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MINISTRY OF WORKS, TRANSPORT AND COMMUNICATION

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TECHNOLOGY POLICY 2016**

**IMPLEMENTATION STRATEGY
2016/17 – 2020/21**

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LIST OF ACRONYMS

| | |
|-----------------------|---|
| AGC | Attorney General’s Chambers |
| ASO | Analogue Switch Off |
| ATU | African Telecommunications Union |
| BPO | Business Process Outsourcing |
| BRELA | Business Registration and Licensing Agency |
| CA | Chief Accountant |
| CAS | Central Admission System |
| ccTLD | country code Top-Level Domain |
| CEIR | Central Equipment Identification Register |
| CERT | Computer Emergency Response Team |
| CLF | Converged Licensing Framework |
| CO₂ | Carbon Dioxide |
| COSTECH | Tanzania Commission for Science and Technology |
| CSO | Civil Society Organization |
| CTO | Commonwealth Telecommunications Organization |
| DC | Director of Communication Services |
| DICT | Director of ICT |
| DSM | Dar es Salaam |
| DTBi | Dar TEKNOHAMA Business Incubator |
| EAC | East African Community |
| EASSy | Eastern Africa Submarine Cable System |
| ECH | Electronic Clearing House |
| eGA | e-Government Agency |
| EPZA | Export Processing Zones Authority |
| ERB | Engineers Registration Board |
| FDI | Foreign Direct Investment |
| FYDP | Five Year Development Plan |
| Gbps | Gigabits per second |
| GDP | Gross Domestic Product |
| ICT | Information and Communications Technology |
| IFMS | Integrated Financial Management System |
| ISDN | Integrated Services Digital Network |
| ISP | Internet Service Provider |
| ITES | Information Technology Enabled Services |
| ITSO | International Telecommunications Satellite Organization |
| ITU | International Telecommunication Union |
| IXP | Internet Exchange Point |
| KPI | Key Performance Indicator |

| | |
|-----------------|--|
| LAN | Local Area Network |
| LGAs | Local Government Authorities |
| LRCT | Law Reform Commission of Tanzania |
| M&E | Monitoring and Evaluation |
| MDAs | Ministries, Departments and Agencies |
| MEM | Ministry of Energy and Minerals |
| MJCA | Ministry of Justice and Constitutional Affairs |
| MoDNS | Ministry of Defence and National Service |
| MoESTVT | Ministry of Education, Science, Technology and Vocational Training |
| MoFAEAC | Ministry of Foreign Affairs and East Africa Cooperation |
| MoFP | Ministry of Finance and Planning |
| MoFP-PC | Ministry of Finance and Planning - Planning Commission |
| MoHA | Ministry of Home Affairs |
| MoHCDGEC | Ministry of Health, Community Development, Gender, Elderly and Children |
| MoICAS | Ministry of Information, Culture, Arts, and Sports |
| MoITI | Ministry of Industry, Trade and Investment |
| MoLHHSDD | Ministry of Land, Housing and Human Settlement Development |
| MoWI | Ministry of Water and Irrigation |
| MP | Member of Parliament |
| MWCT-RGZ | Ministry of Works, Communication and Transportation – Revolutionary Government of Zanzibar |
| MWTC | Ministry of Works, Transport and Communication |
| NACTE | National Council for Technical Education |
| NEMC | National Environmental Management Council |
| NGO | Non-Governmental Organization |
| NICTBB | National ICT Broadband Backbone |
| NICTP | National ICT Policy |
| NPS | National Payment System |
| OLAS | Online Loan Application System |
| OSHA | Occupational Safety and Health Authority |
| PCCB | Prevention and Combating of Corruption Bureau |
| Ph.D. | Doctor of Philosophy |
| PKI | Public Key Infrastructure |
| PMO | Prime Minister’s Office |
| PO – PSM | President’s Office – Public Service Management |
| PO | President’s Office |
| PO–RALG | President’s Office – Regional Administration and Local Government |

| | |
|-----------------|---|
| PPP | Public Private Partnership |
| RPS | Retail Payment System |
| R&D | Research and Development |
| RASCOM | Regional African Satellite Communication |
| REA | Rural Electrification Agency |
| RVTSC | Regional Vocational Training and Service Centres |
| SADC | Southern African Development Community |
| SEACOM | Southern and Eastern Communications Network |
| SIDO | Small Industries Development Organization |
| SMEs | Micro and Small and Medium Enterprises |
| SUMATRA | Surface and Marine Transport Regulatory Authority |
| TAEC | Tanzania Atomic Energy Commission |
| TANESCO | Tanzania Electricity Supply Company |
| TANROADS | Tanzania National Roads Agency |
| Tbps | Terabits per second |
| TBS | Tanzania Bureau of Standards |
| TCAA | Tanzania Civil Aviation Authority |
| TCO | Total Cost Ownership |
| TCRA | Tanzania Communication Regulatory Authority |
| TCU | Tanzania Commission for Universities |
| TIC | Tanzania Investment Centre |
| TIE | Tanzania Institute of Education |
| TISPA | Tanzania Internet Service Providers Association |
| TISS | Tanzania Interbank Settlement System |
| TMA | Tanzania Meteorological Agency |
| TNBC | Tanzania National Business Council |
| TPA | Tanzania Ports Authority |
| TPDF | Tanzania Peoples Defence Force |
| TPF | Tanzania Police Force |
| TPSF | Tanzania Private Sector Foundation |
| TRA | Tanzania Revenue Authority |
| TTCL | Tanzania Telecommunications Company Limited |
| tzNIC | Tanzania Network Information Centre |
| UCSAF | Universal Communications Service Access Fund |
| VETA | Vocational Education and Training Authority |
| VTC | Vocational Training Centre |
| VPO | Vice President's Office |
| ZBC | Zanzibar Broadcasting Cooperation |
| ZMA | Zanzibar Maritime Authority |

GLOSSARY

- Broadband:** Transmission capacity that is faster than primary rate Integrated Services Digital Network (ISDN) at 2.0 Megabits per second (Mbps).
- Broadcasting:** A term referring to the distribution of information using radio, television, Internet and intranet or webcasting.
- Cybersquatting:** Registering, selling or using a domain name with the intent of profiting from the goodwill of someone else's trademark.
- Digital Divide:** The technological gap between countries that have fully exploited ICT and those that have not. The digital divide is often associated with the resulting gap in terms of economic development.
- e-commerce/e-transaction:** Business activities involving consumers, manufacturers, suppliers, service providers and intermediaries using computer networks such as the Internet.
- e-service:** e-service represents one prominent application of utilizing the use of information and communication technologies in different areas. It includes, among others e-commerce and other non-commercial services.
- e-government:** The use of information and communications technology by the government to transform relations with citizens, businesses, and within different arms of government.
- e-waste:** Discarded ICT equipment including computers, office electronic equipment, entertainment device electronics, mobile phones, television sets, and refrigerators.
- Information and Communications Technologies:** Is a generic term used to express the convergence of information technology, broadcasting, and communication. One prominent example is the Internet.
- Information-Based Economy:** A country or region where ICT is used to develop an economic foundation and market transactions.
- Information Society:** A country or region where information technology has been fully exploited and is part of everyday life as an

enabler of information sharing, communication, and diffusion.

Information Technology: Embraces the use of computers, telecommunications and office systems technologies for the collection, processing, storing, packaging and dissemination of information.

Internet Exchange Point: A “peering point” for interconnecting ISPs and/or other IXPs for the purpose of localizing national traffic routing as opposed to using international routes to accomplish Inter-ISP traffic flow.

Internet Service Provider: Also known as Internet Access Provider. A company that provides infrastructure for access to the Internet or for interconnecting other ISPs and content-based or application-based services on the Internet.

Knowledge-Based Economy: An economy which is directly based on the production, distribution, and use of knowledge and information.

Knowledge-Based Society: A society with capabilities to identify, produce, process, transform, disseminate and use information to build and apply knowledge for human development.

Local Area Network: A computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves.

Local Content: Expression and communication of a community’s locally generated, owned and adapted knowledge and experience that is relevant to the community’s situation and is characterized by location, culture, language and area of interest.

Non State Actors: Non State Actors include non-governmental organizations, community based organizations, media associations, private sector organizations, religious organizations, trade unions and cooperative associations outside of state and the quasi-state organizations.

Open Access: Principle that gives any licensee right for access to any facility and/or service of the ICT Broadband

Infrastructure Network on terms and conditions that are non-discriminatory, transparent and affordable.

Productive sectors: Consists of Agriculture, Tourism, Mining, Oil and Gas, Natural Resources and Energy, Manufacturing, as well as Small and Medium Enterprises (SMEs).

Public institutions: Entities such as Ministries, Departments and executive Agencies (MDAs); Local Government Authorities (LGAs) and any other state-owned institution.

Tele-Density: The number of telephones per 100 people in a region.

FOREWORD

Information and Communication Technology (ICT) is the bedrock of national economic development in a rapidly changing global environment. Nations that have embraced ICT and made it an important aspect of their national agenda have reaped benefits in terms of social economic development. The Government of the United Republic of Tanzania recognizes that effective use of information and knowledge is a critical factor for rapid socio-economic growth, in its aspiration to become a middle-income country by 2025.

To guide Tanzania in the utilization of ICTs, the Government has set policy frameworks. The National ICT Policy formulated in 2003 has enabled Tanzania to attain successes in the areas of telecommunications, infrastructure development, human capital development and use of ICT in service delivery to citizens.

Despite these successes, the ICT landscape has changed since 2003, requiring a relook at the Policy framework to reposition Tanzania to better meet emerging opportunities while contending with their associated threats. These developments challenge us to devise bold and courageous initiatives to address issues such as reliable infrastructure, skilled human resources, open governance, security as well as legal and institutional frameworks. Pursuant to realizing significant ICT potential for development and addressing its challenges, the Government has reviewed the National ICT Policy of 2003 (NICTP 2003) and came up with the National ICT Policy 2016, which provides a comprehensive framework for guiding the development and growth of the industry to ensure optimal benefits to the nation and its citizens.


The National ICT Policy 2016 is formulated within the context of national vision statements guided by the Tanzania Development Vision 2025, which recognizes that ICT is central to a competing social and economic transformation by stating;

“These technologies are a major driving force for the realization of the Vision. They should be harnessed persistently in all sectors of the economy...”

“...This task demands that adequate investments are made to improve the quality of science-based education and to create a knowledge-based society in general.”

The policy and implementation strategy formulation process were participatory, benefiting from contributions from a wide spectrum of stakeholders, including government ministries, departments and agencies, the private sector, ICT operators, research organizations, academia, development partners, non-governmental organizations, public institutions and the general public. Let me use this opportunity to extend my sincere appreciation to all stakeholders who participated in the preparation of the policy and implementation strategy.

May I also take this opportunity to reiterate the government's commitment towards continued improvement of the enabling environment for the ICT industry. The success of the policy framework relies to a large extent on the cooperation of all stakeholders. I welcome continued support for and participation of all stakeholders in its implementation in order to realize the objectives of Tanzania's sustained social economic development and transformation into a knowledge society.



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Minister for Works, Transport and Communication

December, 2016

CHAPTER ONE

BACKGROUND INFORMATION ON NATIONAL ICT POLICY IMPLEMENTATION STRATEGY

1.1 Background

The National ICT Policy 2016 (NICTP 2016) is a result of the revision of NICTP 2003. The NICTP 2003 has provided a national framework for ICTs to contribute effectively towards achieving national development goals and transform Tanzania into a knowledge-based society through the application of ICT. This policy has facilitated the development of the Tanzanian ICT industry over the past decade and created a broad range of economic and social activities. These developments have led to job creation, enhanced productivity and efficiency that led to an increased ICT contribution to the Gross Domestic Product (GDP) from 1.5% in 2004 to 2.4% in 2013 and later decreased to 2.0% in 2015. Moreover, sector growth has increased from 17.4% of GDP in 2004 to 22.8% by 2013.

The NICTP 2003 has been implemented for a period of more than ten years, a period in which the industry has witnessed major technological changes. The government has been making efforts to accommodate these changes. These include the introduction of the Converged Licensing Framework (CLF), migration from terrestrial analogue to digital television broadcasting, putting in place a National ICT Broadband Backbone, an extension of telecommunication networks to rural communities and financial inclusion through mobile money innovation. One of the major initiatives that the government has pursued is the improvement of the ICT infrastructure to bridge the digital divide and lower the cost of communications.

The development, deployment, and utilization of ICTs within the economy and society, raise a number of challenges in infrastructure, safety, security, standardization, electronic service, local content development and Business Process Outsourcing (BPO). However, the legal framework to attract investments in the sector under Public Private Partnership (PPP) arrangement, as well as skills and leadership to champion the integration of ICTs in the socio-economic development process, is also a challenge. To address the above challenges, the Government has reviewed the NICTP 2003 to spearhead the development of ICT in the country through a process that has resulted in the formulation of NICTP 2016. The NICTP 2016 will make a desirable and

appreciable impact on the country's developmental process. The NICTP 2016 is based on the basic premise that Tanzania's accelerated development within the emerging information and digital age of which will not be possible without an ICT-driven development agenda.

1.2 Introduction

Tanzania National ICT Policy 2016 Implementation Strategy is prepared to translate the policy statements into actions, covering a five-year period from 2016/17 to 2020/21. The Strategy offers a fundamental strategic direction for enhancing the ICT Sector that are responsible for implementing ICT Policy. The present Policy, as its predecessor, essentially focuses on creating an enabling environment to facilitate the acquisition, utilization, and exploitation of ICT for social and economic development in Tanzania. The Strategy shows what the ICT Sector does, what it wishes to achieve and how it contributes to the National Long Term Goals and the Development Agenda.

