

The progress made in various sectors notwithstanding, a number of significant challenges persist. These challenges primarily involve the insufficient integration and interoperability of centralized systems in different sectors and the lack of adequate guidelines for the effective management of data throughout its entire lifecycle.

Despite the significant developments in e-services, there exists a number of challenges to be addressed. Most of the systems in the public sector are not integrated, and the quality and stability of existing systems need to be improved. Also, the need to integrate service delivery platforms, requires users of e-services to have a distinctive digital identifier. This identifier is fundamental for unique identification of

e-service clients and aids in the interoperability service delivery platforms under different institutions and sectors. Additionally, the development of e-Services in the country has not yet fully exploited the possibilities offered by new and emerging digital technologies. The revised policy intends to advocate the adoption and promotion of frontier technologies such as Machine Learning, Artificial Intelligence (AI), Blockchain, Data Analytics, and Internet of Things (IoT) in e-Service development.

1.2.4.2 Local Content Development

Active participation of the community in the digital space is facilitated, among other things, by the availability of local innovators, products, services, and contents in the online space. Availability of local contents gives the community opportunities to access ICT resources, and access relevant information to its culture, context and language.

One of the benefits of promoting local content development is to encourage the growth of a skilled ICT workforce to help nurture local talents and build capacity of local experts in the ICT ecosystem to create home-grown solutions. Additionally, a thriving local content development environment contributes to economic growth by generating revenue, creating jobs, and attracting investment. It is also a key driver for a robust digital economy, as it makes digital solutions and services available and accessible across various sectors.

A variety of initiatives, focused on fostering innovation and incubation centres, have been set up to escalate ICT innovations and the proliferation of products, services, and online content in the digital space. Legal and regulatory instruments are in place to protect the development of local content, especially in the realms of e-Government, electronic transactions, and data protection. Infrastructure elements like data centres, owned by both public and private sectors, have introduced cloud services within the country. The provision of these services is essential for facilitating the creation, hosting, and wider accessibility of online content.

Moreover, the Government has forged partnerships with different countries through Memorandum of Understandings (MoUs) to exchange expertise and trade in locally developed solutions. This strategy aims to enhance digital exports and bolster south-south cooperation. Additionally, in collaboration with the Tanzania Start-Up Association (TSA), the Government has facilitated loan accessibility for local start-ups, a move anticipated to cultivate a robust content culture within the nation.

Despite the achievements made, the creation and availability of local content in Tanzania faces numerous obstacles. The representation of content that truly reflects the Tanzanian culture, information needs, and language is scarce on digital platforms. There is a lack of adequate incentives for developing and promoting local products and solutions. The use of Kiswahili in creating online content remains minimal, and most content creators are not proficient in English, the predominant language on these platforms. Additionally, internet access in Tanzania is limited and costly for many users, which restricts online activities and contents generation, and the quality of online content with local context often falls short of expectations.

1.2.5 Cooperations and Collaborations

The Government of Tanzania acknowledges the advantages of engaging in regional and international cooperation in the ICT sector. Consequently, it has sustained strategic partnerships at the regional and international levels. Since the operationalisation of the NICTP-2016, Tanzania has actively participated in regional integration initiatives led by the African Union (AU), Southern African Development Community (SADC), and the East Africa Community (EAC). These efforts have amplified Tanzania's role in the region, thanks to its strategic location and capacity to connect landlocked countries with submarine cables.

These collaborations entail joint forces by the countries involved to formulate and harmonize policies and regulations that oversee the ICT sector. This encompasses the establishment of data protection laws, cybersecurity standards, and rules pertaining to internet governance, aiming to forge a more unified ICT environment across national borders. Additionally, regional cooperation is exemplified by the extension of ICT infrastructure across borders. Tanzania, through the NICTBB initiative, is enabling landlocked neighbours like Uganda, Rwanda, Burundi, Malawi, and DRC to access international submarine internet cable systems.

The Government of Tanzania has reinforced its collaborative efforts with key organizations such as the International Telecommunications Union (ITU), African Telecommunications Union (ATU), Commonwealth Telecommunications Organization (CTO), and International Telecommunications Satellite. Additionally, collaboration frameworks with the private sector have been established, including various bilateral agreements and MoUs between the Ministry responsible for ICT, ITSO, RASCOM, and other national and international bodies. These collaborations yield numerous benefits, such as knowledge exchange, enhancement of human capital and expertise, funding for ICT initiatives, building a network for the information society, policy harmonization, and enlarging the market for ICT services and products.

Notwithstanding the achievements in regional and international collaborations in the ICT sector, there are still challenges to overcome. It is vital to bolster Tanzania's negotiation capabilities and enhance its collaboration with other countries to foster local innovation, knowledge exchange, and attract Foreign Direct Investment (FDI) in ICT. Moreover, greater efforts are needed to enhance the role of the private sector in expanding and advancing the ICT sector.

1.2.6 ICT Governance

1.2.6.1 ICT Governance and Strategic Management

ICT Governance is an integral part of corporate governance. It consists of leadership, organisational structures and processes which ensure that ICT extends and sustains the realization of organisation’s strategies and objectives. On other hand, ICT Management is the process whereby all resources related to ICT are managed according to an organization’s priorities and needs.

Effective ICT governance ensures that digital strategies and technologies align with the broader objectives and policies of the government. This alignment is crucial for maximizing the benefits of digital transformation in achieving national goals such as economic growth, improved public services, and enhanced governance. Strategic management of ICT resources ensures that investments in technology are made wisely, wastage is avoided and funds are allocated to initiatives that offer the highest return on investment and public value. The aim is to generate value through the use of ICT systems, solutions and services. A strong ICT Governance and Strategic Management is needed to guide various players in the ICT industry considering its multi-sectorial nature that involves national and international stakeholders.

In recognition of the importance of ICT Governance, the Government established The Ministry of Information, Communication and Information Technology (MICIT) in 2021. The Ministry has a mandate to formulate and monitor the implementation of policies on Information, Information Technology, Telecommunications and Postal in the country. In 2015, the Government established The Information and Communication Technologies Commission (ICTC) to provide advice, strategic planning, implementation, investment in ICT, and coordinate National ICT initiatives.

In 2019, the Government established e-Government Authority (e-GA) under the President's Office Public Service Management and Good Governance (POPSMGG) with the objective of enforcement of e-Government related policies, laws, regulations, standards and guidelines in public institutions. In 2022, e-Government Strategy was developed to provide for a more coordinated and citizen-driven focus for Tanzania's e-Government initiatives.

Despite the measures taken to improve ICT governance and management, the ICT sector continues to face several leadership challenges. There is no a National ICT Strategic Management Structure and a comprehensive National ICT Act to oversee and advance the sector nationally. The NICTP-2024 recognizes this gap and highlights the necessity to enhance ICT Strategic Governance and Management of the ICT sector.

1.2.6.2 Governance of e-Government Services

ICT presents tangible opportunities for both the public and private sectors to enhance their performance, particularly in areas like transparency, accountability, citizen involvement, and decentralization. It also empowers governments to efficiently deliver public services, granting citizens the access to services they are entitled to. Integrating ICT into the planning and design of development strategies is essential for establishing governance systems that are efficient, effective, and transparent. Online tools can substantially improve service delivery and the flow of information from government bodies to the citizens. Additionally, ICT facilitates improved communication between governments and citizens, offering valuable opportunities for increased citizen participation in governance and decision-making processes."

Various endeavours were made by the Government to ensure that ICT is utilized to provide public services and support good Governance. The most notable step was the establishment of the e-Government Agency in 2012 which was later transformed in to e-Government Authority through the act of Parliament No.10 of 2019.

The Government has introduced various ICT systems, solutions, and services within the government framework, including Ajira Portal, National e-Procurement System of Tanzania (NeST), e-Mrejesho, e-passport, GovMail, MUSE, e-Office, Web-based Plan Rep and Government Electronic Payment Gateway (GePG). These initiatives have notably enhanced public service delivery, curtailed corruption, and bolstered transparency, accountability, and citizen engagement.

While the achievements to date are commendable, there is still a crucial need for the government to engage in proactive and strategic initiatives aimed at the effective governance of e-Government services. Alongside this, it is essential to develop policies that encourage the comprehensive integration of sectorial service delivery platforms within the public sector that integrates directly with the private sector through standards developed by the Ministry responsible with ICT. Such measures are vital for further improving service delivery and advancing the principles of good governance.

1.2.7 ICT Security and Safety

The implementation of NICTP-2016 has influenced the establishment of a secure environment that builds public confidence and trust in the use of online platforms and ICT devices to access public services. Initiatives such as the Government Enterprise Service Bus (GovESB) as central platform for integrating Government service delivery systems are significant to enable public institutions to securely exchange data. In recognition of data protections and privacy laws and regulations, it has become imperative for national critical information infrastructure to be enhanced through the introduction of new technologies such as National Public Key Infrastructure (NPKI) to govern exchange of information between parties.

Other achievement of the NICTP-2016 include promotion of the secure use of ICT products and services as well as the enforcement of ICT industry standards; the establishment of Personal Data Protection Act 2022; and the Online Content Regulations of 2020 which enhanced the legal framework related to the protection of personal data, privacy and ensuring online protection via content regulation.

The development of the ICT sector introduces various security challenges for ICT resources and their users, particularly with the expansion of network connectivity and data sharing platforms. Proactive policy development and strategic actions are necessary to enhance skills in ICT security and close the security gap.

While social media and digital platforms are extensively used for various applications and online interactions between governments, businesses, and citizens, they present increased security risks, especially for vulnerable populations such as children and the elderly. Therefore, there is an urgent need for comprehensive policies that guide safe

and ethical social media use, with a focus on data protection and regulation of online behaviour, including addressing online harassment and providing support for social media addiction. Collaboration between public and private sectors and individual stakeholders is essential to ensure community safety and develop effective online safety policies. Additionally, the NICTP-2016 did not adequately anticipate the need for National PKI guidance, a gap that this policy intends to address is to foster the secure use of digital signatures through the NPKI platform to be used in ensuring safe transactions in e-services especially e-Commerce.

1.2.8 Legal and Regulatory Framework

In developing nations such as Tanzania, the increasing adoption of ICTs is presenting a mix of socio-economic and legal challenges. The advent of emerging technologies has unveiled novel methods, opportunities, and risks that were once unknown. Given these dynamics, it's crucial to establish a proactive legal and regulatory framework. Such a framework is essential not only to keep up with the swift changes in the ICT landscape but also to effectively promote and regulate its usage within the country.

In response to the dynamic changes in the ICT sector, a series of laws and regulations have been put in place and periodically revised. These include notable acts and regulations such as the Cybercrimes Act of 2015, Personal Data Protection Act of 2022, the updated Law of Evidence Cap.6 (2019 Edition), the e-Government Act of 2019 and subsequent regulations in 2020, the Electronic and Postal Communications Act of 2010 with its 2022 Regulations, TCRA Guidelines, the Access to Information Act of 2016, and the National ICT Policy of 2016. Furthermore, there have been substantial efforts in aligning with International Legal Instruments to bolster cooperation in ICT matters, including signing the MALABO CONVENTION and participating in roaming initiatives in the EAC and SADC regions.

Focusing on Comprehensive Legal Frameworks for ICT and Global Partnerships: "To effectively manage the burgeoning ICT sector, a comprehensive set of laws and regulations have been established and revised. This legal framework encompasses the Cybercrimes Act of 2015, the Personal Data Protection Act of 2022, the revised Law of Evidence Cap.6 (2019 Edition), the e-Government Act of 2019 along with its 2020 amendments, the Electronic and Postal Communications Act of 2010 and its 2022 Regulations, TCRA Guidelines, the Access to Information Act of 2016, and the National ICT Policy of 2016. In addition, there have been major initiatives in adopting international legal instruments to facilitate cooperation on ICT issues. This includes Tanzania's participation in the MALABO CONVENTION and agreements for mobile phone roaming in the East African Community (EAC) and Southern African Development Community (SADC) regions.

