

Ministry of Information and Communications



NATIONAL ICT POLICY OF SIERRA LEONE

(Approved by Government on 28 October 2009)



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CCSHRA	ISOC.SL
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Culture radio	Ministry of Energy and Water Resources
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Dhawa Tech Group	Ministry of Fisheries & Mineral Resources
Diaspora Affairs	Ministry of Health and Sanitation
Eagle FM Africa 91.3	Ministry of Information and Communications
ECOWAS	Ministry of Trade and Industry
Exclusive Press	Ministry of Transport and Aviation
FAWE	Ministry of Tourism and Culture
First International Bank	MMCET
For di people Newspaper	MRU/AFJ

Freetown City Council	NaCSA
NASSIT	Sierra Leone State Lottery
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National Electoral Commission	Sierratel
National Insurance Co.	Sky Radio
National Revenue Authority	Skye Bank
National Tourist Board	SLAITS
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SDI-SL	WIMSAL
Sierra Leone Association of Journalists	Women's Forum SL
Sierra Leone Library Board	YAPAD
Sierra Leone Police	Zain SL
Sierra Leone Ports Authority	Zenith Bank

Abbreviations

ADSL	Asymmetric Digital Subscriber Line
ASP	Application Service Provider
CDMA	Code Division Multiple Access
CII	Centre for ICT Intelligence
CPE	Customer Premise Equipment
CTO	Chief Technology Officer
CTO	Commonwealth Telecommunications Organisation
GIS	Geographical Information Systems
GPS	Global Positioning System
HRMO	Human Resource Management Office
ICDL	International Computer Driving Licence
ICE	Information Communication and Entertainment
ICT	Information and Communication Technology
IMC	Independent Media Commission
IP	Internet Protocol
ISP	Internet Service Provider
ITU	International Telecommunication Union
IXP	Internet Exchange Point
LAN	Local Area Network
MAFFS	Ministry of Agriculture, Forestry and Food Security
MDA	Ministries, Departments and Agencies
MDG	Millennium Development Goal
MEYS	Ministry of Education, Youth and Sport
MHS	Ministry of Health and Sanitation
MIALGRD	Ministry of Internal Affairs, Local Government and Rural Development
MIC	Ministry of Information and Communications
MLCPE	Ministry of Land, Country Planning and the Environment
MLESS	Ministry of Labour, Employment and Social Security
MoFED	Ministry of Finance and Economic Development
MSWGCA	Ministry of Social Welfare, Gender and Children Affairs

MTC	Ministry of Tourism and Culture
NATCOM	National Telecommunications Commission
NGO	Non-Governmental Organization
NTB	National Tourist Board
ONS	Office of National Security
PDA	Personal Digital Application
PET	Privacy Enhancing Technologies
PoP	Points of Presence
PRSP	Poverty Reduction Strategy Paper
PSTN	Public Switch Telephone Network
SL-PRSP	Sierra Leone Poverty Reduction Strategy Paper
SLIHS	Sierra Leone Integrated Household Survey
SLIS	Sierra Leone Information System
SSL	Statistics Sierra Leone
TEC	Tertiary Education Commission
UNDP	United Nations Development Program
UNESCO	United Nations Educational Scientific and Cultural Organisation
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network
VSAT	Very Small Aperture Terminal
WAN	Wide Area Network
WATRA	West Africa Telecommunications Regulators Authority
WSIS	World Summit on the Information Society

Glossary

Broadcasting – A term referring to the distribution of information using radio, television, the Internet, intranet, webcasting, etc.

Digital Divide – The technological gap between countries that have fully exploited ICT and those that have not. The digital divide is often associated with the resulting gap in terms of socio-economic development.

E-Commerce / Electronic Commerce/Electronic transactions – Business activities involving consumers, manufacturers, suppliers, service providers and intermediaries using electronic medium.

Information and Communication Technologies (ICTs) – Information and Communication Technologies (ICTs) is a concept related to the convergence of Information Technology, telecommunications, broadcasting and multimedia. ICT is an environment enabling the development of physical infrastructure, hardware equipment and software systems used for the processing, the storing and the transmission of information.

Information Society (IS) – A country or region where information technology has been fully exploited and is part of everyday life as an enabler of information sharing, communication and diffusion.

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

Internet Exchange Point (IXP) – It is a “peering point” for interconnecting ISPs and/or other IXPs for the purpose of localizing national traffic routing as opposed to using international routes to accomplish inter-ISP traffic flow.

Internet Service Provider (ISP) – Also known as Internet Access Providers, an ISP is a company that provides infrastructure for access to the Internet or for interconnecting other ISPs and content-based or application-based services on the Internet.

Knowledge Based Economy (KBE) – A country or region where ICT is extensively used to enhance knowledge so that higher human capital brings further improvement to the economy.

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

Teledensity - The number of telephones per 100 people in a region.

Voice over Internet Protocol (VoIP) – Also known as Voice over Internet, IP Telephony or Internet Telephony – refers to telephone services provided over the Internet as the transmission medium.

Wide Area Network (WAN) – A computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local area networks (LANs). Computers connected to a wide area network are often connected through public networks, such as the telephone system. They can also be connected through leased lines or satellites. The largest WAN in existence is the Internet.

NATIONAL ICT VISION

'To develop into a knowledge-based information society with a vibrant ICT sector as the engine of sustainable socio-economic development.'

1. INTRODUCTION

1-1 The ICT Policy of Sierra Leone

Information and Communication Technologies (ICTs) play a vital role today in facilitating the attainment of development goals of any nation. Over the last few years, many African countries have taken advantage of the opportunities provided by ICTs and have put in place ICT-enabled implementation plans to support their socio-economic development efforts. These country-successes have been made possible due to the combined efforts of all stakeholders and with support from regional and international organizations as well as bilateral partners and the private sector.

Regionally, the Economic Community of West African States (ECOWAS) developed a harmonised policy for ICT in the West African region. The 15-Member States of ECOWAS recognising the importance of formulating an ICT policy, adopted on 19 January 2007 in Ouagadougou, the Supplementary Act A/SA1/01/07 entitled the 'Harmonization of Policies and of the Regulatory Framework for Information and Communication Technologies (ICT)'. This Supplementary Act is a supplemental provision to the Revised ECOWAS Treaty of 1993 and provides guidance on the structure and contents of an ICT Policy for adoption by all Member States.

This policy document is therefore in line with the ECOWAS ICT policy as it attempts to map the ways in which ICTs can be used to achieve the basic development objectives of Sierra Leone. Using the Poverty Reduction Strategy Paper, Vision 2025, and the Millennium Development Goals as a baseline for analysis, the policy links the application of ICT to national development goals identified under specific areas or 'pillars' with a series of ICT-specific objectives and targets for measuring progress over a 5-year implementation timeline.

The development of this policy is the result of the consultative approach of the National ICT Task Force (NICTTF). Its policy work programme included:

- a 2009 e-readiness survey;
- industry consultations to obtain key issues, objectives, targets and challenges;
- review of the draft policy over a two-day national workshop of stakeholders; and
- a two-day stakeholders retreat to finalise the draft policy and incorporate the results from the national workshop.