The Strategy emanates from the new formulated National ICT Policy 2016, guided by the Tanzania Development Vision 2025, Ruling Party Election Manifesto 2015 and the National Five Year Development Plan II 2016/17-2020/21. The strategy is an important guiding tool for implementation of National Information Communication Technology Policy 2016 for the period of five years.

1.3 Issues for Implementation (strategies)

The National ICT Policy 2016 acknowledges that for it to make a desirable and appreciable impact on the country's developmental process, it must, in addition to being related to the wider social and economic development objectives and priorities of the nation, be aimed at addressing the developmental challenges facing Tanzania. Issues for implementation include: (i) Strategic ICT Leadership and Human Capital Development; (ii) Broadband Access and Infrastructure Development; (iii) Frequency Spectrum and other scarce ICT Resources (iv) E-Services and Local Content Development; (v) Cooperation and Collaboration; (vi) ICT Legal and Regulatory Environment; (vii) ICT Security, Safety and Standardization; (viii) ICT Sector and Industry Development; (ix) Productive Sectors Development; and (x) Crosscutting Issues.

1.4 Assumptions

The strategy provides appropriate solutions to the identified issues if conditions are properly met. Assumptions that have been identified are as follows:

- i. Adequate budget allocations are made as well as timely disbursement of funds;
- ii. Timely decision making;
- iii. Strong institutional collaboration in planning and implementation;
- iv. Macroeconomic stability;
- v. Consistency in the institutional framework and national policies that are linked to the implementation of the strategies.

1.5 Expected Result from Implementing National ICT Policy Strategies

Tanzania with economically, socially and culturally enriched people in ICT-enabled knowledge society.

CHAPTER TWO

SITUATION ANALYSIS

2.1 ICT Situation Analysis

For the period of implementation of the National ICT Policy 2003, Tanzania has made substantial progress in the deployment and utilization of ICT. Following the government's guiding plan, the Tanzania Five Year Development Plan (FYDP) of 2011/12-2015/16, highlights the central role of ICTs. It clearly states that:

“It is widely accepted that productivity growth is driven by the adoption of technology. ICTs will play a crucial role in the transformation process from a resource-based to a skill-based and technology-based economy in order to transform the country's production structure...in the current information age, rapid access to data and other new technologies is essential to national socio-economic development.”

Against this backdrop of clear and well-defined vision, strategy and plans, Tanzania has made commendable strides in the right direction. For example, the cost of accessing the internet in the country dropped by more than 50 percent in 2010 due to the deployment of the National ICT Broadband Backbone (NICTBB). Others were the landing of two submarine cables in Dar es Salaam, namely Eastern Africa Submarine Cable System (EASSy) and Southern and Eastern Africa Communication Network (SEACOM). ICT development in Tanzania has contributed in bringing the social economic development of the majority of citizens. For example, the introduction of mobile money platforms in Tanzania has created new banking avenues for people who previously did not have access to banking services. As a positive ripple, the number of SMEs acting as mobile banking agents has created new forms of employment and livelihood. Moreover, ICT has contributed to improvements in both public and private sector service delivery. These include healthcare, formal and informal education and various e-services contributing to the manifestation of e-government. The following sections illustrate some aspects of the progress made:

2.1.1 Communication Infrastructure

The NICTP 2003 envisioned by making Tanzania a hub of ICT infrastructure and ICT solutions in Eastern and Southern African region. In 2003, Tanzania entirely depended on low capacity and expensive satellite bandwidth from local and international communication. To realize its vision, two focused areas, namely ICT Infrastructure and Universal Access were set out in the policy document. This aimed at ensuring the availability of reliable and interoperable ICT infrastructure and extension of ICT coverage to underserved areas, respectively. As of the year 2015, Tanzania has a high capacity broadband connection to the rest of the world through EASSy, with a capacity of 4.72Tbps, SEACOM with a capacity of 1.28 Tbps, and coverage of 7,560 Km long NICTBB Optic Fibre Cable with a capacity of 4.8Tbps. The NICTBB and submarine cables have reduced the cost of backhaul transport bandwidth about 99% compared to the situation in 2009. By leveraging its unique geographical position, Tanzania now serves to neighbor landlocked countries by extending the benefits of high-capacity submarine cables. This was possible through the NICTBB infrastructure as part of fulfilling its aspirations of being a regional ICT hub.

The investment done by the government in the National ICT Broadband Backbone which has networked almost all regional headquarters within the country and provided connectivity to six neighbouring countries. This includes; Kenya, Uganda, Rwanda, Burundi, Zambia, and Malawi which has catalysed new interest among telecommunication operators. Therefore, this has resulted into the willingness to invest in infrastructure and to facilitate exploitation of the availed long distance terrestrial broadband infrastructure. The government is currently laying down the ICT infrastructure in collaboration with both public and private telecommunication operators. Other achievements include deployment of six Internet Exchange Points (IXPs) located in Dar es Salaam, Arusha, Mwanza, Zanzibar, Mbeya and Dodoma and establishment of a .tz registry to manage and administer the Tanzania's country code top-level domain (.tz ccTLD) locally.

In 2012 Tanzania started the Analogue Switch-Off (ASO) exercise to migrate from terrestrial analogue to digital broadcasting. In such aspiration, it become the first country in eastern and southern Africa to embark on the implementation of the ITU goal. Tanzania has achieved a full migration from analogue to digital before June, 2015. Remarkably, it was the deadline for phasing out all the analogue technology worldwide as per ITU agreement.

Tanzania's teledensity has increased from 1.22 subscribers per 100 people in 2002 to 79 subscribers per 100 people in 2015. Furthermore, telecommunication subscriber base has risen from 2.96 million in 2005 to 39.8 million in December 2015. Even though the industry enjoys the tremendous growth of telecommunications in general which is mostly contributed by the mobile industry, the fixed telephony subscription has experienced a declining trend from 154,420 in 2005 to 142,819 in 2015. Internet usage has not grown at a desirable pace. For instance, the number of Internet users by subscription increased from 3.56 million in 2005 to 17.26 million in 2015.

Statistics from TCRA show that 68% of Internet users registered in 2014 was household / individual, whereas Internet users with household / individual in 2005 were 28% only. Internet cafés have contributed to some degree to enhanced Internet usage. The degree of Internet penetration in Tanzania is still lags behind as opposed to other countries in the region with similar GDP per capita and literacy levels. Mobile network operators are picking up the slack and becoming key players in Internet service provision with their extensive national coverage. This follows the introduction of mobile data and broadband services.

Despite the above-mentioned achievements, most citizens still cannot access broadband services. This, in turn, calls for a re-examination of the policy focus so as to accommodate these developments. Moreover, the development of communication infrastructure still faces challenges due to the absence of a supportive framework for acquisition such as the construction of telecommunication infrastructure, lack of mechanism to facilitate broadband penetration agenda at all levels, absence of ICT standardization policy and national data center framework, vandalism of ICT infrastructure, high cost of provision of rural telecommunication and unreliable or absence of power supply.

While the NICTP 2003 is silent on spectrum issues, as such the industry has witnessed an increasing demand for wireless communication spectrum following the liberalization of the communication sector in the country. There has been a challenge of spectrum acquisition for various uses and a big chunk of allocated spectrum is underutilized while implementation of critical services is affected.

The use of finite telecommunications and ICT resources, including spectrum, internet numbering and country code Top Level Domain (ccTLD) namely dot tz (.tz) which is a national resource in the cyberspace, has been increasing in recent years. For instance, a cumulative number of dot tz domain registration

increased from 1,703 in June, 2005 to 10,000 in May 2015. Despite this achievement, the NICTP 2003 was silent on dot tz ccTLD local management, which is among of the key national resources. This is a result of the establishment of the Tanzania Network Information Centre (tzNIC) in 2006 under a public private partnership arrangement. To ensure efficient and effective utilization of this scarce national resource, there is a need to have policy provisions so that the country can reap maximum benefits of a sustainable telecommunications industry.

2.1.2 The Legal and Regulatory Environment

The main objective of the legal and regulatory framework focus area in the NICTP 2003 was to establish an enabling legal framework for the promotion of ICT in the country. To achieve this objective, the government has been undertaking reforms in the legal framework, by putting in place cyber and other related laws. The Government acknowledges the landmark legal amendments which introduced the legal provisions that allow and recognize the admissibility of electronic evidence through the amendments of Evidence Act No. 15 of 2007, Act No. 3 of 2011 and other amendments. Further, the Government enacted the Electronic and Postal Communications Act No. 3 of 2010 and the Universal Communications Service Access Act. No. 11 of 2006 the Cybercrime Act No. 14 of 2015 and the Electronic Transactions Act No. 13 of 2015. Various other Regulations were made under these Acts to promote electronic communications, consumer protection, and to address cyber security issues.

With regard to the regulatory environment, Tanzania has liberalized the communications and broadcasting sector in order, among other things, to attract investment and increase competition. The Government through the Tanzania Communication Regulatory Authority Act No. 12 of 2003, established a converged regulatory authority named TCRA to regulate the communications sector, which includes telecommunication, broadcasting, and postal services. Following the establishment of TCRA, Tanzania marked a new era in the communication sector, which led to the introduction of Converged Licensing Framework (CLF) in 2005. At the end of 2015; 18 network facility operators, 14 network service operators, 80 application service operators, 91 radio content service operators and 26 television content service operators had been licensed under CLF.

Despite the achievements mentioned above, a major challenge is the inability to maintain a proactive legal framework that can keep pace with the rapidly changing technology. Among the areas that need attention include data access rights, privacy protection, computer fraud & crime, security and privacy of e-

transactions, the establishment of rules governing e-transactions, and delivery of e-opportunities to the wider population. Other regulatory challenges facing the ICT sector in Tanzania include lack of a mechanism for ICT standardization.

2.1.3 ICT Industry Development

ICT Industry is another focus area in the NICTP 2003 whose objective was to promote local manufacturing of ICTs as well as enhancing Research and Development (R&D), innovation and entrepreneurship. Over the last decade, Tanzania has experienced a slow-growing local ICT development industry and most software and hardware used by both public and private sectors are imported at considerable cost. Production of software for the local market is still a challenge in Tanzania and the use of open-source software is on a small scale. In terms of the hardware, there are no local manufacturers of ICT equipment in Tanzania. Invariably, local dealers or agents, import ICT products from abroad. In addition, there are no standards guiding the importation of both hardware and software. Overall, Tanzania has a small emerging skilled capacity to support the ICT industry in terms of developing or supporting hardware and software.

2.1.4 Access to ICT in the Education System

The intention of the Service Sector's focus area in the NICTP 2003 was to promote the use of ICT in various sectors including education. ICT has the potential to enhance effective delivery of both formal and informal education. However, given the current situation, this benefit is only evident in some schools and higher learning institutions in urban areas. Currently, few educational institutions, mostly private, have incorporated the use of ICT in education delivery. Universities and other higher learning institutions do not have adequate ICT facilities and bandwidth to meet real demand. There are various initiatives that the Government in collaboration with other stakeholders has been taken to promote the use of ICT in education.

Though cyber cafés have tried to fill the gap, they do not offer a viable alternative for e-learning due to prices being unaffordable. In addition, the inadequacy of effective Programmes for teachers' training, particularly in computer and other multimedia utilization has been identified as a major reason for the slow take-up of ICT in education. Furthermore, the desire to unleash the potential of ICT in education delivery may cause Tanzania to precipitate numerous pitfalls as seen in other African countries. Experiences drawn from other countries' attempts to utilize ICT in education should provide Tanzania with useful lessons and reasons for exercising prudence in how it deploys ICT in education.

2.1.5 Strategic ICT Leadership and Workforce

NICTP 2003 prioritized Strategic ICT leadership focus area because of its importance in providing visionary guidance in the sector. The main goal of this pillar was to create an authoritative national organization to effect, coordinate and review the ICT policy. Over the past ten years, the sector has witnessed major developments in putting an appropriate institutional framework in place. Some of the successes include the establishment of TCRA to regulate the ICT sector, e-Government Agency (eGA) to promote the use of ICT in the Public Service and the Universal Communications Service Access Fund (UCSAF) to bridge the digital divide between urban and rural areas. Other initiatives include the setting up of ICT Units in MDA's and the decision by the Government in July, 2012, to establish the ICT Commission, which is the National ICT think-tank responsible for Research and Development to accelerate ICT industry in the country. To a great extent, the objective in this focus area has been attained. However, the challenge for leaders at various levels remains that of ensuring the objectives of the policy, i.e. the anticipated benefits, reach as many people as possible in both urban and rural areas.

With regard to the workforce, the objective of the 2003 National ICT Policy, under Human Capital Development, was to increase the size and quality of ICT-skilled human resource base in Tanzania. To date, the industry has produced a number of tertiary colleges and higher learning institutions that in turn produce ICT-skilled personnel at different levels of professionalism e.g. technicians, engineers, software developers, network administrators, and system analysts.

Government institutions which regulate the education sectors such as VETA, NACTE and TCU monitors the quality of education in ICT and the Engineers Registration Board (ERB) now recognizes ICT-related professions such as software engineering, telecommunication engineering, and systems engineering. In recent years, TCRA and other public and private institutions are providing a scholarship to bachelor, masters and Ph.D. degree Programmes related to ICT in various higher institutions of learning. In addition, the Government has developed an ICT scheme of service for ICT cadres. However, there is a real challenge of shortage of qualified ICT professionals compared to actual demand, and their profiles are not well defined and established. The process of standardization in terms of evaluation and certification of different courses offered by various training centres is also inadequate.