Lastly, Digital taxation which refers to the tax levied by the Government on digital products and services. As the digital economy expands, the Government of Tanzania has to seek ways to expand its tax-base by revenue generated by digital businesses. Efforts have been made by the Government to introduce taxes on non-resident

electronic service providers operating digitally in Tanzania through digital platforms. Thus, in July, 2022, the Government through the *Finance Act 2022* amended the *Income Tax Act, Cap 332*, and *Value Added Tax Act, Cap 148* to bring into the tax net Non-Resident Electronic Service Providers operating in Tanzania without having a physical presence. The introduction of the specific legislation aims to promote equity and fairness between residents and non-resident service providers who conduct business in the country.

While there have been notable strides in the legal and regulatory fields, a key challenge persists: keeping the legal framework proactive and aligned with rapid technological changes. Areas in dire need of legal and regulatory refinement include rights to data access, protocols for data sharing, privacy safeguards, addressing computer-related frauds and crimes, securing e-transactions, developing comprehensive e-transaction regulations, enhancing e-service delivery to citizens, and overseeing the lifecycle of ICT products and services. Additionally, the legal and regulatory environment must evolve to facilitate the responsible, adaptable, and ethical use of new and emerging technologies.

1.2.9 ICT Sector and Industry Development

The Government of Tanzania recognizes the ICT sector as a fundamental enabler and driving force in its evolving digital economy. The Government's commitment to bolstering ICT use is evident in its efforts to strengthen the innovation ecosystem, working collaboratively with the private sector. As part of these forward-looking initiatives, the Government has established various innovation centres that include Smart Hubs, Boot Camps, and Open Labs, intended to create nurturing environments for startups and innovators.

These are crucial for acquiring and enhancing digital skills through structured training, practical experience, and access to otherwise expensive resources. Notable examples include the Buni Innovation Hub and Dar Teknohama Business Incubation (DTBi) in Dar es Salaam, which have been instrumental in fostering collaboration, mentorship, and resource availability for ICT startups and entrepreneurs.

Research and Development (R&D) is integral to the growth and development of the ICT sector in the country. The Government through Higher Learning Institutions, underscoring its commitment to advancing research on e-services. In a similar vein, the ICT Commission is working in conjunction with other key stakeholders to drive research and development initiatives, which are vital for the sustainability and progression of the ICT industry.

Commission for Science and Technology (COSTECH), the authoritative body for Science and Technology in the country, has been instrumental in championing various ICT research initiatives and supporting the emergence of startups specializing in ICT. It has offered support to inventors and developers engaged in pioneering ICT solutions. A significant contribution from COSTECH is the creation of a soft centre

accelerator through the ICTC. In August 2023, COSTECH funded nine innovative research projects in the realm of emerging technologies, with a total investment of TZS 1.29 billion.

While significant strides have been made in ICT R&D, there are still obstacles to overcome, particularly, in the synergies among institutions overseeing R&D, Innovation, and Entrepreneurship. This collaboration requires more visibility and Government support. Funding is another issue because the current funding mechanism to support ICT R&D is inadequate and unpredictable, and existing funds are not properly coordinated. To address these issues, clear and focused policies and regulatory guidelines and strategies are essential to promote development and use of ICT to accelerate Tanzania's digital transformation agenda. Additionally, establishing a robust framework for cooperation among the Government, private sector, and the academia in ICT development is imperative. Protecting the Intellectual Property rights of homegrown innovators and their novel solutions is also a key area that requires stringent enforcement.

1.2.10 Productive Sectors Development

Tanzania's economic development is anchored on the productive sectors of the economy especially agriculture, tourism, mining, energy, manufacturing and financial services sectors. ICT is becoming a key enabler that is playing a major role in supporting these key productive sectors of the economy. In recognizing the role of ICT in production, the Government has undertaken various efforts to ensure ICT continues to support development of productive sectors.

In the Agriculture sector solutions have been established such as Agriculture sector stakeholders Database; Farmers Registration System (FRS), Agricultural Routine Data System (ARDS); Agriculture Trade Management Information System (ATMS); Agriculture Sector Stakeholders Registration, and M-Kilimo In livestock sector, there is the Mifugo Integrated Information System (MIMIS). A competitive production and trading system has been established through existing digital technologies and enabled the creation of dynamic value chains and provide a reliable market for production and trading in the primary sectors.

Despite the increasing application of ICT in productive sectors, the usage progress is still unsatisfactory. More efforts and innovative initiatives are required to promote and expand the use of ICT to improve performance in production activities, increase productivity and expand production operations.

1.2.11 Cross-cutting Issues

1.2.11.1 Gender and Social Diversity

The proliferation of ICT has resulted into critical challenges concerning gender and social diversity. There exists a conspicuous disparity in ICT accessibility, with women, girls, and individuals with disabilities and special needs often having reduced access

to the Internet and other ICT resources. The ICT industry sees a lower representation of women and those with disabilities, both in leadership and technical roles. This imbalance is largely due to the absence of gender-sensitive measures such as adaptable work schedules, comprehensive maternity leave, and firm policies on discrimination and harassment.

The gender and social gaps in ICT are further exacerbated by socio-economic factors, prevailing cultural norms, and educational inequalities, which can be mitigated through the implementation of effective ICT policies. Additionally, the development of assistive technologies has been initiated to cater to the needs of people with disabilities and special needs.

Even though there are initiatives focusing on ensuring equitable access of ICT resources, still population in rural areas represented a large segment of those experiencing poor connectivity and usability of ICT resources. This situation is attributed to shortage of basic ICT infrastructure and assistive technology tools and software; technophobia; limited number of experts; shortages of ICT skills training opportunities for people with special needs; high costs of ICT resources and solutions, and unfamiliarity with ICTs.

The Government has the opportunity to enhance and social gender diversity in the ICT sector by enacting a range of policies and initiatives that address the challenges faced by women, marginalised communities, and persons with disabilities in the ICT industry. These initiatives should focus on promoting gender-inclusive education policies, encouraging young girls to pursue science, technology, engineering, and mathematics (STEM) disciplines, and providing scholarships and financial incentives for women and girls to study ICT-related subjects. Additionally, academic institutions like the Universities of Dar es Salaam and Dodoma, which large capacity of ICT experts, should be encouraged to create mentorship programs targeting women in ICT. The Government should also launch specific training programs aimed at improving digital literacy and ICT skills for women, girls, and people with disabilities. Implementing policies that support vocational training in ICT for women and persons with disabilities in underprivileged communities is also essential.

1.2.11.2 ICT for Disaster Management

ICT plays a crucial role in disaster management by providing tools and solutions that enhance preparedness, response, recovery, and mitigation efforts. ICT solutions can be used to enhance the efficiency of response and recovery efforts in disaster management save lives and reducing economic losses. As technology advances, the potential for innovative applications in disaster management continues to grow, hence offering new ways to address the challenges posed by natural and man-made disasters. The Government has implemented several ICT-based measures to enhance disaster management, including reinforcing meteorological operations across the nation and collaborating internationally to build capacities in disaster prevention, mitigation, and preparedness.

However, the progress made in the use of ICT for disaster management is unsatisfactory and the current applications are not producing optimal results. There is a need for more strategic and proactive measures to be taken to ensure the country harness the full potential of ICT to prevent, mitigate, and prepare for disaster.

1.2.11.3 Critical Infrastructure

As critical infrastructures become more intertwined with digital technologies, their susceptibility to cyber-attacks has escalated. Utilizing ICT is essential for establishing stringent cybersecurity defences, such as firewalls, intrusion detection systems, and encryption techniques, to safeguard against hacking, malware, and various other cyber threats. Utilizing ICT is crucial in protecting vital systems and assets that underpin society and the national economy. This includes key infrastructure such as electricity grids, water supply systems, transportation networks, and telecommunications networks.

Additionally, ICT plays a key role in facilitating disaster recovery planning and business continuity strategies during incidents. This includes timely disaster notification, backing up crucial data and maintaining redundant systems, and enabling the rapid restoration of essential services in the event of any disruption. For example, key ICT infrastructures like the National Internet Data Centre (NIDC) and the Government Data Centre have also been specifically designed to include disaster recovery capabilities.

However, there is a notable absence of a dedicated policy and national framework for using ICT in disaster management. Addressing this gap is one of the crucial areas addressed in this policy. The policy also provides for an efficient institutional framework dedicated to the use of ICT in disaster management.

1.2.11.4 Environmental Impact

The adoption of ICT has a significant impact on the environment on issues such as energy consumption, electronic waste (e-waste), resource depletion, and carbon emissions. As the use of ICT expands, so does the demand for data centres facilities that consume large amounts of energy for powering servers, network systems and end user devices and cooling systems. While it is possible to use efficient technologies and renewable energy sources, the overall energy demand of data centres remains a concern especially during incidences of power rationing.

Also, the rapid technological advancements lead to a shorter lifespan for electronic devices, contributing to the growing problem of e-waste. This waste often contains hazardous materials like lead, mercury, and cadmium, which can be harmful to the environment if not properly disposed of. Recycling and proper disposal of e-waste remain challenges in Tanzania, leading to environmental pollution and health hazards. The proliferation of ICT has a consequential impact on the environment, particularly in terms of energy consumption and the creation of e-waste from various ICT devices and equipment. The implementation of NICTP2016 led to the formulation of legal and regulatory frameworks specifically for ICT waste management. The Control and Management of Electrical and Electronic Equipment Waste Act, enacted in 2022,

came as a response to these environmental concerns. Additionally, there are ongoing initiatives to set up electronic waste recycling plants and refurbishment centres.

However, there is a pressing need to accelerate existing initiatives and strengthen the legal and regulatory frameworks to address environmental issues caused by the proliferation of ICT in society.

1.2.11.5 Public and Private partnership (PPP)

The NICTP2016 enlightened the need to promote investment in ICT to contribute to the objective of reducing poverty through delivery of competitive and sustainable PPPs. Although the PPP landscape is dynamic, Tanzania is still committed to have successful collaborations between public and private sectors. To provide a robust basis for PPPs, Tanzania has developed the National PPP Policy in 2009, which focuses on promoting private sector participation in the provision of resources for PPP enterprises in terms of investment capital, managerial skills and technology.

The PPP Centre of Excellence (PPP CoE), established by the Government under President Office, serves as a hub for coordinating and overseeing PPP projects. It offers essential guidance to ensure transparent and effective execution of joint initiatives between the public and private sectors. The collaboration between the public and private sectors is instrumental in bridging the digital divide and fostering a digitally inclusive society.

However, challenges still exist in attracting investors in PPP ICT projects. There is a need to create a more conducive policy environment that promotes PPP in ICT project. Attracting investors to PPP projects in the ICT sector requires a blend of policies and incentives that address the specific risks and opportunities in these markets. Such policies should ensure ICT projects are targeted to deliver value to the public.

CHAPTER 2
RATIONALE, VISION, MISSION AND OBJECTIVES

2.1 Unveiling National ICT Policy of 2024

This policy is an overarching National ICT guiding document that recognizes the role of ICT in public and private sectors in Tanzania. The envisioned achievement of this policy depends on mainstreaming and implementation of relevant ICT initiatives in respect to the sectorial polices.

The Policy aims to accelerate the country's digital transformation journey as an implementation continuation of the NICTP-2016 which has been operational for over seven years. During this period the ICT sector witnessed rapid technological changes that resulted in a significant contribution to the Gross Domestic Product (GDP) estimated at 1.5%. In this regard, this chapter highlights the policy vision, mission and objectives thereof to address the challenges which have been aforementioned.