1-2 General Purpose

The general purpose of this National ICT Policy is to provide best practice guidance in the creation of an enabling environment for ICT development by:

- Giving guidelines about the evolution of the legal framework to take into account the convergence of sectors and the convergence of technologies.
- Defining the role of the national institutions and industry stakeholders in the new environment: policy maker, regulator, National ICT Advisory Council, private sector, Diaspora.
- Stimulating a participative approach for the preparation and the implementation of the ICT Policy.
- Ensuring a common understanding about the role of each type of stakeholder and key issues raised in the ICT sector.
- Developing culturally specific contents and applications and to highlight the importance of local contents and local focus.
- Promoting universal access/service.

1-3 STRUCTURE OF THE POLICY

This Policy has been structured into three Sections as follows:

1. Section A -provides the objectives of the policy (2-1 to 2-3), background information (3-1 to 3-5) and the current status of the ICT sector in Sierra Leone (4-1 to 4-6);
2. Section B -summarises the key socio-economic issues identified by the Government and the preferred ICT solutions (see 5-1 to 5-11) as well as deadlines within which to address them (5-12). It also summarises plans for strengthening the key stakeholders tasked with oversight responsibility for the implementation of the policy (6-1 to 6-6) and the supporting legal and security framework required (7-1 to 7-3); and
3. Section C -details the ten implementation plans required for the carrying out of this policy (8-1 to 8-10) and the summary conclusion (9).

Additional annexes are provided for further detail and clarification (A, B, C).

SECTION A

2 OBJECTIVES IN DEVELOPING AN ICT POLICY

The following political, economic and social objectives have been identified as the key objectives of the Government of Sierra Leone in its formulation of this policy:

2-1 Political objectives of the ICT policy

- To enhance better transparency and facilitate communication with citizens through E-governance;
- To integrate Sierra Leone regionally and globally through the use of ICTs;
- To re-brand the image of Sierra Leone by providing information on progress and achievements in Sierra Leone and to promote the distribution of culturally sensitive materials through various ICT channels;
- To comply with the provisions of ECOWAS and the World Trade Organisation (WTO) General Agreement on Trade and Services.

2-2 Economic objectives of the ICT policy

- To improve efficiency in the public sector through effective use of ICT infrastructure, applications and services;
- To enhance competitiveness in the private sector;
- To enable global economic integration;
- To create new opportunities for Sierra Leoneans to become ICT citizens equipped to take advantage of a knowledge-based economy;
- To encourage the transition of the informal market to the formal market through ICT tools;
- To promote and support indigenous and foreign entrepreneurship in Sierra Leone;
- To enable growth in key areas such as Agriculture, Tourism, Mineral Resources, and Infrastructure development.

2-3 Social objectives of the ICT policy

- To improve the basic living standard of Sierra Leoneans;
- To facilitate and support the universal freedom of affordable access to information;
- To identify and implement all relevant procedures related to cyber security, electronic security and data protection to protect ICT users;

- To improve the education system through e-learning;
- To provide better assistance in the health sector through e-medicine;
- To promote and sustain the national culture and tradition through e-learning and local content application/software development;
- To reduce poverty by improving free flow of business opportunity based information to underprivileged areas and facilitating the growth of small businesses through innovative solutions;
- To engage the Diaspora in the development of Sierra Leone through e-interaction;
- To use ICT tools to bridge the illiteracy divide;
- To subsidize access for high-speed Internet subscribers in schools and national education institutions.

3 BACKGROUND INFORMATION

3-1 General Summary

According to the 2003 World Telecommunication Development Report, almost half of the workforce in developed countries will be employed by industries that are either producers or intensive users of ICT products and services. In the case of sub-Saharan Africa, the average teledensity is two lines per 100 inhabitants and only 0.6 percent of Internet users worldwide are on the African continent. Despite the growth of mobile telephones, Sierra Leone is ranked as one of the least connected countries (170th out of 178 economies) on the Digital Access Index (DAI) (with an index of 0.10), which measures the overall ability of citizens to access and use ICTs.

3-2 Post-conflict context

Since the formal conclusion of the war in 2002, Sierra Leone has re-established security and the country's economic growth rate has jumped to a healthy 7.4 percent. This growth, while positive, is more reflective of the fact that economic activity was halted during the war and current economic activity has been heavily reliant on donor contributions.

Notably, a consequence of the war resulted in the missed opportunity of Sierra Leone obtaining fibre optic landing from the main SAT 3 connection along the coast of West Africa. This missed opportunity has meant that Sierra Leone relies on satellites as its primary access medium for wireless technology, resulting in high costs and insufficient access and distribution.

On a positive note, the need to communicate, bolstered initially by very low licensing fees and the lack of a central regulator has resulted in the significant growth of mobile telephone operators in the market. Nonetheless, despite such growth, penetration levels remain low, with much market opportunity remaining, especially in the area of rural telephony.

As evidenced by the e-readiness survey results, access to the Internet, remains particularly low. Outside of the capital city, there are few access points and even in academia, students rarely have access to computers.

In respect of re-branding the national image of Sierra Leone, the lack of positive content and culturally sensitive information have permitted negative foreign connotations on the national image, many of which are related to the concluded war such as seen in the film Blood Diamonds.

3-3 Key Strategic Issues from the Vision 2025

The Vision 2025 for Sierra Leone embodies the aspirations of Sierra Leoneans for the year 2025. This shared national vision is expressed as follows: “UNITED PEOPLE, PROGRESSIVE NATION, ATTRACTIVE COUNTRY”. It also identifies six strategic issues that must be confronted to attain the national vision by 2025.

Table 3: Key Strategic Issues for Attainment of National Vision
1. How to attain a competitive private sector-led economy with effective indigenous participation;
2. How to create a high quality of life for all Sierra Leoneans;
3. How to build a well educated and enlightened society;
4. How to create a tolerant, stable, secure and well managed society based on democratic values;
5. How to ensure sustainable exploitation and effective utilization of our natural resources, while maintaining a healthy environment;
6. How to become a science and technology driven nation.

Section six of the Vision 2025 Plan references technology with the following specific objectives:

- Encourage and improve the teaching of science and technology at all levels of education;
- Improve science and technology to increase productivity in all sectors of the economy, including the informal sector; and
- Improve the use of science and technology to facilitate decision-making at all levels of society.

3-4 The SL-PRSP II (Poverty Reduction Strategy Paper)

The Government of Sierra Leone in its second Poverty Reduction Strategy Paper has identified four strategic priorities for national development:

- reliable power supply;
- a pro-poor growth perspective in agriculture and fisheries;
- a national transportation network to enable the movement of goods and people and thereby facilitate increased investment and economic activity;
- sustainable human development through the provision of improved social services.

