



2014-2031

NATIONAL ICT MASTER PLAN





## ACKNOWLEDGEMENT

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The development of the National ICT Master Plan is a result of consultative processes which benefitted from collective wisdom of the people of Malawi. The process involved a diverse group of individuals representing households, communities, organizations, industries and Government.

The National ICT Master Plan benefitted richly from the contribution of individuals acting in advisory roles, as members of national ICT working group, focus groups and review panels as well as interested citizen, participating in online or email consultations.

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## ACRONYMS

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CERT	:	Computer Emergency Readiness Team
CSOs	:	Civil Society Organisations
E-Government	:	E-government Department
EPD	:	Economic Planning Department
ESCOM	:	Electricity Supply Cooperation of Malawi
EWS	:	Early Warning System
FDI	:	Foreign Direct Investment
FGD	:	Focus Group Discussion
G2B	:	Government to Business
G2C	:	Government to Citizen
G2G	:	Government to Government
GDP	:	Gross Domestic Product
GSM	:	Global System for Mobile Communications
GWAN	:	Government Wide Area Network
HRD	:	Human Resource Development
HRMIS	:	Human Resource Management Information System
ICT	:	Information Communication Technology
ICTAM	:	Information and Communications Technology Association of Malawi
IFMIS	:	Integrated Financial Management System

IP	:	Internet Protocol
IT	:	Information Technology
ITU	:	International Telecommunications Union
IXP	:	International Exchange Point
KBE	:	Knowledge Based Economy
Kbps	:	Kilobit per second
KS	:	Knowledge Society
LAN	:	Local Area Network
M&E	:	Monitoring and Evaluation
MACRA	:	Malawi Communications Regulatory Authority
MALICO	:	Malawi Association of Library Consortium
MaTIS	:	Malawi Traffic Information System
MAREN	:	Malawi Research and Education Network
Mbps	:	Megabit per Second
MGDS II	:	Malawi Growth and Development Strategy II
MGDs	:	Millennium Development Goals
MIM	:	Malawi Institute of Management
MIS	:	Management Information Systems
MISPA	:	Malawi Internet Service Providers Association
MITA	:	Malawi Information Technology Agency
MTL	:	Malawi Telecommunications Limited
NACIT	:	National College of Information Technology
NCC	:	National Computing Centre
NGO	:	Non-Governmental Organisations

NICTWG	:	National ICT Working Group
NREN	:	National Research and Education Network
NSO	:	National Statistical Office
OPC	:	Office of the President and Cabinet
PPPs	:	Public Private Partnerships
RCIPMW	:	Regional Communications Infrastructure Project Malawi
SWOT	:	Strengths, Weaknesses, Opportunities and Threats
ToR	:	Terms of Reference
UNDP	:	United Nations Development Programme
UNECA	:	United Nations Economic Commission for Africa
WSIS	:	World Summit on the Information Society





## GLOSSARY

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**Antivirus-** A software tool (hardware tools are also available) for detecting and removing viruses on a computer.

**CERT – Computer Emergency Readiness** is team of experts set up to oversee and improve a country’s cyber security, coordinate cyber information sharing, and proactively manage cyber risks to the nation while protecting the constitutional rights of its citizens.

**ICT – Information Communications Technology.** ICT is defined as any computer-based resource, networked or standalone, hardware or software or computer systems, communications and networks and other technology used in the interconnection. ICT is an umbrella term that encompasses any communication device, application, service as well as access. It includes: radio, television, fixed line phones, cellular phones, computer and network hardware and software, satellite systems, as well as content, services and applications associated with them, such as media broadcasting, videoconferencing and distance learning.

**Digital Divide -** The term denotes enormous disparities in ICT infrastructure, capacity to use ICTs, and affordable and equitable access to knowledge, information and suitable digital content. The “digital divide” is also defined as the unequal access to and diffusion to ICT both between and within countries. The global digital divide is calculated by dividing penetration rates in the developed world by the penetration rate in the developing world.

Indicators measure insufficient infrastructure, high cost of access, lack of locally created content and an uneven ability to derive economic and social benefits from information-intensive activities.

**Electronic business, or e-business,** is the application of information and communication technologies (ICT) in support of all the activities of business.

**E-Commerce/Electronic Commerce –** are business activities involving buyers and sellers making use of internet and the world wide web to buy and sale goods and services.

While e-business refers to more strategic focus with an emphasis on the functions that occur using electronic capabilities, e-commerce is a subset of an overall e-business strategy.

**E-Governance -** A broad concept which includes: enhancing the delivery of government services and information through ICTs, thereby strengthening

<p>accountability and transparency in government actions; launching new participatory mechanisms; and fostering a process of decentralisation.</p>
<p><b>E-Government</b> - Defined broadly, this refers to the use of ICT to promote more efficient and effective government, facilitate more accessible government services, allow greater public access to information and make government more accountable to citizens, thus empowering them. "E-Government" denotes the e-services and e-applications used by government in carrying out its day-to-day activities.</p>
<p><b>IFMIS</b>- An Integrated Financial Management System is a computer based financial information system that enhances effectiveness and transparency of the financial management system. It provides timely and accurate financial information and a standardised integrated financial management reporting system for managers within government leading to significant improvement in financial control.</p>
<p><b>Knowledge economy/Knowledge Society</b> - An economy / Society based on the exchange of knowledge, information and services, rather than physical goods and services.</p>
<p><b>LAN</b> – Local Area Network - two or more computers connected either physically using cable or wirelessly and able to share resources.</p>
<p><b>Licence</b> – Any software that is being used is potentially subject to copyright restrictions and it is essential that the organisation ensure that it has the correct type and number of licences for the software in use. There are two types of user licences, 'per seat' licence and 'concurrent user' licences. Per seat licence requires that there be a licence for every installation or instance of the software, typically, Microsoft Office Licences are supplied on this basis. Concurrent user licence allows for a maximum number of simultaneous users and is normally used for shared software such as some database applications. This enables client software to be installed on many machines, but typically the server software is set so that it will not allow more than the licensed number of users to work simultaneously.</p>
<p><b>Linux</b> – Open Source software, originally aimed at desktop workstations but now available for servers as well as desktops.</p>
<p><b>Server</b> – A computer on a network that stores shared information or which handles common tasks for a number of client computers.</p>
<p><b>Virus</b> – A virus is software code designed to make cause havoc on the computer. It is capable of replicating i.e. producing functional copies of itself and depends on a document or executable file shared by email or instant messaging to carry each copy. When executed it has ability to do something funny, destructive or clever. There are over hundred thousands of viruses and</p>

they keep changing names making it imperative to maintain updated antivirus software.

## EXECUTIVE SUMMARY

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The National ICT Master Plan is developed to operationalise the approved National ICT Policy in order to realise the vision to make Malawi a knowledge based economy by year 2031. The plan spans the years 2014 to 2031, an eighteen year duration which is split into four (4) separate plans. The plan incorporates both remedial and proactive interventions to create opportunities for Malawian citizens in order to create wealth and enhance people's quality of lives. The recommendations centre on the need to transform our society on the aforementioned four dimensions with ICT: capacity and knowledge community, businesses, infrastructure and the Government.

The first plan is a three year plan for the period 2014 to 2016. Subsequent three plans span five year period each. The plan which was derived from people's voice following a consultative process, also undertook baseline survey and literature references to establish ICT indicators and progress made so far in the ICT sector.

The plan is aligned to the MGDS II and has clustered the ten priority areas identified in the National ICT Policy into four logical strategic pillars, namely, Innovation and Human Capital Development, ICT Industry Development and E-Business, ICT Infrastructure Development and E-Government and Growth Sector Development. Each of these Pillars is linked to a Strategic Objective which consists of a set of Key Initiative. Each Key Initiative consists of programmes for implementation.

Each of the defined distinct four implementation plans will undertake aspects of initiatives defined for each of the four strategic pillars with special focus on implementing major initiatives on a specific pillar.

Plan 1: 2014-2016 [National ICT](#) Master Plan is the first part of the ICT Roadmap for Malawi. The end goal is to ensure universal access to information through government investment in ICT infrastructure development. The Plan focuses on ICT infrastructure development which is rolling over from current government activities. This will be implemented parallel to a continuation of initiatives in human capital development. ICT Infrastructure development aims at making broadband internet services accessible at

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affordable prices and increasing universal access to information in order to stimulate industrial growth and e-business.

Plan 2: which cover the period 2017 to 2021, the focus shifts to innovation and human capital development in order to create a critical mass of knowledge workers and stimulate ICT industry growth and sectoral transformation. Emphasis in this phase will be on developing strategic advantages in specific industries to enhance Malawi value proposition in regional and international markets.

Plan 3: for the period from 2022 to 2026, the focus shifts to ICT Industry development and e-business. In this plan Malawi creates an enabling environment for businesses to compete on global market through thriving online businesses that export goods and services realizing the MGDS goal of being an export led economy. In this period innovation and human capital development continues in order to realise the aim of creating a critical mass of knowledge workers as well as sectoral specific industries development needed to stimulate ICT industry growth and sectoral transformation

Plan 4: is for the period 2027 TO 2031 and the focus shifts to E-Government and growth sectors. The goal is to create an integrated government using ICT to create work efficiencies, transparent government with good governance. In this period government will serve its citizens with world class online interfaces in citizen information as well as providing government business links to stimulate ICT Industry development and e-businesses growth. In this plan Malawi creates an open government system that engages with citizens in policy formulation. The Plan seeks to foster opportunities in education, health, tourism, agriculture and irrigation, mining, energy, water development and trade through new technology-based service delivery mechanisms.

The plans include cost estimates and key performance indicators (KPI) which will be used to monitor and evaluate plan programmes implementation. This Master Plan has also provided recommendations for governance and institutional framework of MITA which is crucial in implementation of the National ICT Master Plan.

**Commented [ST1]:** These plans need to be run concurrently, especially plans 2 to 4. I would suggest the team to implement this be clustered into four; each to focus on one strategic pillar. However, they should work in close collaboration.

**Commented [ST2]:** Allocating 5 years to each pillar is very risky. Need to come up with phases, and focus implementation on all four pillars at once. Everything should be flowing at the same time.

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## PART 1

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## 1. INTRODUCTION

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The Malawi Government cognisant of the great potential of knowledge based economy as an engine of growth for the country's socio-economic development has placed ICT as a priority sector both in the short to medium term Economic Recovery Plan (ERP) and Malawi Growth and Development Strategy (MGDS) II and the long-term Malawi Vision 2020. In order to

provide national guidance in the development and use of ICT, government has developed a National ICT Policy.

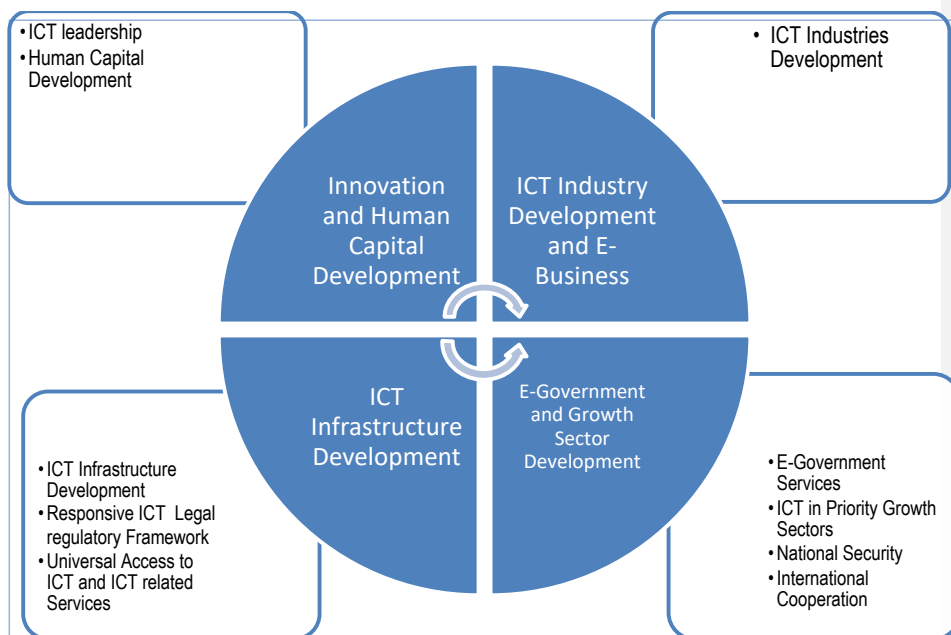
The 2013 approved National ICT Policy provides “a framework for deployment, exploitation and development of ICT to support the process of accelerated socio-economic development in Malawi.” Further, the policy aims to unravel strategic leadership to “provide direction for systematic ICT program development, implementation, monitoring and review through a consolidated ICT approach for the mobilization, allocation and utilization of resources that will realize institutional, community, sector and national development policies and strategies.” In its implementation strategy, the policy provides for a restructured quasi-state institution called Malawi Information Technology Agency (MITA) to effect the realization of knowledge based economy through the implementation of the National ICT Master Plan.

### 1.1 The National ICT Policy

The National ICT Policy provides for ten (10) priority areas. These are clustered in only four main Strategic Pillars:

- 1) Innovation and Human Capital Development
- 2) ICT Industry Development and E-Business
- 3) ICT Infrastructure Development
- 4) E-Government Services and Growth Sectors Development

FIGURE 1 : CLUSTERING ICT PRIORITY AREAS INTO STRATEGIC PILLARS



### 1.2 The National ICT Master Plan

It has become necessary to develop a National ICT Master Plan. The main objective is to develop a National ICT Master Plan in order to operationalise the National ICT policy. The National ICT Policy which has been developed to give direction to ICT development in the country aims to support the Malawi Growth and Development strategy MGDS II goal of wealth creation and poverty reduction through a sustainable economic growth and infrastructure development. The Malawi National ICT Policy establishes “a framework for deployment, exploitation and development of ICT” aimed at building a modern vibrant knowledge economy needed for accelerated socio-economic growth. The aim of the Government of Malawi is to establish an integrated approach to ICT resource mobilization, allocation and utilisation that will ensure synergy and help realize economic growth and development. The National ICT Policy covers inclusive provision of ICT services to be not only in urban areas but also in the rural areas and to the vulnerable groups. Vital to addressing this concern the policy seeks to strengthen the formulation of an appropriate regulatory and legal framework aimed at



safeguarding fundamental human rights, protecting privacy, promoting electronic services and promoting competition.

### 1.3 Methodology

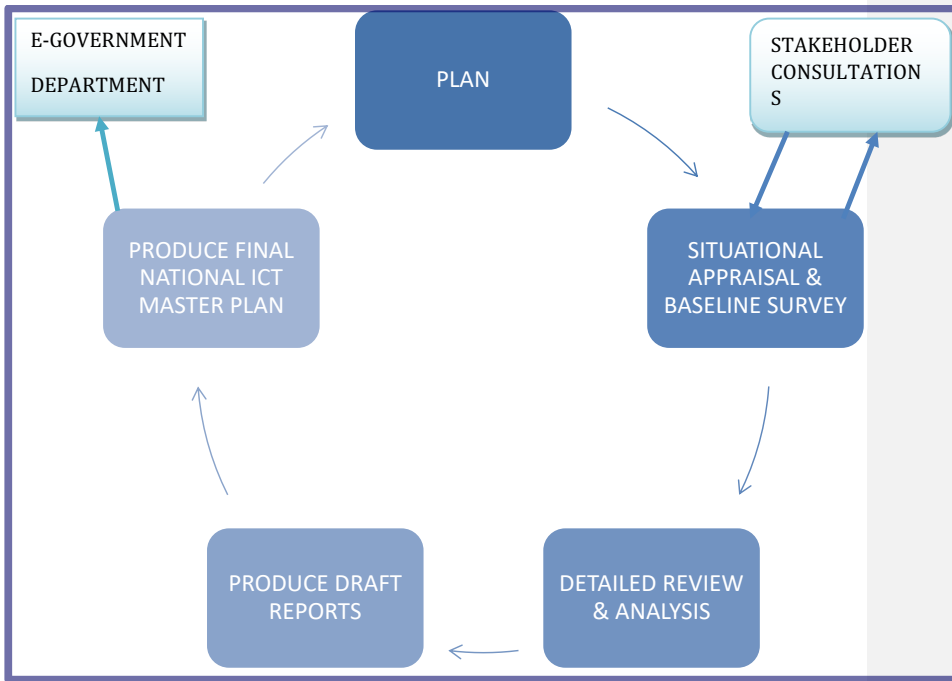
The National ICT Master Plan development methodology was highly consultative in nature. All



key stakeholders in the ICT sector in terms of their interest, power and influence were identified in order to involve them in the development of the National ICT Action Master Plan. The participatory and consultative approach to the assignment has ensured full ownership of the outputs. The specific participatory methods that were employed to achieve thorough consultations

were an initial diagnostic workshop followed by key informant interviews, focus group discussions and plenary workshop sessions, with a representative of a purposively selected sample of internal and external stakeholders comprising officers in government Ministries and Departments, interest groups from public, private and civil society, among others. These methods were used systematically to identify strategic issues, needs, problems, challenges, opportunities, threats, strengths and weaknesses that informed clear and realistic strategic themes/pillars, objectives and strategic outcomes for the National ICT Master Plan. Since not all national citizens were able to participate using the above proposed approaches, further ways of getting people's voice utilized social media interfaces such as facebook and internet communication using emails. The approach comprised the following key steps:

FIGURE 2: NATIONAL MASTER PLAN DEVELOPMENT METHODOLOGY



## 1.4 Baseline Survey

Baseline survey serves to establish a starting point for the Malawi [National ICT Master Plan](#) development. The purpose is to provide valuable social and economic information which is critical to decision-making, impact assessment and prediction. To this end, Malawi Institute of Management, contracted by Department of E-Government conducted a baseline survey on ICT to form the basis of the National ICT Master Plan.

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The study was designed to draw samples across the country and assess ICT in government, in industry, in households and usage by the people. A sample size of 250 rural and urban households and individuals were targeted to inform availability of ICTs, services and assess the pattern of usage of ICT. ICT Household questionnaire and ICT individual questionnaires were used to collect data from households and individuals on use of ICTs at household and individual levels. Other tools were used to assess ICT use in government and private agencies. Further, secondary data from the Regional Communications Initiative Project Malawi (RCIPMW), National Statistical Office (NSO) and Ministry of Economic Planning and Development (MEPD) were also used to inform the study.

The study objectives were as follows:

- To determine the country's current computer spread in terms of computer per 1,000 people (Compudensity) based on sample survey;
- To determine the country's current Telecommunications spread in terms of phone subscribers lines per 1,000 people (Teledensity) based on available secondary data.
- To determine the size of government ICT workforce;
- To determine the average National Revenue polled by the ICT Sector based on Secondary data from MEPD Annual Economic Report 2012;
- To determine the sectoral growth rate within ICT (i.e. Annual Real Rate of Service, Hardware, Software) also available as Secondary Data from MEPD Annual Economic Report 2012.

## 2. FINDINGS AND DATA ANALYSIS

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The consultative process used a number of tools to establish the current status of ICT readiness in the country and capture ICT indicators from primary as well as secondary sources. Both qualitative and quantitative data analysis was used to analyse the findings. From interviews conducted we collected qualitative data which we analyse using SWOT Analysis Tool.

The survey results and additional secondary data are presented in the section below.

### **2.1 ICT Contribution to Gross Domestic Product**

Economic figures show that ICT contributions to Gross Domestic Product (GDP) have increased in the years 2011-2012 with projections showing a steady increase. However the sectoral contribution of ICT to GDP is still low at less than 4%. There is therefore need for deliberate government efforts to stimulate ICT industry growth in order to grow the economy of the country. Table 1 below is an extract of the GDP figures showing ICT contribution to the economy.

TABLE 1 CONTRIBUTION OF ICT TO GDP

**Contribution of ICT to GDP**

YEAR	2010	2011	2012	2013*1	2014*
MK (million)	1,021,319	1,140,843	1,408,237	1,849,932	2,719,424
<b>Percentage Sector Contribution to GDP</b>					
ICT	3.5	3.5	3.7	3.8	3.9
<b>Percentage Annual Growth Rate</b>					
ICT	7.6	4.3	6.8	7.9	9.5

Source: National Statistical Office and Ministry of Economic Planning and Development 2013

### 2.3 Household Survey Results

Based on the sample survey conducted, results in Table 2-1A show that 31.1% of household have radios in the home while 17.3% of those surveyed had TV in the home. In response to question on whether household has a computer and internet access in the home, the finding was that 47.1% had computers in the home and 56.8% had internet access in the home, mostly using mobile connectivity.