2.1.6 ICT in Everyday Life

There has been an improvement in adopting and using ICT in day-to-day activities. This is a result of the realization of the productive sector focus area of the NICTP 2003, which envisioned enabling ICT to contribute towards the reduction of poverty and improvement of the quality of life. A good example is the uptake of mobile money services. The introduction of mobile money services such as M-Pesa, TigoPesa, Airtel Money and EzyPesa, has enabled people to save, send and spend money including payment of bills for utilities through mobile platforms. In addition, banks have started offering banking services through mobile platforms, which allow their customers to use mobile phones for banking transactions.

For the period of July, 2015 to March, 2016 money amounting to Tanzania Shillings 45 trillion was transacted through the mobile phone platform. Moreover, the use of social media applications such as Facebook, Twitter, Instagram, WhatsApp, LinkedIn, YouTube, and Blogs is increasing in Tanzania just as the trend in the world is. Social media now constitute dominant forms through which society communicates using different languages including Kiswahili. While recognizing the advantages of these social media, it is also evident that they pose security challenges, and a lot of online content is detrimental to national culture and poses a particular threat to children. It cannot be overemphasized, therefore, that there is a need for strategies/ mechanisms to regulate against the abuses of social media. Others are the capacity to manage ICT quality and electronic waste, including the availability of frameworks to ensure electronic safety.

2.1.7 ICT at the Workplace

There is sufficient evidence that many large organizations and companies make extensive use of networked computers with Internet access. The workplace has been embracing the use of ICT in its daily operations. This applies to Government, SMEs, and other institutions. These organizations have appreciated the potential of ICT in workplaces. The use of ICT in Government institutions has improved and is coordinated following the Government decision to establish ICT Units in MDAs and LGAs.

Besides other initiatives taken by public and private institutions, in 2013 the Government acquired the 1.55Gbps international Internet bandwidth for Government use and provided video conferencing facilities to regional headquarters in Tanzania mainland and Zanzibar. The use of ICT in various

independent departments and authorities is high which has helped to further improve public service delivery.

Despite these achievements, evidence suggests that smaller companies and many institutions make marginal use of ICT in their daily operations to enhance efficiency and increase productivity. Other challenges include improper use of ICT at workplaces, which affects staff productivity, cyber security, network management and spiraling costs that need special intervention. The greatest obstacle to effective use of ICT in the workplace in Tanzania, according to the e-Readiness Report, is the low capacity of human capital in the use and maintenance of ICT.

2.1.8 Local Content and Hosting

The ninth objective of the NICTP 2003 aimed to promote the local creation and development of ICT applications and multi-media content for productivity, as well as for social interactions, culture, and entertainment. A study conducted by the Ministry of Communication, Science and Technology in 2014 showed that there had been little progress in developing local content over the last ten years of NICTP 2003 implementation. The country still depends on foreign importation of content, software, and hardware. Development of local content is still a challenge as there is a limited level of local expertise in content development.

Migration from analogue to digital terrestrial broadcasting, on the other hand, has brought about the challenge of inadequate local television content. Currently, Tanzania faces a shortage of locally made English and Kiswahili television Programmes for local service demands. Depending on the imported content hinders opportunities for domestic economic empowerment as well as capacity development within the context of ICT.

The Tanzania ICT industry has been taking a number of initiatives to address the challenge of language as a barrier to ICT adoption and usage in the country. In 2008, for instance, the first open source Kiswahili application software called Jambo Office was developed and introduced in Tanzania by the University of Dar es Salaam in collaboration with the Royal Swedish IT Consultancy Company. These efforts, however, lacked a supportive framework to become operational. Necessary actions need to be taken to improve the domestic value added and local content development in the ICT industry.

Tanzania as a country has not been able to maximize the economic benefit created by the proliferation of ICT utilization which creates opportunities in terms of value chain activities required in the provision of ICT services,

including; software development, hardware manufacturing, hosting activities and training, amongst others. As a result, the country continues to be dependent on foreign imports in the process denying itself opportunities for domestic economic empowerment and capacity building.

While local content and development of electronic services face a number of challenges, the prevalence of Information Technology Enabled Services/ Business Process Outsourcing (ITES/ BPO), which is a global multi-billion dollar ICT industry has potentials in job creation and significant contribution to gross domestic product (GDP). This is a new focus area of concern and calls for a proper policy framework and promotion strategy as the current environment is supportive for ITES/ BPO uptake. Challenges to be addressed in order to promote ITES/ BPO include the creation of a robust framework, address security concerns, development of local skills and expertise that if not addressed will likely prevent Tanzanian organizations from benefitting from growing ITES/ BPO opportunities in many developing countries. Digital content and ITES/ BPO require competence and significant investment resources from both public and private sectors.

2.1.9 ICT Employment Opportunities

The supply of ICT professionals in Tanzania is considerably less than current demand, especially in the areas of higher skills and experience. In the past four years, The Tanzania Commission for Science and Technology (COSTECH) has embarked on supporting ICT innovation through the Dar Teknohama Business Incubator (DTBi). This initiative has provided small local entrepreneurial start-ups to partner with their counterparts from other countries and thereby assisting in job creation. Replication of business incubators, which has been proved successful in Dar es Salaam to other areas of the country, encounters a number of challenges such as lack of incentives. Nevertheless, innovation has been increasing over years, especially in the private sector through the development of ICT solutions, which has helped in job creation; for example, the mobile money innovation in telecommunication companies has facilitated the financial inclusion of the majority of Tanzanians and created job avenues. However, job mobility in the ICT industry is high and poses a challenge for the local industry.

2.1.10 E-Government

The NICTP 2003 under a focus area of Public Services addressed the issue of using ICT to enhance service delivery to the general public. Cognizant of the fact that there were fragmented e-Government initiatives, the-Government in 2010 made a remarkable step of establishing the e-Government Agency (e-GA)

to coordinate, oversee and promote e- Government initiatives and enforcement of e-Government standards to Public Institutions. Other strides include the use of integrated HR and Payroll Systems covering about 280,000 public servants and also the adoption of the organizational web portal in the Government. Other ICT services, particularly those, which allow interaction and/or transaction with MDAs, are still rare in the public sector in Tanzania.

Various arms of government are making progress in transforming their operations by deploying ICT solutions. Successful deployment of e-government systems includes the National Payment System (NPS) which comprises of the Tanzania Interbank Settlement System (TISS), Electronic Clearing House (ECH), Integrated Financial Management System (IFMS) and Retail Payment System (RPS). Through NPS values of transactions increased in March, 2013 by 4.2% to Tanzania shillings 16,482.6 billion from Tanzanian shillings 15,818.7 billion recorded in March, 2012. Other successes are the establishment of the Central Admission System (CAS) for higher learning students' placement and the Online Loan Application System (OLAS). Despite these achievements, Tanzania could benefit even more from the potential benefits of ICTs to improve efficiency and effectiveness by furthering information sharing, transparency, and accountability as well as through improvement of citizens' ICT literacy. Based on the baseline study on e-Government, it has been indicated that there is a low level of application of ICT services in the public sector in Tanzania. The language of Internet content also poses a significant challenge, underscoring the importance of having Internet content in languages that the citizens can read and understand.

2.1.11 E-Transactions

Currently, there are limited e-transaction services such as e-commerce due to lack of local credit cards and supportive legal framework appropriate for e-business promotion. Most significantly, the legal framework does not provide adequate safeguards to create an environment of trust for e-business transactions to take place. Consequently, financial institutions and businesses at large are not able to set up provisions for supporting e-transactions for their own, and each other's clients.

2.1.12 Foreign Direct Investment

The communications sector in Tanzania has grown to a great extent because of Foreign Direct Investment (FDI). The FDI has been important not only for the investment it brings but also for the operational expertise, which accompanies the investment. If the communications sector is to continue to grow and expand,

the challenge is the knowledge transfer through technology transfer. Attractive investment opportunities are based not only on the provision and management/operation of new technological infrastructure but also on the development and launching of value-adding services supported by these agreements.

2.1.13 Research, Development & Innovation

The international ICT sector is an Intellectual Property-driven and supported the industry through R&D. Tanzania has little intellectual property registration and publications among its ICT companies/ people. There is a profound need to identify what latent intellectual property already exists within the industry, harvest what exists among Tanzanians and publish the intellectual property. Intellectual Property publication will leverage the results of where existing ICT companies have been historically focusing their efforts (fragmented and opportunistic technical efforts). Intellectual Property publishing will help communicate and develop an international awareness of Tanzania's technical capability and competence. There is a dire need to develop awareness of hidden and under-promoted conceptual and technical assets. As such, it is important to create awareness among ICT companies and management about the importance of Intellectual Property. However, paired with awareness is also the need for training which explains the procedure for Intellectual Property searches and registration, including whom and where such services can be obtained in Tanzania, likewise in Business Registration and Licensing Agency (BRELA).

2.2 Challenges

- i) Non-recognition of the ICT profession, inadequacy of skilled and competent human resources base and illiteracy amongst citizens to effectively participate in a knowledge society;
- ii) Ineffective leadership framework at different levels to champion the integration of ICTs in the socio-economic development process;
- iii) Lack of appropriate frameworks for the deployment and utilization of ICT infrastructures including data centres, right of way, e-readiness and availability of electricity in most rural areas;

- iv) Underutilization of the deployed radio communication frequency spectrum and other scarce ICT resources due to lack of policy framework;
- v) Most ICTs used in the country lack or contain minimal local content components, online content language is foreign, predominantly English which is not accessible to most citizens and no framework for promotion of the competitive ITES/BPO Industry in the country;
- vi) Relative increase in ICT infrastructure vandalism and unsafe/insecure use of communication services which lead to cybercrime, infringement of privacy and detriment to national culture including child abuse online;
- vii) Unsupportive policy framework for National ICT standardization and e-waste management;
- viii) Weak research & development (R&D) in the sector and high dependency on ICT importation which negatively impacts innovation within ICT start-ups and the industry;
- ix) Low negotiation capacity and ineffective participation in regional and international integration, ICT initiatives which hinder opportunities for network creation, collaboration, and linkage to Foreign Direct Investment (FDI) and technology transfer;
- x) Dire need to develop awareness of hidden and under-promoted conceptual and technical assets on Intellectual Property rights;
- xi) Ineffective integration of ICTs for increased productivity and value addition in the production chain; and
- xii) Increased gender inequality in ICT initiatives and ineffective application of ICT in key / potential crosscutting sectors.

CHAPTER THREE

VISION, MISSION AND OBJECTIVE

3.1 Vision

Tanzania with economically, socially and culturally enriched people in the ICT-enabled knowledge society.

3.2 Mission

To transform Tanzania into an ICT-enabled knowledge-based economy through development, deployment and sustainable exploitation of ICT to benefit every citizen and business.

3.3 Objectives

3.3.1 Main Objective

To accelerate socio-economic development with potentials to transform Tanzania into ICT driven middle-income economy and society.

3.3.2 Specific Objectives

- i. To strengthen strategic ICT leadership at all levels to effectively champion exploitation of ICT in all sectors of the economy;
- ii. To develop and enhance human capital that is capable of championing ICT in the creation of Tanzania's knowledge society;
- iii. To enhance public participation and understanding of the potentials of ICT for effective transformation towards a knowledge-based society;
- iv. To enhance accessibility and availability of affordable and reliable broadband services to accelerate socio-economic development of the society;
- v. To have reliable, interoperable and sustainable ICT infrastructure that supports ubiquitous national connectivity;
- vi. To have universal access to ICT products and services in order to bridge the digital divide;

- vii. To strengthen management and promote efficiency in spectrum allocation and utilization that guarantees its availability and competition in both urban and rural areas;
- viii. To promote and strengthen management of scarce ICT resources for sustainable ICT industry;
- ix. To enhance the local content in all aspects of the ICT value chain and local hosting of electronic services;
- x. To promote a competitive ITES/ BPO industry and development of electronic services in all aspects of ICT value chain activities;
- xi. To strengthen cooperation and collaboration in regional and international ICT development initiatives that promote knowledge transfer and attract foreign direct investment;
- xii. To strengthen legal and regulatory environment that facilitates the acquisition, utilization, and development of ICT in Tanzania;
- xiii. To have secure environment that builds confidence and trust in the use of ICT products and services;
- xiv. To promote safety in the use of ICT products and services;
- xv. To strengthen quality control and standardization in the ICT industry;
- xvi. To have sustainable ICT industry;
- xvii. To promote the effective use of ICT in the productive sectors for increased productivity;
- xviii. To enhance participation of gender and social diversity groups in ICT;
- xix. To promote the use of ICT in disaster management;
- xx. To promote the use of ICT in environmental conservation;
- xxi. To have Good Governance enhanced by ICT; and
- xxii. To promote investment in ICT under the PPP arrangement.

CHAPTER FOUR

IMPLEMENTATION STRATEGY

4.1 Objectives, Strategies, Targets and Indicators

Objective 1

To strengthen strategic ICT leadership at all levels to effectively champion exploitation of ICT in all sectors of the economy.

Performance Indicators

- A number of leaders championing ICT.
- Percentage of GDP allocated for ICT
- A number of leaders from different sectors trained in the utilization of ICT for service delivery.
- Presence of functional ICT leadership framework.

Strategy: 1.1

Strengthen high level of ICT leadership to provide vision and guidance for effective development, deployment and exploitation of ICT for socio-economic advancement in the country

Target 1.1.1

Institutions to champion ICT leadership towards knowledge society strengthened by June, 2021

Target 1.1.2

Capacity of leaders across all sectors at different levels in the utilization of ICT for improving service delivery built by June, 2021

Target 1.1.3

Frameworks to strengthen ICT leadership at all levels to promote ICT for full participation in knowledge economy developed, harmonized and implemented by June, 2021

Strategy: 1.2

Set adequate funds equivalent to a reasonable proportional of GDP to promote ICT for full participation in the knowledge economy

Target 1.2.1

At least 0.3 percent of GDP allocated for ICT development by June, 2021

Objective 2

To develop and enhance human capital that is capable of championing ICT in the creation of Tanzania's knowledge-based society.