3-5 The Millennium Development Goals

The table below details the strategic role of ICT in the attainment of the PRSP Pillars and the Millennium Development Goals (MDG's):

SL-PRSP I & II Pillars	MDGs	Contribution of ICTs
Pillar 1: Good governance, security and peace building	Goal 8: Develop a global partnership for development: Target 12: Develop an open, rule-based predictable, non-discriminatory trading and financial system (...).	<ul style="list-style-type: none"> · Enhance efficiency of markets and financial systems; · Link local markets and financial systems to global networks; · Promote the use of internationally accepted standards and practices.
<p>Pillar 2: Promoting pro-poor growth for Food Security and job creation.</p> <p>Promoting Food Security Agriculture and Fisheries, and rural infrastructure, etc).</p> <p>Human Development - Job Creation (Investment in Infrastructure - energy, roads, transport, communication, ICT, tertiary sector, Private Sector development and Mining.</p>	<p>Goal 1: Eradicate extreme poverty and hunger:</p> <p>Target 1: Halve, by 2015, the proportion of people whose income is less than one dollar a day;</p> <p>Target 2: Halve, by 2015, the proportion of people who suffer from hunger.</p> <p>Goal 8: Develop a global partnership for development:</p> <p>Target 16: In co-operation with developing countries, develop and implement strategies for decent and productive work for the youth.</p> <p>Target 18: In co-operation with the private sector, make available the benefits of new technologies, especially information and communications.</p>	<ul style="list-style-type: none"> · Provide e-information about opportunities for investment in productive sectors of the economy; · Enhance opportunities for e-learning and employment among youth; · ICTs for local and community development through establishment of ICT resource centres.
<p>Pillar 3: Promoting Human Development</p> <ul style="list-style-type: none"> · Education · Health and Nutrition · Housing · Water and Sanitation · Vulnerable · Youth Development · Cross-cutting Issues: <ul style="list-style-type: none"> – Child first 	<p>Goal 2: Achieve universal primary education:</p> <p>Target 3: Ensure that by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling;</p> <p>Goal 3: Promote gender equality and empower women:</p> <p>Target 4: Eliminate gender disparity in at all</p>	<ul style="list-style-type: none"> · Online access to primary education resources and learning opportunities; · Facilitate access to e-learning resources and opportunities; · Facilitate life long learning; · Provide e-learning opportunities for both sexes;

<ul style="list-style-type: none"> - HIV/AIDS - Gender Equality and Empowerment - Environment 	<p>levels of education no later than 2015;</p> <p>Goal 4: Reduce child mortality:</p> <p>Target 5: Reduce by two-thirds, by 2015, the under-five mortality rate;</p> <p>Goal 5: Improve maternal health:</p> <p>Target 6: Reduce by three-quarters, by 2015, the maternal mortality rate;</p> <p>Goal 6: Combat HIV/AIDS, malaria and other diseases:</p> <p>Goal 7: Ensure environmental sustainability:</p> <p>Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources;</p> <p>Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water;</p>	<ul style="list-style-type: none"> · Network all health centres, clinics, etc. to share information about public health, epidemics, treatments, best practices etc.; · ICTs for local and community development: multipurpose community resource centres · Using ICTs for environmental observation, management and promoting e-Environment
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4 CURRENT STATUS OF ICT IN SIERRA LEONE

4-1 Sector Overview

4-1-1 Sector capitalization and growth

Sierra Leone's ICT successes have been periodic and the benefits lopsided even with sustained interest from several quarters of the ICT sector. Seasonal capitalization has come largely as a result of donor-based initiatives and these have supported the growth of ICT firms. The recent explosion of new banks and the installations of the local and wide area networks are another case of the seasonal growth trend. The rapid growth seen in the mobile telecoms market has done much to connect the capital Freetown to the provincial towns. A number of ICT firms and individuals have also implemented modern ICT technologies to conduct their businesses.

A notable sector trend is the growth projection of the number of Internet users in Sierra Leone, which could reach a quarter of a million by 2010 and exceed one million by 2015. Further growth would depend on an improvement of the country's low literacy rate (currently circa 35%).

Another trend that contributes to the growth of Internet usage is the rising number of Internet cafés accounting for the majority of Internet users (up to 80%). Telecentres and Internet cafés provide Internet access for the general public as well as low cost international phone calls using VoIP.

The Government is keen to see the entry of new technologies in the ICT market. The example of WiMax technology will ultimately offer mobility, wireless broadband capability and lower base cost in urban areas.

The use of geo tools is also a priority, particularly for the collation of data necessary for the development of appropriate national policies. Annex C provides further information on the key application of geo-information in economic planning.

4-1-2 Sector Challenges

One of the biggest constraints to the expansion of the telecommunications infrastructure in Sierra Leone (outside of the capital and a few main cities), is the limited extent of the electricity grid, which has yet to reach many of the provincial areas. These areas typically lack electricity or fixed phone service and are completely unconnected with the rest of the country. Even in the main cities, the provision of Internet bandwidth is limited, expensive and largely unavailable. These are all significant constraints to investment promotion in the ICT sector.

In addition, the public telephone network is largely circuit-switched as opposed to packet-switched and relies heavily on copper wire rather than fibre optics. The limited infrastructure makes congestion management difficult since Internet traffic shares the same network as voice traffic.

Furthermore, most of the available ISP providers concentrate their wireless broadband services in the greater Freetown area and only expensive VSAT services are available in the other major cities (VSAT bandwidth fees can range from US\$500 to US\$15,000 per month).

4-1-3 ICT for Basic Infrastructure Management and Operations

Currently, basic infrastructure systems are poorly managed and maintained due in part to ineffective information communication systems. Basic infrastructure systems include water supply, electricity supply, sewage, solid waste collection, right-of-ways, communication networks and land use. Recent and projected investments in such infrastructure involve the introduction of prepaid services inclusive of monitoring and payment systems. These prepaid service operations rely on ICT devices at the client's premises and community distribution hubs that are connected offline and online to databases at the responsible agency.

Effective management of the basic infrastructure operations will depend on the collection, transmission and analysis of demand and supply information between client and responsible agency.

This policy therefore envisions the introduction and customization of reliable ICT devices that are appropriate for the delivery services mentioned above. Coordination in ICT infrastructure development is also considered paramount to achieving national backbone networks that can carry data, voice and video, as would be employed in effective management and operations of basic infrastructure.

4-2 The Current Institutional Structures

4-2-1 The Ministry of Information and Communications

The Ministry of Information and Communications is the primary stakeholder of ICT related policies and is tasked with overseeing the development, review and implementation of the Government's information and communication agenda. The Ministry has mandated the preparation of this ICT Policy document and will be responsible for its regular review and update.

4-2-2 The Regulatory Authority, NATCOM

The Telecommunications Act 2006 established the National Telecommunications Commission (NATCOM) to provide for the licensing and regulation of telecommunications operators and for the promotion of universal access to basic telecommunications services. It is also tasked with ensuring fair competition for the benefit of investors and users of telecommunications networks and services and to improve the national, regional and global integration of Sierra Leone in telecommunications.

4-2-3 The National ICT Task Force

The National ICT Task Force was established by the Government to provide strategic recommendations on the enabling policies for the ICT sector and the necessary institutional framework to result in a more effective, efficient and harmonized sector.

4.3 Current ICT Infrastructure and Network Operators

4-3-1 Introduction

The country's traditional telecommunications infrastructure suffered during the war but the mobile sector has experienced excellent growth with four GSM networks currently competing for customers. Wireless broadband service providers have been providing Internet access and VoIP Internet telephony. However, penetration rates in all market segments are still very low, leaving ample potential for future growth.