TABLE 2 PERCENTAGE OF HOUSEHOLDS OWNING ICT DEVICES

PERCENTAGE OF HOUSEHOLD WITH ICT DEVICES IN THE YEAR 2012						
	RADIO	SATELITE DISH TV	SATELITE DISH INTERNET	COMPUTER	*INTERNET ACESS	Telephone
<b>ALL (n = 250)</b>	31.1%	17.3%	4%	47.1%	56.8%	8.1%

Source: Baseline Survey Results, 2013

1\* These are based on projected figures

**\*Internet access includes mobile internet, Laptop and computer device based access.**

#### 2.4 Telephone and Mobile Use

The Regional Communications Initiative Programme Malawi monitoring and evaluation survey of telephone and mobile providers provides that mobile subscriptions constitute 27% of the country's population figures and this translates to country's current Telecommunications spread in terms of mobile subscribers per 1,000 people (Teledensity) of 267 based on available RCIPMW secondary data. Internet penetration in Malawi per 100 people is at 3.33 according to 2011 figures reported on [www.okii.com](http://www.okii.com). Internet penetration measures number of people with access to the world wide network. The country's current Telecommunications spread in terms of phone subscriber lines per 1,000 people (Teledensity) is at 5.04.

TABLE 3 PERCENTAGE OF INDIVIDUALS WITH TELEPHONE AND MOBILE DEVICES

	Total Subscriptions	Percentage to population figure	Per 1000 persons
<b>Mobile</b>	3,951,572	27%	276
<b>Mobile with Data</b>	176,086	0.01%	11.9
<b>Landline</b>	74,532	0.1%	5.04

Source: Computed from RCIPMW Monitoring and Evaluation Survey Results, 2012

## 2.4 Households with ICT Devices Based on 2011 NSO Survey Results

NSO integrated household survey findings of 2011 in table 2-1B indicates that 45.5% of household had a Radio with only 8.7% owning a Television. Only 0.8% had computers in the home. Ownership of ICT devices in urban show large figures compared to the rural areas.

TABLE 4 PERCENTAGE OF HOUSEHOLDS WITH ICT DEVICES IN YEAR 2011

PERCENTAGE OF HOUSEHOLD WITH ICT DEVICES IN THE YEAR 2011				
	RADIO	CD- PLAY	TV	COMPUTER
<b>ALL</b>	45.5%	10.1%	8.7%	0.8%
<b>URBAN</b>	60.6%	32.9%	32.2%	4.1%
<b>RURAL</b>	42.8%	5.9%	4.4%	0.2%

Source: NSO Malawi Integrated Household Survey Results 2011

## 2.5 Households with Telephone or Mobile Devices, NSO 2011 Survey

NSO integrated household survey findings of 2011 in table 2-2B indicates that 36.3% of household had mobile phones in 2011. Only 0.8% had telephones in the home. Ownership of mobile phones among the rich show large percentages compared to the rural areas.

TABLE 5 PERCENTAGE OF HOUSEHOLDS WITH TELEPHONE OR MOBILE DEVICES

PERCENTAGE OF HOUSEHOLD WITH TELEPHONE OR MOBILE DEVICES						
	2005			2011		
	ALL	POOR	RICH	ALL	POOR	RICH
<b>Mobile</b>	11.5	0	12.8	36.3	11.5	62.5
<b>Landline</b>	0	0.1	4.1	0.8	0	2.9

Source: NSO Malawi Integrated Household Survey Results, 2011

## 2.6 Individual Survey Results

Based on the individual questionnaire sample used in the baseline survey, results show that a substantial number of individuals have either a computer, laptop which they use for home or business use. Of these most have internet access using wimax or modem/dongle. Some individual internet access is achieved using most commonly available mobile phone with data connectivity.

## 2.7 Core E-Government Indicators

The results of the core E-Government indicators are as in table 4 below: The results also show that out of all civil service employees only 1% are ICT professionals. Support for the 39% that use computers in government is undermined by the low ICT professional workforce.

TABLE 6 CORE E-GOVERNMENT INDICATORS

CORE E-GOVERNMENT INDICATORS		
Code Name	E-Government Indicator	Percentage
EG1	Proportion of persons employed in central government organizations routinely using computers	39%
EG1.2 <sup>2</sup>	Proportion of ICT professional employed in government	1%
EG2	Proportion of persons employed in central government organizations routinely using the Internet	23%
EG3	Proportion of central government organizations with a Local Area Network (LAN)	50%
EG4	Proportion of central government organizations with an intranet	11%
EG5	Proportion of central government organizations with Internet access, by type of access	50%
EG6	Proportion of central government organizations with a web presence	39%
EG7	Selected Internet-based services available to citizens, by level of sophistication of service	0%

## 2.8 The World Summit Targets

[The World](#) Summit on the Information Society (WSIS), in 2005, set 10 targets for all participant countries to be met by 2015 as follows:

- i. Connect villages and establish community access points;
- ii. Connect universities, colleges, secondary schools and primary schools;
- iii. Connect scientific and research institutions;

<sup>2</sup> This is not defined in this category of indicators but has been added to the list to substantiate the need human capital development in ICTs and to provide for an M&E plan indicator for measuring progress in this area.

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- iv. Connect all public libraries, archives, museums, cultural centres and post offices;
- v. Connect health centres and hospitals;
- vi. Connect all local and central government departments and establish websites and e-mail addresses for them;
- vii. Adapt all primary and secondary school curricula to meet the challenges of the information society, taking into account national circumstances;
- viii. Ensure that the entire world population has access to television and radio services;
- ix. Encourage the development of content and put in place technical conditions in order to facilitate the presence, and use, of all world languages on the Internet;
- x. Ensure that more than half the world's inhabitants have personal use of ICT.

## **2.9 SWOT Analysis**

The feedback of the consultative workshop as well as the analysis of current ICT environment shows that ICT industry has a number of strengths and opportunities to be exploited for the country economic growth. There are also weaknesses, and threats to be mindful of and to provide mitigating interventions for. The SWOT analysis is tabulated in diagram below.

FIGURE 3 ICT SECTOR SWOT ANALYSIS

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> <li>• Growth in demand in ICT services</li> <li>• High profitability of mobile industry</li> <li>• The government's high interest and prioritisation of ICT in National Strategy and Economic Recovery plan interest;</li> <li>• Telecommunications liberalisation and Communications Regulatory framework in place;</li> <li>• Education and Training of human resources on the increase;</li> <li>• Commitment to digital inclusion through universal access initiatives</li> <li>• Relatively cheap labor cost</li> </ul>	<ul style="list-style-type: none"> <li>• Limited competition on telecommunications environment;</li> <li>• Limited and unstable telecommunications infrastructure</li> <li>• Weak ICT industry base</li> <li>• Strong regulation imposed on most of industry sectors</li> <li>• Mismatch of ICT manpower supply and demand</li> <li>• Public's lack of ICT knowledge</li> <li>• Inadequate ICT professionals on labour market</li> <li>• Inadequate ICT infrastructure</li> <li>• High cost Internet bandwidth</li> <li>• No legal framework yet, still under development</li> <li>• Low financial budget allocation to ICT</li> <li>• <u>Low industrial base</u></li> <li>• <u>Poor innovation culture which is indispensable to ICT development.</u></li> </ul>
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>• New administration with new National ICT Policy direction</li> <li>• Green opportunities for developing software solutions and content</li> <li>• Improving international cooperation environment</li> <li>• Regional cooperation with SADC, Donor community and others</li> <li>• Strong determination on ICT based growth</li> <li>• Increasing demand to result in a number of ICT service outsourcing</li> </ul>	<ul style="list-style-type: none"> <li>• Intense business competition from advanced countries</li> <li>• Application support failures and lack of upgrade threaten already automated services</li> <li>• Instability of the Malawi Kwacha on money market and low efficiency in macro economy</li> <li>• Weak financial industry base and structure</li> <li>• Limited foreign investment</li> <li>• Low ICT incentives on labor market</li> <li>• Brain drain of ICT human resources</li> </ul>

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### 3. ICT PROGRESS

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The following section provides an overview of progress made in ICT sector in Malawi in the areas of E-Government, Infrastructure Development, Education, E-Health and others.

#### **3.1 E-Government**

Malawi government recognized the important role of ICT in government and established the E-Government Department in the office of the President and Cabinet in the year 2012. Before this initiative, ICT services were provided through the Department of Information, Systems and Technology Management Services (DISTMIS). An E-Government strategy was developed in the same year. Additionally, the long drafted National ICT Policy was refined and was approved by Cabinet in September 2013. The overall aim of the policy is to promote the country's socioeconomic development, supporting the aspirations of Vision 2020, with priority being given to ICT initiatives that contribute to poverty reduction. The e-government element focuses on the modernisation and improved efficiency of public services.

#### **3.2 E-Legislation**

E-Legislation or the Electronic Transactions and Data Protection Bill (E-Bill) funded by the World Bank RCIPMW aims to set up a responsive ICT Legal framework to facilitate competition, development and participation of ICT for users in Malawi. The draft bill is designed to promote the development of e-Commerce in Malawi by supporting the use of electronic transactions. To this end, the bill provides guidelines and protection for electronic messages and signatures; promotes the development of legal and business infrastructure in support secure e-Commerce, cyber crime, domain name management, E-Government, E-Waste. It also has provision for the

establishment of Malawi CERT to lead in cybersecurity. The Data Protection Bill component provides security for electronically formatted, personal information. A draft Bill is finalized awaiting its review and cabinet approval.

### **3.3 Infrastructure Development : Government Wide Area Network (GWAN)**

Malawi Government Wide Area Network commonly referred to as GWAN is wide area computer network which provides 12 Mbps bandwidth speed which was this year contracted from Globe Internet changing from the previous connection with MTL. GWAN spans 26 buildings covering almost all government ministries in the capital city. The GWAN connectivity was established using UTP Category 5e cable, radio and laser links, and the installation of Cisco networking equipment. As at year 2013, GWAN had not managed to include connectivity of all government businesses in the country. Attempts had been made to connect offices in Blantyre and Mzuzu but it is evident now that such connectivity will have to be redone with more appropriate connectivity cabling and equipment.

### **3.4 The Regional Communications Infrastructure Project Malawi (RCIPMW)**

RCIPMW is a Government of Malawi led, World Bank funded, intervention in the ICT sector whose objective is to support policy and legislative reforms and to provide affordable Internet capacity to the nation through facilitating the provision of a wet portion (submarine cable) solution to dry portion (overland) connectivity to Malawi and other eligible countries. It is managed by the Public Private Partnership (PPP) Commission in partnership with MACRA and the E-Government Department.

Under the enabling environment activity, the project has reviewed the Communication Act of 1998 currently undergoing further reviews in the Justice Ministry before cabinet approval. It also has contributed to capacity building amongst its agencies especially those involved in the policy and regulatory supervision of the ICT sector.

The other activity of the Project is the Connectivity component which is providing ICT equipment and Internet to selected public institutions in Malawi.

This year the Project has awarded a contract to a contractor who will bring the fiber connectivity from Dares Salaam to Lilongwe, creating a landing site in Lilongwe with redundancy with a redundant route to the West Sea Cable through Lusaka. It is expected that this will bring down the price of internet to US\$200 per megabyte ultimately achieving the project objective. Government will receive fiber connection providing 620Mbps bandwidth. Current commercial fiber connectivity rates of year 2013 are range from US\$750-US\$1680 per megabyte. Additionally the current incumbent charges for the fiber used and labour costs for connecting building to nearest exchange point.

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### **3.5 Electricity Supply Cooperation of Malawi (ESCOM) Optic Fibre project**

ESCOM has laid fiber-optic cables that connect Mozambique with the Zambian border town of Mchinji to ease communication problems. The cable network that connects Tete in Mozambique to Mchinji provides services ranging from voice, data, fax and radio communication system.

The cables were laid on ESCOM's power lines throughout Malawi to build the networks that form part of the country's national fiber-optic backbone. They provide voice, data, fax and radio communication systems. The project which commenced in 2008 is on-going with further plans for redundancy route to WACS Sea Cable through Lusaka, Zambia.

The cabling which will provide ESCOM with a communication system linking the power generation center with control centers and, eventually, with the regional office, has more than enough bandwidth capacity with excess planned to be leased to ISPs (Internet service providers), mobile service providers, television companies, and government and education institutions.

### **3.6 Digital Migration**

The Ministry of Information in collaboration with Macra has embarked on a project to set up a switch centre which will facilitate the migration of all broadcasting services

from analog to digital. The equipment is ordered and is set to be installed. An independent agency will run the digital signal switch for the benefit of all stakeholders in the broadcasting industry. This will enable broadcasters to concentrate on content development and should contribute to improved broadcasting programming.

### **3.7 Universal Access – Rural Connectivity**

Malawi Communications Regulatory Authority (MACRA) is implementing telecommunications infrastructure development through the establishment of telecentres in several rural areas of the country through ITU's support. The majority of Malawians (about 80%) live in the rural areas where access to basic ICT services is not readily available therefore the implementation of the ITU/MACRA/MPC tele-centre project has brought great enthusiasm and uptake of ICT services to the extent that the Government of Malawi is embarking on a "Connect a Constituency" Project to make sure that there is at least one Multipurpose Community Tele-centre (MCT) in each constituency. Five tele-centers are currently in place over a period of three years in addition to the government established fifty-one telecentres.

This will help in the attainment of the millennium development goals (MDG's) as people will have access to online internet based information and ICT enabled applications i.e. e-learning, e-health and agriculture information. To this end, Malawi government is ensuring that it puts in place an enabling policy, legal and regulatory framework to ensure provision of affordable and accessible ICT services to its citizens especially those in the rural areas.

### **3.8 Education and e-Learning projects**

The Ministry of Education through donor aid technical assistance developed the Education Management Information System (EMIS). EMIS is developed using most common, simple programming language on a common desktop database platform Ms Access as a cost effective solution to education data needs. It also includes a decision support system component. The Ministry provided financial and human resource support to sustain running of the system. A district level system (DEMIS) is used to

capture data at district levels. Headmasters fill in school returns on hard copies which get sent to the District Education Manager who oversees the District data entry.

Malawi's National ICT Policy includes the promotion of ICTs in education systems at all levels in order to improve both the access and the quality of education, improve management of education systems and improve ICT literacy. It also has a few innovative initiatives in this area, committed largely to the promotion of integrated library and information services and networks.

SchoolNet Malawi and Computers for African Schools Malawi and other international NGOs have been active for the past decade in distributing recycled PCs to Schools. It incorporates academic and business representatives and is implemented with support from the British Council and Ministry of Education. It provides ICT training to teachers, computers and printers to schools and support for the development of the ICT Curriculum for schools.

### **3.9 The Pan African eNetwork**

An example of an e-Learning initiative is the Pan African eNetwork, a Tele education connectivity which enables 5 African regional leading universities including the University of Malawi (Chancellor College) to be connected to a hub through satellite to 53 remote virtual classes distributed in all the 53 countries. Seven universities from India are connected via IPLC to the Hub located in Africa. India hosts the Tele education LMS portal comprising the University Tele-Education delivery system software that incorporates the e-learning, content management KMS (knowledge Management System) and digital library solutions. This project provides eServices with a priority on tele-education and telemedicine in order to build capacity. The Government of India has established the eNetwork through 3 centres in Malawi - eLearning at Chancellor College, Telemedicine at Kamuzu Central Hospital and e-VVIP at the State House. Free technical support which ends in December this year 2013, was provided for five years as part of the project.

### **3.10 Health Systems and e-Health Projects**

Health Management Information Systems (HMIS), developed on Windows platform, the system was developed using most common, simple programming language on a common desktop database platform using Ms Access with district level systems on standalone. Plan to use web based DHIS2 version for District Data with support from Oslo University and Malawi College of Medicine who were contracted to modify the open source code for Malawi. The system was developed with support of Technical Assistance through donor financial aid. The Malawi government sustains the day to day running of the system.

Other health systems have been developed by Baobab Health Trust, a Malawian NGO focused on providing technology solutions for healthcare challenges in Malawi. The Trust works with the Ministry of Health to design and utilise medical informatics to replace traditional paper based systems. Solutions assist healthcare workers with registering patients and aggregating essential medical data for improved healthcare management to facilitate efficient patient care. Projects include setting up a 24 hour toll free hotline, accessed by clients seeking health advice about their pregnancy or care of young children and a booking system for ante and post natal care using SMS Technology.

The College of Medicine is undertaking research related to magnetic resonance imaging in Malaria research to support common neurological disorders and improving clinical services for patients receiving care at the teaching hospital. Complex scans are sent to Michigan State University over VSAT for further investigation. The MRI Scan is also serving neighbouring countries such as Zambia and Mozambique to detect issues related to malaria and brain disease, spinal cord, heart and great vessel, head and neck diseases etc.

### **3.11 Software System /Applications Development Initiatives**

#### **3.11.1 Integrated Financial Management Information System (IFMIS)**



A computer based integrated finance management system, a software financial suite of EPICOR version 7.2.3, funded by the World Bank funded project, was implemented with the objective of providing timely and accurate financial information in Government of Malawi while enforcing standardised integrated financial management reporting system for government Ministries and departments. The main purpose for such an investment was to achieve a Government-wide computerised accounting system that would lead to significant improvement in financial control. The system, implemented by Soft-Tech Consultants Ltd of Tanzania, consists of several sub-systems. The core sub-systems procured by Malawi Government are General Ledger, Accounts Payables, Accounts Receivable, Cash Management, Commitments Planning and Control, Electronic Funds Transfer, Inventory Control, Purchasing, Reporting which enable accounting, budgeting, cash management, debt management and related core treasury systems. The Government of Malawi is reportedly only using four (4) of these subsystems. The system is capable of incorporating other subsystems such as revenue collection, procurement management, asset management, human resource and payroll systems, and pension and social security system.

### **3.11.2 HRMIS AND GOVERNMENT PAYROLL**

The Malawi government purchased a payroll and Human Resource Management System from Globe Computers to overhaul the locally developed government establishment, personnel, payroll, pensions, loans management (PPPAI) that was initiated in 1998-99. The HRMIS provides a Payroll and Human Resource Solution (HRMIS) for the entire Civil Service which includes Police & Defense Forces. The payroll system interfaces with IFMIS currently is an unautomated interface but an automated one is under implementation.

### **3.11.3 MALTIS**

Road Traffic Department's Traffic Management Information System (MalTIS) facilitates motor vehicle registration, issuing of driving licences and road permits. Face Technologies, a South African IT company, was awarded a R25million contract in 1998

to implement a new computerized road traffic system. The system introduced new SADC driving licence cards, and also facilitated learners' licence applications and authorisations, drivers' licence applications and authorisations, professional driving permit (PrDP) applications and authorisations, and card production. "The new credit card format has been produced according to the SADC protocol and incorporates full colour cards with various state-of-the art security features including biometrics and UV markings" Face Technologies. Other components of the system deliver motor vehicle registration and licensing (MVR) and border control component.

The system currently lacks support for needed identified enhancements. A new tender to upgrade the system was floated but is not yet awarded.

#### **3.11.4 PASSPORT AND BORDER CONTROL SYSTEMS**

The Malawi Immigration Department introduced a computer based system new machine readable passport issuing system. The new passport system set up by Global Enterprise Technologies (GET Group) along with its local partner, Techno Brain Limited (TBL), claims to use proprietary issuing software and Toppan E2000 digital passport printers and security films provided exclusively by GET Group. The new Malawian passport is said to incorporate more than 20 different security features such as data page protection with proprietary EDE Crystagram security film, which carries some of the most sophisticated security elements available in the industry, GET Group. According to GET Group, the system is a fully integrated turnkey passport issuing system incorporating state-of-the-art biometric enrollment, issuing software, and Toppan digital passport printers.

In addition, the department has launched a new ICT innovation border control system in its international airports, called the Integrated Border Control System, as part of its objective to computerise all its border posts.

The Department of Immigration has successfully completed pilot runs of the system implemented in Chileka airport in Blantyre and Kamuzu international airport in

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Lilongwe. The installation of the system is an ongoing project which aims to cover all border posts in the country.

#### **3.11.5 District Database System – A Local Government Initiative**

The District Data Bank System (DDBS) is an offline Microsoft Access-based software tool that has been deployed by the Ministry of Economic Planning and Development (MEPD) and the Ministry of Local Government and Rural Development (MoLGRD) to all district councils in Malawi. The DDBS designed to capture standard reporting data from nearly all sectors, by having the District M&E Officer or Management Information Systems Officer (MISO) enter the paper-based reports that have been submitted from sectoral M&E focal points into the database system. It facilitates data compilation from a wide variety of sectors, with reports that could be generated for the district/sub-district level or aggregated at the regional or national level. The HIV/AIDS module of the DDBS is a component supported by the National Aids Commission (NAC).