Performance Indicators

- Presence of a functional body for accreditation of ICT professionals
- A number of professionals championing ICT
- Number of ICT professionals working abroad and in international organizations
- Percentage of schools and colleges using ICT in teaching and learning
- Percentage of informal education and skills development centres using ICT in teaching and learning
- Number of collaboration Programmes between ICT training institutions and employers in development of ICT skills

Strategy: 2.1

Create ICT professional recognition and develop framework for promoting human resource base in the country which is ethical and capable of championing ICT initiatives towards creation of knowledge society.

Target 2.1.1

ICT human resource development and utilization plan developed and implemented by June, 2021

Target 2.1.2

Body for accreditation of ICT professionals established, strengthened and operationalized by June, 2018

Target 2.1.3

Integration of ICTs throughout the education system and within the public at large including formal and informal sectors promoted by June, 2021

Target 2.1.4

Incentive mechanism to encourage Tanzanian ICT professionals works abroad and in International Organizations developed by June, 2018.

Strategy: 2.2

Strengthen collaboration with the private sector in development of a critical mass of ICT skills and expertise while encouraging lifelong learning through the use of ICT.

Target 2.2.1

Incentive mechanisms to encourage private sector collaboration in ICT skills development established and operationalized by June, 2021

Target 2.2.2

Mechanism for collaboration between ICT training institutions and employers strengthened by June, 2021

Strategy: 2.3

Ensure effective use of ICT in teaching and learning throughout the formal and informal education system

Target 2.3.1

At least 50% of schools and colleges effectively use ICT in teaching and learning by June, 2021

Target 2.3.2

The use of ICT in recognized informal education system and skills development centres incentivized by June, 2021

Objective 3

To enhance public participation and understanding of the potentials of ICT for effective transformation towards a knowledge-based society.

Performance Indicators

- Readiness of citizens towards knowledge based society
- Percentage of population aware of the use of critical ICT services

Strategy: 3.1

Create Public awareness on ICT usage.

Target 3.1.1

Awareness and readiness of at least 50 percent (50%) of population on the use of critical ICT services created by June, 2021

Strategy: 3.2

Create collaboration between public and private sector to ensure awareness in ICT.

Target 3.2.1

The collaboration mechanism between public and private sector on ICT awareness created and operationalized by June, 2021

Strategy: 3.3

Embrace ICT as an integral part of the national development and empower citizens to use it to fight poverty, ignorance and disease so as to improve the quality of their lives.

Target 3.3.1

Program/ mechanism for citizen empowerment in potential use of ICT in fighting poverty, ignorance and diseases developed and implemented by June, 2021

Objective 4

To enhance accessibility and availability of affordable and reliable broadband services to accelerate socio-economic development of the society

Performance Indicators

- Level of accessibility of reliable broadband services
- Level of affordability of broadband services
- Level of utilization of broadband services
- Presence of National Broadband Strategy

Strategy: 4.1

Create conducive environment for collaboration of public and private sector in exploring various means of financing access to broadband services

Target 4.1.1

Collaborative framework between ICT investors and Government to facilitate access to broadband established and operationalized by June, 2018

Target 4.1.2

Incentive mechanism to enhance access to affordable broadband services strengthened by June, 2021

Strategy: 4.2

Promote availability and accessibility of reliable and affordable broadband services countrywide

Target 4.2.1

Affordable broadband services available and accessible in all Wards by 2021

Target 4.2.2

National Broadband Strategy developed by June, 2018

Strategy: 4.3

Establish mechanisms to enable citizens in underserved areas, business communities and public institutions to have access to universal broadband services.

Target 4.3.1

Broadband access facilities provided to eighty percent (80%) of Public Service Delivery Outlets in underserved areas by June, 2021

Objective 5

To deliver reliable, interoperable and sustainable ICT infrastructure that supports ubiquitous national connectivity

Performance Indicators

- Level of accessibility of reliable and affordable broadband infrastructure
- Collaborative framework between ICT investors and the Government on development of ICT infrastructure in place
- Integrated Project Planning framework in place

Strategy: 5.1

Create a conducive environment for collaboration of public and private sector in exploring various means of financing ICT infrastructures.

Target 5.1.1

Collaborative frameworks between ICT investors and Government to facilitate development of ICT infrastructure established and operationalized by June, 2018

Target 5.1.2

Mechanism for energy distributor's participation in the development of the ICT broadband infrastructure established and operationalized by June, 2018

Strategy: 5.2

Develop safe and reliable ICT infrastructure countrywide

Target 5.2.1

Critical ICT infrastructures designated and protected by June, 2018

Target 5.2.2

An integrated Project Planning framework for collaboration with local authorities and public institutions to accelerate ICT broadband and other infrastructure development established by June, 2018

Strategy: 5.3

Devise a mechanism to promote e-ready infrastructure development countrywide.

Target 5.3.1

Mechanism to promote e-ready infrastructure developed and implemented by June, 2018

Strategy: 5.4

Develop supportive framework to guide the deployment of ICT infrastructures including right of way and sharing of such infrastructures.

Target 5.4.1

Mechanisms for issuance of Right of Ways to accommodate ICT broadband infrastructure development agenda prepared by June, 2018

Target 5.4.2

Open access to ICT broadband infrastructure promoted by June, 2017

Objective 6

To have universal access to ICT products and services in order to bridge the digital divide

Performance Indicators

- Level of accessibility of ICT products and services
- Level of utilization of ICT products and services

Strategy: 6.1

Strengthen mechanism for solicitation of funds for supporting rural ICT investment.

Target 6.1.1

Legal frameworks related to funding of Universal Access Service reviewed by June, 2018

Strategy: 6.2

Strengthen collaboration with Service providers to participate in rural ICT investments.

Target 6.2.1

Licensing and incentive criteria for rural investment reviewed by June, 2018

Strategy: 6.3

Facilitate access to ICT products and services to society

Target 6.3.1

Incentives mechanism to enhance access to ICT products established and implemented by June, 2018

Strategy: 6.4

Encourage financial institutions and Development Partners to give particular support on investments in rural ICT services.

Target 6.4.1

Collaborative framework between ICT investors and Government to facilitate development of ICT products for rural areas established and operationalized by June, 2021

Objective 7

To strengthen management and promote efficiency in spectrum allocation and utilization that guarantees availability and competition in both urban and rural areas

Performance Indicators

- Level of spectrum utilization
- Regulations on spectrum management reviewed.

Strategy: 7.1

Strengthen management and allocation of radio frequency spectrum.

Target 7.1.1

Institutional Framework for management and allocation of Radio Frequency Spectrum strengthened by June, 2018

Target 7.1.2

Substantial amount of spectrum including digital dividend allocated for Government use by June, 2017

Strategy: 7.2

Enhance transparency, efficiency and competitiveness on efficient utilization of commercial spectrum.

Target 7.2.1

Regulatory instruments for management of commercial spectrum resources reviewed by June, 2018

Target 7.2.2

Competitive assignment of Radio frequency spectrum introduced by June, 2017

Strategy: 7.3

Enhance national capacity on management of spectrum and contribution to regional and international spectrum planning and harmonization conformity to international standard.

Target 7.3.1

Institutional capacity and framework on regional and international Spectrum Management and harmonization strengthened by June, 2021

Objective 8

To enhance efficiency and transparency in the management and utilization of scarce ICT resources for sustainable ICT industry

Performance Indicators

- Level of dot tz domain name usage
- Level of utilization of numbering, addressing, naming and routing ICT resources

Strategy: 8.1

Allocate ICT numbering, addressing, naming and routing resources on a fair, transparent and non-discriminatory basis for effective competition and promotion of innovation.

Target 8.1.1

A framework for efficient and effective utilization of ICT scarce resources reviewed by June, 2018

Target 8.1.2

Framework for promotion of IPv6 and seamless migration from IPv4 to IPv6 developed and implemented by June, 2021

Strategy: 8.2

Promote utilization of country codes in the cyberspace to facilitate transformation towards information society.

Target 8.2.1

60 percent (60%) of the Public sensitized on the use of country code by June, 2021

Target 8.2.2

90% of all organizations in Tanzania use dot tzccTLD by June, 2021

Strategy: 8.3

Establish mechanisms that will protect and preserve the use of symbols, national and heritage names for future use in cybersquatting.

Target 8.3.1

Mechanisms for protecting and preserving the use of symbols, national and heritage names for future use in cybersquatting established and operationalized by June, 2019

Objective 9

To enhance the local content in all aspects of the ICT value chain and local hosting of electronic services.

Performance Indicators

- Number of e-services hosted locally,
- Level of local content in ICT products and services
- Number of incubators

Strategy: 9.1

Create conducive environment for production of electronic services to satisfy local demand and for export; enhancing hosting of ICT systems locally and localization of internally generated traffic.

Target 9.1.1

Legal framework to support the development sharing and usage of e-services and local digital contents established by June, 2018

Target 9.1.2

Incentive mechanism for promoting development of e-services and local content introduced by June, 2018

Target 9.1.3

Mechanism to promote local ICT products in national, regional and international markets established and operationalized by June, 2021

Target 9.1.4

90% of usable national data centre capacity utilized by June, 2021

Target 9.1.5

Hosting of electronic services locally increased by 30% by June, 2018

Target 9.1.6

Amount of locally generated traffic traversing locally increased by 50% by June, 2021

Strategy: 9.2

Create an enabling environment that nurtures the development and promotion of local content in ICT products and services, in partnership with public and private sector.

Target 9.2.1

Framework for establishment and promotion of local content in ICT product and services in partnership with public and private sector developed by June, 2018

Strategy: 9.3

Promote the use of Kiswahili in the development of electronic services and local contents for transformation of Tanzania into knowledge society.

Target 9.3.1

Mechanism to promote the use of Kiswahili in digital contents established and operationalized by June, 2021

Objective 10

To promote a competitive ITES/ BPO industry and development of electronic services in all aspects of ICT value chain activities

Performance Indicators

- Number of competitive BPO ventures
- Level of e-service usage in Government
- Number of e-services

Strategy: 10.1

Government be a model user of electronic services to improve efficiency in service delivery, enhance planning, raise the quality of services and access to global resources.

Target 10.1.1

Integrated e-services platforms for delivery of public services developed and operationalized by June, 2017

Strategy: 10.2

Strengthen institutions responsible for coordinating, providing oversight, regulating, promoting and enforcement of e-government and other e-services initiatives.

Target 10.2.1

Framework for effective coordination, overseeing, regulating, promoting and enforcement of e-government and other e-services initiatives reviewed by June, 2019

Target 10.2.2

Institutions for enforcement of e-government strengthened by June, 2021

Strategy: 10.3

Create an enabling environment that nurtures the promotion and development of ITES /BPO ventures in partnership with public and private sector.

Target 10.3.1

Framework for establishment and promotion of ITES/BPO ventures in partnership with public and private sector developed and operationalized by June, 2018

Target 10.3.2

Incentive mechanism for promoting development of e-services and ITES/BPO introduced and implemented by June, 2021

Objective 11

To strengthen cooperation and collaboration in regional and international ICT development initiatives that promote knowledge transfer and attract foreign direct investment.

Performance Indicators

- A number of experts developed,
- Amount of Foreign Direct Investment
- Number of meetings participated
- Number of meetings hosted

Strategy: 11.1

Strengthen coordination for cooperation and collaboration with regional and international ICT organizations with mutual benefits between Tanzania and other collaborators in order to expand and strengthen local ICT capacity.

Target 11.1.1

Coordination frameworks that provide guidelines for regional and international cooperation to strengthen local ICT capacity developed and operationalized by June, 2017

Target 11.1.2

Guideline for International cooperation arrangements and agreements for promotion ICT initiatives in Tanzania reviewed by June, 2021

Strategy: 11.2

Promote the creation of bilateral relations and cooperation with regional and international organizations that generate, process, store and disseminate ICT driven information in order to expand and strengthen local ICT capacity.

Target 11.2.1

Mechanism for promoting bilateral relations and hosting of strategic international ICT events developed by June, 2018

Strategy: 11.3

Strengthen country's negotiation capacity and enhance collaboration of Tanzanians and other nations to promote local innovation, technology transfer, and FDI.

Target 11.3.1

Capacity of Tanzanians to negotiate in international ICT agreements strengthened by June, 2021

Target 11.3.2

Mechanism to strengthen local innovation, technology transfer and attract FDI established and operationalized by June, 2021

Objective 12

To strengthen a legal and regulatory environment that facilitates acquisition, utilization, and development of ICT in Tanzania.

Performance Indicators

- Number of ICT related legal frameworks in place
- ICT related Criminal incidents reported
- Offences committed in cyber world recognized by laws

Strategy: 12.1

Develop and review laws and regulations for acquisition, development, adoption, use and disposal of ICT products, services, and protection of infrastructure.

Target 12.1.1

Laws and Regulations for promotion of ICT enacted and reviewed by June, 2021

Strategy: 12.2

Strengthen institutional capacity and supportive legal framework for promoting ICT development issues.

Target 12.2.1

Law reform Commission strengthened to effectively deal with ICT law reforms by June, 2018

Target 12.2.2

Capacity of policy makers, legislators, judiciary and law enforcers in ICT strengthened by June, 2021

Target 12.2.3

ICT Laws curricula in colleges, universities and law schools integrated and implemented by June, 2021

Strategy: 12.3

Create collaborative framework for protection of intellectual property rights in ICT industry.