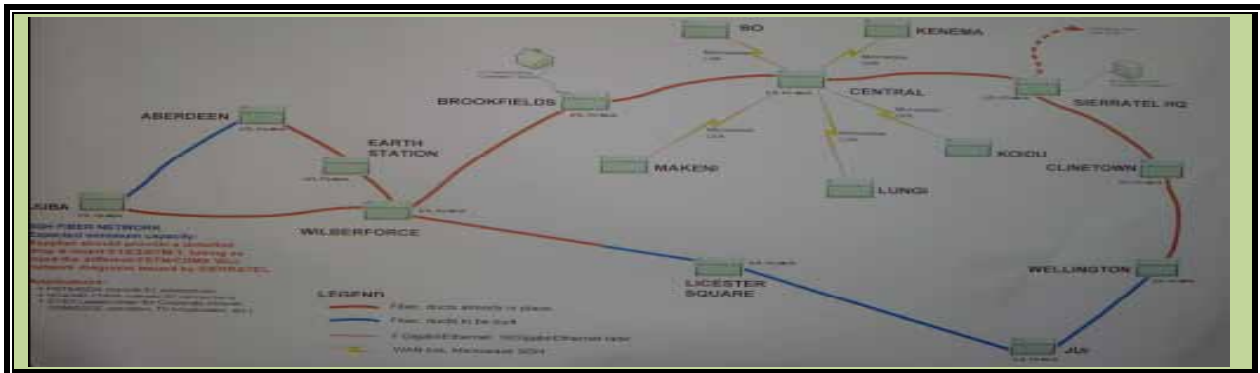
4-3-2 Incumbent Fixed Line Operator

SierraTel (Sierra Leone Telecommunications Company), is 100% Government owned. It provides fixed-line, international and Internet services.

The company lost its dominance with the arrival of the mobile network operators but has made significant effort to rehabilitate and reinstate the telecom network after the war and to modernise and expand its outdated equipment.

The installed capacity of the PSTN fixed line network is 250,000 (as at 2004) but with only 25,000 active fixed lines (as at end 2008). The fixed-line teledensity is currently 0.4%. Its copper lines are in a very poor condition and are consequently not eligible for ADSL. SierraTel has plans to rehabilitate, upgrade and expand its PSTN services. Recently it has complemented the PSTN services using the CDMA wireless technologies to deliver both voice and data (Internet services).

In the near future, SierraTel plans to provide fibre optic connectivity within the Freetown municipality junction network. The diagram below shows the network fibre ducts (in blue) required.



4-3-3 International Gateway

Sierra Leone is connected to the rest of the world via an Intelsat (Atlantic Ocean) satellite Earth station that is operated by SierraTel. SierraTel currently solely manages the international gateway according to a two years statutory right. This mandate expired in August 2008, and the national regulator (NATCOM) is set to review the exclusivity status. However, efforts are being made to facilitate submarine optical fibre landing and several applications have been received from prospective providers. The process of approving landing rights is currently underway.

It is believed that the cost of international communications will be drastically reduced if Sierra Leone acquires fibre landing in the nearest future.

4-3-4 GSM Mobiles Operators and Frequency Spectrum Usage

- They are four active mobile operators:

Mobile Network	Technology & Frequency
Africell / Lintel	GSM 900 & 1800
Zain (ex-Celtel)	GSM 900 & 1800
Comium	GSM 900 & 1800
Tigo / Millicom	GSM 900 & 1800

(SierraTel operates on a CDMA 850 frequency.)

The combined total Mobile Subscriber base is approximately:

- 1,200,000 (with 72% annual growth rate) in June 2007; and
- 1,545,000 (with 39% annual growth rate) in 4th quarter 2008.

The Mobile Penetration is 25% by June 2008; and the Average Revenue Per User (ARPU) is \$8.00.

- **IMT - 2000**

400 MHz band (FWA Broadband Internet).

- **Unlicensed Spectrum**

The unlicensed spectrum (2.4GHz/5.8GHz) is partly regulated by NATCOM the regulator and is subject to interference due to use by other wireless ISPs. This in some cases has resulted in the degradation of the quality of service provided.

4.4 Current ICT Services

4-4-1 Available Services

- Fixed and Wireless Telephony (post-paid and prepaid).
- Broadband Internet Services ranging from 64 kbps to 1Mbps are available for homes, small and medium sized enterprises, small office/home office and corporate entities; Audio/Video streaming (music download) and Virtual Private Networking (VPN) for Closed User Groups like Business Entities are also provided on the market.

4-4-2 Internet penetration

- Dial-up ISP (PSTN) with 150-200 subscribers;
- Internet Users (excluding mobile Internet users) 16,000; and
- Internet Penetration 0.27%

4-4-3 Broadband ISPs

- PCS Holdings (SL) Limited brand named IpTel
- Afcom (SL) Limited
- LimeLine (SL) Limited
- Fidelity Global FGC
- Multinet
- Zain
- Atlas Communications
- Ambitel
- Intergroup Telecommunications
- Rawabi Dubai Company
- Equatorial Communications
- Tigo
- icom.net (an ISP subsidiary of Comium)

Current total Investment in Broadband Internet Business is estimated to be \$7 Million.

4-4-4 Telecoms Market

In 2008, the total revenue generated by the voice telephony market in Sierra Leone was estimated to be \$176 million. Indeed, the demand in the voice market has been growing at a rate of 72% while that of the Internet lags behind at 15%.

The trend in the voice market in Sierra Leone is moving from the traditional voice telephony model to the rich voice (Interactive voice response, ring tone download and audio streaming) model. As for Internet services, there is an ever-growing demand for higher Internet bandwidth for data-intensive services. Many financial institutions are rolling out products requiring higher bandwidth for data services.

4-5 The Postal Sector

The Postal Sector has been beset by several problems in the past decade. The use of postal services has reduced drastically, due in part to the emergence of Internet and web technologies, and also due to general loss of confidence in the services. These problems have been exacerbated by poor infrastructure and inadequate finances to improve and expand the sector.

Nonetheless, the Government is committed to developing a vibrant and efficient postal sector to effectively meet present and future needs. In particular, the Government plans to liberalize the fast mail and courier service segment of the sector in which the private sector has continued to play an important role.

Additionally all post offices will be required to adhere to minimum service standards against which performance will be monitored. The Universal Service Provider will provide exclusive services such as delivery of printed materials and packages weighing up to 350 grams and the issuing of stamps. The non-exclusive market segments will consist of Courier and Parcel Services, Marketing Services, Postal Financial Services, and Agency services with other sectors.

The Government recognises the key role of the postal sector to the development of ICTs in Sierra Leone as the incumbent operator, SALPOST is equipped with infrastructure and premises spanning the entire country. The Government is also mindful of the need to converge regulation as technology converges across the postal, telecoms and media sectors.

An overview of the strategic considerations on the Postal Sector is located in Annexe B.

4.6 Broadcast Media and regulating converged technology

Broadcast media have emerged as one of the most powerful communication tools in the 21st century thus revolutionising the way in which individuals and societies interact. A series of reforms have been undertaken in the broadcasting sub-sector to ensure that it becomes competitive and serves the growing needs of the people. Consequently, over 40 radio and two TV stations are operational in Sierra Leone.

An aim of this policy is the provision of a rational and comprehensive framework to govern the establishment, ownership, control, management and delivery of information, entertainment and educational services to Sierra Leoneans. This can be achieved through the provision of an efficient and reliable broadcasting.

The case for reform is particularly strong in the music and film industry where rampant piracy has affected the growth and development of local music and film talent/work. It is certain that the development of Internet will result in further damage if an adequate legal framework is not established. Through the establishment of a supportive legal framework, this policy provides for the enactment of Intellectual Property and Copyright laws and for the development of music and film security/encryption tools by the Centre for ICT Intelligence (CII).

Digital technology has however brought about the convergence of computer (IT) and communications (together referred as ICT), and permeated into media (Print & Electronic Media - broadcast) and entertainment (Games and IPTV), which has evolved into yet another terminology, ICE (Information, Communication and Entertainment).