#### **3.12 Malawi Revenue Collection**

The Malawi Revenue Authority uses a system called Asycuda ++ to account for tax revenue collection. The computerized system is said to be outdated and requires to be updated with Asycuda World, a web based platform. However Asycuda World requires good internet connection to synchronise the data across its operating points.

#### **3.13 Government Websites**

A number of websites exist in government for almost all ministries under the domain name [www.malawi.gov.mw](http://www.malawi.gov.mw) . The site is well designed and it is easy to navigate with links to all ministries and departments. All that it requires is for continuous updates to occur so as to provide visitors with up-to-date information. The Ministry of information developed a news outlet website for the Malawi news agency (MANA) hosted on [www.manaonline.gov.mw](http://www.manaonline.gov.mw). Other notable websites are the Tourism website [www.visitmalawi.mw](http://www.visitmalawi.mw) and the Malawi Parliament website [www.parliament.gov.mw](http://www.parliament.gov.mw) .

### **3.14 Sustainable Development Network Programme (SDNP)**

SDNP is a UNDP funded project that implemented the provision of Internet services in the country under the sustainable development network programme, SDNP, a programme put in place to help countries implement Agenda 21 by facilitating access to information about sustainable development and also encouraging participation in decision making for sustainable development. SDNP is being supported by the National Commission for Science and Technology after UNDP stopped funding its operations in 2011.

SDNP services include: Full Internet Services, Installations and Maintenance, World Wide Web Services, Leased Line Access, Wireless network access, Domain Name Services, Domain and subdomains registration, Gateway Service and the IPv4 and IPv6.

### **3.15 Malawi Library and Information Consortium (MALICO)**

MALICO, established in May 2003 and launched its VSAT Network, giving academic connectivity from north to south of Malawi in 2005, leveraging 4 VSATs purchased with the support of OSISA, World Bank and Dossani Trust. It pioneered the establishment of the Malawi Research and Education Network. It contributes to the subscription of e-Resources and the production of local and relevant content for Malawi's repositories.

Current activities include establishment of a national digital repository at the National Library Service and subscription to international e-resources for the academic community.

### **3.16 Malawi Research and Education Network (MAREN)**

The Malawi Research and Education Network (MAREN) is a non-profit national organization formed in October 2005 with the aim of establishing sustainable communication and networking among research and education institutions in Malawi. Its main mandate is to offer a single focus for pursuing excellent Internet connectivity for the Tertiary Education and Research Sectors in Malawi. MAREN has assisted its

member institutions to renumber their networks to be identified globally as research and education institutions. The availability of national and international fiber cable is a catalyst for the implementation of the physical network. Building on the work done by the Malawi Library and Information Consortium (MALICO) of establishing a VSATs based network, aims to further the efforts by providing fast fiber connectivity to be linked to neighbouring countries, to the rest of Africa and to the EU academic network (GEANT).

MAREN, registered as a not-for-profit company limited by guarantee in late 2009, has been involved in such as activities as the development of a fiber campus for the University of Malawi sites: College of Medicine and related medical research complexes, Blantyre Campus of Kamuzu College of Nursing and the Malawi Polytechnic including reviewing alternative routes by ESCOM, ensuring negotiated regulatory compliance with MACRA and working with support agencies EU and UbuntuNet Alliance for research and education.

In order to implement the regional high capacity data network for research and education in Eastern and Southern Africa, the EU funded AfricaConnect Project was launched in May and is being implemented by UbuntuNet Alliance for the benefit of its members throughout the region. When in place, this network will facilitate the participation of Malawi educators and researchers in regional and global collaborative teams and bring the learning and research experience much nearer with the institutions in the West. Among the outcomes will be E-Medicine, High definition video conferencing, Enhanced e-learning and Participation in global virtual research communities.

### **3.17 National Digital Repository (NDR)**

In 2009, the National Library Service (NLS) began collaborating with the Institute of Development Studies (IDS, UK) on the Malawi Development Exchange (MDE), a project to facilitate the widening of access to development information in Malawi, by collecting and disseminating Malawian research. MDE, based at the NLS, has

established procedures and processes for collecting and digitising research documents and is making these available through a website with a supporting online community or related professionals. NDR is implemented by MALICO.

Additionally, MALICO, with the support from the International Network for the Availability of Scientific Publications (INASP) and eIFL.net, aims to establish a digital repository for research in Malawi. The National Digital repository of research for Malawi aims at collecting research outputs from Malawian institutions and building their capacities in global knowledge sharing. It is envisaged that the increased accessibility and visibility of Malawian research outputs will increase their impact on policy and bring more transparency to research institutions. A second aim is to link to, learn from and utilise the related work, ensuring close collaboration, identifying opportunities for further collaboration and avoiding duplication of effort.

The project also includes a training component for technicians, researchers, non-governmental organisations and policy makers to enable them to repackage their research for different audiences as well as input such information into the repository.

### **3.18 Mobile Innovations and e-Banking:**

Mobile Money and mobile bill payments: Mpamba and Airtel Money. The two mobile service providers in the country have introduced new innovations on the Malawi market that use mobile service to send and receive money. To use the service one has to register for the mobile money service. The service has been extended to enable client pay bills as well.

Banks are using ICT to provide internet banking to its clients. Some banks have implemented mobile sms alert to inform client of transactions on their accounts.

## 4. MASTER PLAN STRUCTURE, STRATEGIC THEMES AND PILLARS

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### 4.1 The National ICT Master Plan structure

The 2014-2031 National ICT Master Plan focuses on social and economic transformation by creating inclusive opportunities in order to achieve enhanced quality of life for the people of Malawi. The plan places emphasis on supporting ICT-based innovation and developing human capital in the ICT sector. It also aims to accelerate economic growth through ICT services and e-business enabling environment. Good and robust ICT infrastructure and e-services are strong support pillars of the Master Plan. The plan aligns with the strategic priorities within the National ICT Policy, the Malawi Growth and Development Strategy (MGDS II), the Economic Recovery Plan (ERP) and Vision 2020.

### 4.2 National ICT Vision

***An ICT-led Malawi***

### 4.3 OBJECTIVES

The overall objective of the National ICT Master Plan is to implement the National ICT policy and achieve its objective of facilitating “the creation of an enabling environment for efficient, effective and sustainable utilisation, exploitation and development of ICT in all sectors of the economy, including the rural and underserved communities, in order to attain an information-rich and knowledge-based society and economy”

Specific objectives:

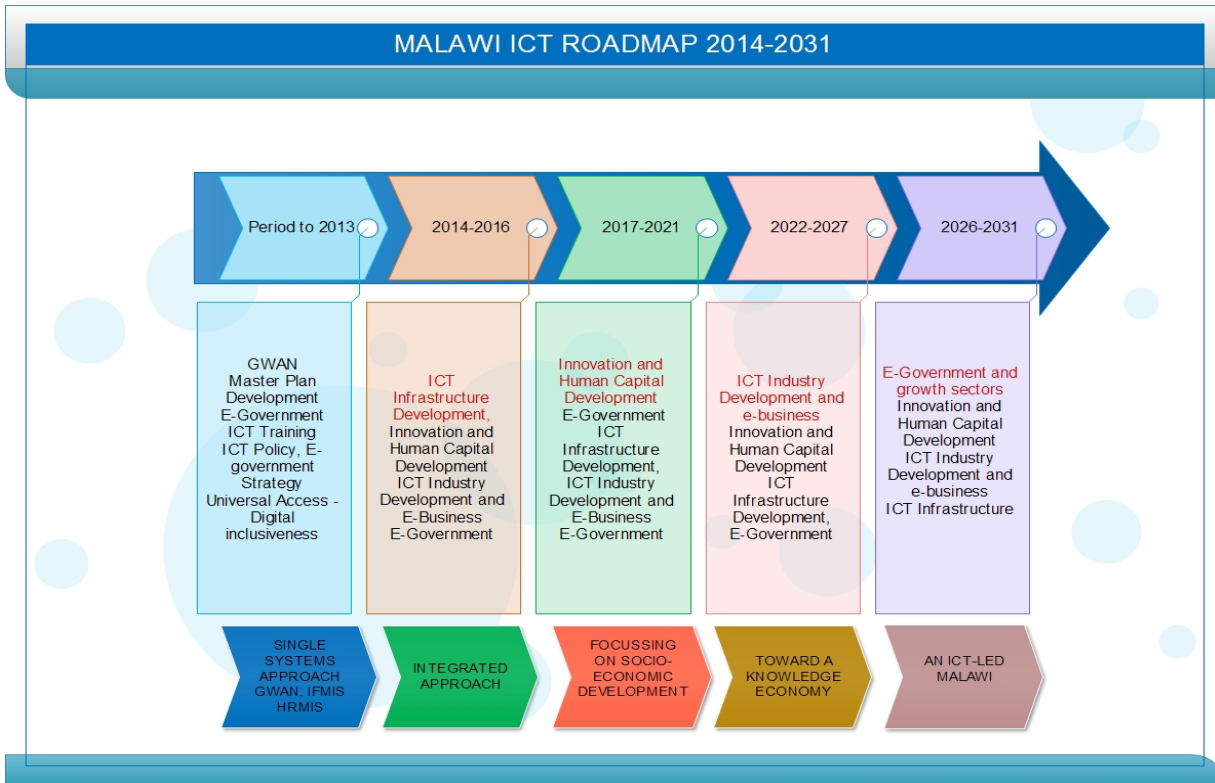
- Facilitate socio-economic growth and development by promoting the ICT industry and establishing ICT infrastructure;
- Achieve good governance and transparent government through ICT
- Strengthen country’s global competitiveness;

- Enhance the ability of citizens to utilize ICT.



#### 4.4 ICT ROADMAP FOR MALAWI 2014 – 2031

FIGURE 4 ICT ROADMAP FOR 2014-2031



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The ICT roadmap 2014-2031 consists of four distinct plans split into :

- A three (3) year plan 2014-2016
- Three five(5) years each plans for the years 2017-2021, 2022-2026, 2027-2031.

**4.4.1 THE 2014-2016 NATIONAL ICT PLAN** is the first part of the ICT Roadmap for Malawi. The end goal is to ensure universal access to information through government investment in ICT infrastructure development. With good infrastructure in place, existing government systems will be enhanced with web based system, including intranet and extranet development. Over the period 2014 to 2016, the Plan will focus on Government's thrust to increase ICT utilisation and uptake within the public sector while establishing an enabling environment for private sector to participate in the economic development.

**4.4.2 FOR THE PERIOD 2017 TO 2021**, the focus shifts to innovation and human capital development in order to create a critical mass of knowledge workers and stimulate ICT industry growth and sectoral transformation. Emphasis in this phase will be on developing strategic advantages in specific industries to enhance Malawi value proposition in regional and international markets. As Malawi Growth and Development Strategy goals evolve, this roadmap can be re-aligned to reflect any changes in priority areas.

**4.4.3 FOR THE PERIOD 2022 TO 2026**, the focus shifts to ICT Industry development and e-businesses. In this plan Malawi creates an enabling environment for businesses to compete on global market through thriving online businesses that export goods and services realizing the MGDSII goal of being an export led economy. In this period innovation and human capital development is escalated in order to continue with the aim of creating a critical mass of knowledge workers as well as sectoral specific industries development needed to stimulate ICT industry growth and sectoral transformation. As Malawi Growth and Development Strategy goals evolve, this roadmap can be re-aligned

to reflect any changes in priority areas.

**4.4.4 FOR THE PERIOD 2027 TO 2031**, the focus shifts to E-Government and growth sectors. The goal is to create an integrated e-government using ICT to create work efficiencies, transparent government with good governance. In this period government will serve its citizens with world class online interfaces in citizen information as well as providing government business links to stimulate ICT Industry development and e-businesses growth. In this plan Malawi creates an open government system that engages with citizens in policy formulation. The Plan seeks to foster opportunities in education, health, tourism, agriculture and irrigation, mining, energy, water development and trade through new technology-based service delivery mechanisms. Government plans to take a leadership role in creating the service delivery and policy conditions which encourage businesses and citizens to adopt ICT. As in previous, innovation and human capital development, ICT industry development initiatives will be rolled over in order to achieve the aim of creating a critical mass of knowledge workers as well as sectoral specific industries development needed to stimulate ICT industry growth and sectoral transformation. Again, as Malawi Growth and Development Strategy goals evolve, this roadmap can be re-aligned to reflect any changes in priority areas.

**Commented [ST5]:** Since e-Government is responsible for implementing the Master Plan, I think systems need to be in place before any work starts. This strategic pillar needs to precede human capital development and industrial development; or be implemented concurrently with the other pillars – see earlier recommendation. Putting it into final phase implies that the rest of the phases will be implemented without proper systems in place which would be a challenge.

Beyond 2032, Malawi seeks to realise significant gains from sharing its ICT expertise and reap the benefits of being a true knowledge-based society.

The four plans above will have an aspect of each of the knowledge society building pillars expounded below. Each of the strategic pillars has its strategic objective and strategic outcomes. We describe the pillars in the section below.

#### **4.5 STRATEGIC PILLARS**

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##### *Strategic Pillar 1: ICT Infrastructure Development*

A connected Malawi requires a strategic objective toward “**Enhancing Internet Governance, Accessibility and Usage**”. This will involve the continual deployment and

refresh of infrastructure, particularly Internet and telecommunications infrastructure.

*Strategic Pillar 1 Objective – Enhancing Internet Governance, Accessibility and Usage*

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ICT facilitates social growth and inclusion. Most importantly learning lessons from countries that have successfully leveraged use of ICT for economic growth, it improves living standards by broadening access to ICT services and improves the quality of life by providing new economic opportunities. At the World Summit on Information Society (WSIS) governments of the world committed to the pursuit and objectives of building information societies and laid a mandate for its achievement. The role of public authorities and all stakeholders in the promotion of ICTs for development entail:

- ✔ Information and communication infrastructure
- ✔ Access to information and knowledge
- ✔ Capacity building
- ✔ Building confidence and security in the use of ICTs
- ✔ Enabling environment
  
- ✔ ICT Applications: e–government; e–business; e–learning; e–health; e–employment; e–environment; e–agriculture; e–science

Infrastructure is defined as multi-dimensional as it enables the development of an information society based on the objectives set above and comprises:

- ✔ An **enabling set of physical equipment**, components and technologies that

function to convey data and information across specified transmission routings and electronic interfaces, directly to or from different geographic locations or points of connection.

- ***Service-custom applications*** together with physical equipment and components that form the process and delivery platforms for the many ICT services.

The effectiveness of ICT infrastructure as a factor that contributes to economic and social growth is established only when governed by rules, laws and regulations. These governance models determine how ICT must interact or be made to interact, with the different environments that it serves or, has to contend in meeting the social, economic and political demands of society.

Infrastructure development will be addressed within this context, confining its discussion and initiatives within these following areas:

- i. Network planning and construction and the measures required to bring the physical network into being;
- ii. Governance of the overall development process;
- iii. Initiatives that concern financing and investment;
- iv. Changes to the regulatory framework to foster infrastructure development;
- v. Developing the human capacity to continuously operate, maintain and develop the infrastructure.

The National ICT Plan addresses the provisioning of adequate telecommunications

and broadcasting networks at the national-level. Two high level objectives guide the move to full infrastructure resource are:

- I. **Broadband Vision:** To deliver a future-proof broadband infrastructure capable of delivering access speeds of 100 Mbps and above to the majority of the population by 2016.
- II. **High-Level Broadband Objective:** To promote widespread access to high-speed broadband services throughout the country as a significant driver of economic growth, job creation, and development and a critical element in the E-Government Department's broader objective of building a knowledge-based economy.

#### *Key Initiatives*

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*Key Initiative 1.1: Enhancing Infrastructure, Access, ICT policies and Regulatory Oversight to Facilitate Sustainability.*

Ubiquitous connectivity of ICT infrastructure is important to support both the telecommunications and broadcasting infrastructures and the services provided. The availability of broadband ICT infrastructure and related services is critical to the realization of the broader benefits of ICT. The availability of spectrum resources to effectively meet the demands of emerging technologies such as 4G mobile and Long Term Evolution (LTE) is a key priority.

*Key Initiative 1.2: Instituting appropriate Governance Structures to Drive Infrastructure Planning and Development*

It is estimated that currently there are approximately 2,116 km of fiber (RCIPMW report) deployed within Malawi, the majority belonging to the one major telecommunications provider, MTL. ESCOM has also set up fiber on its electricity lines which it contracts out to Service providers. The fiber runs, however, are not complimentary. There is much duplication and parallel build-out along the same locations, leaving the majority of the poor rural sector yet to be served with an adequate primary fiber optics backbone.

In enhancing infrastructure and connectivity, network development and build out in unserved and under-served communities is therefore essential. Another key area of focus will be to convene a national infrastructure taskforce to examine infrastructure requirements for the information society.

*Key Initiative 1.3: Building Information Society Governance Capacity to Ensure Availability of Internet Resources and viability of the Internet Economy*

This Key Initiative focuses on the global Internet landscape that shapes and influences the evolution and existence of interconnectivity between the domestic and international ICT infrastructure and services. These services allow Malawi's citizens to actively participate and utilise ICT in the evolving global knowledge-based society. Emphasis for physical interconnection will be on:

- a) Encourage the interconnectivity of upcoming service providers and others to the established domestic Internet eXchange Point (IXP) to facilitate domestic Internet traffic exchange and encourage and increase the amount of locally hosted content and services.
- b) Provision of a direct international connectivity to Sea Cable and development of routing diversity and redundancy to ensure network resilience in the instance of disasters.
- c) Establishment of alternative carrier for the purpose of co-location of international

infrastructural facilities.

Interconnectivity at the logical infrastructural level ensures interoperability of ICT devices, enables the efficient routing of data packets to the desired destination and / or ICT device, and guarantees compliance with appropriate network security. Emphasis will be placed on:

- a) Establishing a transparent national management plan of the national domain name system, (currently managed by SDNP) to guarantee the efficient routing of data, including the installation of a local copy of DNS root server;
- b) Transitioning government networks to IPv6 and developing policies to encourage IPv6 adoption within other national networks;
- c) To ensure efficient utilization of national Internet resources, government will take its role for the management of the .TT country code .mw Top Level Domain (ccTLD) based on the principles and guidelines for the delegation and administration of country code top level domains provided by ICANN (Committee, 2005) which state that “ultimate public policy authority over the relevant ccTLD rests with the relevant government or public authority; how this authority is exercised is determined by applicable law” and that “government or public authority is strongly encouraged to ensure that the ccTLD is being administered in the public interest, within the framework of its national public policy and relevant laws and regulations” ; and
- d) Development of national computer incident response capability to protect critical infrastructure and systems against malicious threats.

Building ICT institutional capacity and the professional capital stock for managing Internet Governance related issues is critical to a number of Key Initiatives identified under Malawi Department of E-Government strategic plan. Provision will be made



to have Malawi consistently participate in and be represented at international Internet Governance fora. In addition, development of local Internet Governance capacity will be strengthened via a number of capacity building programs, training and public awareness activities such as the ICT week.