2.2 Rationale for a new ICT policy

The NICTP-2016, and the NTP of 1997 before it, served considerably well in providing an enabling environment for the development, implementation and exploitation of ICT to achieve the nation's social-economic goals as enshrined in the National Development Vision 2025. The policies focused on addressing the following ten strategic issues: measures and mechanisms to accelerate ICT infrastructure development; broadband penetration and access; strengthening national capacity in protection of cyber space users; management and efficient utilization of the spectrum and other scarce ICT resources; promoting business process outsourcing industry; enhancing innovation in e-services; and promoting local content development and hosting.

Other areas were the establishment of frameworks for e-waste management, promoting the use of ICT for disaster management and other cross-cutting issues. Despite the efforts previously made by both the public and private sectors, and while acknowledging the accomplishments in policy execution, there is a need for coordinated efforts to offer clear policy guidance. This is essential to effectively address challenges arising from advancements in the field of Information and Communication Technology (ICT).

Likewise, the pace of technological change is rapid and relentless. ICT technologies that were cutting-edge a decade ago are now virtually obsolete. New and emerging technologies like artificial intelligence, machine learning, deep learning, robotics

process automation, blockchain, Internet of Things, and 5G telecommunications require updated frameworks to be effectively integrated into the economy. As the country is focusing in building a digital economy, the risks associated with cybersecurity increase. Older ICT policies might not address current threats such as advanced cyber-attacks, data breaches, and online fraud. Updating these policies is crucial to protect sensitive data and ensure trust in digital systems. Thus, this policy is a review of the NICTP-2016 to align the evolving economic realities goals to ensure that digital transformation contributes positively to sustainable development and socio-economic. In doing so, it is focusing on addressing following strategic issues:

2.2.1 Limitations of the Current Digital Infrastructure

Poor digital infrastructure often results in limited access to technology, especially in rural or underserved areas. This creates a digital divide where rural populations lack the benefits of digital services and tools. The Government may also face significant challenges in offering services digitally (e-governance) without robust digital infrastructure. It is also a fact that a limited digital infrastructure might not be able to support emerging digital technologies and applications such as Big Data, Internet of Things, Robotics Process Automation, Artificial Intelligence and Machine Learning.

2.2.2 Weaknesses in the Current Institutional and Legal Framework

In the absence of robust legal and institutional frameworks, there might be unequal access to ICT, leading to a digital divide. This inequality can affect rural and underserved communities disproportionately, limiting their access to digital resources. Weak legal and institutional frameworks can leave a country more susceptible to cybersecurity threats such as increased risk of cyberattacks, data breaches and other digital security issues. Also, weak legal and institutional structures can deter investment in ICT infrastructure and innovation. Potential investors often seek stable, well-regulated environments, and a lack of this can hinder technological advancement.

2.2.3 Lack of Robust Cybersecurity Measures

Lack of robust cybersecurity measures leads to systems and networks are more susceptible to attacks such as hacking, phishing, malware, and ransomware. This can lead to unauthorized access to sensitive data and service disruptions.

Weak cybersecurity can lead to data breaches, exposing confidential information such as personal data, financial records, and trade secrets. This compromises individual privacy and corporate confidentiality and can result in significant financial losses for individuals, businesses, and governments.

2.2.4 Challenges in Nurturing Innovation and Start-up Ecosystem

Within the digital economy, digital innovation, entrepreneurship, and startups are fundamental components driving economic growth and job creation. Nevertheless, the current ecosystem does not provide sufficient support for the growth and

commercialization of digital startups, innovations, and entrepreneurship in the market. This deficiency weakens Tanzania's competitive position in the regional and global market for innovative digital products and services. Therefore, it is essential to implement measures that establish supportive frameworks and institutional arrangements to nurture innovation, entrepreneurship, and startups, thus contributing to the socio-economic progress of the country.

2.2.5 Lack of Standards and Guidelines in Data Management Practices

The use of e-Services for service delivery in the public and private sectors is rapidly increasing in the country. Such developments result in the collection and storage of massive volumes of electronic data under different institutions that can be used for different purposes. Furthermore, they pose new challenges with regards to privacy, confidentiality, security, sharing, and use of personal and institutional data. Therefore, there is a need for standardized practices and regulations to ensure the captured electronic data are securely stored, analysed and used for the intended purposes and protected from malpractices and data breaches. Also, data management guidelines and procedures have to be established to ensure the data quality and reliability of information produced for decision making. Such measures will also ensure that electronic data are secured from breaches and unauthorized access. Additionally, data management capacity needs to be built to ensure effective and meaningful analysis and use of electronic data, particularly in public institutions.

2.2.6 Shortage of Advanced Digital Skills

As the country is determined to effectively participate in the global digital transformation agenda, adequate and advanced digital skills are needed. The ICT workforce needs to advance its capability to adapt and keep pace with technological changes and innovations. Also, digital literacy and skills are required to enable citizens to use of e-services, online platforms, and the Internet as well as participate in digital economy activities. Such skills are also critical for local content development with local context. There is a need for the government to collaborate with the private sector and other stakeholders to invest in building capacity of ICT professionals to meet technological advancements, consistent with requirements.

2.2.7 Need for Establishing Space Science Utilization Framework

Space science technology has grown globally, both for space exploration and for economic purposes. The advancement of ICT has significantly facilitated research, innovation and investment in space technology. As our country is venturing into digital transformation process and building the digital economy, there is a need to explore and exploit space technologies for scientific and socio-economic purposes. The participation in space science technology opens opportunities for tapping on satellite communication, access to geospatial data for agricultural innovation and precision agriculture, earth observation technologies, and navigation systems, as well as

national security. Also, space technology is vital for effective disaster management, including early warning systems and post-disaster assessment monitoring disease patterns to understand environmental triggers for the spread of diseases, and also predict risk areas that require disease-control planning. Therefore, the country has to establish legal, regulatory, institutional, investment and research environment to support space science activities.

2.2.8 Lack of a Policy Framework for Cross-Border Collaboration

The country efforts to promote digital transformation initiatives in building a digital economy, require strong regional and international collaboration in the ICT sector. Such collaboration would give the country opportunities to innovate through shared knowledge, technology, and resources at regional and international levels. It will also make the country competitive in the global ICT space due to access to broader markets, resources, and technological advancements. Therefore, collaboration in ICT need to be strategically strengthened to harmonise emerging of new national, regional and international development initiatives in ICT that have relevance to the national development goals.

2.2.9 Lack of Interoperability and System Integration Framework

The lack of interoperability and system integration framework prevent different ICT systems and platforms from communicating effectively, leading to inefficiencies in data sharing and collaboration. Integration of systems would result in higher costs due to complexities, as organizations must invest more resources in developing custom solutions to enable different systems to work together. Lack of system integration hamper workflow automation and lower productivity, as employees may need to manually transfer data between incompatible systems. Also, the absence of an interoperability framework creates difficulties in interconnecting new technologies, as compatibility with existing systems becomes a difficult or impossible.

2.2.10 Outdated National Telecommunication Policy

The National Telecommunication Policy of 1997 (NTP-97) significantly impacted Tanzania's telecommunications sector in accelerating the development of a robust and efficient sector. Its most enduring legacy lies in establishing the legislative and regulatory framework that led to the creation of the Tanzania Communications Regulatory Authority (TCRA) and the liberalization of the telecommunications sector. This deregulation led to the creation a highly competitive and innovative environment by allowing private sector participation.

However, the dominance of mobile network operators and the increasing convergence of IT and telecommunication services have made the National Telecommunication Policy of 1997 outdated. In the digitalization era, pre-telecom liberalization laws, which often focused on centralized monopolies and voice-centric services, need to be replaced with a comprehensive regulatory framework and therefore, it is

recommended that the NTP-97 be decommissioned and instead existing laws should be enhanced or new laws enacted to further open competition and remove barriers of entry; ensuring level playing field among different players through regulations that prevent anti-competitive practices and encourage infrastructure sharing; and empowering consumers with the ability to choose between different providers and services.

2.3 Policy Vision, Mission and Objectives

This section highlights the policies issue, objectives and statements thereof to address the challenges which have been aforementioned. This policy will be implemented by the public, private, development partners and non-state actors.

2.3.1 Vision

An inclusive digitally empowered Tanzania through knowledge-based socio-economic growth, innovation, and community connectivity through ICT.

2.3.2 Mission

Promoting digital innovation transformation and building a digitally-enabled knowledge-based economy for national development.

2.3.3 Main Objective

The overarching objective of the national ICT policy framework is to develop a comprehensive, secure, and inclusive digital environment. Specific objectives include the enhancement of digital infrastructure to ensure reliable and widespread connectivity; the promotion of digital literacy and skills development across all societal levels for a competent digital economy workforce; fostering innovation and the adoption of emerging technologies to spur economic growth and efficiency; ensuring digital inclusion and equity to bridge the digital divide and provide equal access to digital resources; and strengthening cybersecurity measures and data protection protocols to safeguard against threats and protect data privacy. Collectively, these objectives aim to create a robust digital ecosystem that benefits all citizens and supports sustainable development.

CHAPTER 3
OBJECTIVES AND POLICY STATEMENTS

3.1 Digital Infrastructure

Digital infrastructure refers to physical and virtual technologies that serve as the underlying infrastructure for other applications, processes, or activities required to support digital operations. The availability of adequate, world-class and reliable Digital Infrastructure will provide a competitive advantage for the country to achieve inclusive socio-economic development. This Policy underpins the development of digital infrastructure that reflects the growing importance of digital transformation, considering interconnection and interoperability to optimize performance and efficient adoption of emerging digital technologies and applications such as big data, Internet of Things (IoT), Robotics and Artificial Intelligence (AI).

Digital infrastructure is divided into the following major components:

- Hard Digital infrastructure
- Soft Digital infrastructure

3.1.1 Hard Digital Infrastructure

Hard Digital Infrastructure is the main foundational component that facilitates the development and use of digital systems, products and services. It provides the necessary support, structure, and functionality upon which other components can be built. Hard digital infrastructure refers to the physical components that are essential for digital communications and data processing. It includes:

- Hardware devices such as servers, router, switches and storage devices;
- Physical network components like fiber optic cables, satellites, cellular networks, and Wi-Fi infrastructure.
- Data centres and associated facilities that house critical IT equipment, including servers and storage systems, with the necessary power and cooling infrastructure.
- Physical Security Systems including access controls, surveillance cameras, and other systems that secure the physical infrastructure.

Deployment of Hard Digital Infrastructure requires to be done in a holistic approach to accommodate future needs and provide digital capabilities that will meet the ever-growing demand for data consumption. Its development requires a strong

collaboration between public and private sector to enable universal access to reliable hard digital infrastructure, while adapting conducive legal and regulatory frameworks.

This policy outlines interventions to achieve a Universal and meaningful connectivity. Moreover, it responds to the need to enhance availability and affordability of computing equipment including such as computers, tablets, smart phones and assistive devices.

Policy Objective

> To ensure reliable, affordable, secure, interoperable, and sustainable hard digital infrastructure countrywide for universal and meaningful connectivity.

Policy Statements

The Government shall:

(i) Create an enabling environment for public and private sector to sufficiently invest in hard digital infrastructure.
(ii) Strengthen integration in planning and implementation of hard digital infrastructure projects and promote sharing of infrastructures in delivering digital services.
(iii) Promote establishment of factories for manufacturing electronic devices, equipment such as spare parts, tools and other telecommunication materials.
(iv) Continue expanding and strengthening National ICT Broadband Backbone Infrastructure and its services to deliver broadband services efficiently.
(v) Ensure availability of quality hard digital infrastructure and services countrywide as well as creating conducive environment to promote affordability of accessing broadband services.
(vi) Ensure financing mechanisms/scheme for affordability and accessibility of computing devices and digital services to marginalized groups in rural and underserved urban areas.