Additionally there has also been convergence of fixed and wireless communications with the arrival of wireless terminal devices that have multi purposes e.g. a single device functioning as a PDA, a cell phone, a TV receiver, providing wireless access to Internet etc.

In the area of regulation, there is currently a specific regulatory body for the media, the Independent Media Commission, IMC. The Government is however fully aware that technologies arriving in Sierra Leone will arrive in converged devices and that will cut across telecoms and media services and even postal services.

In this regard, it is envisaged that there will be a merger of NATCOM and the IMC to regulate the entire ICT sector. Moreover, this is a recognised principle of the ECOWAS recommendations on legal framework formulation for the sector.

SECTION B

5 LINKAGE BETWEEN SOCIAL-ECONOMIC GROWTH AND ICT DEVELOPMENT

In this policy, the following eleven pillars have been identified as key to the socio-economic development of Sierra Leone:

- Private Sector Business Activity
- Capacity Building and Human Resources in ICT
- Infrastructure
- Health
- Education
- Natural Resources and Environment
- Agriculture and Food Security
- Good Governance
- Gender, Youth and Social Services
- Media and Civil Society
- Tourism

These eleven pillars cover basic social, political and economic needs that have been identified by the Government as areas in which ICT development can play a key role, providing opportunities for further social growth and cohesion through ICT enabled solutions.

Annex A1 provides the Government's strategic policy considerations identified in relation to the eleven pillars, listing the challenges, objectives and targeted solution to the issues through the use of ICTs. From Annex A1 are culled the issues listed in the eleven tables below that are considered to be of first and utmost priority in the implementation of this policy. Also presented are the Government's preferred ICT solutions, the key stakeholder(s) tasked with oversight responsibility for implementation of the solutions and the PRSP (I&II) and MDG references. Following the tables is a Gantt timeline chart for the implementation of the priority ICT solutions over a period of 5 years (2010-2014).

The Government anticipates a concerted and timely effort at implementation by the MDA's most closely linked to the solutions, the private sector, the donor community and the full support of citizens both at home and in the Diaspora.

5-1 Private Sector and Business Activity

Issues affecting social economic development	ICT Solutions	Accountable Stakeholder(s)	PRSP	MDG
Lack of awareness on the value of ICTs by average Sierra Leoneans, indigenous business owners and employees.	To regularly hold an ICT Show (Trade Fair) with the first one to be held in Freetown 2009. To be replicated in provincial Headquarter towns. Create a National ICT week (that invites the sub-region).	MIC NATCOM	Growing The Private Sector- Promoting and Supporting Entrepreneurship	Eradicate Poverty Global Partnerships
High investment cost in ICT equipment and peripherals deters the deployment of ICT tools in business operations and even the growth of ICT industry itself in the country.	Create a tax regime that provides incentives. E.g. Tax Holidays. Reduction of taxes on personal use ICT equipment and accessories.	MIC	Growing The Private Sector	Eradicate Poverty
Tariffs for telecom services and reliability of these services where available.	Develop price regulation and quality of service monitoring of all network operators and service providers and require co-location.	NATCOM	Growing The Private Sector – Improving Legal and Regulatory Framework	Eradicate Poverty
Some imported terminals and CPE devices do not conform to engineering standards.	Reduce dumping of obsolete and inappropriate technologies without proper standardization. Develop type approval and assessment of installed equipments.	NATCOM Standards Bureau	Growing The Private Sector – Legal/Regulatory Framework	Eradicate Poverty

Building Codes do not take cognisance of engineering standards and supporting infrastructure for ICTs.	Develop training standards for engineers handling equipment installation. Create a standard for current service providers and maintain online public records of quality service providers.	NATCOM Universities Standards Bureau	+	Growing The Private Sector – Making Markets Work Better	-
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5-2 Capacity building and Human resources in ICT

Issues affecting social economic development	ICT Solutions	Accountable Stakeholder(s)	PRSP	MDG
Limited ICT human resources in the country to support ICT-based or ICT-led industrial and business activities.	To establish an academy into a national/regional English speaking institution of higher learning in ICT (in collaboration with ECOWAS/WATRA/CTO/ITU/ECA)	MIC, NATCOM and operators	Sustainable Human Development - Education	Universal Education
Low retention of trained ICT workforce.	Encourage a favourable labour policy for ICT workers. Establishment of a cadre for ICT professionals and departments with government MDA's and establishment of respective industry standard vendor certification, educational and experience requirements. Encourage the development of standards for ICT professionals in private businesses along with promotion paths. Development of a Ministry of Labour website, that	MIC NATCOM and operators MLESS	Growing the Private Sector - Making Markets Work Better	-

	provides information on employment regulation, employment surveys and opinions of the Industrial Court. Development of a government electronic human resource management solution.	MLESS, MIC MIC, HRMO		
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5-3 Infrastructure and Service Delivery

Issues affecting social economic development	ICT Solutions	Accountable Stakeholder(s)	PRSP	MDG
Inadequate International bandwidth.	Facilitate landing of fibre optic cabling by 2011 and emerging technologies.	MIC, NATCOM	Growing The Private Sector – Improving Physical Infrastructure	Global Partnerships
Unreliable power supply.	Encourage use of alternative energy sources.	NATCOM, operators and equipment resellers	Growing The Private Sector – Improving Physical Infrastructure	Global Partnerships
Legacy systems (including national backbone).	Encourage modernization of backbone technology.	MIC	Growing The Private Sector – Improving Physical Infrastructure	Global Partnerships
Structuring of the Internet Exchange Point.	Establish shared network for the internet exchange by 3rd quarter of 2009.	MIC NATCOM	Growing The Private Sector – Improving Physical Infrastructure	Global Partnerships

Lack of stakeholder participation in the management of .sl domain name.	Establish a participatory framework for the management of the top level country code .sl domain name by the end of 2009.	MIC NATCOM	Growing The Private Sector – Improving Physical Infrastructure	Global Partnerships
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5-4 Health

Issues affecting social economic development	ICT Solutions	Accountable Stakeholder(s)	PRSP	MDG
Lack of ICT tools for supporting health care delivery services.	Establish a National Health Management Information System by 2011.	MHS	Sustainable Human Development – Healthcare	Maternal Health, Child Health, HIV/Aids
Absence of a national disaster response centre.	Establishment of a national disaster response centre.	MHS, ONS	Sustainable Human Development – Healthcare	Environmental Sustainability
Limited use of ICT tools in medical emergencies/disaster management.	Use ICT tools for addressing medical emergencies/disaster management through electronic delivery platforms.	MHS	Sustainable Human Development – Healthcare	Maternal Health, Child Health, HIV/Aids
Limited availability of health research information.	The compulsory use of ICT in health research in urban and rural areas.	MIC MHS	Sustainable Human Development –	Maternal Health, Child Health, HIV

5-5 Education

Issues affecting social economic development	ICT Solutions	Accountable Stakeholder(s)	PRSP	MDG
Training of teachers in ICT and to motivate them to use ICT as a tool in education: teaching, planning and administration.	Include compulsory ICT (ICDL) courses in teacher training curriculum and teacher refresher programmes.	MIC MEYS & TEC	Sustainable Human Development - Education	Universal Education
Introduction of ICT literacy as a basic component of the formal education programmes in the country.	<p>Integration of ICT into the existing school curriculum at all levels, e.g. using UNESCO's ICT Competency Framework by September 2010.</p> <p>To provide free ICT distance learning opportunities in education at resource centres, cinemas and through the use of text messaging. To offer discount for Internet subscriptions to schools and public educational institutions.</p> <p>Establish educational server by 2010 and ICT module materials to be made available online and offline and to be accessible by all.</p>	NATCOM (Universal access) MEYS & TEC	Sustainable Human Development - Education	Universal Education
High national illiteracy.	Provide multi-purpose and adult literacy centres with audiovisual and touch-screen e-learning kiosks by 2010.	MIC NATCOM MEYS	Sustainable Human Development - Education	Universal Education