Target 12.3.1

Collaborative framework for protection of IPR developed and operationalized by June, 2017

Target 12.3.2

ICT Intellectual property rights incorporated in national intellectual property policy by June, 2021

Objective 13

To have secure environment that builds confidence and trust in the use of ICT products and services

Performance Indicators

- The secured environment for ICT systems, products and services.
- Level of availability of critical systems and infrastructure
- Number of ICT security technologies deployed
- National Cybersecurity strategy in place.

Strategy: 13.1

Develop frameworks for coordination and promotion of ICT security.

Target 13.1.1

National framework for coordinating ICT security initiatives developed and operationalized by June, 2018

Target 13.1.2

Mechanism for collaboration on ICT security regionally and globally established by June, 2021

Target 13.1.3

Critical National ICT Systems and infrastructure monitored throughout

Strategy: 13.2

Facilitate adoption of appropriate technologies and mechanism for stakeholders' collaboration and contribution to innovative ICT related security activities.

Target 13.2.1

Appropriate technologies for ICT related security activities deployed by June, 2021

Target 13.2.2

A mechanism for stakeholder's collaboration and contribution of innovative ICT related security activities developed and implemented by June, 2021

Target 13.2.3

Public Key Infrastructure (PKI) for secure e-service established and operationalized by June, 2017

Strategy 13.3

Sensitization of the community, ISPs, Telcos, hosting companies and .tz accredited registrars on the need to sign the .tz domains (DNSSEC deployment).

Target 13.3.1

DNSSEC deployment capacity developed for ISPs, .tz Accredited Registrars, Hosting companies, ISPs and Telcos to over 80% by 2018/19.

Target 13.3.2

At least 50% of all .tz domains signed by 2020/2021.

Objective 14

To promote safety in the use of ICT products and services.

Performance Indicators

- A number of public awareness Programmes on the safe use of ICT product and services.
- Number of awareness Programmes for children on safe and ethical online practices

Strategy: 14.1

Develop framework for coordination and promotion of ICT Safety.

Target 14.1.1

National framework for coordinating ICT safety initiatives developed and operationalized by June, 2018

Strategy: 14.2

Facilitate adoption of appropriate technologies and mechanism for management of online content and protection of children online.

Target 14.2.1

Framework for management of online content and protection of children online developed and operationalized by June, 2018

Target 14.2.2

Public awareness on ethical use of online content and protection of children online created by June, 2021

Objective 15

To strengthen quality control and standardization in the ICT industry

Performance Indicators

- Number of ICT products and services standards
- A number of Interoperable ICT systems.
- Level of compliance with ICT standards

Strategy: 15.1

Develop frameworks for coordination, promotion, and development of national ICT standards.

Target 15.1.1

Frameworks for coordination, promotion, and development of national ICT standards developed and operationalized by June, 2018

Strategy: 15.2

Establish national frameworks for interoperability of ICT products and services

Target 15.2.1

National frameworks for interoperability of ICT products and services established and operationalized by June, 2018

Strategy: 15.3

Strengthen ICT governance for adoption and compliance with national and other acceptable ICT standards

Target 15.3.1

ICT governance for adoption and compliance with national and other acceptable ICT standards established and operationalized by June, 2018

Objective 16

To have sustainable ICT industry.

Performance Indicators

- A number of ICT SMEs and industries
- A number of Local ICT products and services.
- Number of Research & Development (R&D) on ICT service and products
- Number of ICT Park (s)
- Institutional framework for R&D, innovation and entrepreneurship in ICTs in place

Strategy: 16.1

Strengthen institutional framework to promote and support R&D, innovation, and entrepreneurship in ICTs

Target 16.1.1

Institutional framework for R&D, innovation, and entrepreneurship in ICTs established and operationalized by June, 2019

Target 16.1.2

ICT entrepreneurial skills Programmes in higher learning institutions introduced and strengthened by June, 2019

Strategy: 16.2

Establish incentive mechanism for promoting innovation and development of ICT products and services locally.

Target 16.2.1

Guidelines to promote utilization of locally made ICT products and services developed and operationalized by June, 2021

Target 16.2.2

Innovation Fund for promoting ICT start-ups and incubators created and operationalized by June, 2021

Target 16.2.3

ICT Park established by June, 2021

Strategy: 16.3

Establish mechanisms to attract investment of private sector financial and technical capabilities for the development of ICT sector and industry.

Target 16.3.1

Incentive packages for promoting local production of ICT products developed and operationalized by June, 2019

Strategy: 16.4

Establish supportive frameworks for the use of renewable energy in ICT investments to promote the green initiatives.

Target 16.4.1

Supportive frameworks for the use of renewable energy in ICT investments to promote the green initiatives established by June, 2018

Strategy: 16.5

Establish mechanisms to promote participation of Tanzanians in ICT investment

Target 16.5.1

Mechanisms to promote participation of Tanzanians in ICT investment established and operationalized by June, 2020

Objective 17

To promote the effective use of ICT in the productive sectors for increased productivity

Performance Indicators

- Number of effective ICT systems in use in productive sectors
- Number of appropriate ICT capacity building Programmes in productive sectors
- Number of harmonized ICT related initiatives among productive sectors

Strategy: 17.1

Promote integration and utilization of ICT in productive sectors

Target 17.1.1

Uptake of ICT in the productive sectors to increase productivity and efficiency promoted by June, 2018

Target 17.1.2

Appropriate ICT technologies to enhance productive sector promoted by June, 2018

Strategy: 17.2

Promote development and utilization of appropriate ICT skills in the productive sectors

Target 17.2.1

Appropriate ICT skills in the productive sector developed and utilized by June, 2018

Target 17.2.2

Guidelines to facilitate integration of ICT in productive sectors Programmes and initiatives developed and operationalized by June, 2020

Strategy: 17.3

Establish linkages among productive sectors to benefit development of ICT

Target 17.3.1

Linkages among productive sectors to benefit development of ICT established and operationalized by June, 2018

Objective 18

To enhance participation of gender and social diversity groups in ICT

Performance Indicators

- Level of participation of special groups in ICT use
- Level of participation of special groups in ICT development
- A number of ICT products and services for special groups
- Number of ICT platform for gender and special groups

Strategy: 18.1

Promote equitable participation of gender and social diversity groups in developments and use of ICT.

Target 18.1.1

Guidelines which promote equal opportunities in ICT developed and implemented by June, 2018

Target 18.1.2

Awareness to special groups in using ICT products and services created by June, 2021

Target 18.1.3

The capacity of people with special needs in the development of digital contents built and enhanced by June, 2018

Strategy: 18.2

Promote the use and application of ICT products and services relevant to special groups

Target 18.2.1

An ICT platform for gender-related issues established by June, 2019

Target 18.2.2

Mechanism to promote adoption of ICT for people with special needs created by June, 2019

Target 18.2.3

ICT facilities for people with special needs incentivized by June, 2019

Objective 19

To promote the use of ICT in disaster management.

Performance Indicators

- Number of experts with ICT knowledge in disaster management
- A number of national disaster management ICT system in place.
- Level of use of ICT in disaster management

Strategy: 19.1

Create conducive environment for effective use of ICT for disaster management

Target 19.1.1

Framework for promoting effective use of ICT for disaster management developed and implemented by June, 2018

Strategy: 19.2

Develop a mechanism for cooperation with relevant regional and international organizations in promoting the use of ICT for disaster management.

Target 19.2.1

Mechanism for cooperation with relevant regional and international organizations in promoting the use of ICT for disaster management developed and operationalized by June, 2018

Objective 20

To promote the use of ICT in environmental conservation

Performance Indicators

- Adoption of National Green ICT strategy
- Number of experts with ICT skills related to environmental conservation
- Regulations on importation of second-hand ICT products in place
- Number of ICT systems related to environmental conservation
- A number of small scales industries for recycling e-waste
- e-waste policy in place

Strategy: 20.1

Enhance capacity in using ICT to predict and track environmental changes.

Target 20.1.1

Mechanism for strengthening capacity to predict and track environmental changes developed and operationalized by June, 2020

Strategy: 20.2

Leverage the use of ICT in environmental preservation

Target 20.2.1

Importation of second-hand ICT products controlled by June, 2020

Target 20.2.2

Small scale industries for recycling e-waste established by June, 2018

Target 20.2.3

The national green ICT strategy developed and operationalized by June, 2019

Strategy: 20.3

Develop framework for coordination and promotion of management of electronic waste

Target 20.3.1

Framework for management of electronic waste developed and operationalized by 2018

Target 20.3.2

Mechanisms for electronic wastes management and protection of environment developed by 2018

Objective 21

To have Good Governance enhanced by ICT

Performance Indicators

- A number of ICT systems for good governance in place.
- Level of utilization of ICT systems for good governance

Strategy: 21.1

Mainstream ICT in all pillars of the state to support good governance

Target 21.1.1

Mechanism to mainstream ICT in all pillars of the state to support good governance developed and implemented by June, 2020

Objective 22

To promote investment in ICT under a PPP arrangement

Performance Indicators

- A number of ICT PPP projects.
- A number of guidelines for ICT PPP projects.
- Number of capacity building Programmes on ICT PPP projects.

Strategy: 22.1

Develop mechanism to foster linkages for PPP in ICT investment.

Target 22.1.1

Mechanism to foster linkages for PPP in ICT investment developed and implemented by June, 2018

Strategy: 22.2

Develop appropriate framework for mobilization of resources for the development of PPP

Target 22.2.1

Guideline for mobilization of resources for the development of PPP in ICT developed and implemented by June, 2017

Strategy: 22.3

Develop capacity building Programmes in public institutions on ICT PPP investment

Target 22.3.1

Capacity building Programmes in public institutions on ICT PPP investment developed and implemented by June, 2018.

4.2 Distribution of Responsibilities to Various Institutions and Stakeholders

The Ministry responsible for ICT will be the main coordinator of this policy implementation strategy. Other public and private institutions will be executing their areas of responsibilities as articulated in Chapter Five of this document.

4.2.1 Ministry Responsible for ICT

The Ministry of Works, Transport and Communication (MWTC) is responsible for overall coordinating policy implementation, monitoring, evaluation, periodic review of the policy, strategies and initiate the law's enactment for policy implementation. Other responsibilities include awareness creation and provision of guidelines. The Ministry will promote ownership and mainstream of the policy to all sectors. In implementing the Policy, the Ministry through ICT Commission will facilitate, promote and coordinate implementation of national ICT development projects within the context of social and economic development.

4.2.2 Ministry Responsible for e-government

The Ministry will be responsible for developing e-government policy and to facilitate its implementation in Government institutions. The e-Government Agency will be responsible for coordinating, overseeing, promoting and enforcing e-government in public institutions.

4.2.3 Sector Ministries

The Ministries will ensure the integration of ICT in their sector-specific policies and development initiatives.

4.2.4 Ministry responsible for Regional Administration and Local Government

The Regional Administration and Local Government (RALG) is the link between Central Government and communities. This Ministry shall be responsible for implementation of the Policy at their local government levels.

4.2.5 The Judiciary

The Judiciary shall be responsible for interpreting all laws and administering justice in the ICT environment. Therefore, the Judiciary shall ensure that there are an adequate justice and fair legal environment that will facilitate the growth of the ICT sector. It will also ensure that ICT is mainstreamed in the justice framework in the country.

4.2.6 Private Sector

The private sector is an important element in the implementation of ICT initiatives in Tanzania. The private sector shall collaborate with the Government through Private Public Partnerships (PPP) to own, propagate ICT initiatives and utilization in Tanzania. The private sector shall participate in bringing innovations and relevant solutions for the implementation of the policy.

4.2.7 Non-State Actors

Non-State Actors play an important role in the social and economic development of the country. In implementing the Policy, the civil society shall participate in the creation of the ICT awareness, transparency and accountability in matters pertaining to the ICT sector.

4.2.8 Education and Research Institutions

Education and research institution are important for the development of the ICT industry. Development of the ICT industry has increased the demand for knowledge and skills. Education and research institution will be responsible for promoting ICT curricula that shall be used in training, developing competent human capital and relevant scientific research outputs for ICT development in Tanzania.

4.2.9 Sector Regulator

The potential size of the ICT resource in Tanzania and its expected multiple uses require a robust regulatory authority. The role of the regulator shall be responsible for enforcement of laws and regulations so as to promote competition in the ICT sector.

4.2.10 Development Partner

Development partners are working closely with the Government for sustainable development Programmes related to the implementation of the policy. They may also be involved in resource mobilization and provision of support for investing in fundamental areas of infrastructure.

4.3 Financial Requirement and Mobilization

In order to implement this strategy, it is estimated that a total of Tsh. 248.2 billion is required for the specified period 2016/17 – 2020/21 as per the outlined strategies and targets in a Log frame matrix. The financing arrangement will include Government budget, development partners, and the private sector.