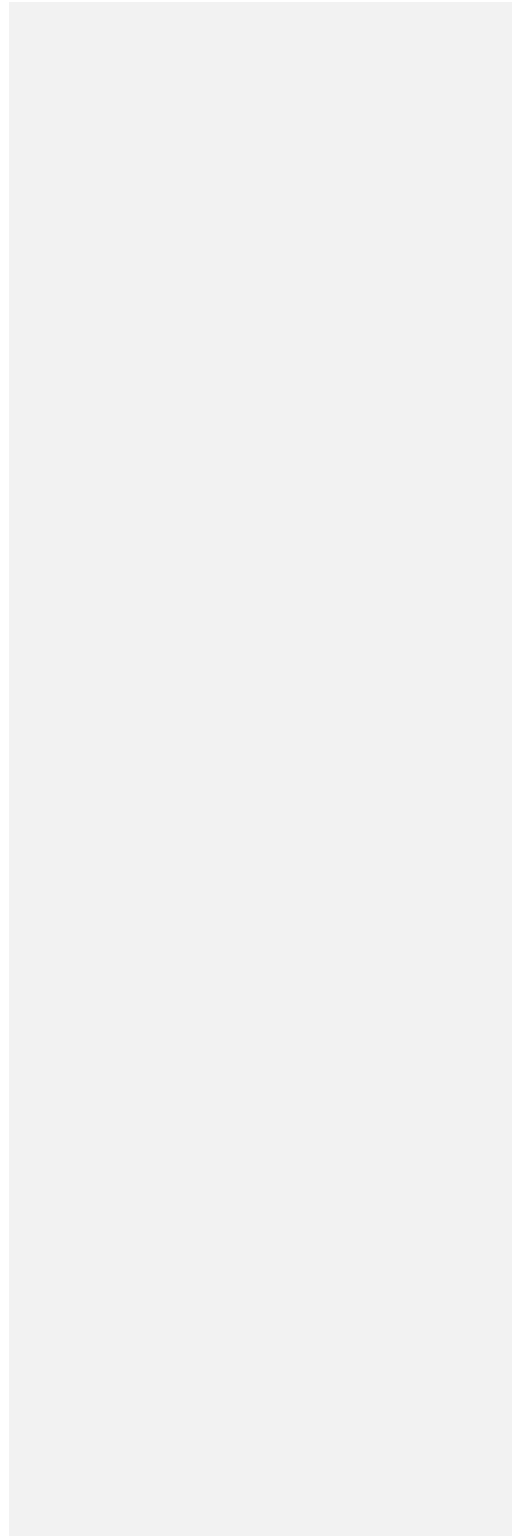
*Key Initiative 1.4: Building Government Infrastructure to Develop and Support a Vibrant e-Government Ecosystem*

In order to support Government's thrust towards a more integrated e-Government, there needs to be a focus on the sharing of common data through standardization of hardware and software platforms and the development of a modularized enterprise network system. There is a need for a software solution which provides an end-to-end electronic service to make it easier for Ministries to configure e-Services.

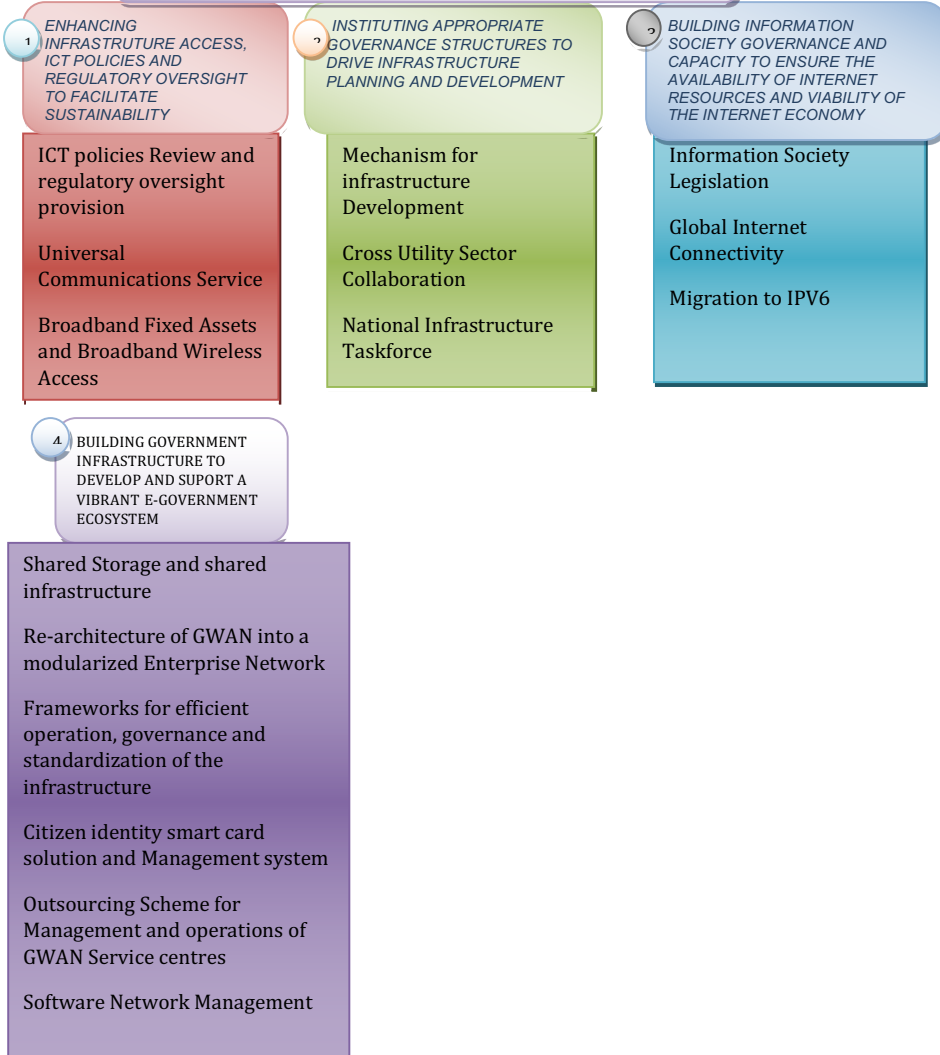
*Pillar 1 Programmes*

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The programmes under this theme are listed in the following diagram:

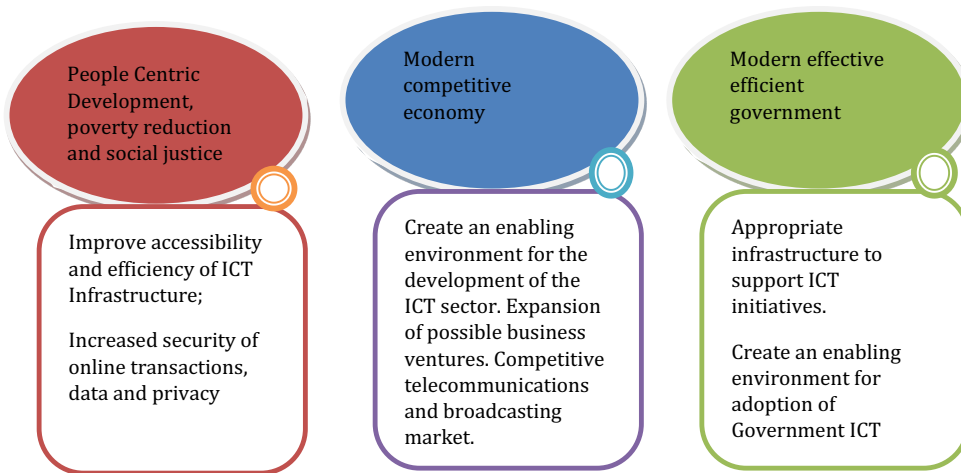


**Pillar 1: ICT Infrastructure Development**



**Pillar 1: Expected Outcomes**

The expected outcomes for implementing programme initiatives under the strategic pillar, ICT infrastructure development are depicted in diagram below:



**Strategic Pillar 2: Innovation and Human Development**

The Plan will entail a strategic objective of building a creative knowledge Society. This pillar is geared towards people-centered development. The pillar involves the seamless incorporation of ICTs into learning at all levels of the education and human capital development systems. In this regard it is foreseen that ICT will be made a compulsory subject at the appropriate education levels. In addition to theory, there will be an emphasis on practical, creative application of ICTs. This theme builds the “Capacity and community” dimension.

### *Strategic Pillar 2 Objective - Fostering a Creative e-Ready Generation*

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Malawi's medium term strategic framework, MGDS II, recognizes that human capital development is critically important to all aspects of national development. The Framework acknowledges that innovation and production are inextricably linked and that innovation and talent have become valued assets in the local and global knowledge economy. However, despite a literacy rate of 64 percent and enrolments rates at the Primary and Secondary education levels of 91 percent and 8.8 percent respectively, enrolment at the tertiary level falls drastically and is amongst the lowest in the world at 0.3 percent according to NSO figures 2012. This places Malawi at 129/142 countries in the tertiary education enrolment index in the World Economic Forum's Global Competitiveness Report 2011-2012.

Under this strategic objective, initiatives to ensure that innovation and human capital development needs are strategically addressed in the period 2014-2031 will be implemented.

#### *Innovation*

Innovation is the ability to solve challenges using novel solutions. In order to create the knowledge based economy, an innovative class is needed to drive national development. Fostering innovation is integral to diversifying the economy. The nation, however, is ranked as one of the most poorly performing countries globally with respect to innovation. The Global Competitiveness Report 2010-2011 placed Malawi amongst the lowest countries in the world in innovation at 137/139. Although an improvement was gained in 2011-2012 with a rank of 120/142, this still places the country lowest among countries of similar size and economy.

Malawi needs to quickly improve and catch up with the rest of the world in innovation. The National ICT Plan proposes a bold set of initiatives to aggressively

target the various components of innovation and human capital development.

In order to promote innovation as the driving force for global competitiveness and economic stability, the Department of Human Resource Management, in collaboration with Ministry of Education and Youth Development and National Commission for Science and Technology (NCST), will champion the development of a National Innovation Policy which includes the elements necessary to support financing, intellectual property protection and linkages between research and development and commercialization. The National ICT Plan is closely aligned to this policy in order to ensure that synergies are created and sustained to promote multi-sectoral collaborations.

#### *Human Capital Development*

Human Capital Development refers to the skills building and uplifting of people's lives through knowledge attainment derived through training of citizens. The MGDS II envisions that skilled and knowledgeable work force with the appropriate supporting infrastructure and equipment, proper institutional arrangement are a prerequisite for "successful implementation of its development programmes". The human resource capital development will be done through initiatives to "change mind set, orientation of skills, work process re-engineering, improvement of institutional set up and provision of appropriate [ICTs] equipment", MGDS II.

Further, the uptake and absorption of ICT's into the everyday activity of citizens and businesses depends in part on the level of development of our human capital to absorb and apply ICTs and on the other the availability and accessibility of ICTs and ICT infrastructure to all.

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## Key Initiatives

### *Key initiative 2.1: Building a knowledge society through ICT enriched learning*

Training is a key strategy to address the growing demand for the knowledge worker. An ICT capacity building framework that caters to the different levels of ICT competencies across both the public and private sectors is necessary to build a knowledge equipped workforce. The ICT training courses must be internationally accredited, so that the ICT training and certification attained is widely recognised. Further, the interest in ICT must be cultivated from an early age and sustained through life. Accumulation of ICT literacy skills is crucial to employability in the knowledge economy.

### *Key Initiative: 2.2 Creating and Promoting Local Digital Content*

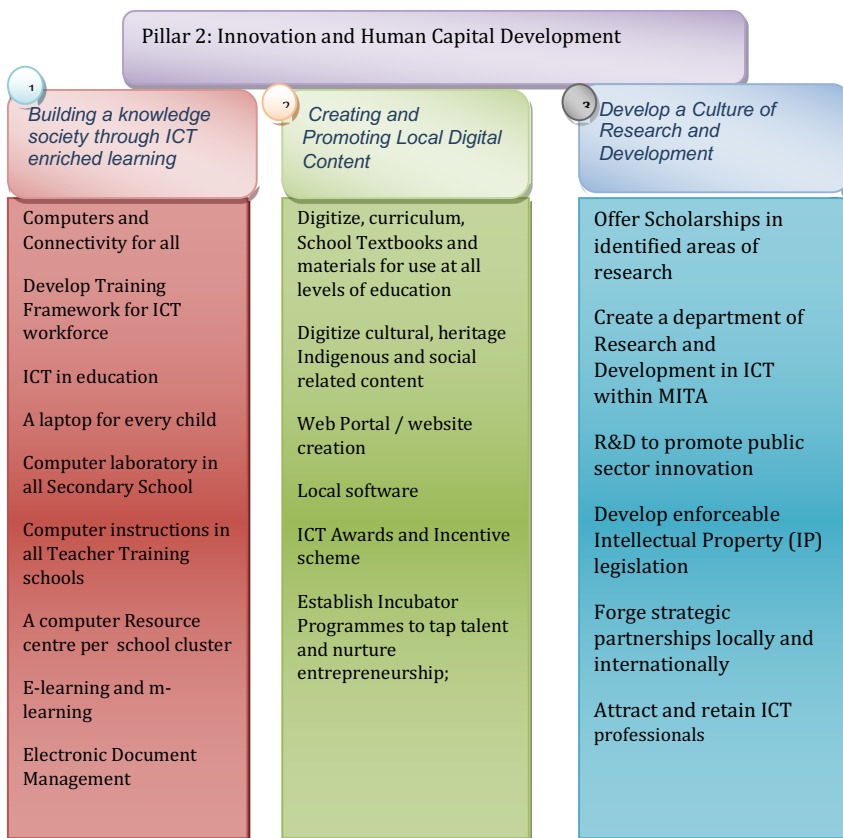
As Malawi shifts focus from “connectivity” to “Usage and Creation”, citizens and local organisations, must also be encouraged to transition from merely being electronic content consumers to become content creators. This will entail inculcating a responsible culture that **celebrates** development and sharing through special mention, recognition and or awards.

### *Key Initiative: 2.3 Develop a Culture of Research and Development*

A strong culture of research and development is necessary for creativity; rigorous testing of new ideas to ensure their validity and value; and problem-solving using structure, logic and discipline in a knowledge-based economy. Knowledge intensive activity creates additional wealth from innovative ideas, products, expertise and services. At the same time it requires continual adaptation and change. In this context research and development provides for a continued generation and development of new ideas.

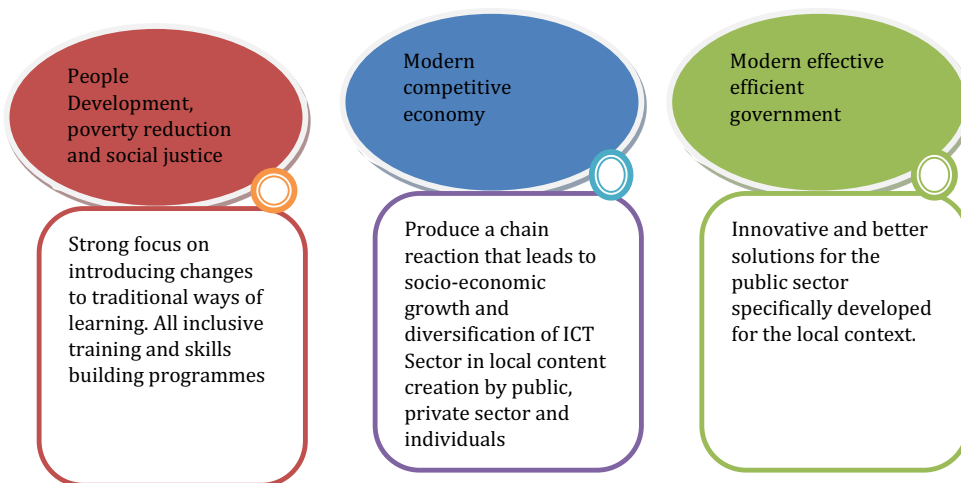
*Strategic Pillar 2 Programmes*

The programmes under this strategic pillar are listed in the following diagram:



### *Pillar 2: Expected Outcomes*

*The expected outcomes for implementing programme initiatives under the strategic pillar of innovation and human capital development are depicted in diagram below:*



### ***Strategic Pillar 3: ICT Industry Development and e-business***

Strategic pillar 2 is a means by which to build a modern, competitive economy through the enabling and facilitation of e-business and ICT industry development. This strategic pillar requires creation of an ecosystem of ICT consumers, service providers and resources in the entrepreneurship and “Business” dimension.

#### ***Strategic Pillar 3 Objective - Building a Pro-Enterprise Environment***

Technology is a key enabler for economic diversification. ICTs improve business market opportunity and strengthen business processes to create efficiencies that ultimately



improve national competitiveness.

Developing electronic commerce capabilities is essential to enable both the production and exportation of knowledge products and services. The Government is committed to developing an ICT-enabled, pro-enterprise environment geared towards increasing technology driven commercial and business activity that can result in the continued growth and development of Malawi.

### *Key Initiatives*

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#### *Key Initiative 3.1: Stimulating ICT Demand and Encourage e-Commerce Adoption*

This Key initiative focuses on the development of specific programmes around various consuming publics (Government, Businesses, and Consumers) directed towards driving ICT demand so that businesses can become sufficiently persuaded of the viability of e-Commerce adoption.

#### *Key Initiative 3.2: Developing e-Business Capacity*

A significant barrier to e-Business adoption is the lack of know-how, and awareness of the existence of business funding, business support services and useful technological tools. Furthermore, the provision of funding for ICT adoption requires accompanying business support services.

The programmes under this initiative are designed to increase national e-Business capacity.

*Key Initiative 3.3: Enabling the Production, Distribution and Promotion of Local ICT products and services*

Efforts will be directed towards strengthening of government trade infrastructure and adjustment of the regulatory environment for starting and operating a local business.

*Key Initiative 3.4: Enabling Other Sectors through ICT*

The rationale for enabling other sectors through ICTs is much the same as the rationale for promoting e-business adoption in general. The MGDS II outlines several strategic sectors with potential to contribute to economic growth. Although not as highlighted, sectors that benefit from ICT in economic growth necessary include the creative industry composed of various sub-sectors inclusive of the Music Industry, Film and Television, Advertising, Book and Magazine Publishing Industry, Fashion and Glamour and the Performing Arts and Visual Arts and the Environmental Services Sector inclusive of Eco-Tourism. The Agriculture sector has long been identified as a key area for diversification.

Related programmes will therefore address the specific projects that will culminate in the overall improvement of these industries which will ultimately translate into greater prospects for businesses.

*Key Initiative: 3.5 Facilitating Leadership and Coordination of Efforts among Key Stakeholders*

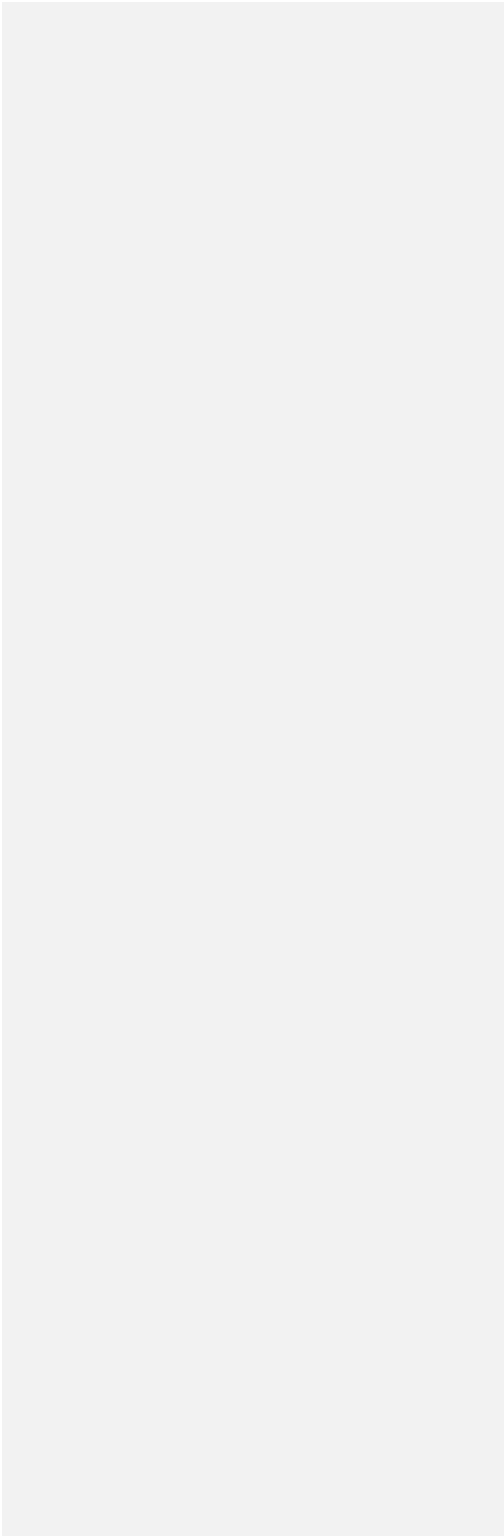
Government role in e-business adoption and ICT Sector growth is facilitative. The e-Business Working Group is a key multi-stakeholder advisory group that communicates their position and recommendations to Government in matters related to e-Business. The group also transfers information on new business

opportunities and influence supportive action within the business and academic community. The group will be empowered to identify domestic, regional and international business opportunities and assist in coordinating efforts in the areas of e-business integration, technology exporting, cluster development, R&D innovation and venture capital funding.