Limited availability of ICT tools in educational institutions.	Provision of ICT tools in educational institutions by the Ministry of Education.	MIC MoFED, MEYS	Sustainable Human Development - Education	Universal Education
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5-6 Natural Resources and Environment

Issues affecting social economic development	ICT Solutions	Accountable Stakeholder(s)	PRSP	MDG
Ineffective communication systems limit the effectiveness of responses by the government and other organizations for natural resources management.	To put in place an ICT-based early warning system on disasters and environmental degradation. To facilitate the use of low-cost terrestrial and satellite radio communication systems in emergency situations where there is no access to adequate telecommunications.	MLCPE MIC	Effective Management of Natural Resources	Environmental Sustainability
Smuggling and poaching of our natural resources.	Use of ICT/GIS tools to monitor affected areas.	MLCPE MIALGRD ONS	Effective Management of Natural Resources	Environmental Sustainability

5-7 Agriculture & Food Security

Issues affecting social economic development	ICT Solutions	Accountable Stakeholder(s)	PRSP	MDG
<p>Low productivity and marketing opportunities for farmers.</p>	<p>To use ICT for providing information and access to markets for locally produced goods. Exposure of products to larger international markets shall lead to improvements in the quality of agricultural products.</p> <p>Provide resource centres with free documentary, videos for free transmission across the country.</p> <p>Develop (free) local content documentaries for Internet and TV circulation.</p>	<p>MIC, NATCOM, MAFFS</p>	<p>Productivity in Agriculture</p>	<p>Environmental Sustainability</p>
<p>The functional literacy level of some farmers and the agriculture knowledge base of the general public and in particular the fourth estate is very low making it a barrier to the widespread adoption of ICT.</p>	<p>Utilise resource centres to train farmers on user-friendly ICT tools like touch screen kiosks in villages to enable them to market their products globally, and get online access to market-oriented information.</p> <p>Organize ICT training programmes for all stakeholders in agriculture.</p>	<p>MIC, NATCOM, MAFFS</p>	<p>Productivity in Agriculture</p>	<p>Environmental Sustainability</p>

5-8 Good governance

Issue affecting social economic development	ICT Solution	Accountable Stakeholder(s)	PRSP	MDG
Lack of appropriate ICT tools and capacity in enhancing good governance.	To develop and adopt e-government strategy by December 2009.	MIC, MoFED	Good Governance	Eradicating Poverty

5-9 Gender, youth and social services

Issues affecting social economic development	ICT Solutions	Accountable Stakeholder(s)	PRSP	MDG
Low level of literacy among women, and the girl child especially at grassroots level. Removal of gender imbalance in ICT education.	Ensure that priority is given to girl child/women, youth and physically challenged for ICT training by reducing or waiving tuition fees or awarding grants and providing scholarships.	MEYS, MSWGCA, NATCOM (Universal Access)	Sustainable Human Development - Gender	Universal Education Gender Equality
To build capacity and training of women,	To set up multimedia centres and Internet	NATCOM	Sustainable	Universal

youth and physically challenged in ICT.	<p>access points throughout the country especially targeting women, youth and physically challenged.</p> <p>Establishment of a Ministry of Gender and Social Welfare website that addresses developmental issues for women youth and physically challenged by 2010.</p>	(Universal Access) MEYS, MSWGCA	Human Development – Gender	<p>Education</p> <p>Gender Equality</p>
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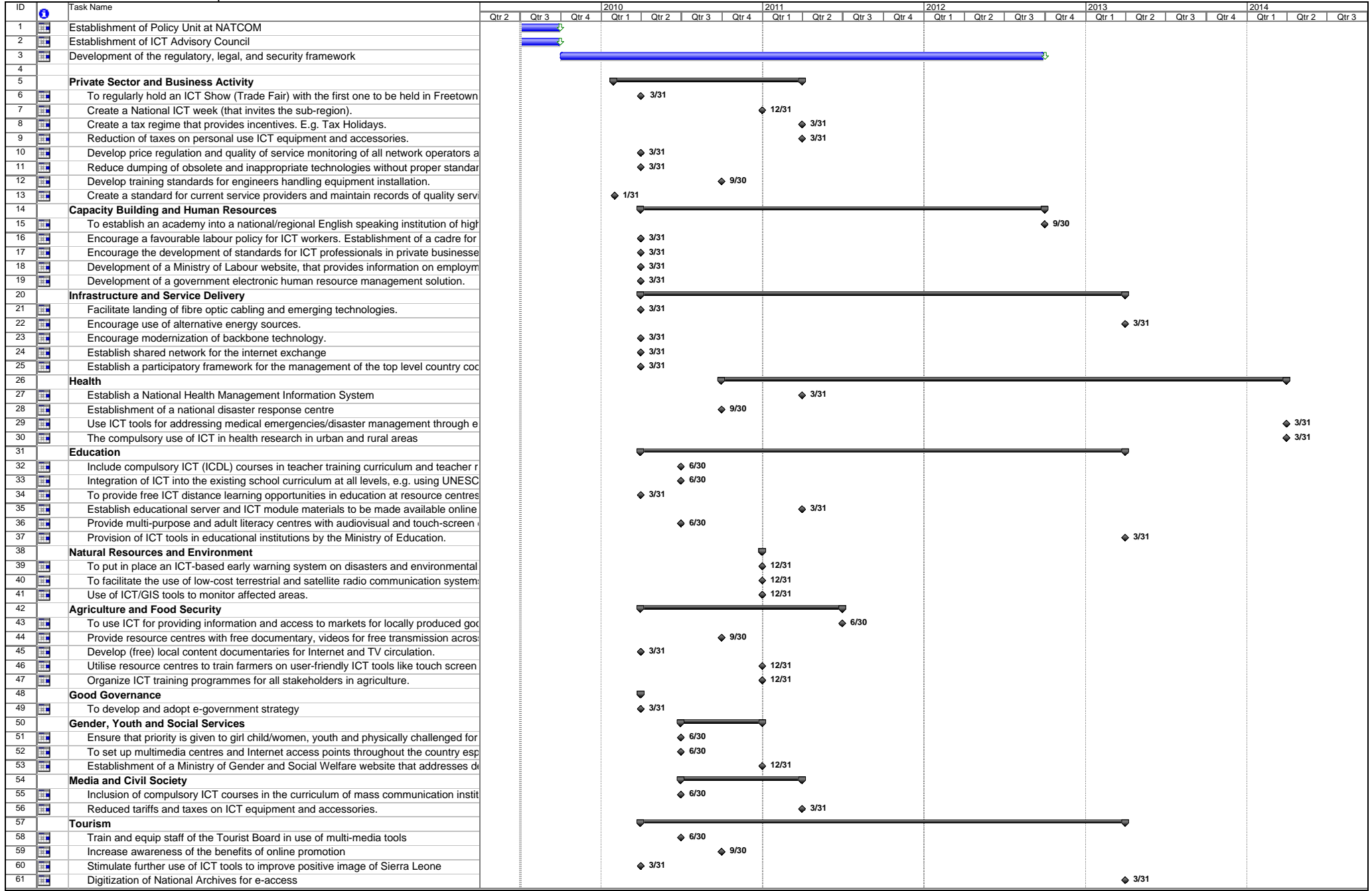
5-10 Media and Civil Society