3.1.2 Soft Digital Infrastructure

Soft Digital Infrastructure include the non-physical aspects that enable and enhance the functionality of the hardware. The essence of digital soft infrastructure is to deliver digital services including financial, education, health care, and other sectorial services that form significant segment of the digital transformation. Soft Digital infrastructures create an operating environment where both Public and private sectors can support their operation on the same service by creating interoperable platforms which allow sharing of data.

Therefore, this policy underscores directives that will assist the continued efforts to design, implement and deploy digital platforms to allow greater information exchange across different sectors. This will increase efficiency and effectiveness of core functions and services in the public and private sector; reduce unnecessary duplication of systems for businesses; exchange goods and services; and tap into underutilized

ICT resources through creation of soft digital infrastructure that encompasses the following:

- Software and applications such as operating systems, databases, and specialized applications.
- Cloud services provided over the internet, including cloud storage, computing resources, and software as a service (SaaS) application.
- Network protocols such as TCP/IP that govern data transmission, along with services like DNS and email.
- Cybersecurity tools such as firewalls, antivirus software, encryption, and intrusion detection systems.
- Digital content such as websites, multimedia, and databases.
- Standards, regulations, guidelines, and policies governing the use of software and access to services.

Policy Objective

> To foster the development of demand-driven home-grown soft digital infrastructure for efficient and effective service delivery.

Policy Statement

The government shall: -

(i) Promote the development of people-centric and integrated soft digital infrastructure and services.
(ii) Enhance private sector participation in developing ICT solutions.
(iii) Ensure migration of IPv4 to the new version to facilitate provision of new digital/ICT services;

3.2 Securing Digital Systems

The growth of ICT sector in the country has witnessed an increase in the deployment and utilization of ICT systems and network connectivity. Such developments have rendered ICT resources vulnerable to security threats both globally and within the country. The digital economy is anticipated to present an environment where most businesses will be conducted in the cyber space and hence it is inevitably crucial to ensure safety among end users and hence build confidence and trust.

The safety and security of ICT products and services delivered from within and out of Tanzania shall be implemented in vast manners ranging from ensuring the identification and Protection of Critical Information Infrastructure (CII). putting in place a comprehensive framework for protection of vulnerable groups against online crimes; strengthen national cybersecurity resilience through proactive threat mitigation; develop and promote Research and Development in ICT Security and Safety; develop deploy and monitor compliance of Standards, Certifications and accreditation for conformance by ICT Security professionals and all relevant ICT Security and Safety

stakeholders; and establish a dedicated operation centre for ensuring ICT Security and Safety at nationwide level.

The country's cooperation with regional and international organizations in ICT systems security facilitates a secure and safe ICT environment. This leads to an increase in compliance with the five elements (Legal Measures, Technical Measures, Organizational Measures, Capacity Development and Cooperation) of Global Cybersecurity Index (GCI). The country has continued to raise awareness to law enforcement agencies, judiciary, policy makers, academia, students' communities and general public on the proper use of ICT and how to deal with matters related to cybercrimes.

Policy Objective

> To have secure, safe and trusted ICT systems and services.

Policy Statements

The Government shall:

(i) Strengthen national ICT security governance.
(ii) Promote Research and Development in ICT Systems Security and Safety;
(iii) Strengthen ICT security capabilities.
(iv) Strengthen local, regional and international collaboration in ICT security and safety.
(v) Enhance capacity building and awareness to adapt to ubiquitous threats and technological changes.

3.3 ICT Research and Development

In this dynamic landscape of Tanzania's technological evolution, ICT stands as a fundamental force shaping the nation's socio-economic pathway. Innovation and digital transformation have propelled Tanzania into an era where research and development (R&D) in ICT play a central role in fostering progress. As the nation navigates the challenges and opportunities presented by the digital age, a rigorous focus on R&D in ICT emerges as a foundation for unlocking innovative solutions, enhancing connectivity, and harnessing the full potential of technological advancements.

Growth of R&D in the ICT sector in Tanzania faces some notable challenges that include: inadequate human and financial resources for ICT research projects which hinder the capacity for investment in cutting-edge technologies and innovations; limited access to latest technologies and equipment and inadequate collaboration among researchers, industries, and government agencies, which limits sharing of knowledge and resources necessary for comprehensive research and development in ICT.

Therefore, this policy intends to address the aforementioned challenges and position ICT as a fundamental force shaping the nation's socio-economic pathway. Through improving efficiency and effectiveness in conducting research, new technologies, processes and products are developed, thus leading to innovation, value addition of ICT in organizations and transformation in the industrial sector.

Policy Objective

> To promote ICT Research and Develop in building a robust and inclusive economy.

Policy Statements

The Government shall:

(i) Ensure sustainable funding schemes to facilitate ICT research and development initiatives.
(ii) Strengthen ICT infrastructure to support research and development efforts.
(iii) Ensure widespread access to cutting-edge technologies for ICT research and development.
(iv) Promote collaboration among educational institutions, researchers, industries, and government agencies.
(v) Capacitate researchers with necessary ICT research and development skills.

3.4 Data Governance

The Government has digitalized its business processes which led to collection and storage of massive different types of data from various individuals and institutional data, which calls for proper data governance and management. For individual data, processes such as the registration of National Identification, voters' registration, licensing registrations, the mandatory sim card biometric registration, and other several initiatives, together contribute to the collection, storage and usage of personal data.

This policy highlights potential means of using generated big data from various ICT systems for effective use by enforcing standards and frameworks for all actors involved in electronic data management; data sharing and exchange across public and private institutions.

Policy Objective

> To enforce the use of standards and guidelines for management of electronic data

Policy Statements

The Government shall:

(i) Establish mechanism for data privacy, protection and management
(ii) Build capacity in data science and big data analytics.
(iii) Promote and encourage information culture and data use for informed decisions.
(iv) Establish framework to facilitate data sharing within and across sectors and cross boarder data flow.
(v) Establish mechanism for data commercialization.

3.5 ICT Governance

ICT Governance requires strategic leadership, structures and institutional arrangements to ensure that investment, use, and support of ICT are strategically done to enable the optimal achievement of ICT goals. For nearly seven years now, the sector has witnessed major development in terms of putting in place appropriate institutional frameworks for the governance and management of ICT. This policy foresees the need of strengthening ICT Strategic Governance and Management at the institutional and national level focusing on legal and regulatory arrangements.The policy will also focus on establishing Guidelines for safe usage of ICT in the country. The sector is currently facing several challenges such as the absence of harmonized ICT Act for the purpose of overseeing and promoting ICT services; usage and adoption of emerging technologies; limited capacity of ICT institutions to implement laws and regulations govern ICT, and inadequate awareness of existing laws and regulations with regards to ICTs issues.

Policy Objective

> To strengthen institutional, legal and regulatory environment for governance of the ICT sector.

Policy Statements

The Government shall:

(i) Strengthen legal framework for governance of ICT Sector;
(ii) Enhance frameworks for Strategic Governance and Management of ICT at the national level.

3.6 Governance of e-Government Services

The use of ICT systems, solutions, and services in public institutions has provided new opportunities for the government to deliver effective, efficient and equitable public services and improve good governance. The government has achieved the delivery of e-Government services to enable better delivery of government services to citizens, improve interactions with business and industry, increase openness and transparency in governance, and strengthen the management of public resources.

Despite the aforementioned achievements, more strategic initiatives are required for the government to digitalize its business processes and services to enhance efficient,

effective and equitable ways of delivery public goods and services; coordinating and implement development projects and programs; improving communication with citizens; promoting and enforcing the rule of law; maintaining order; providing leadership; facilitating and supporting business and ensuring good governance.

The government is committed to use e-Government services more strategically and objectively to ensure they contribute to socio-economic development. Therefore, implementation of e-Government related policies in all public institutions should align with National ICT Policy Vision.

Policy Objective

> To align e-government initiatives with the National ICT Vision.

Policy Statements

The government shall: -

(i) Enhanced governance and management of e –Government services in public institutions.
(ii) Ensure e-government initiatives compliment to the realization of National ICT Vision
(iii) Digitalize all services and operations in public institutions.
(iv) Guide the standardized acquisition, implementation, and use of ICT resources in public institutions.
(v) Ensure the secure use of e-Government systems, solutions and services;
(vi) Ensure the involvement of all stakeholders in investment, development and use of e-Government solutions and services.
(vii) Ensure quality of online contents in public institutions.

3.7 Digital Skills, Human Capital Development and Talent Management

The era of digital transformation requires development of knowledgeable and skilled ICT experts capable to leverage the evolving digital technologies for social and economic growth. ICT Human capital is vital to champion this transformation by building a knowledge-based society that can adopt usage of ICTs in socio-economic activities. Significant progress has been made in developing human resources in ICT and digital skills necessary to venture into digital transformation. ICT related training programs and courses have been offered at different level of the education system and different initiatives are in place to develop ICT professionals in public and private sectors.

Despite the achievements in building digital skills, there is still a need to build more capacity in digital skills to a wider community of Tanzanians to be able to actively participate into digital transformation agenda and ICT-enabled social-economic activities. Also, there is inadequate systemic mechanism to identify, develop, nurture

and utilizing talents necessary in digital transformation. The policy highlights strategic measures to facilitate development of digital skills and talents in the ICT sector by amplifying the engagement of the Government, education institutions and the industry.

A National Digital Transformation Database shall be implemented by the Ministry responsible for ICT to monitoring the progress on various digital initiatives keeping an inventory of various digital skills available Tanzania workforce. The establishment of a national database by the Ministry responsible for ICT is important as the Government undertakes its digitalization journey and the digital economy is gaining a foothold in Tanzania. Data collected in the National Digital Transformation Database that can be used for analysing the performance and benefit realization of various ICT development initiatives undertaken in collaboration with various stakeholders.

Policy Objective

> To promote and develop ICT human capital, digital skills and talents among Tanzanians to become active-players in the digital transformation agenda.

Policy Statements

The government shall:

(i) Promote integration of digital skills development in formal and informal education systems.
(ii) Enhance ICT expert's competency in high demand ICT skills
(iii) Establish mechanism to attract and retain high skilled ICT professionals for local ICT industry.
(iv) Establish mechanism to identify, develop, nurture and utilize talents in ICT innovations and solutions development.
(v) Promote digital literacy to create digital citizenship to the community.
(vi) Promote Gig Economy to foster employment opportunities.

3.8 ICT in Space Science and Technology

Tanzania envisions to harness the potential of outer space for national development. Various public institutions and private sector entities have already been leveraging services derived from space activities, particularly satellite service. This extends to a spectrum of sectors, encompassing healthcare, education, telecommunications, defence, and security agencies. Nonetheless, for Tanzania to carve its niche in the space industry landscape, it is imperative to establish an environment that fosters governance, investment, and the effective utilization of space technologies.

Currently, Tanzania has not ventured enough in space technologies to become a significant stakeholder in space endeavours and cultivate a space-based economy. This underscores the need for the government to lay the groundwork and facilitate a conducive environment to tap into the benefits of space technologies for socio-economic development. This policy aims to create an enabling environment for the

development of space technologies in Tanzania. It seeks to attract increased private sector investments in this field, foster international collaboration, facilitate technology and knowledge transfer within the country.

Policy Objective

> To venture into space science and technology for advancement of science, research and socio-economic development.

Policy Statement

The government shall:

(i) Establish space science and technology governance frameworks.
(ii) Promote space education for development of local scientists and engineers.
(iii) Promote ICT research and investment in space science and exploration.
(iv) Strengthen collaboration between local Institutions and International space agencies and research institutions.