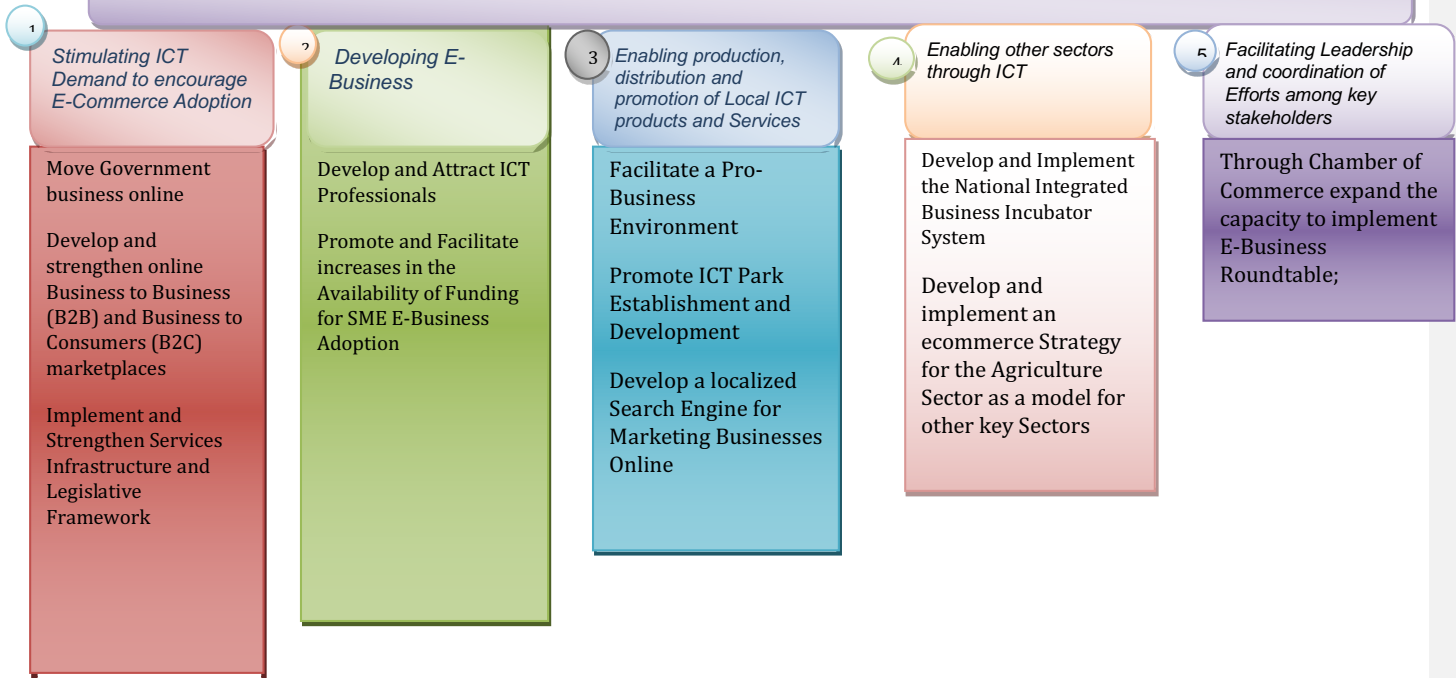
*Pillar 3 Programmes*

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The programmes under this theme are listed in the following diagram:

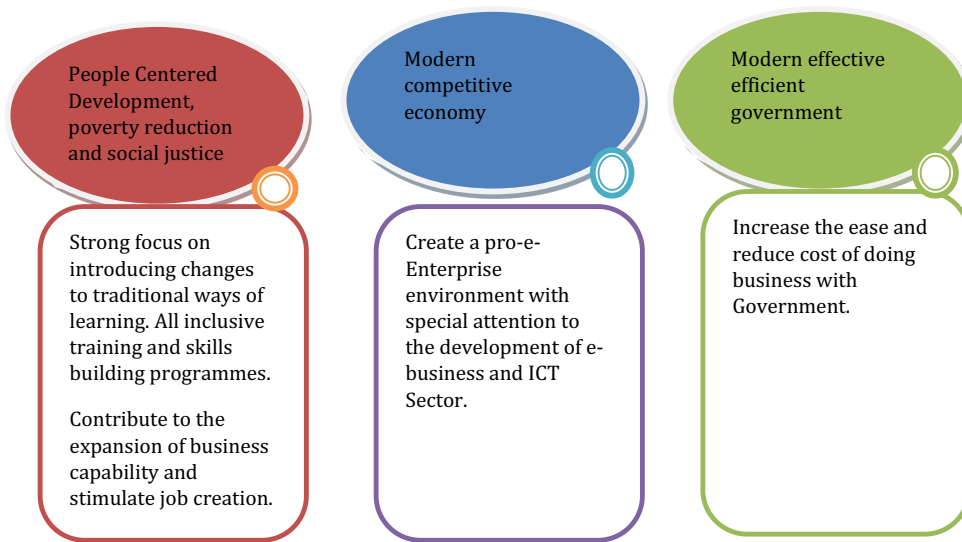


Pillar 3: ICT Industry Development and E-Business



*Pillar 3: Expected Outcomes*

*The expected outcomes for implementing programme initiatives under the strategic pillar of ICT industrial development and E-business are depicted in diagram below:*



#### *Strategic Pillar 4: E-Government*

ICTs are necessary to facilitate government's strategic objective of "**Working as an integrated e-Government**". The prioritization of ICT in government service processes will facilitate collaboration across the public service to deliver quality public service in the customers' choice of delivery channel – the "Government" dimension.

#### *Strategic Pillar 4 Objective – Working as an integrated e-government*

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ICT in Government is about facilitating the process of bringing the Government closer to the people through major improvements in the delivery of Government Services. As stated in E-Government Department's Strategic Plan, *in order to sustain higher levels of socio-economic growth, "Government will promote, coordinate and support the utilization of ICT products and services in order to accelerate the implementation of the Malawi Growth and Development Strategy."*

The underlying principle of e-government, supported by an effective e-governance institutional framework, is to improve the internal workings of the public sector. It seeks to establish 'better processes and systems' aimed at greater efficiency, effectiveness, inclusion, transparency and sustainability. Government e-Services provide citizens access to the tools and content needed to seamlessly incorporate ICTs into their daily lives.

## *Key Initiatives*

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### *Key Initiative 4.1: Collaborating to implement shared ICT systems and processes*

This Key Initiative focuses on leveraging ICT to improve the efficiency of government processes; the effectiveness of government policies; and ensuring sound ICT investment.

The deployment of common ICT infrastructure has proven to be a challenge for many Governments. Ministries must understand the need to streamline existing processes; relinquish control over common ICT infrastructure; and focus on their core businesses. Successful deployment of common ICT infrastructure, systems and policies calls for top-down directive, timely and clear communications to the various levels of government, tangible consequence for non-compliance and relevant support from government agencies. By consolidating the ICT infrastructure requirements of E-Government Department, the Government as a whole also stands to reap cost savings, to build in redundancy and exercise better control by enforcing ICT infrastructure standards and government-wide ICT policies.

### *Key Initiative 4.2 Serving Citizens through multi-channel service delivery*

In the near term, this key Initiative will seek to put key G2C and G2B services online and ensure that all e-Services are of high quality. Customers of government services must be provided with convenience and choice. Providing the option of services via electronic means allows customers the convenience of access at a time and location of their choosing. It also allows the Government to be more responsive, flexible and efficient in service delivery and more transparent with its processes. Citizens and government customers need not understand the complex structure of the Government to obtain government services. Integrated e-Services offer the

opportunity to provide a single entry point to a range of different services.

These programmes aim to deliver integrated, personalised and value-adding Government e-Services.

Government service delivery has to go beyond 'transactional' to personalised. Areas where personalised e-Services will add value include:

- a) **Content Subscription:** Customers can subscribe to receive electronic versions of policies opened for public consultations, budget debates, parliamentary proceedings etc.;
- b) **Personalised Notifications:** Customers can subscribe to receive weather and traffic alerts by location; government fees and fines payment schedules; reminders for events such as court hearings; and
- c) **Personalised Page:** Customers can maintain and manage personal data and interactions with the Government.

Change management will be important to the implementation and adoption of e-Services. The process will be aided with public awareness and education programmes. There will also be a review to ensure that the business model is viable for sustained service delivery. In the longer term, all feasible Government services will be put online.

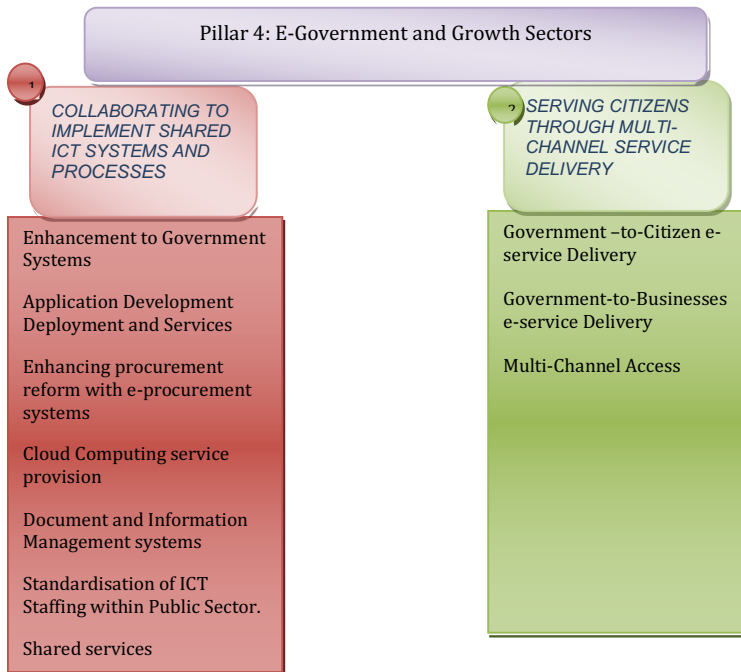
In addition, to ensure growing mass adoption of e-Services, the government has to also gather and analyze customers' behaviour and needs. The goal is to eventually offer predictive services pushed to customers via advanced messaging and mobile communication services.



*Pillar 4 Programmes*

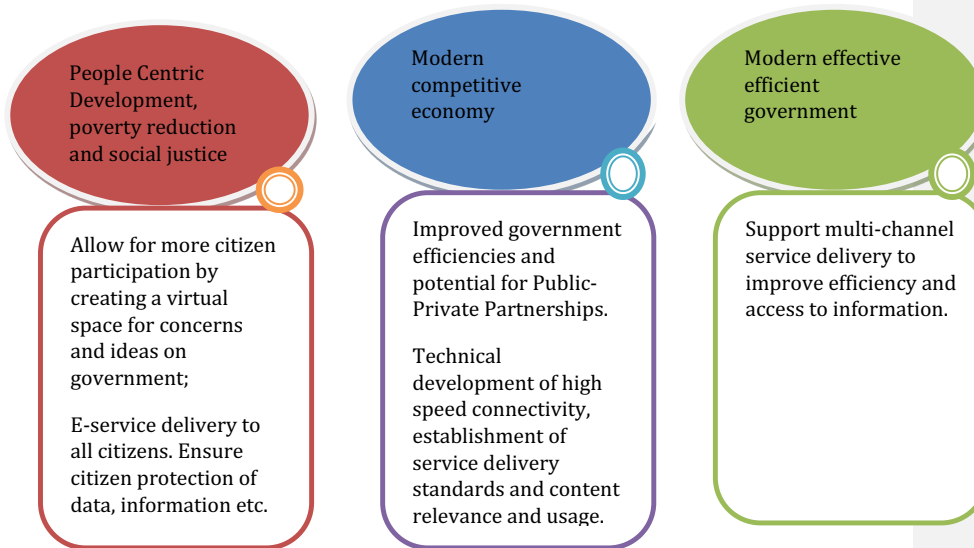
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The programmes under this theme are listed in the following diagram:



*Pillar 4: Expected Outcomes*

*The expected outcomes for implementing programme initiatives under the strategic pillar, E-Government are depicted in diagram below:*



#### 4.6 Supporting Mechanisms for the Strategic Pillars

##### 4.6.1 Creating Redundancy Route for Connectivity

ICT-based development and service delivery are predicated upon the availability of a robust, reliable, pervasive technology infrastructure that provides appropriate access in an economically viable manner for both the implementer and the consumer. ICT service delivery demands that high priority and significant investment emphasis be placed on strengthening and expanding the country's technology infrastructure. Connectivity is not only a technology hardware issue, it is a social issue as well. Consideration will be given to how people, communities and institutions are connected, what they are connected to do, what content they connect to share and what specific benefits the connectivity ought

to bring. Equitable, affordable access must be a non-negotiable goal of a Connected Malawi. It is intended therefore, to provide a direct international connectivity/cable to Lilongwe landing site from Dares Salaam on Sea cable with a redundant route to the West Africa Sea cable through Lusaka, Zambia. This facility can support redundant service route for Malawi and also serve as a 2nd cable landing station for the nation.

#### **4.6.2 Open Government Data**

Generally, information becomes more valuable as it is shared and less valuable when it is not easily accessible. E-Government Department recognises that the Internet is the public space of the modern world. Conversely, the Internet allows citizens to participate more fully in government. E-Government Department will put attention to making appropriate public data available in a standardized electronic format for public consumption. This initiative is expected to increase civil discourse, improve public welfare, and provide more efficient use of public resources.

E-Government Department will take the necessary steps to ensure that the public data, which is not subject to valid privacy, security or privilege limitations, as governed by other statutes, can be easily found, used, cited and understood. This move serves to encourage transparency and democratic control, civil participation, improved and new private products and services, innovation and Governmental efficiency. In order to do so, certain guidelines will be followed, according to clearly defined principles for open government as detailed on the website resource (<http://www.opengovdata.org/home/8principles>).

#### **4.6.3 Free / Libre / Open Source Software (FLOSS)**

Free / Libre / Open Source Software (FLOSS) refers to any software that provides users with the ability to run a programme and access its source code, for viewing, distribution and or modification, free of charge. It is E-Government Department's intention to have an alternative to proprietary software and extend

to citizens the benefit of reduced investments in proprietary license.

From a national development perspective, E-Government Department will engage in activities that will seek to promote activities that require interoperability with open standards, rather than proprietary standards.

The recommended activities will include:

- the development and execution of a statistical monitor system for the usage of open source in the public as well as in the private sector;
- the development and promotion of a comprehensive policy to improve the usage of open source software;
- help to enable and coordinate open source software migration and implementation in the public sector for small and medium size organizations; coordination and cooperation within open source projects of public interest;
- development of strategies to adopt the public and private educational sector to open source requirements; support of business models based on open source software; and inform and advise small and medium size enterprises before and in their implementation of open source software.

Issues surrounding security under the Data Protection Act will also be taken into account. Open source software solution providers will be tasked with providing viable alternatives from vendor lock-in and dependence.

#### ***4.6.4 Green Computing and Sustainable ICT***

The field of green computing is described by San Murugesan (2008) as "the study and practice of designing, manufacturing, using, and disposing of

computers, servers, and associated subsystems—such as monitors, printers, storage devices, and networking and communications systems — efficiently and effectively with minimal or no impact on the environment<sup>5</sup>."

The Department of E-Government intends to establish the necessary administrative, environmental and technical frameworks for efficient and effective e-waste management for sustainable ICT. This Key Focus Area will address the formal assembly of stakeholders and identification of an effective institutional framework. E-Government Department will also develop the requisite legal framework within which specific e-waste requirements will be addressed.

As one of the largest consumers of ICT products and services, Malawi Government has the responsibility to ensure that there is a well-defined strategy to include green computing initiatives as well as treat with e-waste for the disposal of end-of-life assets. E-Government Department or its other established agencies will drive the initiative to seek alternative disposal methods through possible deposit/refund mechanisms, reduction of export costs of "end-of-life" equipment and their waste components and the revitalisation of previous e-waste disposal mechanisms. Establishment of quality standards around e-waste disposal will be a requirement that will encourage the already existing e-waste recycling sector to perform to industry standards.

Monitoring of volumes of computing equipment will become necessary for data collection agencies as national planning for e-waste disposal is conducted. The necessary implication is for both public and private sectors' procurement practices to demand accurate record maintenance of computing equipment inventory. In addition, procurement requirements within the context of e-waste will require a schedule of acquisitions, expected duration for use, storage and disposal practices.

Cloud Computing can be viewed as a Green technology. Organisations – both

public and private- can reduce their hardware inventory as they adopt cloud technology and consequently lessen the burden for disposal. Additionally, re-purposing equipment to locations and situations where the technology specifications are less demanding, can be utilised in efforts to Bridge the Digital Divide.

#### *4.6.5 Ministerial/Departmental and other agencies ICT Planning*

There is a need for a concerted ICT planning effort at the agency-level. A Ministry or departmental or agency level ICT plan is part of a roadmap that will put in place the necessary infrastructure, systems and policies to support its current business needs and pipeline plans. Departmental /Ministerial/agency ICT plans should align with the National ICT Master Plan.

From the departments or Ministry's ICT plans, common ICT requirements of infrastructure, systems and policies can be identified for sharing or development. Alternatively, a government-wide Enterprise Architecture (EA) development exercise is a systematic way to do so. A Government EA serves as a framework and a collection of standards that enable the sharing of information and systems across ministries. Such an exercise delivers the Business Architecture, Information Architecture, Solution Architecture and Technical Architecture for the whole of public sector.

Demand aggregation of ICT goods and services is another area where there can be reduction in effort and cost. Cost savings will result from economies of scale.

As one of the largest consumers of ICT, the Government will leverage ICT to further augment the capacity of its officers. Strategic Planning and IT executives who were engaged in focus group discussion as part of this exercise indicated these as the areas that ICT tools can facilitate their day-to-day work: Customer Relationship Management or Case Management, information dissemination and workgroup collaboration. Portal technologies support these functions for

deployment of agency intranets, the Government Intranet as well as extranets to facilitate Public Private Partnerships.

#### ***4.6.6 ICT Incubator Development***

E-Government Department's intent to pursue ICT incubator Development is expected to drive the prioritisation of relevant technology policy, R&D incentives and infrastructure. E-Government Department will target the most dynamic segments of the ICT industry for promotion and export, and sequence their entry and systematically upgrade their capabilities towards higher value segments of the global supply chain. E-Government Department's will partner with the private sector to promote incubators, develop hi-tech "parks", and develop local knowledge networks. E-Government Department will also mobilize the diaspora for capital, technology, entrepreneurship, and market intelligence.

The ICT park environment will also serve to advance other key focus areas namely planning for e-waste management, open government data, cloud computing, and the development of open source software. This environment will foster a cohesive engagement that will optimise the inherent talents, knowledge and skills for overall national development.

#### ***4.6.7 Infrastructure and Security***

To realize its vision of a society where ICT plays a key role in enhancing quality of life, it is critical for the Government of Malawi to secure the ICT environment and defend the critical infrastructure of the country from cyber threats. This security enables trust, which encourages adoption of technologies and the rate of uptake. This trust in the security of our ICT environment is crucial as organisations and citizens become increasingly dependent on ICTs for social and economic connectivity.

Seemingly isolated ICT security incidents can bring forth ripple effects to other ICT infrastructures and systems. A secure ICT environment ensures confidentiality, integrity and availability of data. This inspires confidence and trust in the users, generating greater up-take of the various key initiatives.

Securing our ICT systems and cyberspace requires continuous examination of our laws, current and upcoming threats, as well as the strategic implementation of technologies that will further enhance our economy.

#### *4.6.8 Cyber security*

The **Government of Malawi** has undertaken a major enterprise-wide initiative - GWAN to use ICTs to improve the internal communications as well as increase and improve services to the public.

It must be noted that the government hold the largest repositories of citizen data, making it not only a target for the information it stores regarding its operations, but also for the financial, medical and other sensitive information collated by various government ministries and agencies.

**Corporations**, like government, make heavy use of ICTs. The breath of technologies is arguably larger for private organizations due to the less-restrictive policies for these entities.

Malawi even as it is lacking in such services as debit and credit card payment gateways, cloud computing which span internationally and are consumed by businesses in their operations, should the country develop to embrace such services, cybersecurity will be a major concern much more so than is currently the case.

Businesses, as a by-product of the services they provide to both government and citizens, also over time amass sensitive data that must be protected. To fail in



protecting these assets exposes them to grave reputational, legal and financial risks. Where a business fails to protect its sensitive data, its client data is also, by extension, at risk of loss.

**Citizens**, generally speaking, are the primary consumers of services provided by government and businesses. Protecting personally identifiable information and data is a legal right for each citizen. Creating a safe cyber-space for citizens involves not only securing the data they pass on to ICT systems, but also necessitates educating people about how to share information in a secure way.

The government must set policy and finalise and approve e-legislation to institutionalize certain rights upon the citizen and the government itself must take measures to secure its data in application such as the population and business registries, National Identification Systems and others similar systems which store detailed citizen data and legal entity in our nation.