Issues affecting social economic development	ICT Solutions	Accountable Stakeholder(s)	PRSP	MDG
Inadequate knowledge of ICT in media and civil society organizations.	Inclusion of compulsory ICT courses in the curriculum of mass communication institutions. In-service ICT training for media and civil society workers.	IMC MIC	Good Governance	Global Partnerships
Availability and affordability of ICT equipment for media houses and civil society groups.	Reduced tariffs and taxes on ICT equipment and accessories.	MIC MoFED	Good Governance	Global Partnerships

5-11 Tourism

Issues affecting social economic development	ICT Solutions	Accountable Stakeholders	PRSP	MDG
Poorly presented tourist attractions	Train and equip staff of the Tourist Board in use of multi-media tools	MIC, MTC National Tourist Board	Management of Natural Resources – Tourism and Economic Development	Environmental Sustainability
Limited number of tourism related websites	Increase awareness of the benefits of online promotion.	MTC, National Tourist Board	Management of Natural Resources – Tourism and Economic Development	Environmental Sustainability
Negative and poor media publicity/image of the country	Stimulate further use of ICT tools to improve positive image of Sierra Leone. Digitization of national archives for e-access.	MTC, National Tourist Board, Universities	Management of Natural Resources – Tourism and Economic Development	Environmental Sustainability

5-12 Timeline for the implementation of ICT Solutions



Project: ICT Policy Timeline
Date: Thu 5/21/09

Task Progress Summary External Tasks Deadline
Split Milestone Project Summary External Milestone

6 STRENGTHENING THE STAKEHOLDERS OF THE ICT SECTOR

6-1 Showing the Political will on ICT development

The Government of Sierra Leone recognises the fact that there is a fundamental need to modernise ICT in Sierra Leone, as it is critical to the socio-economic development of the country. Given the nascent stage of the sector, regulation will be pro-growth and development focused.

The Telecommunication Act 2006 (and its subsequent amendment) is the current legal framework that governs the ICT sector. However, given the fact that ICT substantively represents a broader domain than Telecommunications, it is necessary to further amend the Telecommunications Act to reflect modern trends of convergence.

6-2 Developing the role of the ICT Committee of the Parliament

The role of Parliament is central for the enactment of all laws. In particular, the legal framework required for the ICT sector cuts across other sectors especially in areas of security and data protection. It is therefore important that the Parliamentary Committee on ICTs be made familiar with ICT science and technology innovation, policy formulation, planning and monitoring. This will ensure that key sector issues are properly understood in legislation enactment and are properly communicated through the various parliamentary constituency channels. Additional objectives for the development of the ICT Committee's role include:

- To expose the committee to regional and international instruments governing the development and implementation of emerging technologies;
- To periodically review the roles and strategies of the parliamentary ICT technology.
- To share and learn from various regional best practices;
- Employing ICT tools to manage the legislative process.

6-3 Developing the role of the Ministry

The Ministry shall be identified as being foremost in ICT. In order to ensure an effective implementation of the ICT policy and to enable it to fulfil its obligations as defined in the Telecommunications Act, the Ministry should facilitate the in-house training of personnel. The Ministry shall review and make recommendations to the Public Sector Reform Unit (PSRU) and HRMO on ICT entry requirements for prospective communication staff. It shall also be strengthened to effectively carry out the following tasks:

- To monitor and review the implementation plans of this ICT policy;
- To set up and to regularly update a web site to publish all the texts and the events related to the development of the ICT sector.

- To promote a participative approach with all the stakeholders of the ICT sector through the establishment and supervision of the National ICT Advisory Council.

6-4 Developing the role of NATCOM

The role of NATCOM is principal in the implementation of this policy as it is tasked by law with ICT regulation as well as the enablement of growth in the ICT sector. This is in line with ECOWAS harmonisation principles but requires that NATCOM be adequately equipped with qualified staff and appropriate modern regulatory equipments. In particular, NATCOM must secure ICT tools to monitor all operators and develop a national information system with all pertinent statistics about the ICT sector. It must also undertake an annual ICT survey to ensure its activities and regulations are tailored for sector growth/development.

6-5 Developing Statistics Sierra Leone

Statistics Sierra Leone (SSL), (formerly Central Statistics Office) established by statistics and census Statistics Act 2002) serves as the central authority for the collection, processing, analysis and dissemination of statistical information on socio-economic activities.

There is the need for SSL to employ more ICT tools in data collection surveys and in analysis and dissemination of information. The website also needs to be updated to make it more interactive and to provide intuitive navigation and search capabilities for easier access to statistical data. Additionally, SSL also requires a research and development unit to ensure continual growth in its core skills and areas of competence.

6-6 Developing Standards Bureau

The Standards Bureau has a key role in the development of the ICT sector. As the office responsible for establishing standards in imported goods and equipments, the Bureau's human resource needs to be strengthened to be in a position to ensure that all imported equipments meet international type approval standards. In the area of electronic equipments, it is especially important that the Bureau must be able to adequately enforce the type approval standards determined by NATCOM for all electronic equipments (imported or otherwise) and to do so in collaboration with the Centre for ICT Intelligence once it is established.

6-5 Setting up a National ICT Advisory Council

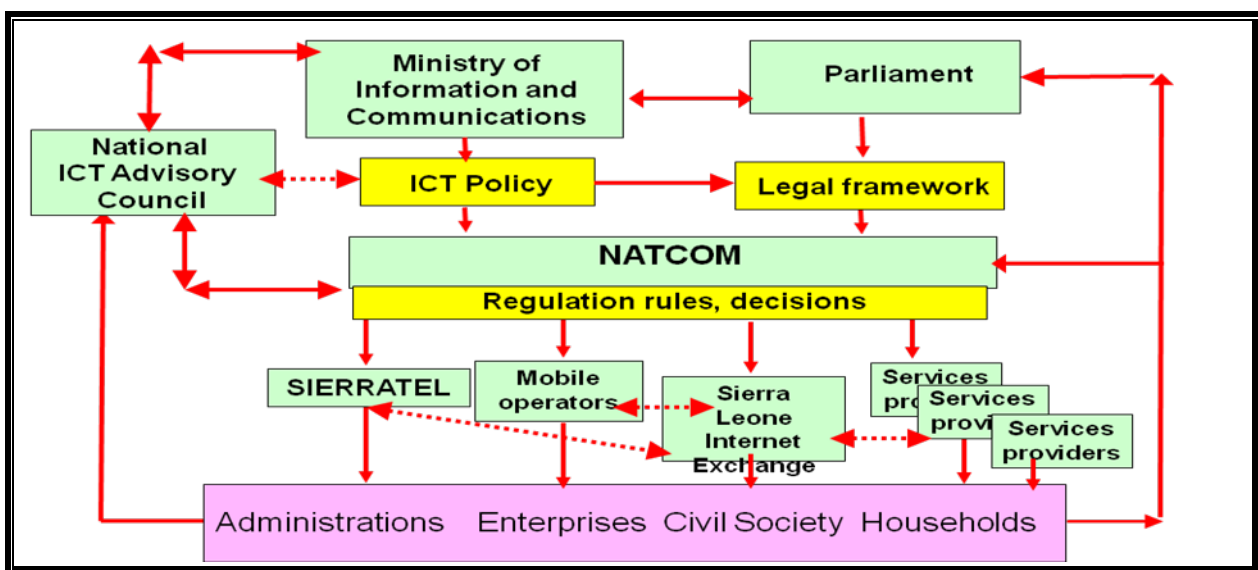
A National ICT Advisory Council shall be created by the Government on the recommendations of the Ministry of Information and Communications to ensure a participatory approach for the development of the ICT sector. The Council shall be tasked with giving guidance to all stakeholders on sector related matters including the following:

- Formulating ICT objectives and implementation plans;
- Development of national ICT standards and guidelines;
- Coordination of national ICT initiatives and projects;

- Determining requisite ICT support services to public and private sectors;
- Monitoring the implementation of policy plans and evaluating the results;
- Convergence of technologies.