A LOGFRAME MATRIX OF IMPLEMENTATION STRATEGY FOR NATIONAL ICT POLICY 2016

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|---|---|---|---------------|-------------------------|--|--|
| 1. | To strengthen strategic ICT leadership at all levels to effectively champion exploitation of ICT in all sectors of the economy. | i) Strengthen high level of ICT leadership to provide vision and guidance for effective development, deployment and exploitation of ICT for socio-economic advancement in the country | i) Institutions to champion ICT leadership towards knowledge society strengthened by June, 2021 | A number of leaders championing ICT. | TZS 5 billion | July, 2016 – June, 2021 | Meeting minutes reflecting the ICT agenda Public and private sector financial reports | MWTC ICT Commission PO-PSM PO-RALG MoESTVT AGC eGA MoFP TCU VETA COSTECH Private sector Non State Actors |
| | | | ii) Capacity of leaders across all sectors at different levels in the utilization of ICT for improving service delivery built by June, 2021 | A number of leaders from different sectors trained in the utilization of ICT for service delivery | | July, 2016 – June, 2021 | | |
| | | | iii) Frameworks to strengthen ICT leadership at all levels to promote ICT for full participation in knowledge economy developed, harmonized and implemented by June, 2021 | Presence of functional ICT leadership framework | | July, 2016 – June, 2021 | | |
| | | ii) Set adequate funds equivalent to a reasonable proportional of GDP to promote ICT for full participation in the knowledge economy | At least 0.3 percent of GDP allocated for ICT development by June, 2021 | Percentage of GDP allocated for ICT | | July, 2016 – June, 2021 | | |
| 2. | To develop and enhance human capital that is capable of championing ICT in the creation of Tanzania's knowledge-based | i) Create ICT professional recognition and develop framework for promoting human resource base in the | i) ICT human resource development and utilization plan developed and implemented by June, 2021 | Number of professionals championing ICT | TZS 20billion | July, 2016 - June, 2021 | Reports on certified ICT professionals as obtained from accreditation body | MWTC ICT Commission PO-PSM PMO PO-RALG MoESTVT MoFP AGC |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|---|---|---|-------------------------|-------------------------|---|--|
| | society. | country which is ethical and capable of championing ICT initiatives towards creation of knowledge society | ii) Body for accreditation of ICT professionals established, strengthened and operationalized by June, 2018 | Presence of a body for accreditation of ICT professionals | | July, 2016 - June, 2018 | Reports on usage of ICT in schools and colleges | REA TCU VETA COSTECH Private sector Uongozi Institute Non State Actors |
| | iii) Integration of ICTs throughout the education system and within the public at large including formal and informal sectors promoted by June, 2021 | | Percentage of schools and colleges using ICT in teaching and learning | | July, 2016 - June, 2021 | | | |
| | iv) Incentive mechanism to encourage Tanzanian ICT professionals work abroad and in International Organizations developed by June, 2018 | | Number of ICT professionals working abroad and in international organizations | | July, 2016 - June, 2018 | | | |
| | ii) Strengthen collaboration with the private sector in the development of a critical mass of ICT skills and expertise while encouraging lifelong learning through the use of ICT | | i) Incentive mechanisms to encourage private sector collaboration in ICT skills development established and operationalized by June, 2021 | Number of collaboration Programmes between ICT training institutions and employers in development of ICT skills | | July, 2016 - June, 2021 | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|--|---|--|--|--------------|-------------------------|--------------------------------|---|
| | | | ii) Mechanism for collaboration between ICT training institutions and employers are strengthened by June, 2021 | | | July, 2016 - June, 2021 | | |
| | | iii) Ensure effective use of ICT in teaching and learning throughout the formal and informal education system | i) At least 50% of schools and colleges effectively use the ICT in teaching and learning by June, 2021 | Percentage of informal education and skills development centres using ICT in teaching and learning | | July, 2016 - June, 2021 | | |
| | | | ii) The use of ICT in recognized informal education system and skills development centres incentivized by June, 2021 | | | July, 2016 - June, 2021 | | |
| 3. | To enhance public participation and understanding on potentials of ICT for effective transformation towards a knowledge-based society. | i) Create Public awareness on ICT usage. | Awareness and readiness of at least 50 percent (50%) of population on the use of critical ICT services created by June, 2021 | Readiness of citizens towards knowledge based society | TZS 2billion | July, 2016 - June, 2021 | E-readiness assessment reports | MWTC ICT Commission PO-RALG PO-PSM MoESTVT TCRA Private sector Non-State Actors SIDO TCU VETA MoICAS |
| | | ii) Create collaboration between public and private sector to ensure awareness in ICT. | The collaboration mechanism between public and private sector on ICT awareness created and operationalized by June, 2021 | Percentage of population aware of the use of critical ICT services | | July, 2016 - June, 2021 | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|--|---|--|--|---------------|---|--|--|
| | | iii) Embrace ICT as an integral part of the national development and empower citizens to use it to fight poverty, ignorance and disease so as to improve the quality of their lives. | Program/ mechanism for citizen empowerment in the potential use of ICT in fighting poverty, ignorance and diseases developed and implemented by June, 2021 | | | July, 2016 - June, 2021 | | |
| 4. | To enhance accessibility and availability of affordable and reliable broadband services to accelerate socio-economic development of the society. | <p>i) Create a conducive environment for collaboration of public and private sector in exploring various means of financing access to broadband services</p> <p>ii) Promote availability and accessibility of reliable and affordable broadband services nationwide</p> | <p>i) Collaborative framework between ICT investors and Government to facilitate access to broadband established and operationalized by June, 2018</p> <p>ii) Incentive mechanism to enhance access to affordable broadband services strengthened by June, 2021</p> <p>i) Affordable broadband services available and accessible in all Wards by 2021</p> <p>ii) National Broadband Strategy developed by June, 2018</p> | <p>Level of accessibility of reliable broadband services</p> <p>Level of affordability of broadband services</p> <p>Presence of National Broadband Strategy</p> <p>The level of utilization of broadband services.</p> | TZS 40billion | <p>July, 2016 - June, 2018</p> <p>July, 2016 - June, 2021</p> <p>July, 2016 - June, 2021</p> <p>July, 2016 - June, 2018</p> | <p>Customer satisfaction survey reports</p> <p>Broadband penetration reports</p> | <p>MWTC ICT Commission PMO MoFP TCRA UCSAF</p> <p>Broadband Service Providers</p> <p>TRA TIC</p> |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|---|--|---|----------------|--|--|---|
| | | iii) Establish mechanisms to enable citizens in underserved areas, business communities and public institutions to access to universal broadband services | Broadband access facilities provided to eighty percent (80%) of Public Service Delivery Outlets in underserved areas by June, 2021 | | | July, 2016 - June, 2021 | | |
| 5. | To have reliable, interoperable and sustainable ICT infrastructure that supports ubiquitous national connectivity | <p>i) Create a conducive environment for collaboration of public and private sector in exploring various means of financing ICT infrastructures</p> <p>ii) Develop safe and reliable ICT infrastructure countrywide</p> | <p>i) Collaborative frameworks between ICT investors and Government to facilitate development of ICT infrastructure established and operationalized by June, 2018</p> <p>ii) Mechanism for energy distributor's participation in the development of the ICT broadband infrastructure established and operationalized by June, 2018</p> <p>i) Critical ICT infrastructures designated and protected by June, 2018</p> | <p>Level of accessibility of reliable and affordable broadband infrastructure</p> <p>Collaborative framework between ICT investors and the Government on development of ICT infrastructure in place</p> <p>Integrated Project Planning framework in place</p> | TZS 60 billion | <p>July, 2016 - June, 2018</p> <p>July, 2016 - June, 2018</p> <p>July, 2016 - June, 2018</p> | <p>Infrastructure Coverage or penetration reports</p> <p>e-Readiness assessment report</p> | <p>MWTC ICT Commission PMO PO-RALG MEM MoWI MLHSD TCRA UCSAF AGC LRCT REA TANESCO TCU Service Providers TIC</p> |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|--|---|---|---------------|-------------------------|--|---|
| | | | ii) Integrated Project Planning framework for collaboration with local authorities and public institutions to accelerate ICT broadband and other infrastructure development established by June, 2018 | | | July, 2016 - June, 2018 | | |
| | | iii) Devise a mechanism to promote e-ready infrastructure development countrywide | Mechanism to promote e-ready infrastructure developed and implemented by June, 2018 | | | July, 2016 - June, 2018 | | |
| | | iv) Develop supportive framework to guide the deployment of ICT infrastructures including right of way and sharing of such infrastructures | i) Mechanisms for issuance of Right of Ways to accommodate ICT broadband infrastructure development agenda prepared by June, 2018 | | | July, 2016 - June, 2018 | | |
| | | | ii) Open access for ICT broadband infrastructure promoted by June, 2017 | | | July, 2016 - June, 2017 | | |
| 6. | To have universal access to ICT products and services in order to bridge the digital divide | i) Strengthen mechanism for solicitation of funds for supporting the rural ICT investment | Legal frameworks related to funding of Universal Access Service reviewed by June, 2018 | Level of accessibility of ICT products and services | TZS 28billion | July, 2016 - June, 2018 | Customer satisfaction survey reports Capacity utilization reports ICT Products and | MWTC ICT Commission MoFP-PC UCSAF TCRA AGC Service Providers TRA |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|---|--|---|--------------|-------------------------|--|---|
| | | ii) Strengthen collaboration with Service providers to participate in rural ICT investments | Licensing and incentive criteria for rural investment reviewed by June, 2018 | Level of utilization of ICT products and services | | July, 2016 - June, 2018 | services penetration reports | |
| | | iii) Facilitate access to ICT products and services to society | Incentives mechanism to enhance access to ICT products established and June, 2018 | | | July, 2016 - June, 2018 | | |
| | | iv) Encourage financial institutions and Development Partners to give particular support on investments in rural ICT services | Collaborative framework between ICT investors and Government to facilitate development of ICT products for rural areas established and operationalized by June, 2021 | | | July, 2016 - June, 2021 | | |
| 7. | To strengthen management and promote efficiency in spectrum allocation and utilization that guarantees availability and competition in both urban and rural areas | i) Strengthen management and allocation of radio frequency spectrum | i) Institutional Framework for the management and allocation of Radio Frequency Spectrum strengthened by June, 2018 | The level of spectrum utilization. | TZS 1billion | July, 2016 - June, 2018 | Regulatory reports on spectrum utilization | MWTC ICT Commission PO MWCT - RGZ TCRA UCSAF eGA Service Providers TCAA TPDF TPF TMA SUMATRA TPA ZMA ZBC MoICAS |
| | | | ii) Substantial amount of spectrum, including digital dividend allocated for Government use by June, 2017 | Regulations on spectrum management reviewed. | | July, 2016 - June, 2017 | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|---|--|--|--------------|-------------------------|--|--|
| | | ii) Enhance transparency, efficiency and competitiveness on efficient utilization of commercial spectrum | i) Regulatory instruments for management of commercial spectrum resources reviewed by June, 2018 | | | July, 2016 - June, 2018 | | |
| | | | ii) Competitive assignment of Radio frequency spectrum introduced by June, 2017 | | | July, 2016 - June, 2017 | | |
| | | iii) Enhance national capacity for management of the spectrum and contribution to regional and international spectrum planning and harmonization conformity to international standard | Institutional capacity and framework for regional and international Spectrum Management and harmonization strengthened by June, 2021 | | | July, 2016 - June, 2021 | | |
| 8. | To enhance efficiency and transparency in the management and utilization of scarce ICT resources for sustainable ICT industry | i) Allocate ICT numbering, addressing, naming and routing resources on a fair, transparent and non-discriminatory basis for effective competition and promotion of innovation | i) Framework for efficient and effective utilization of ICT scarce resources reviewed by June, 2018 | Level of dot tz domain name usage Level of utilization of numbering, addressing, naming and routing ICT resources | TZS 1billion | July, 2016 - June, 2018 | Report on utilization of numbering, addressing, naming and routing ICT resources | MWTC ICT Commission MWCT - RGZ TCRA tzNIC TISPA |
| | | | ii) Framework for promotion of IPv6 and seamless migration from IPv4 to IPv6 developed and implemented by June, 2021 | | | July, 2016 - June, 2021 | Report on preserving symbols, national and heritage names | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|--|---|---|--|--------------|---|--|---|
| | | ii) Promote utilization of country codes in the cyberspace to facilitate transformation towards information society | <p>i) 60 percent (60%) of the Public sensitized on the use of country code by June, 2021</p> <p>ii) 90% of all organizations in Tanzania use dot tz ccTLD by June, 2021</p> | | | <p>July, 2016 - June, 2021</p> <p>July, 2016 - June, 2021</p> | | |
| | | iii) Establish mechanisms that will protect and preserve the use of symbols, national and heritage names for future use in cybersquatting | Mechanisms for protecting and preserving the use of symbols, national and heritage names for future use in cybersquatting established and operationalized by June, 2019 | | | July, 2016 - June, 2019 | | |
| 9. | To enhance the local content in all aspects of the ICT value chain and local hosting of electronic services. | i) Create a conducive environment for production of electronic services to satisfy local demand and for export; enhancing hosting of ICT systems locally and localization of internally generated traffic | <p>i) Legal framework to support the development sharing and usage of e-services and local digital contents established by June, 2018</p> <p>ii) Incentive mechanism for promoting the development of e-services and local content introduced by June, 2018</p> | <p>Level of Local content in ICT products and services</p> <p>Number of e-services hosted locally</p> <p>A number of incubators.</p> | TZS 5billion | <p>July, 2016 - June, 2018</p> <p>July, 2016 - June, 2018</p> | <p>Status of local e-service utilization report</p> <p>Local content in ICT products and services report</p> | <p>MWTC</p> <p>ICT Commission</p> <p>MoICAS</p> <p>MoITI</p> <p>MFAEAC</p> <p>COSTECH</p> <p>TCRA</p> <p>TCU</p> <p>VETA</p> <p>Private Sector</p> <p>Tan Trade</p> |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|------------|---|--|------------|-----------|-------------------------|-----------------------|--------------------------|
| | | | iii) Mechanism to promote local ICT products in national, regional and international markets established and operationalized by June, 2021 | | | July, 2016 - June, 2021 | | |
| | | | iv) 90% of usable national data centre capacity utilized by June, 2021 | | | July, 2016 - June, 2021 | | |
| | | | v) Hosting of electronic services locally increased by 30% by June, 2018 | | | July, 2016 - June, 2018 | | |
| | | | vi) Amount of locally generated traffic traversing locally increased by 50% by June, 2021 | | | July, 2016 - June, 2021 | | |
| | | ii) Create an enabling environment that nurtures the development and promotion of local content in ICT products and services, in partnership with public and private sector | Framework for establishment and promotion of local content in ICT product and services in partnership with public and private sector developed by June, 2018 | | | July, 2016 - June, 2018 | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|--|--|--|--|---------------|--|---|---|
| | | iii) Promote the use of Kiswahili in the development of electronic services and local contents for transformation of Tanzania into a knowledge society | Mechanism to promote the use of Kiswahili in digital contents established and operationalized by June, 2021 | | | July, 2016 - June, 2021 | | |