Threats to Cyber Security can take the form of:

- Criminal attacks (fraud, theft, identity theft, hacking, extortion, phishing, intellectual property(IPR) and copyright theft, piracy, brand theft, spoofing);
- Destructive attacks (cyber-terrorism, hackers, ex-employees, vengeful individuals, cyber war, cyber-vandals, anarchists, viruses)
- Nerd attacks (denial of service attacks, publicity hounds, adware)
- Espionage attacks (data and IPR theft, spyware)

The majority of individuals and smaller businesses have inadequate cyber protection and attacks exploit this, similarly large businesses and public sector organizations, have significant assets to protect and make high profile targets. Security defences need to be appropriate and government must take a lead role to sensitise citizens and provide support and advisory services in the area.

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## 5. IMPLEMENTATION PLAN

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Appendix A lists the comprehensive plans. In this chapter the plan provides detail on plan ownership, who is to implement the plan, by when it is to be implemented and at what cost. The cost element is only an estimate at this stage. A feasibility study would be required to establish actual costs and benefits to be accrued from every proposed initiative. The detailed plan also prioritises activities and separates the plan into 2014-2016 sub-plan activities from the other long term plans for 2017-2021, 2022-2026, 2027 - 2031.

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## 6. MONITORING AND EVALUATION PLAN

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The purpose for developing a monitoring and evaluation plan is to provide a way of assessing progress made in plan implementation as well as assess whether the strategic outcomes for the initiatives on plan are being met. Investment in technology must achieve its intended objectives if not then a review and reprogramming may be necessary. Therefore the implementation of the National ICT Master Plan and therefore the National Policy shall be monitored and evaluates for effectiveness and responsiveness to ensure intended goals and objectives are met. Monitoring will be done annually or as may be determined. Evaluation shall be conducted every three years to measure impact. The implementation plan in Appendix A has a list of indicators against which the implementation will be assessed.

### 6.1 Monitoring

Implementation of the National ICT Master Plan will be through annual work plans and budgets. Every implementing unit will ensure that their respective annual work plan and budgets are prepared within the framework of the National ICT Master Plan. The tasks detailed in the implementation plans will form the basis for preparing annual work plans and budgets.

Management will ensure that all policies, programs, rules and regulations are prepared and reviewed on the basis of the National ICT Policy and National ICT Master Plan. The reporting system will require that each implementing unit monitor activities as contained in its annual work plan and budget and prepare monthly performance reports which will be presented to Strategic Plan Implementation Committee and Management and subsequently to the Office of the President and Cabinet. The SPIC will discuss consolidated performance reports on a quarterly basis, after which a comprehensive strategic performance report now called an Annual report will be presented to Management and OPC.

## **6.2 Evaluation**

Performance evaluation is very important as it entails comparing actual against expected resultant impact. In a changing technological environment some key assumptions in the implementation plan may dramatically change and affect implementation of the set outcome targets. It is therefore in the course of evaluation that the effect of such changes will be determined and appropriate corrective action taken. The findings from the Monitoring and Evaluation will be used to make adjustments during the implementation process and input into annual review programs.

## **6.3 Review of the Implementation Plan**

The annual implementation plans will be reviewed annually at end of each financial year. A full review of the plan will be conducted at the end of each implementation period. In addition the plan may be reviewed outside the set times to incorporate any new major development and emerging issues needing immediate action.

## **9. RECOMMENDATIONS**

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### **9.1: Governance Model**

The first recommendation is on the institutional framework and governance structure and processes to facilitate the effective implementation of the National ICT Master Plans.

The guiding principles upon which the proposed ICT Governance Structure for this National ICT Master Plan has been developed are based on focusing on achieving synergy in the planning and execution of nation-wide, government-wide major ICT initiatives. This coupled with support of the Cabinet and the entire Government should provide needed impetus for the successful implementation.

The National ICT Policy proposed establishing MITA. This establishment will work with an appropriate structure and an emphasis on meritorious placement of executive leadership. The purpose of the structure is to ensure participation across government, businesses, and citizens to support decision-making, communications and consultation. In particular, it is necessary to establish a high level committee to drive the development and adoption of major ICT projects in Government, ICT projects requiring cross ministry participation and ICT projects with nation-wide impact. The Committee will determine the ownership responsibilities for such projects and will also be responsible for monitoring the progress of implementing National ICT Master Plan. The Committee will further review the performance through measurement of the key indicators set as targets for accomplishment. The recommended ICT Governance Structure for the implementation of the National ICT Plan is detailed as follows:

#### **9.1.1 National ICT Steering Committee**

The existing Inter-Ministerial Steering Committee (MSC) on ICT will assume the role of the National ICT Steering Committee. This committee is the highest approving and decision-making committee that oversees and drives the government-wide ICT programmes as well as nation-wide ICT programmes under the National ICT Master

## **DRAFT MASTER PLAN**

Plan and provides the strategic direction towards realizing the National ICT Vision. This Committee will be headed by the President of Malawi as champion of the Master Plan or Her/His appointed Champion representative and cabinet ministerial level.

### **9.1.2 ICT Development Board OF Trustees**

The Board of Trustees overseeing MITA will report to the National ICT Steering Committee. Its work will be to inform strategies and projects for economic development through ICTs. The role of the ICT Development Board of Trustees will include planning, alignment, and coordination, advice, monitoring and reporting. An important function of the Board will be to consolidate information from the ICT Secretariat and the sector as a whole for presentation to the National ICT Steering Committee.

### **9.1.3 MITA – The ICT Secretariat**

MITA, as defined in National ICT Policy is the ICT Secretariat to be headed by a competitively recruited Chief Executive Officer (CEO). MITA will support the work of the ICT Development Board and will comprise Sector Specialists who will be liaisons to executing agencies, a policy and research function, monitoring and evaluation, and administration. The Secretariat will co-ordinate, track and monitor progress of all programmes under the National ICT Master Plan. The work programme of the board/secretariat will inform the submission of ICT related initiatives for consideration within Government budgetary cycles.

It will also coordinate and integrate efforts across the various programmes of the Plan, and ensure alignment with other national development efforts. The Secretariat will further identify and address gaps and areas of overlap between the various programmes of this and other National Plans. Opportunities for major Government ICT projects and G2B and G2C e-Services will also be identified at this level.

The Secretariat will comprise representatives of all relevant ICT sector specific specialists.

### **9.2 ICT Agencies and Other Groupings**

Existing ICT agencies, authorities and other ICT related groupings will report into the ICT Secretariat. The work of these entities will continue uninterrupted but monthly reports in keeping with the already established budgetary cycle will be made to the ICT Secretariat to inform planning and decision making.

### **9.3 Master Plan Programme and Project Funding**

There needs to be two types of funding arrangements to support the deployment of the National ICT Plan. Firstly, a central government fund is required to fund the development and implementation of cross-Ministry/departments ICT shared systems, as well as subsidise the usage of these systems to encourage government agencies' participation.

This will steer government ministries /department towards the use of shared systems and collaboration in the delivery of integrated systems. Secondly, PPP fund and Universal Access Fund are required to encourage Public Private Partnerships and promote universal access and digital inclusion initiatives. Lastly, the usage of these funds must be accounted for to the National ICT Steering Committee that has oversight of e-Government matters.

Indicative budget estimates for each programme and project is listed in the Appendices under the Programme Implementation Roadmap. These figures may be used for budgeting purposes but actual cost of programme / project delivery is subject to a) the priority of the Government at the time of programme / project initialisation; and b) the outcome of the tendering process for procurement of ICT goods and services for the programme / project.

The projects that have been identified to support programme delivery is also subject to change and hence the programme and project funding as well. Unlike programmes that are high level activities and tasks designed around its respective strategic objective, projects can be replaced with alternatives that contribute towards the same programme outcomes. Some situations that may require a replacement of projects include changes in government policies, and availability of new technology and alliances.

**DRAFT MASTER PLAN**

**9.4 Performance Management and Reporting**

The Government is accountable for the progress and success of the National ICT Plan which must be based on performance measures that are finite and agreed upon by stakeholders. The Appendices lists the KPIs and year-on-year targets by Strategic objective and Programmes.

**9.5 Develop the Communications Plan**

There is a need for a communications plan to inform all stakeholders of key information of the National ICT Master Plan i.e. the rationale, benefits, impact, approach, timeline, and assistance plans. Communications is required at different levels. This shall be coupled with adequate awareness building and publicity defined with the objective to inform the public, build consensus and mobilize support to the ICT development agenda.

The progress of the communication plan should be tabled at the National ICT Steering Committee by the National ICT Board of Trustees.

## **10. CONCLUSIONS**

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This 2014 - 2031 National ICT Master Plan is the first novel effort by government to consolidate national efforts of both public and private sector to contribute to national socio-economic growth through leadership efforts in creating knowledge based economy by 2031. The plan incorporates both remedial and proactive interventions to create opportunities for Malawian citizens in order to create wealth and enhance people's quality of lives. The recommendations centre on the need to transform our society on the aforementioned four dimensions with ICT: capacity and knowledge community, businesses, infrastructure and the Government.

The plan is built upon four key Pillars: Innovation and human capital development; ICT sector development and e-business; Infrastructure development and e-Government. Each of these Pillars is linked to a Strategic Objective which consists of a set of Key Initiative. Each Key Initiative consists of programmes for implementation.

This document provides a coherent framework for the identification and channeling of financial and human resources in line with the country's stated development agenda in the MGDS II. The return on the country's technology investment, in economic and social terms, will be tracked and reported using the M&E Plan. The plan has also documented and included existing programmes ensuring continuity and progression of ongoing work.

The Master Plan implementation success to meet the strategic objectives, outcomes and the National ICT vision, hinges on the recommended governance structures and processes being in place by start of the year 2014. Strong governance ensures timely mitigation to manage changing priorities and needs of the country.

More importantly, there is a need for a continued political will coupled with mindset change to transition to a new knowledge-based economy. The people, businesses and the Government of Malawi must be prepared to do things differently and adapt to new ways of learning, living, doing business, getting online and seriously taking the obligation to deliver public services online. Together each one doing their part we shall realise the knowledge based economy well before 2031.



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**APPENDIX A: LIST OF INSTITUTIONS AND INDIVIDUALS CONSULTED**

**E- GOVERNMENT WORKSHOP ON NATIONAL ICT MASTER PLAN DEVELOPMENT**

**LIST OF PARTICIPANTS ATTENDED**

<b>NAME</b>	<b>ORGANISATION</b>
John Kapito	Executive Director, CAMA, Box 5992, Limbe
Emily Khamula Lungu	MACRA, P/Bag 261 Blantyre
Anthony Muyepa	ICT Director, University of Malawi, P.Bag 303, Blantyre 3
Harry Gombachika	University of Malawi, The polytechnic, P/Bag 303,Chichiri
Derek Lakudzala	Bumas International, P.O.Box 51379, Limbe
Chimwenwe David Matemba	Public Private Partnership Commission, P.O. Box 937, Blantyre
Allan Nila Chongwe	University of Malawi, Chancellow College, P.O.Box 280, Zomba
Seyani Frank Nayeja	Mzuzu University, P/Bag 201, Mzuzu
Pemberton Peter Chinthalo	Malawi Government (MoEST),P/Bag 328, Lilongwe 3
Sarah Tsokalida	UNDP Mw, P.O.Box 30135, Lilongwe
Emmanuel Kamanga	Malawi Government, Box 30140, Lilongwe 3
Anthony Tadala Singano	Bunda College, Box 219, Lilongwe
Brian Fudzulani	Skyband Corporations Ltd, P.O.Box 1147, Lilongwe
Titus William Chalusu	Department of E-Government, DISTMS, P/Bag 338, Lilongwe 3
Charles Josiah Muname	Department of E-Government P/Bag 338 Lilongwe 3
John Mataya	Box 30950, Lilongwe 3
Marian Mtingwi	E-Government, P/Bag 301, Lilongwe
Kayunga Munyemembe	E- Government P/Bag 338, Lilongwe
Patrick Machika	E- Government, P/Bag 338 Lilongwe 3
Maganiza Chipula	E-Government, P/Bag 338, Lilongwe

**DRAFT MASTER PLAN****Individual and Institutional Consultations**

<b>Institute</b>	<b>Individuals</b>
Department of E-Government	PS Mrs. O. Chikankheni Mr Patrick Machika Mr Kamanga
Road Traffic Directorate	Mr Sache Miteche
Ministry of Transport and Public Works	Mr. F.G. Vitsitsi
Ministry of Information	Acting PS Grey Mang'anda, DS Directors : Denis Chirwa – Digital Migration
Ministry of Justice	
Ministry of Health	PS Dr. Charles Mwansambo Director Mr Chris Moyo
Ministry of Finance	
Ministry of Agriculture	Deputy Director (IT) Mr. Biggi Sajiwa
Rumphi District Commissioner	MIS Officer - Francis Puleni
Mzuzu City Council	MIS Officer – Stanley C. Chibambo
Kasungu District Council	MIS Officer – Wellington Mmora
Dowa District Council	Ass. HRM Officer
Karonga District Council	DC – E. Bambe DHO – Alick Chirombo, (HMIS) A.M. Kamanga DADO – Lonely Shaba
Dedza District Council	MIS Officer – Gloria Mwale
National Commission for Science and Technology (NCST)	Mr Anthony Muyepa
Business Computer Services, Blantyre	Mr. James Chimwaza
UbuntuNet Alliance for Research and Education Networking	Tiwonge Msulira Banda

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Regional Communications Initiative project Malawi (RCIPMW)	Mr. Matemba
The World Bank	Doyle Roy Gallegos, ICT Regional Coordinator, Latin America & Caribbean Region.
Department of Human Resource Management and Development	Deputy Director – Mrs E.A. Chirwa
Business and internet Cafes in Dedza, Dowa, Mzuzu	Business Owners

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NATIONAL ICT MASTER PLAN

PART 2

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**DRAFT MASTER PLAN**

**PLAN 1 -2014-2016 NATIONAL ICT MASTER PLAN**

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**NATIONAL ICT MASTER PLAN 1**

**STRATEGIC PILLAR 1: ICT INFRASTRUCTURE AND DEVELOPMENT**

**STRATEGIC OBJECTIVE: 1.1:** *Enhancing Internet Governance, Accessibility and Usage*

**DRAFT MASTER PLAN**

STRATEGIC	OUTCOME		Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
OBJECTIVE		<b>Modern Competitive Economy : Produce a chain reaction that leads to socio-economic growth and diversification of ICT sector in local content creation by public, private sector and individuals</b>					
	1.1.1	Financing Mechanism for infrastructure Development	Multi-Sectoral	12	E-Gov	E-Gov	Financing Mechanism Developed and enforced
	1.1.2	Creating enablers for Cross Utility Sector Collaboration <sup>1</sup>	Multi-sectoral	25	E-Gov	E-Gov	Enabling Environment defined & Communicated
	1.1.3	National Infrastructure Taskforce	Multi-Sectoral	30	E-Gov	E-Gov	Taskforce set up

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<sup>1</sup> New collaborations are emerging that that are unlocking synergies and creating fresh opportunities nurtured by mobility, payment systems, open information, energy management and infrastructure development.



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<b>STRATEGIC OUTCOME</b>	<b>Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context</b>		<b>Target</b>	<b>Cost (MK million)</b>	<b>Programme Owner</b>	<b>Implemented By:</b>	<b>KPI: Indicator</b>
<b>OBJECTIVE</b>							
<i>Building Information Society Governance and Capacity to ensure the availability of Internet resources and viability of the internet economy</i>	1.1.4	Participate and Represent country in Global Internet Connectivity Forums	Country	12	E-Gov	E-Gov	Yearly
	1.1.5	Country Migration from IPV4 to IPV6	All connected computers (networks)	12	E-Gov	E-Gov	By 2015

**STRATEGIC PILLAR 1: ICT INFRASTRUCTURE AND DEVELOPMENT**

**STRATEGIC OBJECTIVE: 1.1:** *Enhancing Internet Governance, Accessibility and Usage*

**DRAFT MASTER PLAN**

STRATEGIC	OUTCOME	People Centered Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
Building Government Infrastructure to Develop and Support A Vibrant E-Government Ecosystem	4.1.1	Planning for Government wide Shared Storage and shared infrastructure	Government offices	250	E-Gov	E-Gov	Shared storage and infrastructure plan in place and implemented by 2016
	4.1.2	Re-architecture of GWAN into a modularized Enterprise Network	Infrastructure Plan	10	E-Gov	E-Gov	Re-architecture of GWAN finalised by 2014
	4.1.3	Frameworks for efficient operation, governance and standardization of the infrastructure	Government framework	14	E-Gov	E-Gov	Frameworks developed by 2015
	4.1.4	National identity smart card solution and Management system	National identity card	260	OPC	E-Gov	By 2016
	4.1.5	Outsourcing Scheme for Management and operations of GWAN Service centres	GWAN Management	120	E-Gov	E-Gov	By 2015
	4.1.6	Software Network Management	GWAN	10	E-Gov	MITA	By 2015
	4.1.1	Shared Storage and shared infrastructure	All Ministries	30	E-Gov	MITA	By 2016
	4.1.7	Develop the National Communications Network Master Plan	All communications	20	E-Gov	MITA	By 2015

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STRATEGIC	OUTCOME	People Centered Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.1.8	Develop National Backbone	National	2135	E-Gov	MITA	By 2016
	4.1.9	Build in a robust automatic Power backup generator system with battery pack backup	Government	25	E-Gov	MITA	By 2015
	4.1.11	Implement a network management software system to monitor and control bandwidth usage and traffic and take proactive measures to counter system failure or urgently fix failure points	GWAN	245	E-Gov	MITA	By 2015
	4.1.12	Implement an online user support system on government systems - helpdesk	GWAN	56	E-Gov	MITA	By 2015
	4.1.14	Use Media to Promote ICT	Public		E-Gov	Media Houses and print media	2014-2016
	4.1.15	Launch Project for the On-going Collection and Publishing of ICT Data	ICT sector	2935	E-Gov	E-Gov & NSO	Yearly 2014 -2016
	4.1.16	Develop Public Sector Data Dictionary and Data Exchange	Public Sector Systems	100	E-Gov	MITA	By 2016
	4.1.18	Implement ICT Standards and Guidelines	ICT sector	12	E-Gov	MITA	By 2016
	4.1.20	Initiatives to Facilitate the Necessary Regulatory Enabling Environment for the Promotion and Development of the Information and Knowledge Economy	Public	35	E-Gov	MITA	By 2016

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STRATEGIC	OUTCOME	People Centered Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.1.22	Initiatives to Facilitate an Enabling Legal and Legislative Environment for the Development and Exploitation of ICTs – finalise consultations on E-legislation bill and obtain cabinet approval	Public	8	E-Gov	E-Gov	By 2014
	4.1.23	Rural Mobile Network Accessibility and is affordability regulatory framework	Rural communities		MACRA	MACRA	By 2016
	4.1.25	The National Multipurpose Community TeleCenter (MCT) Project	Rural Communities		Information Ministry	MACRA	By 2015
	4.1.26	Increase International Bandwidth from 10MBsp to 620 MB	Government	56	E-Gov	E-Gov	By 2015
	4.1.27	Defining and managing the Top Level Domain governance	public		E-Gov	E-Gov	By 2015

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**STRATEGIC PILLAR 2: INNOVATION AND HUMAN CAPITAL DEVELOPMENT**

**STRATEGIC OBJECTIVE: 2.1: *Fostering a Creative e-Ready Generation***

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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
<i>Building a Knowledge Society through ICT enriched learning</i>	2.1.1	Initiative to Promote Home Ownership of Computers	20,000	4,200	E-Gov& MACRA	E-Gov	By 2016, household with PCs increased by 50%
	2.1.2	Program to Promote the Acquisition of Computer Equipment by Civil and Public Service Organisations	10,000	2,100	E-Gov & MACRA	E-Gov	By 2016 households with PCs increase by 50%
	2.1.3	Promote ICT Capacity-Building in the Public and Private Sector	6,000	300	Tertiary Education Institutions, NACIT/TEVE TA/Private Sector	All Training Institutions	knowledge workers increase by 50%
	2.1.4	Enhance Human Resources Management/Planning Information System for Government and for specific sectors such as the Health Sector. Integrate sector data and create interfaces.	1	10	HRD	HRD	Web based HR Planning and Development tool for all Government
	2.1.5	Encourage ICT Certification Programs in both open source and proprietary platform through Government recognition for promotion and engagement / placements.	500 per year	840	E-Gov	MITA	50% of ICT Professionals certified
	2.1.6	Create and ICT Skills Reference Portal and career	1	2	E-Gov	E-Gov	Skills Reference