3.9 Emerging Technologies

The world is experiencing rapid technological advancements, propelled by substantial investments in research and development and exponential advancements in various fields, notably digital technology. New and emerging technologies such as blockchain, artificial intelligence (AI), virtual/mixed/augmented reality, drones, Robotics, Datafication, Internet of Things (IoT), Big Data, Quantum computing, Cybersecurity, Autonomous Vehicles, 5G, Cognitive Ratio (CR), and 3D printing are revolutionizing every sector. Each of these technologies represents a significant breakthrough, and when integrated with other technologies, their inherent potential benefits add more value. They are typically employed to created new products and services in different application domains such finance, healthcare, agriculture, production automation, and entertainment in a transformative way.

AI has particularly taken the world by storm and will continue to exert its presence for a long time to come. The acceptance of AI's impact as a transformative force stems from a combination of technological advancements, market trends, and policy developments that collectively underscore AI's significance and pervasive influence in today's society. This policy would serve as a vital framework for navigating the complex landscape of AI and ensuring its benefits are maximized in the digital economy while mitigating risks and ensuring ethical, responsible, and inclusive AI development and deployment.

New and emerging technologies also bring many ethical issues that need to be addressed, including privacy, bias and discrimination, job displacement, and weaponization of technology. Addressing these ethical issues requires interdisciplinary collaboration among technologists, policymakers, innovators, users, and the wider society. As a nation, new governance frameworks, protocols, and policy systems are

imperative in the evolving digital era to ensure comprehensive and equitable benefits for all.

Policy Objective

> To establish a responsive and adaptive environment for the development and utilization of new and emerging technologies including Artificial Intelligence and related technologies.

Policy Statement

The Government shall: -

(i) Establish frameworks for adoption and governance of new and emerging technologies.
(ii) Promote investment in developing new and emerging technologies in ICT solutions and services.
(iii) Build capacity for development and use of new and emerging technologies including AI.
(iv) Create an enabling and holistic strategic framework for AI that encourages innovation.

3.10 Financial Services and Digital Trading Platforms

Financial services delivered through digital platforms, include online banking, mobile payments, digital wallets, and peer-to-peer lending, possess a transformative effect on the financial sector and digital transformation. Significant efforts have been made in the country to adopt and use digital technologies and solutions to promote the financial sector. Such developments have made the country to achieve financial inclusion, facilitated by high penetration of mobile telecom services, enabling secure and convenient financial transactions.

Despite the achievements, there is still a need to harness the full potential of digital financial services and trade to achieve financial inclusion, innovation and contribute to socio-economic development. Moreover, a need to enhance the interoperability of the digital taxation system in order to ensure canon of taxation are adhered and result into prosperity of the country. Hence, this policy strives to create a conducive environment to enhance digital financial services and trade.

Policy Objective

> To enhance the development and use of digital technologies and solutions in delivery of financial services and trading.

Policy Statements

The Government shall:

(i) Enhance the legal and regulatory environment for development of financial technologies (FinTech).

(ii) Promote a cashless economy.
(iii) Promote e-business and e-commerce in all sectors of economy.
(iv) Promote digital commodity trading platforms to access domestic and international markets.
(v) Enhance interoperability of the digital revenue to expand government tax-base.

3.11 ICT Innovations, Entrepreneurship, and Startups

The country acknowledges the significant role of ICT innovation, entrepreneurship, and start-ups in encouraging job creation, promoting businesses and productivity. This is achieved through the creation of innovative digital products and services for production sectors. Therefore, the government is committed to creating a dynamic ecosystem that promotes entrepreneurship and innovation, and the growth of start-ups. Transforming Tanzania's economy into a regional innovation powerhouse demands a strong emphasis and concentration on three critical areas: empowering potential entrepreneurs, fostering creative ideas, and supporting the growth of start-ups.

Even though ICT innovation, entrepreneurship, and start-ups are key enablers and catalysts in the transformation of various sectors of the economy for sustainable development, there are significant challenges that constrain their growth and sustainability. These challenges include the inability to secure funds for capital and finance for scaling; lack of innovation and entrepreneurship culture; insufficient training on innovation, entrepreneurship, and technical skills. Other challenges include inadequate infrastructure and resources, and insufficient supportive regulatory environment for digital innovation and growth of start-ups. Therefore, the policy demonstrates the country’s commitment to promote a facilitating environment to enable innovation and entrepreneurship.

Policy Objective

> To promote the advancement of ICT innovation, entrepreneurship, and start-ups for a sustainable and inclusive socio-economic development.

Policy Statements

The Government shall:

(i) Establish governance framework to support start-ups, innovators and entrepreneurs.
(ii) Ensure adequate resources for funding ICT innovations and startups
(iii) Promote commercialization of demand driven home grown innovative ICT solutions.
(iv) Capacitate local innovators to patent their ICT innovations.
(v) Enhance the interoperability of the

3.12 Radio Frequency Spectrum

The radio frequency spectrum is fundamental to wireless communications, encompassing mobile networks, Wi-Fi, satellite communications, and broadcasting services. It plays a vital role in connecting people, devices, and machines, facilitating seamless communication across various platforms and applications.

Spectrum is critical for the deployment of emerging technologies such as 5G, the Internet of Things (IoT), autonomous vehicles, and infrastructures like smart cities and smart grids. It enables these technologies to operate effectively and on a large scale.

Additionally, the radio frequency spectrum is a crucial factor in providing high-speed internet access to both urban and rural areas. It helps bridge the digital divide, fostering inclusive growth by ensuring that diverse communities have access to digital resources.

Further, in public safety and emergency services, the radio frequency spectrum supports effective communication during disasters and emergencies, enabling prompt and coordinated response efforts.

Given its importance, efficient spectrum management is essential to ensure that this finite resource is accessible to all wireless services equitably while preventing interference.

Policy Objective:

> To ensure the efficient and effective allocation and use of the radio frequency spectrum resources.

Policy Statements:

The government shall:

(i) Ensure that radio frequency spectrum is allocated, assigned, and utilized efficiently to meet the increasing demands for wireless communication services.

(ii) Promote innovative approaches to spectrum sharing.

(iii) Promote the development and implementation of long-term spectrum management policies, ensuring future generations access to the spectrum resources they need for evolving communication requirements.

3.13 Cross-Cutting Issues

3.13.1 ICT Standards for System Interoperability

Inefficiency due to operational silos

The ICT sector in Tanzania lacks the necessary cohesive frameworks that dictate standardization and interoperability across various components such as ICT

infrastructures, systems, solutions, technologies, services, data management, practices, and governance. This absence of unified guidance has led to a fragmented landscape where ICT systems operate in silos.

Operational silos result in duplicated efforts, disjointed innovations, and uncoordinated governance practices, inefficiencies, unproductive bureaucracy, and duplication of functions, are often caused by a combination of structural, cultural, and technological factors. The key contributors include traditional hierarchical organization structures which tend to compartmentalize different departments or units. Each department often operates independently with its own set of rules, processes, and objectives, which may not align with those of other departments.

Another source of operational silos is the lack of Integrated ICT systems. The absence of integrated IT systems and databases across different service provider platforms leads to information silos. Without shared systems, departments may end up collecting and storing the same data independently, leading to duplication and inefficiencies.

The imperative of standardization for interoperability

Thus, the lack of standardization and poor coordination among key sector players impedes the unified pursuit of common goals and aspirations essential for the ICT sector's growth. The successful deployment and utilization of the ICT sector's capabilities hinge on the seamless integration and interaction of its fundamental systems, solutions, technologies, and services.

Maximizing the benefits of ICT's technical and technological capabilities in improving business operations and processes demands not only effective governance and strategic management, but also the collaborative participation of stakeholders across both public and private sectors. To meet these goals, it is crucial to adopt a unified set of standards and guidelines that facilitate interoperability within an integrated ICT ecosystem.

In light of these challenges, this policy is committed to providing the necessary guidance to foster a standardized and interoperable ICT ecosystem. Such an ecosystem is vital for supporting the nation's development goals and digital economy agenda, ensuring that the ICT sector can effectively contribute to national development.

Policy Objective

> To ensure interoperability and standardisation of ICT governance, management, infrastructure, solutions, and services.

Policy Statement

The Government shall:

(i) Promote interoperability of ICT infrastructure, solutions, and services.

(ii) Promote the use of open technology and standards in implementing ICT infrastructures, solutions, and systems.
(iii) Promote ICT interoperability architectures.

3.13.2 ICT Growth and Environmental Challenges

The rapid growth of the ICT sector has increased the influx of ICT equipment in our daily lives, most of which is imported from developing countries. The relentless advancement of new hardware and software technologies leads to quicker obsolescence of older models. Some manufacturers exacerbate this by designing products with a limited lifespan or discontinuing support, nudging consumers towards newer models.

This trend has escalated the accumulation of ICT-related e-waste, which is environmentally harmful and non-biodegradable. Furthermore, the ICT sector is a significant contributor to global greenhouse gas emissions, with energy-intensive activities like operating data centres and telecom systems playing a major role in climate change. The country's initiative to set up electronic equipment assembly and manufacturing plants further intensifies the concern over the growing digital carbon footprint.

Policy Objective

> To reduce environmental impact attributed to the development and use of ICTs.

Policy Statement

The government shall: -

(i) Strengthen the management of e-waste.
(ii) Promote safety and health-related matters on the use of ICTs.
(iii) Strengthen standards and compliance guidelines for ICT equipment.
(iv) Promote green ICT to minimize impact of ICTs on the environment.

3.13.3 Digital Inclusion and Social Diversity

The development and advancement of ICT presents equal opportunities to both genders (men and women) and special groups (disabled, elderly, women, children, entrepreneurs, people with special needs, and youth). However, such opportunities are influenced by socio-economic development, and cultural limitations that exist in our communities which introduce, among other challenges, a gender divide and social inequalities.

Despite major strides made to improve access to ICT services to special groups, data shows that a significant digital gap still exists in all spheres of our life. Therefore, this policy set strategic commitments to reduce a gender digital divide which both genders, special groups and social groups effectively and equitably participate in the development, management and use of ICT. Such a digital society will benefit individual

citizens, institutions, communities and ultimately contribute to the national development.

Policy Objective

> To promote inclusivity of diverse social groups in development, management and use of ICT.

Policy Statements

The government shall: -

(i) Promote participation of diverse social groups in ICT development
(ii) Promote inclusion in ICT sector workforce
(iii) Promote the development of critical and highly demanded ICT skills among diversified groups.
(iv) Ensure availability of affordable assistive ICT devices for people with disabilities.

3.13.4 ICT in Disaster Management

ICT plays a crucial role in disaster prevention, mitigation, response and recovery by providing digital solutions and technologies that can assist in disaster management. Some of the solutions that are frequently used include early warning system and Geospatial systems to predicts, communicate and disseminate information across the community.

Several initiatives have been implemented by the Government regarding the use of ICT in disaster management. Some of these include development of National Disaster Management Strategy, early warning information system, disaster risk reduction database, and one health surveillance system.

Despite the aforementioned efforts, systems used for disaster management are not harmonized and integrated thus hindering effective management of disasters. This calls a need for strategic directives to oversee the development and use of ICT technologies, systems and solutions for disaster management.

> **Policy Objective**
>
> To enhance the application of digital technologies, systems, and solutions in disaster management.

Policy Statement

The government shall: -

(i) Enhance emergency telecommunication mechanisms to provide timely notification of disaster threats.
(ii) Promote the application of digital solutions to ensure timely availability of vital information for disaster management.

3.13.5 Public Private Partnership

The government acknowledges the role played by the private sector in the service provision and support in the ICT industry. Various efforts have been made to create conducive environment for Public Private Partnership (PPP) to operate include development of National PPP Policy 2010, enactment of PPP Act, 2010 (amended in 2023); establishment of PPP Centre Unit, formulation of the Ministry of Planning and Investment in 2023 to oversee and coordinate investments for both public and private sectors.

The PPP framework plays a vital role in encouraging the investment of ICT infrastructure, systems and services. However, there are some challenges facing PPP in ICT such as slow adaption pace of advanced technology relative to global trends, inadequate capacity in investment negotiation under PPP arrangement, and inadequate resources on public institutions to design and implement PPP projects.