| 10 | To promote a competitive ITES/BPO industry and development of electronic services in all aspects of ICT value chain activities | <p>i) Government be a model user of electronic services to improve efficiency in service delivery, enhance planning, raise the quality of services and access to global resources</p> <p>ii) Strengthen institutions responsible for coordinating, providing oversight, regulating, promoting and enforcement of e-government and other e-services initiatives</p> | <p>Integrated e-services platforms for delivery of public services developed and operationalized by June, 2017</p> <p>Framework for effective coordination, overseeing, regulating, promoting and enforcement of e-government and other e-services initiatives reviewed by June, 2019</p> <p>Institutions for enforcement of e-government strengthened by June, 2021</p> | <p>A number of Competitive BPO ventures.</p> <p>Level of e-service usage in Government</p> <p>Number of e-services</p> | TZS 35billion | <p>July, 2016 - June, 2017</p> <p>July, 2016 - June, 2019</p> <p>July, 2016 - June, 2021</p> | <p>Status of e-services utilization report</p> <p>BPO ventures report</p> | <p>MWTC</p> <p>ICT Commission</p> <p>PO-PSM</p> <p>PMO</p> <p>PO-RALG</p> <p>eGA</p> <p>Other Public Institutions</p> <p>TCRA</p> <p>VETA</p> |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|--|---|--|---|--------------|-------------------------|--|--|
| | | iii) Create an enabling environment that nurtures the promotion and development of ITES /BPO ventures in partnership with public and private sector | Framework for the establishment and promotion of ITES/BPO ventures in partnership with public and private sector developed and operationalized by June, 2018 | | | July, 2016 - June, 2018 | | |
| | | | Incentive mechanism for promoting the development of e-services and ITES/BPO introduced and implemented by June, 2021 | | | July, 2016 - June, 2021 | | |
| 11 | To strengthen cooperation and collaboration in regional and international ICT development initiatives that promote knowledge transfer and attract foreign direct investment. | i) Strengthen coordination for cooperation and collaboration with regional and international ICT organizations with mutual benefits between Tanzania and other collaborators in order to expand and strengthen local ICT capacity | i) Coordination frameworks that provide guidelines for regional and international cooperation to strengthen local ICT capacity developed and operationalized by June, 2017 | Amount of Foreign Direct Investment Number of meetings participated Number of meetings hosted | TZS 5billion | July, 2016 - June, 2017 | Knowledge transfer evaluation report FDI status reports | MWTC ICT Commission PO-PSM PMO MFAEAC MoFP TCRA TIC TCU COSTECH |
| | | | ii) Guideline for International cooperation arrangements and agreements for promotion of ICT initiatives in Tanzania reviewed by June, 2021 | Number of experts developed | | July, 2016 - June, 2021 | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|---|---|---|--------------|-------------------------|--|---|
| | | ii) Promote the creation of bilateral relations and cooperation with regional and international organizations that generate, process, store and disseminate ICT driven information in order to expand and strengthen local ICT capacity | Mechanism for promoting bilateral relations and hosting of strategic international ICT events developed by June, 2018 | | | July, 2016 - June, 2018 | | |
| | | iii) Strengthen country's negotiation capacity and enhance collaboration of Tanzanians and other nations to promote local innovation, technology transfer, and FDI | i) Capacity of Tanzanians to negotiate in international ICT agreements strengthened by June, 2021 | | | July, 2016 - June, 2021 | | |
| | | | ii) Mechanism to strengthen local innovation, technology transfer and attract FDI established and operationalized by June, 2021 | | | July, 2016 - June, 2021 | | |
| 12 | To strengthen a legal and regulatory environment that facilitates acquisition, utilization, and development of ICT in Tanzania. | i) Develop and review laws and regulations for acquisition, development, adoption, use and disposal of ICT products, services, and protection of infrastructure | Laws and Regulations for promotion of ICT enacted and reviewed by June, 2021 | Number of ICT related legal frameworks in place ICT related Criminal incidents reported. | TZS 1billion | July, 2016 - June, 2021 | Judgement reports Reports on ICT related cases filed before the court | MWTC ICT Commission PMO PO-PSM Parliament MJCA MoESTVT MoITI LRCT AGC TCU |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|------------|---|--|---|-----------|-------------------------|-----------------------|--------------------------|
| | | ii) Strengthen institutional capacity and supportive legal framework for promoting ICT development Issues | i) Law reform Commission strengthened to effectively deal with ICT law reforms by June, 2018 | Offences committed in the cyber world recognized by laws. | | July, 2016 - June, 2018 | | COSTECH |
| | | | ii) Capacity of policy makers, legislators, judiciary and law enforcers in ICT strengthened by June, 2021 | | | July, 2016 - June, 2021 | | |
| | | | iii) ICT Laws curricula in colleges, universities and law schools integrated and implemented by June, 2021 | | | July, 2016 - June, 2021 | | |
| | | iii) Create a collaborative framework for protection of intellectual property rights in ICT industry | i) Collaborative framework for protection of IPR developed and operationalized by June, 2017 | | | July, 2016 - June, 2017 | | |
| | | | ii) ICT Intellectual property rights incorporated in national intellectual property policy by June, 2021 | July, 2016 - June, 2021 | | | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|---|--|---|--------------|-------------------------|--|--|
| 13 | To have secure environment that builds confidence and trust in the use of ICT products and services | i) Develop frameworks for coordination and promotion of ICT security | i) National framework for coordinating ICT security initiatives developed and operationalized by June, 2018 | The secured environment for ICT systems, products and services. Level of availability of critical systems and infrastructure Number of ICT security technologies deployed National Cyber security strategy in place. | TZS 2billion | July, 2016 - June, 2018 | ICT Security reports Evaluation report on Green ICT | MWTC ICT Commission President's Office PO-PSM MoDNS MoHA MFAEARIC TCRA AGC eGA TPF TPDF Service Providers TCU VETA |
| | | | ii) Mechanism for collaboration on ICT security regionally and globally established by June, 2021 | | | July, 2016 - June, 2021 | | |
| | | | iii) Critical National ICT Systems and infrastructure monitored throughout | | | July, 2016 throughout | | |
| | | ii) Facilitate adoption of appropriate technologies and mechanisms for stakeholder collaboration and contribution to innovative ICT related security activities | i) Appropriate technologies for the ICT related security activities deployed by June, 2021 | July, 2016 - June, 2021 | | | | |
| | | | ii) Mechanism for stakeholder's collaboration and contribution of innovative ICT related security activities developed and implemented by June, 2021 | July, 2016 - June, 2021 | | | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|--|---|--|---------------|-------------------------|---|---|
| | | | iii) Public Key Infrastructure (PKI) for secure e-service established and operationalized by June, 2017 | | | July, 2016 - June, 2017 | | |
| 14 | To promote safety in the use of ICT products and services. | i) Develop framework for coordination and promotion of ICT Safety | National framework for coordinating ICT safety initiatives developed and operationalized by June, 2018 | A number of public awareness Programmes on the safe use of ICT product and services. | TZS 2billion | July, 2016 – June, 2018 | ICT Security status reports Evaluation report on Green ICT Evaluation report on children awareness on safe use of ICT | MWTC ICT Commission MoHCDGSC TCRA OSHA eGA TAEC TPF VETA Service Providers |
| | | ii) Facilitate adoption of appropriate technologies and mechanism for management of online content and protection of children online | Framework for management of online content and protection of children online developed and operationalized by June, 2018 | Number of awareness Programmes to children on safe and ethical online practices | | July, 2016 – June, 2018 | | |
| | | | Public awareness on ethical use of online content and protection of children online created by June, 2021 | | | July, 2016 – June, 2021 | | |
| 15 | To strengthen quality control and standardization in the ICT industry | i) Develop frameworks for coordination, promotion, and development of national ICT standards | Frameworks for coordination, promotion, and development of national ICT standards developed and operationalized by June, 2018 | Number of ICT products and service standards A number of Interoperable ICT systems. | TZS 1 billion | July, 2016 – June, 2018 | Quality assurance and standardization reports | MWTC ICT Commission PO-PSM MoHA TCRA TBS AGC eGA VETA |
| | | ii) Establish national frameworks for interoperability of ICT products and services | National frameworks for interoperability of ICT products and services established and operationalized by June, 2018 | Level of compliance with ICT standards | | July, 2016 – June, 2018 | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|-----------------------------------|--|---|---|----------------|--|---|---|
| | | iii) Strengthen ICT governance for adoption and compliance with national and other acceptable ICT standards | ICT governance for adoption and compliance with national and other acceptable ICT standards established and operationalized by June, 2018 | | | July, 2016 – June, 2018 | | |
| 16 | To have sustainable ICT industry. | <p>i) Strengthen institutional framework to promote and support R&D, innovation, and entrepreneurship in ICTs</p> <p>ii) Establish incentive mechanism for promoting innovation and development of ICT products and services locally</p> | <p>Institutional framework for R&D, innovation, and entrepreneurship in ICTs established and operationalized by June, 2019</p> <p>ICT entrepreneurial skills Programmes in higher learning institutions introduced and strengthened by June, 2019</p> <p>Guidelines to promote utilization of locally made ICT products and services developed and operationalized by June, 2021</p> <p>Innovation Fund for promoting ICT start-ups and incubators created and operationalized by June, 2021</p> <p>ICT Park, established by June, 2021</p> | <p>A number of ICT SMEs and Industries.</p> <p>A number of Local ICT products and services.</p> <p>A number of R&D on ICT service and products.</p> <p>A number of ICT Park(s)</p> <p>Institutional framework for R&D, innovation and entrepreneurship in ICTs in place</p> | TZS 30 billion | <p>July, 2016 – June, 2019</p> <p>July, 2016 – June, 2019</p> <p>July, 2016 – June, 2021</p> <p>July, 2016 – June, 2021</p> <p>July, 2016 – June, 2021</p> | <p>Research, Development & Innovation reports</p> <p>ICT Entrepreneurship Reports</p> <p>Start-up survivability reports</p> | <p>MWTC ICT Commission VPO-Environment PMO PO-RALG MoITI MOFP MEM MoESTVT COSTECH NACTE Academia ICT incubators and entrepreneurs eGA REA TCU TCRA TIC EPZA NEMC VETA TCU</p> |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|--|---|---|--|---------------|--|--|--|
| | | iii) Establish mechanisms to attract investment of private sector financial and technical capabilities for the development of the ICT sector and industry | Incentive packages for promoting local production of ICT products developed and operationalized by June, 2019 | | | July, 2016 – June, 2019 | | |
| | | iv) Establish supportive frameworks for the use of renewable energy in ICT investments to promote the green initiatives. | Supportive frameworks for the use of renewable energy in ICT investments to promote the green initiatives established by June, 2018 | | | July, 2016 – June, 2018 | | |
| | | v) Establish mechanisms to promote participation of Tanzanians in ICT investment | Mechanisms to promote participation of Tanzanians in ICT investment established and operationalized by June, 2020 | | | July, 2016 – June, 2020 | | |
| 17 | To promote the effective use of ICT in the productive sectors for increased productivity | i) Promote integration and utilization of ICT in productive sectors | i) Uptake of ICT in the productive sectors to increase productivity and efficiency promoted by June, 2018 ii) Appropriate ICT technologies to enhance productive sector promoted by June, 2018 | Number of effective ICT systems in use in productive sectors Number of appropriate ICT capacity building Programmes in productive sectors Number of harmonized ICT related initiatives among | TZS 2 billion | July, 2016 – June, 2018 July, 2016 – June, 2018 | Reports on the level of utilization of ICT products and services and linkages among productive sectors | MWTC ICT Commission MoITI Productive sectors eGA VETA |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|---|---|---|---|---------------|--|---|---|
| | | ii) Promote development and utilization of appropriate ICT skills in the productive sectors | i) Appropriate ICT skills in the productive sector developed and utilized by June, 2018 ii) Guidelines to facilitate integration of ICT in productive sectors Programmes and initiatives developed and operationalized by June, 2020 | productive sector | | July, 2016 – June, 2018 July, 2016 – June, 2020 | | |
| | | iii) Establish linkages between productive sectors to benefit development of ICT | Linkages between productive sectors to benefit development of ICT, established and operationalized by June, 2018 | | | July, 2016 – June, 2018 | | |
| 18 | To enhance participation of gender and social diversity groups in ICT | i) Promote equitable participation of gender and social diversity groups in developments and use of ICT | i) Guidelines which promote equal opportunities in ICT developed and implemented by June, 2018 ii) Awareness to special groups in using ICT products and services created by June, 2021 | Level of participation of special groups in ICT use Level of participation of special groups in ICT development Number of ICT products and services for special | TZS 1 billion | July, 2016 – June, 2018 July, 2016 – June, 2021 | Reports on Gender and social diversity groups in ICT participation Reports on availability of ICT products and services for special groups | MWTC ICT Commission MoHCDGSC MoFP UCSAF TCRA AGC TCU VETA Non-state actors |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|-----|--|---|--|--|-------------------------|-------------------------|---|--|
| | | | iii) The capacity of people with special needs in the development of digital contents built and enhanced by June, 2018 | groups Number of ICT platform for gender and special groups | | July, 2016 – June, 2018 | | |
| | | ii) Promote the use and application of ICT products and services relevant to special groups | i) ICT platform for gender-related issues established by June, 2019 | | | July, 2016 – June, 2019 | | |
| | ii) Mechanism to promote adoption of ICT for people with special needs created by June, 2019 | | | | July, 2016 – June, 2019 | | | |
| | iii) ICT facilities for people with special needs incentivized by June, 2019 | | | | July, 2016 – June, 2019 | | | |
| 19. | To promote the use of ICT in disaster management. | i) Create a conducive environment for effective use of ICT for disaster management | Framework for promoting effective use of ICT for disaster management developed and implemented by June, 2018 | Number of experts with ICT knowledge in disaster management A number of national disaster management ICT system in place. | TZS 1.2 billion | July, 2016 – June, 2018 | Evaluation report on ICT use in disaster management | MWTC ICT Commission PMO Service Providers TCRA TMA UCSAF |
| | | ii) Develop a mechanism for cooperation with relevant regional and international organizations in promoting the use of ICT for disaster management. | Mechanism for cooperation with relevant regional and international organizations in promoting the use of ICT for disaster management developed and operationalized by June, 2018 | Level of use of ICT in disaster management | | July, 2016 – June, 2018 | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|--|---|---|--|---------------|-------------------------|--|--|
| 20 | To promote the use of ICT in environmental conservation. | i) Enhance capacity in using ICT to predict and track environmental changes. | Mechanism for strengthening capacity to predict and track environmental changes developed and operationalized by June, 2020 | Number of experts with ICT skills related to environmental conservation Regulations on importation of second-hand ICT products in place | TZS 3 billion | July, 2016 – June, 2020 | Evaluation report on use of ICT in environmental conservation Evaluation report on Green ICT Compliance reports on importation of second-hand ICT products | MWTC ICT Commission VPO MoITI NEMC TCRA SIDO TCU VETA TMA |
| | | ii) Leverage the use of ICT in environmental preservation | i) Importation of second-hand ICT products controlled by June, 2020 | Number of ICT systems related to environmental conservation | | July, 2016 – June, 2020 | | |
| | | | ii) Small scale industries for recycling e-waste established by June, 2018 | Adoption of National Green ICT strategy | | July, 2016 – June, 2018 | | |
| | | | iii) National green ICT strategy developed and operationalized by June, 2019 | Number of small scale industries for recycling e-waste e-waste policy in place | | July, 2016 – June, 2019 | | |
| | | iii) Develop framework for coordination and promotion of management of electronic waste | i) Framework for the management of electronic waste developed and operationalized by 2018 | | | July, 2016 – June, 2018 | | |
| | | | ii) Mechanisms for electronic wastes management and protection of environment developed by 2018 | | | July, 2016 – June, 2018 | | |