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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
		progression grid					on Portal by last quarters of 2014
	2.1.7	Program to Facilitate the Private Sector to Invest in ICT Human Capital Development	5	15	E-Gov/ TEVETA/ MACRA	E-Gov and Private Sector	5 Institutes set up offering International certification in ICT courses by 2016
	2.1.8	Framework for ICT Skills Development and Upgrading in the Civil and Public Service	1	-	E-Gov	E-Gov	By Second Quarter of 2014
	2.2.1	Program to Promote the Acquisition of Computer Equipment by Educational Institutions	Teacher Training Colleges	25	MoEST	MoEST and Partners	100% by 2016
	2.2.2	Computers in Schools Program	Primary and Secondary Schools	120	MoEST	MoEST and Partner Organisations	50% by 2016
	2.2.3	Train Primary and Secondary School Teachers on ICTs in Education: Create a critical mass of ICT literate Teachers	All existing Primary and Secondary School Teachers	220	MoEST	MoEST / MITA	100% by 2016
	2.2.4	A Laptop for every primary student Project	Pilot to	12	MoEST	MoEST Partner	By 2016, 720

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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
			standard 7-8 in 1 school per region			Support	primary students learned using laptop. Lessons learned to feed in subsequent programmes.
<i>Building a Knowledge Society through ICT enriched learning</i>	2.2.5	School Library Network Resource	Secondary School / Teacher Training Colleges	35	MoEST	MoEST and School Libraries	1 connected school library system by 2016
	2.2.6.1	Develop New e-Learning/m-learning Content	Secondary Schools	20	MoEST	MoEST and MITA	By Year 2016
	2.2.7	Improved Educational Management Information Systems (EMIS) and District (EMIS)	Schools, Districts, Zones, Headquarters	44	MoEST	MoEST and MITA	By Year 2016
	2.2.10	National Online Distance Education and Training Program	Online Distance Learners	56	MoEST	MoEST	Online ODL established by Year 2016

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STRATEGIC OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	2.2.11	Special Needs ICT in Education Programs and Initiatives	Learners with Special needs	25	MoEST	Partners & MITA & Disability Department	A Session per Year
	2.2.21	National Program to Speed Up the Deployment, Exploitation and Development of ICTs in Higher Education Institutions (HESP) AfDB programme	Tertiary Education Institutions	352	MoEST	MoEST & Partners - AfDB	Modern Computer Labs with modern equipment and fully licensed software by 2016
	2.2.22	Enhancing the National Computer Curriculum for Secondary Schools	Secondary School ICT Program	5	MoEST	MIE	Yearly curriculum reviews resulting in Enhanced ICT curriculum by 2016
<i>Building a Knowledge Society through ICT enriched learning</i>	HEALTH SUBPLAN						
	2.3.1	Integrated online DHIS2 and Health Information Management System (HMIS)	Health Facilities, DHO, HQ	40	MoH	MoH	Web based online integrated HMIS/DHIS by 2016
	2.3.2	E-procurement system for Drug Procurement and Tracking System	Central Medical	35	MoH	MoH	By 2015



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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
			Stores				
	2.3.5	Establish connectivity of Ministry with Hospital level links to Clinics and Facilities	Hospitals clinics and facilities	33	MoH	MoH	By 2016
	2.3.6	Automate hospital level systems to interface with HMIS so data is input at source of origin	Health workers and Public	25	MoH	MoH	By 2016
	2.3.7	Develop a Health portal for Citizen's Guide to Health Information and Services and for Major Diseases Information Dissemination and Management reporting	Public		MoH	MoH	By 2015
	2.3.10	Labour - National Employment Processing and the Job Opportunities Portal	Unemployed Citizens	6	MoLVT	MoLVT	By 2015
	2.3.11	The Youth and ICTs – A Connected Youth Network	Youth	12	MoEST – Youth Dept.	MoY	By 2015
	2.3.12	Development of Legal Framework for ICT access for special needs	People with Special needs	20	OPC Disability	OPC – Disability and MITA	By 2015
	2.3.15	Produce a website for Enrolment into Volunteering Services and Charities Network	Unemployed youth /graduates	1	MoLVT	MITA	By 2016

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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	2.3.16	The Citizen's Guide to Malawi Skilled and Craft Services on the Web	Skilled and Craft Professionals	1	MoLVT	MITA	By 2015
	2.3.17	<i>Program to Define Standards for the Certification of ICT Professional Skills and to Promote Professional Standards in the ICT Profession</i>	Private /Public Sector Training	4	OPC – E-Gov	MITA	By 2015
	2.3.18	<i>An Initiative to Include ICT training in TEVETA Training Programs</i>	TEVETA	1	MoEST	MoLVT & MITA	By 2015
	2.3.19	Initiative to Formulate Guidelines and Standards for the Provision of ICT education	Education and Training institutions	6	MoEST	MoEST	By 2015

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STRATEGIC OUTCOME	Modern Competitive Economy : Produce a chain reaction that leads to socio-economic growth and diversification of ICT sector in local content creation by public, private sector and individuals		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
OBJECTIVE							
<i>Creating and Promoting Local Digital Content</i>	2.2.30	Digitise Educational Curriculum, Materials and Text Books	50%	40	MoEST	MoEST	By 2016, 50% of School local content digitized
	2.2.31	Institute Computer-Based Training and e-Learning/m-learning Content	Secondary and Tertiary school level	55	MoEST	MoEST	By 2016 e-learning site created

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**STRATEGIC PILLAR 2: INNOVATION AND HUMAN CAPITAL DEVELOPMENT**

**STRATEGIC OBJECTIVE: 2.1: *Fostering a Creative e-Ready Generation***

STRATEGIC OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
<i>Develop a culture of Research and Development</i>	2.4.1	Create a department of Research and Development in ICT within MITA	1	30	E-Gov	MITA	By first quarter of 2015
	2.4.2	Enhance Existing ICT Research and Technology Centers	Institutes	60	NCST	NCST	By 2016
	2.4.3	Offer Research scholarships in identified ICT specific areas.	5 per year	48	E-Gov	DHRM	By 2016 at least 15 research awards made
	2.4.4	Promote R&D, and public sector innovation	public	300	E-Gov and Private Sector	Public Service	Yearly Awareness building workshops and awards
	2.4.5	Promote Intellectual Property (IP) awareness and enforcement	Public	10	E-Gov	IP agency	Yearly Awareness building workshops

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STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
							/publicity through media/website

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**STRATEGIC PILLAR 4: E-GOVERNMENT**

**STRATEGIC OBJECTIVE: 4.1:** *Working as an integrated e-government*

STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.1.1	Establish Malawi Information Technology Agency (MITA)	Agency	30	E-Gov	E-Gov	By 2014

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STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.1.2	Implement a government Enterprise Resource Planning (ERP) Software	Government wide	50	E-Gov	MITA	By 2015
	4.1.3	Establish a Management Information System in MITA	Agency	20	E-Gov	MITA	By 2015
	4.1.4	Develop a Document Tracking and Workflow Management		15	E-Gov	MITA	By 2015
	4.1.5	The Citizen's Guide to Governmental Processes	Country	5	E-Gov	MITA	By 2016
	4.1.7	Continuous Computer Audits and Upgrade to improve on controls for IFMIS	System level	232	Auditor General	NAO	Yearly 2014-2016
	4.1.8	Tax Revenue Management and public reporting System	system	13	E-Gov	MRA	By 2014
	4.1.9	External Finance Inflow Management and reporting System	System	22	E-Gov	MoF	By 2014
	4.1.10	National ICT Policy and Master Plan Reviews	Planning	34	E-Gov	Minister Responsible for ICT	Yearly 2014 -2016
	4.1.11	Enhance automated Border Control and Online Passport Issuing System	System Level		Immigration Department	MITA	By 2015
	4.1.12	Accelerate the Implementation of a National Identification System	Public	230	OPC	NRB and MITA	By 2014

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STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.1.13	Innovate Postal Services using ICTs	Postal Services	11	Postal Service	Minister Responsible for ICT and the Postal Corporation	By 2016
	4.1.14	Develop and achieve a coherence in Strategic Plans and ICT use policy for Each Ministry and Agency	Ministries	14	E-Gov	Ministries	By 2015
	4.1.15	Establish a Donor Coordination Network For support to ICT	Cooperating Partners	5	E-Gov	E-Gov	By 2014
	4.1.16	Computerised M&E Systems in all Ministries integration to MASEDA/NSO	Local Government	34	Economic Planning & Development	EPD and NSO	By 2016
	4.1.17	Improving Parliament Management Automation	Parliament Administration	24	Parliament	Parliament	By 2016
	4.1.18	Upgrade to Transport Management Information System (MaTIS)	Transport System	100	Road Traffic	Road Traffic	By 2016
	4.1.20	Establish the National Information Center (NIC) coordinate with Public Relation Officers in all Ministries	Government Ministry	25	Information Ministry	Ministry of Information	By 2015
	4.1.21	Set Up Coordination Structures within Government Ministries, Public Service Organizations and Other	Government	12	E-Gov	E-Gov	By 2014

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<b>STRATEGIC</b>	<b>OUTCOME</b>	<b>Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context</b>	<b>Target</b>	<b>Cost (MK million)</b>	<b>Programme Owner</b>	<b>Implemented By:</b>	<b>KPI: Indicator</b>
<b>OBJECTIVE</b>							
		Organizations and Establishments Involved in the Implementation of the National ICT Master Plan					
	4.1.22	Program to enhance district administration with connected web based District Database systems	Districts	55	Local Government	Local Government & MITA	By 2016
	4.1.23	ICT Awareness and publicity programmes	Country	25	E-Gov	Media houses and print media	Yearly
	4.1.25	Develop a Government Intranet Project	Government	1	E-Gov	MITA	By 2016
	4.1.26	The Government Extranet Development Project	Government	1	E-Gov	MITA	By 2016
	4.1.28	Monitor and manage Special Government ICT Initiatives financed by donor communities to be consistent with Master Plan and to integrate with existing government systems and provide for their sustainability	Government Ministries	2	E-Gov	MITA	Yearly
	4.1.29	Initiatives to Facilitate Standards, Best Practices and Guidelines for ICT Deployment and Exploitation in the Society and Economy		21	E-Gov	MITA	By 2015
	4.1.30	National Program to Speed Up the Deployment, Exploitation and Development of ICTs in Higher Education Institutions (HESP) AfDB programme	Tertiary Education	234	MoEST	MoEST and Partners	By 2016



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STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.1.36	Development of disaster Recovery Plan Systems	Disaster prone Areas	20	OPC Disaster	MITA	By 2015
	4.1.38	Finalise the Automation of Case Management Information System	Legal	85	Justice	Justice Ministry and MITA	By 2016
		THE SUB-PLAN FOR ECONOMIC GROWTH SECTORS					
	4.2.7	Enhanced Tourism Interactive Portal	Tourists	25	Tourism	Tourism Ministry and MITA	By 2015
	4.2.8	Enhanced Water Management System	Water Sector	20	Water Ministry	Ministry of Water and MITA	By 2016

STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.2.1	Government –to-Citizen e-service Delivery	Online services	200	E-Gov	MITA	One product per year 2014-2016

**DRAFT MASTER PLAN**

<b>STRATEGIC</b>	<b>OUTCOME</b>	<b>Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context</b>	<b>Target</b>	<b>Cost (MK million)</b>	<b>Programme Owner</b>	<b>Implemented By:</b>	<b>KPI: Indicator</b>
<b>OBJECTIVE</b>							
	4.2.2	Government-to-Businesses e-service Delivery	Online services	580	E-Gov	MITA	2014-2016
	4.2.3	Multi-Channel Access	Portal / online	20	E-Gov	MITA	2014-2016

**PLAN 2 -2017-2021 NATIONAL ICT MASTER PLAN**

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**NATIONAL ICT MASTER PLAN 2**

**STRATEGIC PILLAR 2: INNOVATION AND HUMAN CAPITAL DEVELOPMENT**

**STRATEGIC OBJECTIVE: 2.1:** *Fostering a Creative e-Ready Generation*

**DRAFT MASTER PLAN**

STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
<i>Building a Knowledge Society through ICT enriched learning</i>	2.1.1	Initiative to Promote Home Ownership of Computers	20,000	4,200	MITA	E-Gov	By 2018, household with PCs increased by 50%
	2.1.2	Program to Promote the Acquisition of Computer Equipment by Civil and Public Service Organisations	10,000	2,100	MITA & MACRA	E-Gov	By 2018 households with PCs increase by 50%
	2.1.3	Promote ICT Capacity-Building in the Public and Private Sector	6,000	300	NACIT/TEVE TA/Private Sector	All Training Institutions	knowledge workers increase by 50%
	2.1.4	Enhance Human Resources Management/Planning Information System for Government and for specific sectors such as the Health Sector. Integrate sector data and create interfaces.	1	10	HRD -	HRD/ MITA	Web based HR Planning and Development tool for all Government
	2.1.5	Encourage ICT Certification Programs in both open source and proprietary platform through Government recognition for promotion and engagement / placements.	500 per year	840	E-Gov	MITA	50% of ICT Professionals certified
<i>Building a Knowledge Society</i>	2.1.6	Create and ICT Skills Reference Portal and career progression grid	1	2	E-Gov	MITA	Skills Reference on Portal by last quarters of 2017

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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	2.1.7	Program to Facilitate the Private Sector to Invest in ICT Human Capital Development	5	15	E-Gov/ TEVETA/ MACRA	Private Sector	5 Institutes set up offering International certification in ICT courses by 2018
	2.1.8	Framework for ICT Skills Development and Upgrading in the Civil and Public Service	1	-	E-Gov	MITA	By Second Quarter of 2017
	2.2.1	Program to Promote the Acquisition of Computer Equipment by Educational Institutions	Teacher Training Colleges	25	MoEST	MoEST and Partners	100% by 2017
	2.2.2	Computers in Schools Program	Primary and Secondary Schools	120	MoEST	MoEST and Partner Organisations	50% by 2019
	2.2.3	Train Primary and Secondary School Teachers on ICTs in Education: Create a critical mass of ICT literate Teachers	All existing Primary and Secondary School Teachers	220	MoEST	MoEST	100% by 2020
	2.2.4	A Laptop for every primary student Project	Pilot to standard 7-8 in 1 school	12	MoEST	Partner Support	By 2020, 720 primary students learned using laptop. Lessons

**DRAFT MASTER PLAN**

STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
			per region				learned to feed in subsequent programmes.
<i>Building a Knowledge Society through ICT enriched learning</i>	2.2.5	School Library Network Resource	Secondary School / Teacher Training Colleges	35	MoEST	MoEST and School Libraries	1 connected school library system by 2021
	2.2.6.1	Develop New e-Learning/m-learning Content	Secondary Schools	20	MoEST	MoEST	By Year 2021
	2.2.6.2	Building e-learning /m-learning awareness messages through the Development of Content Material for Media Broadcast	Secondary Schools learners	14	MoEST	MITA and Media practitioners	By Year 2021
	2.2.7	Improved Educational Management Information Systems (EMIS) and District (EMIS)	Schools, Districts, Zones, Headquarters	44	MoEST	MoEST	By Year 2017
	2.2.10	National Online Distance Education and Training Program	Online Distance Learners	56	MoEST	MoEST	Online ODL established by Year 2018

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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	2.2.11	Special Needs ICT in Education Programs and Initiatives	Learners with Special needs	25	MoEST	Disability Department and MITA	A Session per Year
	2.2.21	National Program to Speed Up the Deployment, Exploitation and Development of ICTs in Higher Education Institutions (HESP) AfDB programme	Tertiary Education Institutions	352	MoEST	MoEST	Modern Computer Labs with modern equipment and fully licensed software by 2017
	2.2.22	Enhancing the National Computer Curriculum for Secondary Schools	Secondary School ICT Program	5	MoEST	MIE	Yearly curriculum reviews resulting in Enhanced ICT curriculum by 2017
<i>Building a Knowledge Society through ICT enriched learning</i>	<b>HEALTH SUBPLAN</b>						
	2.3.1	Integrated online DHIS2 and Health Information Management System (HMIS)	Health Facilities, DHO, HQ	40	MoH	MoH	Web based online integrated HMIS/DHIS by 2017
	2.3.2	E-procurement system for Drug Procurement and Tracking System	Central Medical Stores	35	MoH	MoH	By 2017

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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	2.3.3	Patient Records Management System (EMR) Software completion and deployment.	Hospitals	52	MoH	MoH	By 2018
	2.3.4	Hospital Management Support System to track issuing of drugs collect and transmit to Hospital wards laboratory results	Hospitals	65	MoH	MoH	By 2022
	2.3.5	Establish connectivity of Ministry with Hospital level links to Clinics and Facilities	Hospitals clinics and facilities	33	MoH	MoH	By 2018
	2.3.6	Automate hospital level systems to interface with HMIS so data is input at source of origin	Health workers and Public	25	MoH	MoH	By 2018
	2.3.7	Develop a Health portal for Citizen's Guide to Health Information and Services and for Major Diseases Information Dissemination and Management reporting	Public		MoH	MoH	By 2017
	2.3.8	The National Telemedicine initiative	Health workers		MoH	MoH	By 2022
	2.3.9	Building awareness messages through the Development of Content Material for Media Broadcast	Public	1	MoH	MoH	By 2017
	2.3.10	Labour - National Employment Processing and the Job Opportunities Portal	Unemployed Citizens	6	MoLVT	MoLVT	By 2017

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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	2.3.11	The Youth and ICTs – A Connected Youth Network	Youth	12	MoEST – Youth Dept.	MoEST	By 2017
	2.3.12	Development of Legal Framework for ICT access for special needs	People with Special needs	20	OPC Disability	MITA	By 2018
	2.3.13	Establish Disability Training, Counseling and Technology Center	People with disabilities	250	OPC Disability	Disability Department	By 2019
	2.3.14	Establish Vaccine Notification System Web based information	Citizens	1	MoH	MoH	By 2019
	2.3.15	Produce a website for Enrolment into Volunteering Services and Charities Network	Unemployed youth /graduates	1	MoLVT	MoLVT	By 2017
	2.3.16	The Citizen's Guide to Malawi Skilled and Craft Services on the Web	Skilled and Craft Professionals	1	MoLVT	MoLVT	By 2017
	2.1.14	Program to Support Professional Level Skills Development in Targeted Lead Sectors of the Economy, the Service Sector and the ICT Industry	Growth Sector Ministries, Service and ICT industries	37	OPC	MITA	By 2017
	2.1.15	Program to Improve the ICT Human Resource Development Capacity of the University of Malawi,	Tertiary Education	45	MoEST	MoEST / MITA	By 2018



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STRATEGIC	OUTCOME	People Centred Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
		Livingstonia, Mzuzu University, the National Institute of (NACIT), Other Institutions of Higher Learning	Institutions				
	2.1.16	Program to Set Up a National HRD Fund to Provide Grants to Selected Public and Private Sector Organizations, Academic Institutions and Businesses to Participate in National HRD Programs	Public/private sector Training institutions	27	OPC, E-Gov	OPC – E-Gov	By 2019
	2.1.17	<i>Program to Define Standards for the Certification of ICT Professional Skills and to Promote Professional Standards in the ICT Profession</i>	Private /Public Sector Training	4	OPC – E-Gov	MITA	By 2017
	2.1.18	<i>An Initiative to Include ICT training in TEVETA Training Programs</i>	TEVETA	1	MoEST	MoLVT	By 2011
	2.1.19	Initiative to Formulate Guidelines and Standards for the Provision of ICT education	Education and Training institutions	6	MoEST	MoEST	By 2018

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STRATEGIC OUTCOME	Modern Competitive Economy : Produce a chain reaction that leads to socio-economic growth and diversification of ICT sector in local content creation by public, private sector and individuals		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
OBJECTIVE							
<i>Creating and Promoting Local Digital Content</i>	2.2.30	Digitise Educational Curriculum, Materials and Text Books	50%	40	MoEST	MoEST	By 2017, 50% of School local content digitized
	2.2.31	Institute Computer-Based Training and e-Learning/m-learning Content	Secondary and Tertiary school level	55	MoEST	MoEST	By 2017 e-learning site created

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**NATIONAL ICT MASTER PLAN**