Policy Objective

> To promote PPP investments in developing the ICT sector.

Policy Statements

The government shall: -

(i) Ensure conducive environment to attract PPP in ICT investment.
(ii) Facilitate capacity in public institutions to engage in PPP investment projects in ICT sector.
(iii) Prioritise and publicise critical ICT investment areas for investment using PPP.

3.13.6 Regional and International Collaboration and Cooperation

Regional and International collaborations facilitate development of the ICT sector through the adoption of standards, codes, systems, treaties and protocols. Such cooperations offer the country opportunities to share experiences and address common policy issues to maximize initiatives focusing on accelerating full-fledged integration into the global information society. They offer forums for our country to showcase her potentials and exploit opportunities related to the ICT sector with a significant impact to socioeconomic development.

Therefore, this policy provides strategic directives to strengthen the active participation in regional and international ICT agenda and initiatives.

Policy Objective

> To collaborate in regional and international ICT development agenda and initiatives.

Policy Statement

The government shall:

(i) Ensure participation of the country in regional and international strategic ICT agenda and opportunities
(ii) Promote home-grown ICT products and services in the regional and international markets.
(iii) Strengthen regional and international collaboration on the development of the ICT Sector.

3.13.7 Online Safety and Protection

The widespread use of the internet, social media, and other digital platforms has become a norm, encompassing everything from personal and professional interactions to official announcements and communications. Similarly, social media platforms are increasingly used as socialisation and working tools, particularly, for groups communication by people with shared interests, organising events, or working on group activities. Alongside these developments, the internet, social media, and other online platforms have made individuals and institutions vulnerable to online abuse and threats. This is particularly the case for special groups such as women, children, and community, institution and political leaders. These include sexual exploitation and abuse, cyberbullying, exposure to inappropriate content and privacy violations.

Despite the existing of legal frameworks protecting individual rights in the country, there is a noticeable lack of comprehensive policy directives to ensure online safety, security, and ethical use of the internet, social media, and online platforms. Therefore, there is a need for more detailed and targeted policy guidance on areas of online engagement and safety.

Objective

> To ensure a safe cyberspace for all and the protection of vulnerable groups against online abuse, exploitation, and threats.

Policy Statements

The government shall:

(i) Ensure online safety and protection of vulnerable groups, particularly, children, women, and people with disabilities.
(ii) Promote responsible use of the internet and social media platforms.
(iii) Strengthen legal framework to drive and guide online protection of people.
(iv) Build capacity of institutions involved in criminal justice system on online-related issues and crimes.

3.13.8 Local Content Development

Several initiatives have been introduced and implemented to promote and support the development of local innovations, products, services, and online contents by individuals, the private sector, and public institutions. Such initiatives have enriched the local market with ICT products and services, and motivated individuals and institutions to develop online contents for the digital space. However, more efforts are needed to strengthen local content development.

Compared to our regional competitors, the quantity and quality of our ICT products and services are unsatisfactory, and their penetration rate to the local, regional, and global market is still low. Inadequacy of relevant skills for online content creation is hindrance to the global reach because of the poor quality of contents. Furthermore, there are insufficient incentive mechanisms for development and promotion of local ICT innovations, products and services. Online contents that reflect information needs, culture and language of Tanzanians is limited in existing digital platforms. The promotion of Kiswahili language for creating online contents is still low. At the same time, the majority of content creators are not conversant in using English which is the common language used on online platforms. Moreover, internet access is still low and relatively expensive to many online users, hence limiting online visits and content creation.

Objective

> To promote national values through development of home-grown ICT innovations, products and services.

Policy Statements

The government shall:

(i) Facilitate quality improvement of local ICT innovations, products, and services.
(ii) Strengthen and promote utilization of DotTz domain extension to increase online search target to local contents.
(iii) Promote and support development of online contents with local context.

CHAPTER 4
LEGAL FRAMEWORK

4.1 Overview

The rapid digital technological advances that Tanzania has witnessed in the last decade indicates that most of the objectives of NICTP-2016 have been overtaken by changes that have taken place. As technology evolves, new challenges and opportunities arise that were not foreseen by existing laws. New policies aim to address these challenges, and corresponding institutional, legal and regulatory frameworks need to be reviewed or reformulated to ensure the new policies are effectively implemented to foster an enabling environment for the digital economy. This chapter outlines the existing legal and regulatory frameworks related to ICT and suggests new ones to be established to support implementation of this policy.

4.2 Existing Legal and Regulatory Framework

In support of its digital transformation, Tanzania has enacted numerous laws and regulatory measures to govern and facilitate e-Commerce, digital communications, e-Government, data protections and privacy, cybersecurity, , regulations, and guidelines include:

i) The Personal Data Protection Act, Cap. 44
ii) The Evidence Act, Cap.6
iii) The Electronic Transactions Act Cap 442
iv) The Tanzania Communications Regulatory Authority Act, Cap.172
v) The e-Government Act, Cap. 273
vi) The Access to Information Act, Cap. 149
vii) The Electronic and Postal Communications Act, Cap. 306
viii) The Cybercrimes Act, Cap. 443
ix) The Registration and Identification of Person Act, (Cap 36,
x) The Information and Communication Technologies Commission Presidential Decree Government Notice No. 532 of 2015
xi) The Tanzania Commission for Science and Technology Act, Cap. 226
xii) The Universal Communications Service Access Act, Cap. 422
xiii) The Tanzania Commission for Science and Technology Act, Cap.
xiv) The Electronic and Postal Communications (Tele-Traffic) (Amendments) Regulations, 2023

xv) The Environmental Management (Control and Management of Electrical and Electronic Equipment Waste) Regulations, 2021 GN No. 388

xvi) The National payment Systems Act, Cap 437The The Electronic and Postal Communications (Online Content) Regulations GN. 538 of 2020

xvii) The e-Government its regulations, 2020

xviii) The National Payment System (Electronic Money Transaction Levy) Regulations GN. 478V of 2022

xix) The Electronic and Postal Communications (Computer Emergency Response Team), GN. 60 of 2018

xx) The Universal Communications Service Access Fund Regulations GN. 109 of 2009

xxi) The Electronic and Postal Communications (Tele Traffic) Regulations GN. 599 OF 2021

xxii) The Electronic and Postal Communications (Access, Co-Location and Infrastructure Sharing) Regulations GN. 59 of 2018

xxiii) The Electronic and Postal Communications (Interconnection) Regulations GN. 25 of 2015

xxiv) The Electronic and Postal Communications (Digital and Other Broadcasting Networks) Regulations GN. 140 of 2018

4.3 Building a Stronger Legal and Regulatory Foundation

In addition to the existing legal and regulatory frameworks governing the ICT sector, the implementation of the National ICT Policy 2024 (NICTP-2024) necessitates the development and implementation of reviewed legal and regulatory framework. The reviewed laws and regulations will enable and support the realization of the NICTP-2024's strategic aspirations. Subsequent amendment of the laws and Regulations will identify specific areas requiring such amendments/ reviews.

4.3.1 Digital Identity, eKYC and Digital Signature

The Government of Tanzania is introducing “Jamii Namba”, a unique digital identity solution, giving every citizen a unique digital identifier tied to their biographical and biometric data as a “cradle to grave” digital identity. This number is meant to create a system of digital identification that is assigned an individual throughout their entire life, from birth ("cradle") to death ("grave"). The Jamii Namba will be issued by the national identification entity and enables easier access to diverse services and to record of various aspects of an individual life journey.

It will also be used to integrate various digital platforms across various sectors and the sharing of data. Implementing the Jamii Namba digital identity system requires the implementation of an enhanced legal and regulatory framework for managing the use, security, and privacy of data together with defining the rights of individuals and their digital identity

> The existing laws around digital identities and authentication need to be enhanced, ensuring secure and reliable identity verification mechanisms for digital transactions. The enhanced identification laws may consider the use of methods such as :

- Multi-modal biometric identification base on fingerprints, facial recognition, and iris scanning.
- Electronic Know Your Customer (eKYC) based on Jamii Namba
- Document authentication based on Digital Signature

Therefore, enhanced identification laws are required to:

i) strengthen eKYC regulations to include authentication based on the Jamii Namba system.

ii) improve digital signature legislation to ensure digital signatures are accorded the same legal status as traditional handwritten or wet-ink signatures, thereby making them legally binding.

4.3.2 Digital Infrastructure Laws

Digital infrastructures in this policy framework refer to the key systems that underpin the functioning of the country as an emerging digital society. Therefore, relevant legal and regulatory frameworks are needed to guide areas such as broadband fibre-optic connectivity, 4G/5G connectivity and future generations connectivity, management of data centres, use of cloud services, satellite communication systems, Internet Submarine Cable System, and protection of all critical infrastructure.

Therefore, enhanced digital infrastructure laws and/or regulations are required to:

i) facilitate the expansion of the broadband infrastructures nationwide in support of an inclusive digital economy,

ii) encourage collaborations between government and private sector entities to share the costs and risks associated with extension of the broadband infrastructure.

iii) facilitate infrastructure funding initiatives to extend broadband connectivity to rural and remote areas.

iv) ensure the current digital licensing and spectrum allocation processes are fair and encourage new entrants into the market.

v) guide investment, operations, and use of data centres.

vi) ensure strong ICT security laws and regulations to safeguard all digital infrastructure against physical and online threats.

vii) ensure relevant revenue are collected from neighbouring countries connected to our digital infrastructure.

viii) promote the deployment and safe use of satellite communication services.

4.3.2.1 Data Centres and Cloud Computing

Data centres host the hardware and the physical infrastructure necessary for cloud computing that include servers, networking and storage systems that form the backbone of cloud services. While a data centre is the physical "heart" of computing power and storage, cloud computing represents the way these resources are delivered and used, offering greater flexibility, scalability, and cost-efficiency to businesses and individual users.

To promote the implementation and ensure the sustainability of data centres and cloud computing in the digital economy. it's imperative to introduce and enforce essential laws and regulations.:

- Enacting datacenter specific cybersecurity regulations to safeguard data centers and cloud services against cyber threats, strong cybersecurity regulations are necessary.
- Enacting datacenter specific data protection and privacy to regulate how data is collected, processed, and stored, ensuring the protection of personal data against unauthorized access and breaches.
- Enacting datacenter specific energy consumption and environmental promoting energy efficiency and the use of renewable energy sources which is important for sustainable services.
- Enacting datacenter specific cross-border data transfer policies governing the international transfer of data which are vital for global cloud services and important for the sustainability of data center-based services.
- Enacting datacenter specific fiber connectivity and internet Infrastructure laws to encourage public and private investment in and maintenance of robust internet infrastructure as the foundation of cloud-based e-Services.

4.3.3 Satellite Communication Systems

Satellite communication can reach remote and rural areas, overcoming geographical barriers such as mountains and forests, where laying fiber-optic cables or setting up cell towers is challenging or cost-prohibitive. By enabling internet and telecommunication access in rural areas, satellite communication helps bridge the digital divide, allowing residents in rural Tanzania to access digital resources as those in urban areas.

The key priority areas targeted for satellite communications are education and healthcare. Satellite communication can facilitate distance learning and online education, providing rural students access to quality educational resources. It also enables telemedicine and remote health consultations, providing rural populations with access to medical expertise, diagnostics, and health information that might otherwise be unavailable in their locality.

Additionally, in the case of a disaster when terrestrial (land-based) communication infrastructure is damaged, satellite communication can be crucial for emergency response, relief operations, and maintaining communication lines. As digitalization takes a strong hold in the nation, new laws and regulations should be enacted to promote the deployment of satellite communication service in rural areas.