| No | OBJECTIVES | STRATEGIES | TARGETS | INDICATORS | RESOURCES | TIME FRAME | MEANS OF VERIFICATION | RESPONSIBLE INSTITUTIONS |
|----|--|---|--|--|---------------|-------------------------|--|--|
| 21 | To have Good Governance enhanced by ICT | Mainstream ICT in all pillars of the state to support good governance | Mechanism to mainstream ICT in all pillars of the state to support good governance developed and implemented by June, 2020 | A number of ICT systems, for good governance in place. Level of utilization of ICT systems, for good governance | TZS 2 billion | July, 2016 – June, 2020 | Report on the use of ICT in supporting good governance | MWTC ICT Commission PO PCCB MoICAS |
| 22 | To promote investment in ICT under a PPP arrangement | i) Develop mechanism to foster linkages for PPP in ICT investment. | Mechanism to foster linkages for PPP in ICT investment developed and implemented by June, 2018 | A number of ICT PPP projects. A number of guidelines for ICT PPP projects. | TZS 1 billion | July, 2016 – June, 2018 | Report on the PPP initiatives in the ICT Industry | MWTC ICT Commission PMO TCRA TIC TPSF TNBC eGA MOFP TCU EPZA |
| | | ii) Develop appropriate framework for mobilization of resources for the development of PPP; | Guideline for mobilization of resources for the development of PPP in ICT developed and implemented by June, 2017 | A number of capacity building Programmes on ICT PPP projects | | July, 2016 – June, 2018 | | |
| | | iii) Develop capacity building Programmes in public institutions on ICT PPP investment. | Capacity building Programmes in public institutions in the ICT PPP investment developed and implemented by June, 2018. | | | July, 2016 – June, 2018 | | |

CHAPTER FIVE

MONITORING, EVALUATION, AND REPORTING

5.0 Purpose and Structure

This Chapter elaborates how the results envisioned in the National ICT Policy 2016 and Implementation Strategy will be measured as well as the benefits that will accrue to its stakeholders. The Framework shows the overall Development Objective (Goal) which is basically the overall impact of ICT initiatives; the beneficiaries of ICT services; how Policy objectives are linked to the Monitoring Plan; the Planned Reviews; the Evaluation Plan and finally the Reporting Plan.

Generally, the Chapter will provide a basis on how the various interventions to be undertaken in the course of the National ICT Implementation Strategy Cycle, will lead to achievement of the Objective, how will the various interventions be monitored, what kind of reviews that will be undertaken over the period, what type of evidence-based evaluation studies that will be undertaken to show that the interventions have either lead or are leading to achievement of the intended outcomes and finally how the indicators and progress of the various interventions will be reported and to which stakeholders.

5.1 Development Objective (Goal)

The overriding objective of the National ICT Policy is enabling environment provided to facilitate the acquisition, utilization, and exploitation of ICT for social and economic development in Tanzania. The Overriding Objective represents the highest level of results envisioned by ICT Sector. However, other key players also significantly contribute towards the achievement of this Development Objective. The achievement of this Development Objective, among others, will be influenced by the level of financial resources available, staff and management commitment, and the demand for accountability on the part of citizens, as well as ICT Sector capacity at both strategic and operational levels.

5.2 Beneficiaries of ICT Services

ICT Sector, comprised of all levels of beneficiaries of services. These levels consist of direct and indirect beneficiaries of the services offered by ICT Sector.

These include Institutions under the sector, Telecom Operators, MDAs, Rural Communities, Students, General Public, Private Sector and Staff. The Sector strives to implement National ICT Policy, strategies, and laws that will ensure a conducive environment for effective utilization and management of ICT services for sustainable socio-economic development.

5.3 Linkage with National Planning Frameworks

This National ICT Policy Implementation Strategy has twenty-two (22) objectives which contribute to the attainment of the National Five Years Development Plan II goals, Tanzania Development Vision 2025 and the Ruling Party Election Manifesto 2015.

5.4 Monitoring, Reviews and Evaluation Plan

This subsection details the Monitoring Plan, Planned Reviews and Evaluation Plan for the period covering the five years strategic planning cycle from 2016/17 to 2020/21.

5.4.1 Monitoring Plan

The Monitoring Plan consists of indicators, indicator description, baseline, indicator target values, data collection and methods of analysis, indicator reporting frequencies and description of key responsible sectors of data collection, analysis, and reporting. Though outcome indicators will be reported on an annual basis, tracking of the indicators will be made on a quarterly basis.

5.4.2 Planned Reviews

This will consist of review meetings, planned milestone reviews and rapid appraisals including their frequencies.

5.4.3 Review Meetings

This will involve various meetings that will be conducted to track progress on the milestones, activities and targets/outputs critical for the achievement of organizational objectives. This will also involve determining the type of meetings, frequency, designation of chairpersons and participants in each meeting.

Table 1: Review Meetings

| S/N | Type of Meeting | Frequency | Designation of the Chairperson | Participants |
|-----|---------------------------|---------------|--------------------------------|------------------------------------|
| 1. | Management meetings | Weekly | Permanent Secretary | All Heads of Division and Sections |
| 2. | Division Meetings | Monthly | Heads of Division/Sections | All staff of the Division/Section |
| 3. | Quarterly review meetings | Quarterly | Permanent Secretary | All Heads of Division and Sections |
| 4. | Mid-year review meetings | Once per year | Permanent Secretary | All Heads of Division and Sections |
| 5. | Annual review meetings | Annually | Permanent Secretary | All Heads of Division and Sections |

5.4.3.1 Planned Milestones Review

The reviews will be tracking progress on implementation of the milestones and targets on the semi-annual and annual basis. The review will focus on determining whether the planned activities are moving towards achieving the annual targets and will find out whether they are on track, off track, or at risk. In addition, the review will track any changes in terms of outputs realized over the period as well as assessing issues, challenges, and lessons learned over the year and to what extent the outputs delivered are contributing towards the achievement of the objectives. The review findings will be used to adjust implementation strategies whenever necessary.

5.4.3.2 Rapid Appraisals

This will also involve determining the type, description, questions, area of focus, methodology, and the frequency of the rapid appraisal including the responsible person for conducting or managing the rapid appraisals.

5.5 Evaluation Plan

The Evaluation Plan consists of the evaluations to be conducted during the National ICT Policy Implementation Strategic Cycle, description of each evaluation, evaluation questions, methodology, timeframe and the responsible person. Two evaluations will be conducted over the period of five years. These

are: (i) mid-term evaluation for assessing progress towards attainment of ICT policy objectives and targets, identify changes encountered in the course of implementation and corresponding countermeasures if necessary and (ii) Final evaluation to obtain evidence as to whether the interventions and outputs achieved have led to the achievement of the outcomes as envisioned in the Strategic Plan outputs. Where necessary, baseline survey/study will be conducted to establish baseline data at the beginning of the implementation of different strategies.

5.6 Reporting Plan

This subsection details the Reporting Plan, which contains the internal and external reporting plans. The reporting plan is as may be required from time to time.

5.6.1 Internal Reporting Plan

This plan will involve preparation of three types of reports namely technical report, quarterly and annual reports. The reports will be prepared on weekly, quarterly, annually or on-demand basis as may be required from time to time. The Reporting Plan is detailed below:

Table 2: Internal Reporting Plan

| S/N | Type of Report | Recipient | Frequency | Responsible Person |
|-----|--|---------------------|-----------|--------------------|
| 1. | Section Progress Report | Permanent Secretary | Weekly | DICT/DC |
| 2. | Project Implementation Progress Report | Management | Quarterly | DICT/DC |
| 3. | Annual Report | Management | Annually | DICT/DC |

5.6.2 External Reporting Plan

This plan will involve preparation of five types of reports namely performance, financial, annual, mid-term review and outcome reports. The reports will be submitted to various external stakeholders, including Prime Minister's Office, Ministry of Finance and Planning, the Planning Commission and the Parliament. The reports will be prepared on quarterly, annually or on-demand basis from time to time.

Table 3: External Reporting

| S/N | Type of Report | Recipient | Frequency | Institution |
|-----|---------------------------|---|--|-------------|
| 1. | Performance Reports | MoFP, Planning Commission | Quarterly | MWTC |
| 2. | Financial Reports | MoFP, Planning Commission | Annually | MWTC |
| 3. | Annual Reports | PMO, MoFP, Planning Commission, Parliament | Annually | MWTC |
| 4. | Mid-term review report | PMO, MoFP, Planning Commission, Parliament | Once; in the middle of implementation period | MWTC |
| 5. | Five Years Outcome Report | PMO, MoFP, Planning Commission / Parliament | After five years | MWTC |

5.7 Relationship between Results Framework, Results Chain, M&E and Reporting Arrangements

Level 1 – Inputs

The first level of the Results Framework tracks the allocation and use of resources on the various activities. Resource availability will be reviewed on the weekly, fortnightly or monthly basis and will be reported on respective implementation reports. At these level indicators will focus on the number and quality of human resources available for various tasks, amount of time dedicated to tasks by staff, information flow between the various levels, time spent on resolving problems, quality and timeliness of decisions and staff as well as the predictability of resource flows, the alignment of resource flow to the activities and outputs.

Level 2 – Activities

The second level of the Results Framework focuses on the realization of activities and linkage between activities and outputs. At this level, indicators will focus on processes, activities programming, and timeliness of implementation. Activities will be reviewed on the weekly, fortnightly or monthly basis and will be reported on respective implementation reports. The reports will focus on quality and timeliness of the activities implemented and will inform corrective action if the activities are not being delivered on time, to the expected quality and if are not contributing to outputs.

Level 3 – Outputs

The third level of the Results Framework tracks the realization of the outputs that ICT Sector produces and which are attributed solely to ICT Sector. The

outputs at this level will be measured by output Indicators and milestones and data collection and analysis will be done quarterly. Outputs or Milestones which have a significant impact on the achievement of the objectives will be reviewed quarterly and will be reported in Quarterly reports. The reports will focus on how the outputs produced are delivering the outcomes and will inform corrective action if the outputs are not being delivered effectively or are not contributing to outcomes.

Level 4 - Outcomes

The fourth level of the Results Framework tracks the realization of the intermediate outcomes specified for each objective, though achievement of these outcomes may not be attributed to ICT Sector alone as there will be several players contributing to these outcomes. These intermediate Strategic Plan outcomes will be measured through outcome indicators whose data collection and analysis could be done annually. Indicators at this level are reported through the annual report or the three-year outcome report. The annual reports and the three years' outcome reports will be based on either sector or specific evidence-based studies using national statistics. The reports focus on the benefits delivered to ICT Sector clients and other stakeholders.