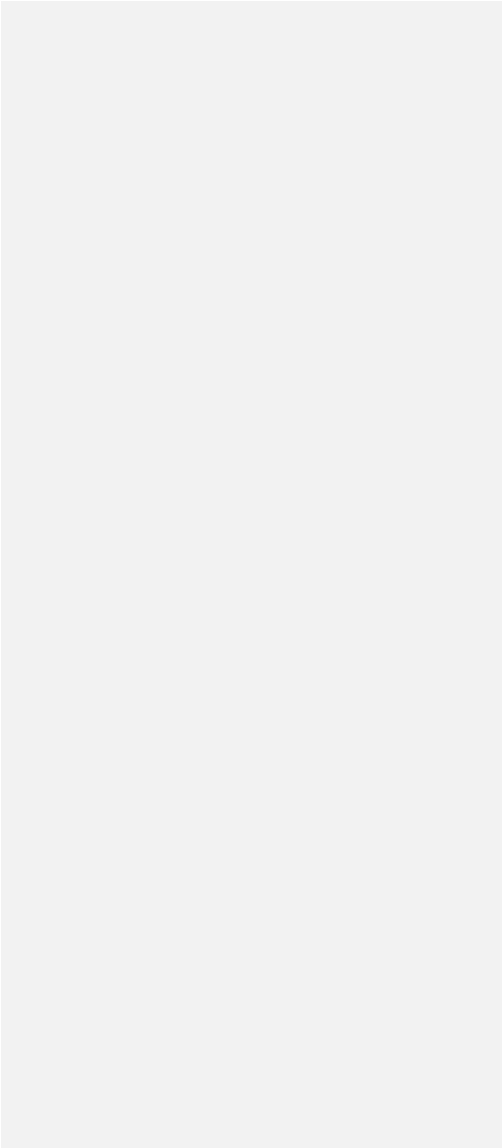
**STRATEGIC PILLAR 2: INNOVATION AND HUMAN CAPITAL DEVELOPMENT**

**STRATEGIC OBJECTIVE: 2.1: *Fostering a Creative e-Ready Generation***

STRATEGIC OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
<i>Develop a culture of Research and Development</i>	2.4.1	Create a department of Research and Development in ICT within MITA	1	30	E-Gov	E-Gov	By first quarter of 2017
	2.4.2	Enhance Existing ICT Research and Technology Centers					
	2.4.3	Offer Research scholarships in identified ICT specific areas.	5 per year	48	E-Gov	DHRM	By 2017 at least 15 research awards made
	2.4.4	Promote R&D, and public sector innovation	public	300	E-Gov and Private Sector	Public Servants and Private Sector	Yearly Awareness building workshops and awards
	2.4.5	Promote Intellectual Property (IP) awareness and enforcement	Public	10	E-Gov	IP agency	Yearly Awareness building workshops

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STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
							/publicity through media/website



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**STRATEGIC PILLAR 3: ICT Industry Development and e-business**

**STRATEGIC OBJECTIVE: 3.1: *Building a Pro-Enterprise Environment***

STRATEGIC	OUTCOME	People Centered Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
<i>Stimulating ICT Demand and Encourage e-Commerce Adoption</i>	3.1.1	Develop a framework for Moving Government business online e.g. – Passport Application interface; _ MalTIS drivers licence Application interface	Enhance existing systems with citizen web interface	50	E-Gov	MITA	G2B Framework developed .Online application and feedback for passport and drivers licences.
	3.1.2	Develop and strengthen online Business to Business (B2B) and Business to Consumers (B2C) marketplaces	Businesses Support	12	E-Gov and Trade & Industry	MITA	B2B and B2C marketplaces by 2017
	3.1.3	Implement and Strengthen Services framework and Legislative Framework	ICT Legislation	22	E-Gov	MITA	Services framework Legislation implemented

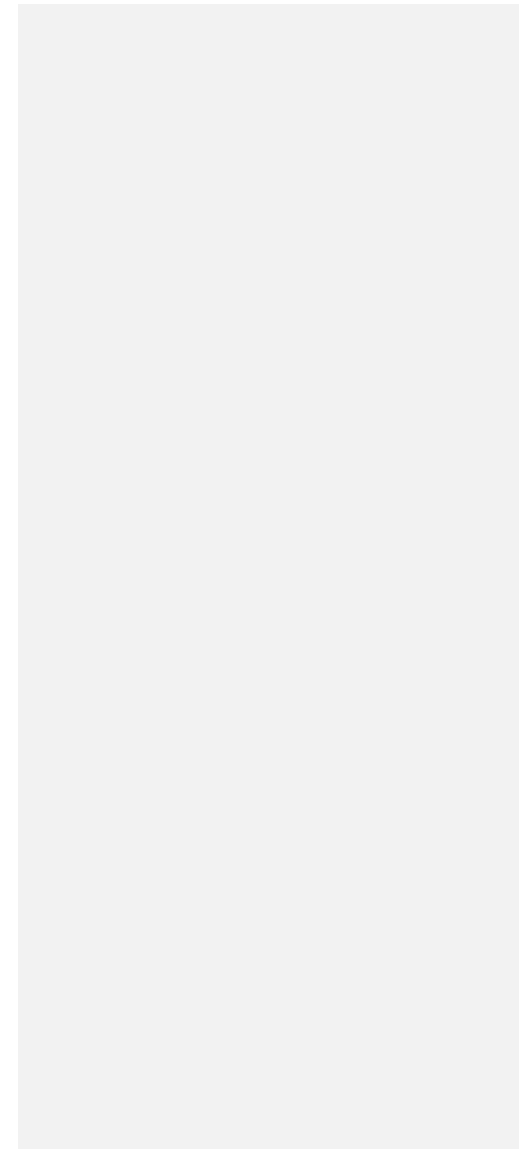
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STRATEGIC	OUTCOME		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
		<b>People Centered Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.</b>					
<b>OBJECTIVE</b>							
	3.1.4	Develop and Implement the National Integrated Business Incubator System	SME, unemployed talented	69	E-Gov, Trade	Business promoting agencies	1 Incubator implemented by 2017
	3.1.5	Move Government business online	Registered Business providers to Government	15	ODPP	ODPP	Online e-procurement
	3.1.6	Facilitate bank issuing Credit/debit Card Payment system	Businesses/ individuals	10	Reserve Bank	Commercial Banks	Credit card used in e-commerce

STRATEGIC	OUTCOME		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
		<b>Modern Competitive Economy : Produce a chain reaction that leads to socio-economic growth and diversification of ICT sector in local content creation by public, private sector and individuals</b>					
<b>OBJECTIVE</b>							
<i>Developing e-Business Capacity</i>	3.1.7	Facilitate SME e-Commerce Awareness, Education and Training Programmes	Businesses / individuals	2	Trade and Industry	MITA	Rise in E-commerce to 10% by 2017
	3.1.8	Develop and Attract ICT Talent and innovation in e-commerce	Individuals	5	Trade and	NCST	5 Awards on

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STRATEGIC	OUTCOME	Modern Competitive Economy : Produce a chain reaction that leads to socio-economic growth and diversification of ICT sector in local content creation by public, private sector and individuals	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
					Industry		innovation in e-commerce by 2018



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**STRATEGIC PILLAR 3: ICT Industry Development and e-business**

**STRATEGIC OBJECTIVE: 3.1: *Building a Pro-Enterprise Environment***

STRATEGIC OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
<i>Enabling the Production, Distribution and Promotion of Local ICT products and services</i>	3.1.10	Facilitate a Pro-Business Environment for ICT	Local industry, SMEs	15	Trade and Industry	MITA	Increase in Business in ICT by 50% by 2017
	3.1.11	Promote ICT Park Establishment and Development	Individuals	55	E-Gov	MITA	1 ICT Park established
	3.1.12	Develop a localized Search Engine for Marketing Businesses Online	Business and Individuals	2	E-Gov	MITA	By 2017
	3.1.13	Through Chamber of Commerce expand the capacity to implement E-Business Roundtable;	Businesses	4	Trade and Industry	Chamber of Commerce	By 2018
	3.1.14	Develop and implement an ecommerce Strategy for the Agriculture Sector as a model for other key Sectors	Agriculture Business - Farmers	10	E-Gov	Agriculture/ MITA	By 2019



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**STRATEGIC PILLAR 1: ICT INFRASTRUCTURE AND DEVELOPMENT**

**STRATEGIC OBJECTIVE: 1.1:** *Enhancing Internet Governance, Accessibility and Usage*

STRATEGIC OUTCOME	People Centered Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
<i>Enhancing Infrastructure Access, ICT Policies and Regulatory Oversight to Facilitate Sustainability</i>	1.1.1	Universal Communications Service <sup>1</sup>	Rural & Urban areas	85	Information Ministry	MACRA	Mobile penetration 100%. Internet Connectivity 60% by 2018
	1.1.2	Broadband Last mile connectivity	Rural and Urban	400	E-Gov	MITA	Internet Connectivity 60% by 2020
	1.1.3	Broadband Wireless Access	Rural and City	500	E-Gov	MITA	Internet Connectivity 60% by 2020

<sup>1</sup> An Economic, legal and business term used to increase availability and access of advanced quality communications services throughout the country at just, reasonable and affordable rates. It also ensures availability of such services to all consumers including the rural at rates that are reasonable.

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**STRATEGIC PILLAR 4: E-GOVERNMENT**

**STRATEGIC OBJECTIVE: 4.1: *Working as an integrated e-government***

STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	1.1.1	Technology trending - Review and Enhance developed Government System	Government	200	E-Gov	MITA	By 2031
	1.1.7	Continuous Computer Audits and Upgrade to improve on controls for IFMIS	System level	232	Auditor General	MITA	Yearly 2027-2031
	1.1.31	Strengthen ICT Competence in the National Security Specialized Units – Police and Army and Intelligence Unit.	Army / Police /SI	28	Home Affairs /Defence	MITA	Yearly 2027-2031
	1.1.32	Develop ICT Training Labs for Security Services	Army / Police /SI	65	Home Affairs /Defence	MITA	By 2018
	1.1.33	Integrated Automation of all Ministries administration systems at the Capital Hill	Government Ministries	128	E-Gov/ Ministries	MITA	By 2020
	1.1.34	Advanced secure Professional Mobile Radio for the Security Forces Communications	Army / Police /SI	85	Home Affairs /Defence	MITA	By 2018
	1.1.35	Strengthen ICT Competence in the National Security Specialized Units	Army / Police /SI	20	Home Affairs /Defence	MITA	By 2030

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STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
		THE SUB-PLAN FOR ECONOMIC GROWTH SECTORS					
	4.2.1	Enhanced Natural Resources Management Systems Development Programs	Natural Resources	65	Natural Resources Ministry	Natural Resources Ministry	By 2028
	4.2.2	Enhanced Integrated National Energy and alternative Energy systems portal	Energy Sector	65	Energy	Ministry of Energy	By 2030
	4.2.3	Enhanced online Integrated Agricultural Market Information System	Agribusiness	12	Agriculture	Agriculture	By 2031
	4.2.4	Enhanced National online Biodiversity Information Exchange Platform	Climate Change	10	Environment and Climate Change	Climate Change Ministry	By 2027
	4.2.5	Enhanced Land Management and Information System	Public	15	Lands	Lands	By 2030
	4.2.6	Enhanced Mineral Resources Management System	Mining Sector	30	Mining Ministry	Mines Ministry	By 2031
	4.2.7	Enhanced Tourism Interactive Portal	Tourists	25	Tourism	Tourism Ministry	By 2031
	4.2.8	Enhanced Water Management System	Water Sector	20	Water Ministry	Water Management Ministry	By 2031

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STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.3.1	Government –to-Citizen e-service Delivery	Online services	200	E-Gov	MITA	Yearly 2027-2031
	4.3.2	Government-to-Businesses e-service Delivery	Online services	580	E-Gov	MITA	Yearly 2027-2031
	4.3.3	Multi-Channel Access	Portal / online	20	E-Gov	MITA	Yearly 2027-2031

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## NATIONAL ICT MASTER PLAN 3

## STRATEGIC PILLAR 3: ICT Industry Development and e-business

STRATEGIC OBJECTIVE: 3.1: *Building a Pro-Enterprise Environment*

STRATEGIC OUTCOME	People Centered Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.		Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
<i>Stimulating ICT Demand and Encourage e-Commerce Adoption</i>	3.1.1	Develop a framework for Moving Government business online e.g. – Passport Application interface; _ MaTIS drivers licence Application interface	Enhance existing systems with citizen web interface	50	E-Gov	MITA	G2B Framework developed .Online application and feedback for passport and drivers licences.
	3.1.2	Develop and strengthen online Business to Business (B2B) and Business to Consumers (B2C) marketplaces	Businesses Support	12	E-Gov and Trade & Industry	MITA	B2B and B2C marketplaces by 2022
	3.1.3	Implement and Strengthen Services framework and Legislative Framework	ICT Legislation	22	E-Gov	MITA	Services framework Legislation

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STRATEGIC	OUTCOME		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
		<b>People Centered Development, poverty reduction and social justice through strong focus on introducing changes to traditional ways of learning. An All inclusive training and skills building programmes.</b>					
<b>OBJECTIVE</b>							
							implemented
	3.1.4	Develop and Implement the National Integrated Business Incubator System	SME, unemployed talented	69	E-Gov, Trade	Business promoting agencies	1 Incubator implemented by 2022
	3.1.5	Move Government business online	Registered Business providers to Government	15	ODPP	ODPP	Online e-procurement
	3.1.6	Facilitate bank issuing Credit/debit Card Payment system	Businesses/ individuals	10	Reserve Bank	Commercial Banks	Credit card used in e-commerce

STRATEGIC	OUTCOME		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
		<b>Modern Competitive Economy : Produce a chain reaction that leads to socio-economic growth and diversification of ICT sector in local content creation by public, private sector and individuals</b>					
<b>OBJECTIVE</b>							
<i>Developing e-Business Capacities</i>	3.1.7	Facilitate SME e-Commerce Awareness, Education and Training Programmes	Businesses / individuals	2	Trade and Industry	MITA	Rise in E-commerce to 10% by 2023

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STRATEGIC	OUTCOME	Modern Competitive Economy : Produce a chain reaction that leads to socio-economic growth and diversification of ICT sector in local content creation by public, private sector and individuals		Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
OBJECTIVE								
	3.1.8	Develop and Attract ICT Talent and innovation in e-commerce	Individuals	5	Trade and Industry	NCST	5 Awards on innovation in e-commerce by 2022	

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**STRATEGIC PILLAR 3: ICT Industry Development and e-business**

**STRATEGIC OBJECTIVE: 3.1: *Building a Pro-Enterprise Environment***

STRATEGIC OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context		Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
<i>Enabling the Production, Distribution and Promotion of Local ICT products and services</i>	3.1.10	Facilitate a Pro-Business Environment for ICT	Local industry, SMEs	15	Trade and Industry	MITA	Increase in Business in ICT by 50% by 2022
	3.1.11	Promote ICT Park Establishment and Development	Individuals	55	E-Gov	MITA	1 ICT Park established
	3.1.12	Develop a localized Search Engine for Marketing Businesses Online	Business and Individuals	2	E-Gov	MITA	By 2023
	3.1.13	Through Chamber of Commerce expand the capacity to implement E-Business Roundtable;	Businesses	4	Trade and Industry	Chamber of Commerce	By 2024
	3.1.14	Develop and implement an ecommerce Strategy for the Agriculture Sector as a model for other key Sectors	Agriculture Business - Farmers	10	E-Gov	Agriculture/ MITA	By 2024



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**STRATEGIC PILLAR 4: E-GOVERNMENT**

**STRATEGIC OBJECTIVE: 4.1: *Working as an Integrated E-Government***

STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	1.1.1	Technology trending - Review and Enhance developed Government System	Government	200	E-Gov	MITA	By 2024
	1.1.7	Continuous Computer Audits and Upgrade to improve on controls for IFMIS	System level	232	Auditor General	MITA	Yearly 2027-2026
	1.1.31	Strengthen ICT Competence in the National Security Specialized Units – Police and Army and Intelligence Unit.	Army / Police /SI	28	Home Affairs /Defence	MITA	Yearly 2022-2026
	1.1.32	Enhance the facilities in the Developed ICT Training Labs for Security Services	Army / Police /SI	65	Home Affairs /Defence	MITA	By 2024
	1.1.33	Integrated Automation of all Ministries administration systems at the Capital Hill	Government Ministries	128	E-Gov/ Ministries	MITA	By 2026
	1.1.34	Advanced secure Professional Mobile Radio for the Security Forces Communications	Army / Police /SI	85	Home Affairs /Defence	MITA	By 2026
	1.1.35	Continue to Strengthen ICT Competence in the National Security Specialized Units	Army / Police /SI	20	Home Affairs /Defence	MITA	By 2026

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STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
		THE SUB-PLAN FOR ECONOMIC GROWTH SECTORS					
	4.2.1	Enhanced Natural Resources Management Systems Development Programs	Natural Resources	65	Natural Resources Ministry	MITA	By 2025
	4.2.2	Enhanced Integrated National Energy and alternative Energy systems portal	Energy Sector	65	Energy	MITA	By 2026
	4.2.3	Enhanced online Integrated Agricultural Market Information System	Agribusiness	12	Agriculture	MITA	By 2024
	4.2.4	Enhanced National online Biodiversity Information Exchange Platform	Climate Change	10	Environment and Climate Change	MITA	By 2023
	4.2.5	Enhanced Land Management and Information System	Public	15	Lands	MITA	By 2023
	4.2.6	Enhanced Mineral Resources Management System	Mining Sector	30	Mining Ministry	MITA	By 2024
	4.2.7	Enhanced Tourism Interactive Portal	Tourists	25	Tourism	MITA	By 2024
	4.2.8	Enhanced Water Management System	Water Sector	20	Water Ministry	MITA	By 2025

**DRAFT MASTER PLAN**

STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.3.1	Government –to-Citizen e-service Delivery	Online services	200	E-Gov	E-Gov	Yearly 2022-2026
	4.3.2	Government-to-Businesses e-service Delivery	Online services	580	E-Gov	E-Gov	Yearly 2022-2026
	4.3.3	Multi-Channel Access	Portal / online	20	E-Gov	E-Gov	Yearly 2022-2026

PLAN 4 -2027-2031 NATIONAL ICT MASTER PLAN

NATIONAL ICT MASTER PLAN 4

STRATEGIC PILLAR 4: E-GOVERNMENT

STRATEGIC OBJECTIVE: 4.1: *Working as an Integrated E-Government*

STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	1.1.1	Technology trending - Review and Enhance developed Government System	Government	200	E-Gov	MITA	By 2031
	1.1.7	Continuous Computer Audits and Upgrade to improve on controls for IFMIS	System level	232	Auditor General	MITA	Yearly 2027-2031
	1.1.31	Strengthen ICT Competence in the National Security Specialized Units – Police and Army and Intelligence Unit.	Army / Police /SI	28	Home Affairs /Defence	MITA	Yearly 2027-2031
	1.1.33	Enhance the Integrated Automation of all Ministries administration systems at the Capital Hill with modern technology	Government Ministries	128	E-Gov/ Ministries	MITA	By 2031
	1.1.35	Strengthen ICT Competence in the National Security Specialized Units	Army / Police /SI	20	Home Affairs /Defence	MITA	By 2030

**DRAFT MASTER PLAN**

STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK million)	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
		THE SUB-PLAN FOR ECONOMIC GROWTH SECTORS					
	4.2.1	Enhanced Natural Resources Management Systems Development Programs	Natural Resources	65	Natural Resources Ministry	MITA	By 2028
	4.2.2	Enhanced Integrated National Energy and alternative Energy systems portal	Energy Sector	65	Energy	MITA	By 2030
	4.2.3	Enhanced online Integrated Agricultural Market Information System	Agribusiness	12	Agriculture	MITA	By 2031
	4.2.4	Enhanced National online Biodiversity Information Exchange Platform	Climate Change	10	Environment and Climate Change	MITA	By 2027
	4.2.5	Enhanced Land Management and Information System	Public	15	Lands	MITA	By 2030
	4.2.6	Enhanced Mineral Resources Management System	Mining Sector	30	Mining Ministry	MITA	By 2031
	4.2.7	Enhanced Tourism Interactive Portal	Tourists	25	Tourism	MITA	By 2031
	4.2.8	Enhanced Water Management System	Water Sector	20	Water Ministry	MITA	By 2031

**DRAFT MASTER PLAN**

STRATEGIC	OUTCOME	Modern effective Government : Innovative and better solutions for the public sector specifically developed for the local context	Target	Cost (MK) million	Programme Owner	Implemented By:	KPI: Indicator
<b>OBJECTIVE</b>							
	4.3.1	Government –to-Citizen e-service Delivery	Online services	200	E-Gov	E-Gov	Yearly 2027-2031
	4.3.2	Government-to-Businesses e-service Delivery	Online services	580	E-Gov	E-Gov	Yearly 2027-2031
	4.3.3	Multi-Channel Access	Portal / online	20	E-Gov	E-Gov	Yearly 2027-2031