4.3.4 Internet Submarine Cable System Laws

Tanzania is connected to the rest of the world through various undersea fibre optic cables systems which service as a catalyst for digital technology development. An estimated 99% of global data currently travels through submarine cables, making these cables crucial in integrating the countries with the rest of the world and allowing them to be a competitor in the global market. The existing subsea infrastructure is aging and won't be able to support infinite future demand. High-capacity subsea cable systems need to be established to complement the existing networks to allow for automated traffic rerouting if there are cuts or outages to address these risks.

Tanzania must begin to enact policies and laws to facilitate a conducive legal environment for the deployment of submarine cable system. The laws must ensure special secure areas in the Tanzania maritime zone are fenced off and allocated for routing and landing future international subsea fibre optic systems.

4.3.5 Critical Infrastructure Protection

Critical ICT infrastructure includes the essential systems, networks, and assets that are fundamental to the operation of a modern, interconnected economy. These systems are implemented in various sectors such as Government, Banking and Finance, Telecommunication, Energy, Health, Transportation, Water Treatment Facilities

Specific examples of critical ICT infrastructure include National ICT Broadband Backbone, International Undersea or Submarine Cable Systems, Data Centres, Internet Exchange Points, Cloud Computing Resources, NIDA National ID Registration System, Government electronic Payment Gateway, Mobile Telecommunication Networks, Banking Systems, National Electricity Grid, etc.

Robust cybersecurity measures are indispensable and central to safeguarding critical infrastructures, which are becoming more dependent on interconnected and digitalized systems. Therefore, the Government shall enact new laws or enhance existing laws specifically designed to protect these critical digital infrastructures from increasing cyber threats.

4.3.6 Cybersecurity Laws and Regulations

As more economic activities move online, cybersecurity becomes a critical concern. This requires the development of regulations aimed at protecting businesses and consumers from cyber threats, imposing standards for data security, establishing plans and procedures for responding to cyber incidents. For Tanzania to effectively support

and secure its digital economies, cybersecurity laws and regulations need to be both robust and adaptable to the rapidly evolving technological landscape. Example of existing laws and regulations that need to be enhanced, or new laws that need to be enacted include:

i) **Data Theft and Breach Laws:** a data breach in cybersecurity is an incident where confidential, sensitive, or protected information is accessed, disclosed, or stolen without authorization. This can involve personal data, such as names, credit card numbers, bank account number, or healthcare histories. Data breaches can occur due to hacking, malware, phishing attacks, insider threats, or simple human error. Therefore, data theft and breach laws and regulations are required to criminalize theft or unauthorized copying of data including personal information, intellectual property, and trade secrets.

ii) **Online Fraud and financial crime laws:** they are required to prevent crimes such as credit card fraud, online scams, and phishing which is an act of fraudulently obtaining sensitive information by masquerading as a trustworthy entity in digital communication.

iii) **Cyberbullying and Online Harassment Laws:** they are needed to protect individuals from threatening or harassing behaviour conducted via digital platforms such as social media. They should define and criminalize various forms of online harassment, including cyberbullying, cyberstalking, online defamation, and doxing. These laws should

iv) **Cyber terrorism laws:** they are needed to criminalized cyber terrorism when the internet is used to conduct terrorist activities such as recruiting terrorists, spread propaganda, or coordinate terrorist attacks.

v) **Malware and Computer Viruses laws:** they are to prevent the distribution of harmful software like viruses, worms, and ransomware to maliciously disrupt, damage, or gain unauthorized access to computer systems.

vi) **Intellectual Property of Digital Contents laws:** they are required to protect innovative digital initiatives and to prevent piracy and unauthorized distribution of copyrighted digital content like equipment, music, movies, software, and other digital solutions. Also, IP protection laws and regulation are required to attract investment and promote collaboration between government, industry, academia and international organizations on innovative digital products and services.

vii) **Child exploitation and pornography laws**: they are needed to strictly prohibit the creation, distribution, or possession of child pornography to prevent online child exploitation.

4.3.7 E-Commerce and Marketplace Fairness Laws

Innovations in mobile technologies, payment methods, and logistics management have streamlined the online shopping experience, making eCommerce more user-friendly and secure. More people than ever can shop online, anytime and anywhere because e-commerce offers unparalleled convenience allowing consumers to purchase variety of products from the comfort of their own homes. However, such developments have also created a fairness challenge in the digital marketplace whereby a few giant companies dominate the market for the sale of digital product and services.

To ensure effective e-commerce activities, and there is a fairness in the digital marketplace, in the implementation of digital economy strategy, several key measures to are requires to strengthen legal and regulatory framework including:

i) Enacting consumer protection laws covering product quality, warranty, returns, and refunds as well as guidelines on false advertising, product misrepresentation, and fraud prevention.

ii) data protection laws to safeguard consumer information and these laws should regulate how registered eCommerce platforms collect, use, and store personal data, ensuring consumer privacy and security.

iii) Improving payment systems and financial regulations to facilitate the secure and efficient digital payment systems supported by the National Public Key Infrastructure (NPKI)

iv) Establishing laws to facilitate efficient and accessible online dispute resolution mechanisms for resolving consumer complaints related to digital transactions. Introducing regulations to ensure fair competition in the digital marketplace, preventing monopolies and ensuring that new entrants have a fair chance to compete. This involves strengthen antitrust laws to prevent monopolistic practices and ensure fair competition by addressing issues such as price fixing, market dominance, anti-competitive mergers, and abuse of market power in the digital space.

v) Aligning national laws and regulations with international standards to ensure fair competition in a globalized digital economy.

CHAPTER 5
INSTITUTIONAL FRAMEWORK, MONITORING & EVALUATION

5.1 Institutional Framework

This National ICT Policy, 2024 (NICTP 2024) shall serve as the guiding ICT implementation framework for public and private stakeholders. Its focus is on utilizing existing, emerging, and future technologies to advance the nation's digital transformation. Stakeholders are expected to align their institutional ICT plans to support the success of the NICTP-2024 vision.

The proposed institutional framework is designed to facilitate the effective realization of the objectives and commitments stipulated within the NICTP-2024 policy. The successful implementation of this policy necessitates the active participation of various institutions, each assuming specific roles and responsibilities as outlined in the following section.

5.1.1 Ministry's Responsible for ICT

The respective roles and responsibilities will be undertaken by the Ministry responsible for ICT in the United Republic of Tanzania and its counterpart in the Revolutionary Government of Zanzibar.

Oversee Implementation ICT Initiatives in Tanzania

- Monitoring the implementation of National ICT Policy 2024 in all public sector institutions (MDAs and LGAs) and Private sector organisations.
- Monitoring the overall implementation of Digital Transformation initiatives in the country.
- Coordinate Implementation of National ICT Development Projects and Programmes.
- Preparing and issuing National ICT Strategies, Guideline and Standards in support of digitalization and the digital economy
- Ensuring ICT policies alignment with national development goals and are in sync with the broader national development objectives.
- Organizing regular policy reviews with all ICT stakeholder and recommend adjustments for the policies to stay relevant and effective.
- Ensuring that evolving strategies and guidelines align with national and international standards and best practices and conventions.

- Coordinating and liaising with other MDAs and LGAs on matters relating ICT sector that might require inter-ministerial intervention.
- Creating awareness of the National ICT Policy, 2024 its implementation strategies and other ICT related laws, regulations and guidelines
- Coordinating national representation and participation in regional and international organizations and activities

Initiation of National ICT Laws and Regulations

National ICT legal and regulatory framework provides a legal structure that guides the development, deployment, and use of ICT in Tanzania. This legal backing is crucial for fostering a stable and predictable environment for both users and providers of ICT. It is essential in establishing robust cybersecurity measures and for protecting data and networks against cyber threats.

This role for the ICT ministries involves:

- Initiating the creation of ICT laws and regulation in support of the National ICT Policy implementation
- Initiating the creation of ICT laws and regulation in support in support of bridging the rural-urban digital divide.
- Initiating the creation of ICT laws and regulation to support the integration of digital systems that provide services support of the National ICT Policy implementation.
- Initiating the creation of ICT laws and regulation to encourage risk-taking and experimentation in the development of ICT solutions.
- Initiating the creation of robust intellectual property laws and frameworks to protect innovations and encourage investment in the ICT sector.

Overseeing the Development of ICT professionals

Government oversight in the development and tracking of ICT professionals ensures that the skills and competencies of ICT professionals meet national and international standards which is necessary for maintaining quality and consistency in the services provided by these professionals in the digital economy. By setting educational and professional development standards, the government can ensure that ICT professionals possess the necessary knowledge and skills to effectively contribute to the industry. Government oversight can also ensure that ICT professionals are continually updating their skills in line with technological advancements, maintaining the relevancy and competitiveness of the Tanzania workforce.

This role for the ICT ministries involves:

- Encouraging lifelong learning and continuous skill enhancement among ICT professionals to keep pace with rapidly evolving technologies and industry practices.

- Ensuring the availability of a professional development resources that include workshops, seminars, online courses, and conferences that help ICT professionals stay abreast of new developments and best practices in the field.

Fostering a Culture of Innovation and Research

Fostering a culture of innovation and research is a digital economy imperative. Innovation and research are primary drivers of economic growth. They lead to the development of new industries, the improvement of existing ones, and the creation of jobs. It also increases Tanzania competitiveness on the global stage.

This role for the ICT ministries involves:

- Creating a supportive environment for research and development (R&D) that includes the establishing and maintaining infrastructures such as Higher Education Research Network (HERIN), innovation hubs, research centres, and incubators where professionals can collaborate, experiment, and develop new technologies.
- Allocating resources, including financial support, grants, and incentives, to encourage research and development in ICT. This includes supporting both public and private sector research initiatives.
- Facilitating partnerships between educational institutions and the ICT industry to ensure that academic research is aligned with real-world applications and industry needs.

Creating a National Digital Transformation Database

A National Digital Transformation Database to be implemented by the Ministry responsible for ICT is aimed at monitoring the progress on various digital initiatives by various digitalization stakeholders in the country. It will also be used for keeping an inventory of various digital skills available Tanzania workforce.

This role for the ICT ministries undertaking this task involves:

- Creating the data in the National Digital Transformation Database that can be used for analysing the performance and benefit realization of various ICT development initiatives undertaken in collaboration with various stakeholders
- Generating periodic insightful and actionable reports on the status of various ICT initiatives launched by key digitalization stakeholders.
- Generating periodic insightful and actionable reports on the availability of key professional skill in various technologies that are driving the digital revolution.
- Performing regular maintenance of the database by collecting and analysing digitalization reports submitted by various stakeholder in the public and private sectors

5.1.2 National ICT Steering Committee

Within the ministerial governance and management structure, there will be National ICT Steering Committee (NICTSC) as an essential team to facilitate the effective implementation of NICTP-2024. The committee is meant to provide oversight of the ICT sector and observe progress of the Policy implementation and ensure ICT plans, programmes, projects, and initiatives are aligned with the overall socio-economic goals of the country. The Committee is co-chaired by the Chief Secretary of the Union Government and the Chief Secretary of the Zanzibar Revolutionary Government. The ministries responsible for ICT form the secretariat of the Committee. The PNICTSC have the following roles:

(i) Overall coordination of the NICTP-2024 implementation, monitoring, and evaluation.
(ii) Providing overall direction for ICT development in public and private sector at the national level.
(iii) The Steering committee has to present its report to Cabinet Secretariat for reference and action.

Members of Steering Committee will be appointed by the Chief Secretaries and shall include:

(i) Permanent Secretaries of the two ministries responsible for ICT
(ii) Representative from the Attorney General Office
(iii) Accounting officers of selected public institutions
(iv) Tanzania National Business Council
(v) Tanzania Private Sector Foundation and ICT Consultants

5.1.3 Ministries Responsible for Public Service Management

Pursuant to the National ICT Policy 2024, the Ministries responsible for Public Service Management in the URT and RGZ are tasked with the enforcement of National ICT Policy in public sector institutions.

5.1.4 ICT Commission

Start-ups often drive the country’s economic growth and job creation by bringing new products and services to market, stimulating economic activity and employment. They are generally the forefront of digital innovation and therefore they can contribute significantly to technological advancement, enhancing a nation's competitiveness. A thriving start-up ecosystem diversifies the economic base, reducing Tanzania’s dependence on traditional agriculture and mining and thereby increase the resilience of the national economy to unforeseen economic downturns.

This role for the ICT Commission involves:

- Overseeing the ICT Startup ecosystem

- Enforcement NICT-2024 compliance in public and private sectors
- Coordination of ICT research and innovation in the public and private sectors.
- Ensure effective and secure deployment of ICT applications in all sectors of the economy;
  ;
- Develop Electronic Waste (E-Waste) Management Mechanism For Tanzania;
- Promote Security and Information Society In Tanzania;
- Promote ICT Entrepreneurship, Innovation, Research and Development Including Local Digital Content, Software Development Centres and ICT Parks;
- Facilitate ICT Professional Development, Registration and Regulation of ICT Professionals In Tanzania;
- Promote ICT Investment Opportunities in Tanzania through Public Private Partnership (PPP) with National and Foreign Investors to Build/Develop IT Infrastructure;
- Create an Enabling Infrastructure for e-Transactions, e-Commerce and other Related Transaction Based Implementation;
- Enhance synergies in National ICT Related Projects and programmes.

5.1.5 Ministries Responsible for Finance

The Ministry of Finance is developing an ESB (Enterprise Service Bus) based platform, named the Financial-ESB, intended to the central interoperability among financial institution including the Central Bank (BOT) and the commercial Banks in Tanzania.

The Financial ESB will be integrated with Jamii Data Exchange Platform implemented by the Ministry responsible for ICT to facilitate interoperability among public and private service delivery platforms. The goal is to ensure that digital platforms in the public and private sectors in Tanzania would be integrated to promote interoperability using standard interfaces (APIs) to ensure efficient and effective delivery of electronic services.

This role for the Finance Ministries involves:

- Developing and deploying the Financial-ESB to integrate public and private sector financial services delivery platforms
- Assisting in securing enough financial resources to fund the implementation of NICTP-2024.

5.1.6 MDAs and LGAs

MDAs and LGAs shall be responsible for the implementation of their respective components of the NICTP-2024 in support of sectoral ICT policies. Specific roles for MDAs and LGAs include:

- Preparing and submitting ICT policy implementation progress reports to the Ministry responsible for ICT in accordance with the ICT policy monitoring and evaluation framework for creating periodic consolidated policy implementation progress reports.
- Coordinating and supervising the implementation and integration of NICTP-2024 in their designated institutions.
- Identifying, assessing, and documenting their individual contributions to the digital economy in their respective domain
- Updating digital development initiatives in the National Digital Transformation Database periodically as required for generating insightful and actionable reports on various ICT developments and initiatives in the country.
- Updating the address records in the National Physical Addressing (NaPA) system
- Coordination of the utilization of ICT in the regions and district for rural development.
- Monitoring of ICT the uptake and utilization of e-Service by various sectors and communities at the district level.

5.1.7 Tanzania National Business Council

The Tanzania National Business Council (TNBC) serves as a strategic forum in fostering dialogue and collaboration between the public and private sectors in Tanzania. Leaders from both sectors meet to deliberate on how best to promote inclusive socio-economic growth in the country by creating a conducive business and environment for private sector participation.

The role of TNBC involves:

- Facilitating exchanges of views on improving business policies and regulatory frameworks for enhancing the economic competitiveness of Tanzania.
- Organizing meetings and discussions that focus on various aspects of Tanzania's business and investment environment, such as regulation and taxation.
- Serving as a platform for both public and private sector members to collaboratively work on strengthening the national economy, with an emphasis on creating a conducive business environment for an inclusive and resilient economy.
- Reviewing the blueprint for the implementation of strategic initiatives such as the NICTP-2024 from the business climate improvement point of view.

5.1.8 The Office of the Attorney General

The Attorney General’s office will be a key player in the digital economy when it comes to striking agreement with international virtual corporation doing business in Tanzania.

Taxing international companies in the digital economy presents several key legal issues that Tanzania must grapple with. Traditional tax laws are based on physical presence, but digital companies can operate in a country without a significant physical presence, raising questions about where tax obligations arise. Resolving the jurisdictional aspects of taxation in the digital economy is a complicated legal issue that falls within the purview of the Attorney General's office..

An equally complex and challenging legal matter that may require intervention by the Attorney General's office to ensure fair taxation is Transfer Pricing and Profit Allocation. Tanzania, specifically the Attorney General's Office working in conjunction with the Tanzania Revenue Authority need to establish how profits should be attributed and taxed when multinational corporations shift profits to low-tax jurisdictions.

The Office of the Attorney General shall be responsible for:

- Advising the Government on legal matters related to ICTs and digital transformation especially taxation for multi-nationals.
- Facilitating negotiations of international contracts and treaties related to determining tax jurisdiction and transfer pricing and profit allocation for international companies without a physical presence in Tanzania.

5.1.9 Private Sector

Collaboration between the private sector and government in the digital economy can be particularly beneficial in several key areas such as Infrastructure Development where partnering in area such as broadband networks, data centres, and 5G technology can have enormous benefits in accelerating the deployment of high-speed internet and other critical digital services especially to the underserved rural areas.

Education and Skill Development is another area where such collaboration can pay dividends. Working together Government and the private sector can enhance digital literacy and upskill the workforce in digital technologies by creating educational programs and providing training in emerging technologies to narrow the digital skills gap.

The Private Sector shall be responsible for:

- Collaboration with the Government to develop and propagate digital technologies investment to support digital transformation initiatives in the country.
- Collaboration with the Government in research and development, bringing innovations and relevant solutions for the implementation of this policy.
- Collaborating with the Government on issue pertaining to emerging and future technologies for economic and social development.
- Advising the Government on issues related to ICT development in the Country.

5.1.10 Non-State Actors

Non-State Actors, which include Non-Governmental Organizations (NGOs), Community-Based Organizations (CBOs), and Faith-Based Organizations (FBOs), Trade Unions, etc, have ability to mobilize community and resources which are important in complimenting government initiatives in attainment of digital transformation.

Non-State Actors in the context of the NICTP-2024 shall be responsible for:

- Promotion of issues related to ICT through communication, education and public awareness and lobbying for police change
- Empowerment of citizen through participation on specific community issues or activities that have been envisaged.
- Participating in creation of digital technological development, utilization, awareness, transparency and accountability in matters pertaining to digital economy.

5.1.11 Education and Research Institutions

Examples of the leading education and research institution in Tanzania that should be tapped for their contribution in the implementation of the NICTP-2024 include:

1. The University of Dar es Salaam (UDSM) contributes significantly to academic research and provides skilled graduates to the workforce focusing in Engineering Technology and Computer Science
2. COSTECH focuses on coordinating and promoting research in science and technology, and also plays a key role in formulating policies related to science, technology, and innovation.
3. Tanzania Institute of Education (TIE) is responsible for developing educational curricula and materials for primary, secondary, and teacher education
4. University of Dodoma (UDOM) specialize in Computer Science, Information Systems,, Cybersecurity and Data Science and Analytics
5. Nelson Mandela African Institution of Science and Technology (NM-AIST) focuses on engineering technology, aiming to foster innovation and entrepreneurship in these fields.

These education and research institutions shall be responsible for:

- Development of digital and emerging technologies in the region
- Promoting digital contents to be used in training and developing competent human capital.
- Undertaking relevant scientific research outputs for digital development in Tanzania.

5.1.12 Personal Data Protection Commission

The mandate of Personal Data Protection Commission (PDPC) in Tanzania is to oversee Tanzania personal data protection landscape. Its key responsibilities include monitoring compliance with data protection laws by data controllers and processors and registering data controllers and processors. But an equally important role of he PDPC is to investigate and address complaints related to personal data protection and privacy violations as well as educating the public on data protection best practices.

The PDPC will be responsible for:

- Registration of all data collectors and processors
- Monitoring the compliance of data collectors and processors
- Receiving, investigating and handling complaints on the breach of data protection and the right to privacy.
- Researching and monitoring technological development in relation to data processing.

5.1.13 Development Partners

Development partners primary role is to provide financial assistance for ICT projects. This can include funding for infrastructure development, such as broadband networks, and support for implementing various ICT initiatives.

Development partners shall be responsible for:

- Providing financial assistance for ICT projects
- Providing technical assistance and consultation by bringing technical expertise and experience that is not available in Tanzania.
- Building local capacity by offering training and skill development programs.
- Facilitating in the formulation of ICT policies by providing insights into global trends, offering comparative studies, and suggesting policy frameworks that align with international standards.

5.2 Monitoring and Evaluation

The Policy Implementation Framework is structured around three core components: a Comprehensive Monitoring Plan, an In-depth Evaluation Plan, and a Detailed Reporting Plan. This framework mandates the issuance of Performance Evaluation Reports, aligned with NICTP-2024 objectives, at specified intervals as part of the evaluation process, adhering to the timeline outlined in the NICTP-2024 Detailed Implementation Framework.

Each MDA or LGA, designated as a policy implementation stakeholder, is responsible for producing a periodic policy evaluation report and submitting it to the Ministry responsible for ICT for in-depth analysis and fusion with evaluations from other stakeholders. The framework explicitly addresses each pertinent policy goal and endeavor, outlining the efforts undertaken by the designated policy entity or MDA/LGA

to achieve the framework's stated objectives. The overarching aim is to gauge the broad impact of these policy efforts on the intended beneficiaries.

The effectiveness of the policy will be shaped by various factors: the availability of financial resources, the dedication of staff and management, citizen demands for accountability, and the capability of the implementing institutional ICT Sector at both strategic and operational level.

The NICTP-2024's implementation, tracking, and evaluation procedures will be elaborated in the NICTP-2024 Detailed Implementation Framework, which is to be created by the Ministry responsible for ICT after this document receives approval and is circulated. The ICT Policy Implementation Plan typically involves a detailed strategy for the deployment and management of ICT resources and services in organizations or entities involved as stakeholders.

5.2.1 Monitoring, Reviews and Evaluation Plan

The structure of the Monitoring Plan includes a range of components such as specific indicators, detailed explanations of each indicator, initial baseline figures, target values for the indicators, procedures for data collection and analysis techniques, regularity of reporting for each indicator, and an outline of the key sectors tasked with the collection, analysis, and reporting of this data. The tracking of these indicators will be conducted quarterly, although the reporting of outcome indicators is planned on an annual basis..

5.2.2 Evaluation Plan

The Evaluation Plan outlines the assessments to be carried out throughout the Strategic Cycle of the National ICT Policy, 2024. During this five-year period, two key evaluations are planned:

- A Mid-term Evaluation aimed at measuring progress in achieving the ICT policy's objectives and targets. This evaluation will pinpoint any deviations or challenges encountered during implementation and propose suitable corrective measures if required.
- A Final Evaluation designed to gather conclusive evidence regarding the effectiveness of the interventions and outputs in realizing the anticipated outcomes outlined in the Strategic Plan. Where necessary, a baseline survey or study will be conducted at the outset of implementing various strategies to establish initial data points.

5.2.3 Reporting Plan

The reporting framework consists of two distinct sections - internal and external reporting:

- Internal Reporting Plan: This section entails generating three types of reports, which include technical, quarterly, and annual reports. The

frequency of these reports will be weekly, quarterly, annually, or based on specific demands as they occur.

- External Reporting Plan: In this part, there are four categories of reports to be prepared: performance, financial, annual, and outcome reports. These reports are to be submitted to various external entities, such as the Ministry of Finance and the President's Office-Planning Commission.