This Council shall be a consultative body with membership comprising representatives of all key stakeholders of the ICT sector such as policymakers, regulator, network operators, service providers, universities, civil society, associations of consumers, private companies and the Chamber of Commerce etc. Below is a diagram showing the position of the National ICT Advisory Council in relation to some sector stakeholders.

THE NATIONAL ICT ADVISORY COUNCIL AND SECTOR STAKEHOLDERS



6-6 Improving the performances of Service Providers

The Government recognises the importance of service providers in the growth of the sector. NATCOM shall therefore establish clearly defined operational standards including the service level delivery to be met by all service providers and appropriate dispute resolution mechanisms.

The Government shall foster an environment that promotes the full spectrum of financing options for ICT development (e.g. angel investors, incubator funds, venture capital and private equity investments) and promote the establishment of a technology incubator to foster local innovation/development while encouraging the use of open source applications.

The Government shall also promote the use of locally developed applications by implementing a “Computerize Sierra Leone Initiative” that provides incentives for the provision of locally developed applications/solutions.

7 LEGAL AND SECURITY FRAMEWORK

The rapid changes in the communications sector have given rise to the need to create a dynamic legal and regulatory framework that is responsive to technological changes and advancement in the sector. In addition, the convergence between telecommunications, broadcasting and information technologies must be reflected in a national legal and regulatory regime. A key goal is to develop the sector within a legal framework that is open and transparent in the application of its rules and regulations and that caters for and promotes healthy competition. The framework must also facilitate affordable universal services and access to basic value added services through the establishment of conditions for an investor friendly communications environment.

Security of networks is also a major area of concern for the development of a digital economy. Information systems carry data of great value to government, businesses and individuals, the transmission of which involves security risks. Fraud conducted on such systems undermines consumer confidence in online services. Increased protection of the networks and the information systems is therefore necessary to guard against various attacks and unauthorised access.

7-1 Developing the national ICT legal framework

The ICT sector is primarily subject to the Telecommunications Act 2006.

The Government considers the following objectives as key to the establishment of a comprehensive legal framework in Sierra Leone over the next 3 years:

- a. The immediate amendment to the Telecommunications Act 2006. This shall take into consideration the regional harmonisation laws on ICT (ECOWAS Supplementary Acts), sector convergence and also provide interim provisions for the laws being prepared in accordance with the objective numbered 4(four) below.
- b. The Law Review Commission to review all laws with a view to ensuring that they reflect the existence of ICT considerations where required.
- c. The Ministry of Labour to determine a suitable labour regulation for ICT employees with a view to ensuring middle to senior management training of nationals, the retention of skilled ICT nationals at all levels and the attraction of skilled nationals from the Diaspora.
- d. The enactment of laws providing for:
 - o the collection of biometric data (general public and visitors) and comprehensive digitalization of databases at the Police and Immigration Departments;
 - o data protection, privacy;
 - o tele-medicine;

- electronic transactions (e.g. e-commerce and transactions between the Government and other governments, between the Government and business institutions, between the Government and consumers and among Consumers);
- intellectual property and copyright especially for print and electronic media;
- the establishment of the Centre for Intelligence (CII).

7-2 Establishing a national security framework

The establishment of a security framework is a key priority of the Government in order to ensure that the development of ICTs occurs within an e-environment that is properly monitored and safe to all users, irrespective of social class, economic class and nationality. In this regard, the Government has determined the need for a centre for intelligence gathering that shall be tasked with developing intelligence in ICT use, security and development in line with the legal framework referred to above.

7-2-1 Establishing the Centre for ICT Intelligence

The Government shall establish the Centre for ICT Intelligence as an independent and autonomous body responsible for collating, organising and processing ICT information relevant to security matters on the use of ICT in the public/private spheres of Sierra Leone.

The functions of the CII shall include:

- To identify threats to national ICT networks;
- To analyze e-security risks;
- To undertake intelligence gathering;
- To develop and to review adequate security software and privacy enhancing technologies (PETs);
- To develop and review security/encryption tools to combat piracy and provide e-related defences for indigenous work (e.g. music, film, print media);
- In collaboration with NATCOM and the Standards Bureau, to monitor the importation of all electronic equipments;
- To establish a national ICT skills database (and from which employees of the CII shall be chosen);
- To develop a section of CII that shall be tasked with the development of ICT courses for National Forces at all levels (including the top level National Security Council);
- To liaise with NATCOM on developing local content regulation on security issues;
- To collaborate with the universities on developing appropriate national security systems (e.g. solar CCTV cameras).
- To develop ICT expertise to address security issues in key sectors/key issues of concern including:
 - Protection of children (trafficking, pornography, paedophilia etc.)

- Town/City centre monitoring
- Fisheries and Marine Resources
- Tourism
- Mining areas
- Education
- Civil Aviation
- Terrorism
- Financial sector technologies
- Money laundering
- Anti-corruption

Additionally, the CII shall:

- be empowered to grant powers of access to the national security forces for quick and swift action wherein a security risk arises;
- be solely funded by the Government (and indigenous private sector) and only employ trained nationals.
- collaborate with Sierra Leone's Embassies and Consular services for its information gathering activities.

7-3 Implementing the legal and security framework

The Government considers the establishment of the legal and security framework as of the highest priority and first on the list of implementation activities. In particular, the establishment of the CII shall require a national effort on the part of all national stakeholders. The implementation plan to be developed for the establishment of the CII shall take into consideration various funding options that will ensure national ownership and the long-term sustainability of the CII. A key component shall be the training and retention of CII staff; supported by a comprehensive employment package.

SECTION C

8 IMPLEMENTATION PLANS OF THE ICT POLICY

The carrying out of this Policy relies on the preparation of ten comprehensive plans that will be focused on the implementation of the priority activities tabled under Section B (5-1 to 5-11). The ten Implementation Plans will be completed by December 2009, prepared by the Policy Unit established by MIC in collaboration with NATCOM. The National ICT Advisory Council shall supervise the preparation of the ten plans and oversee their timely implementation in partnership with the stakeholders identified as Accountable Stakeholders for the priority activities (see 5-1 to 5-11).

Below are the ten Implementation Plans:

SN	Implementation Plan
PLAN I	To amend the current legal and regulatory framework to reflect industry and regulatory convergence;
PLAN II	To establish the Centre for ICT Intelligence (CII);
PLAN III	To improve Internet connectivity;
PLAN IV	To expand and improve fixed and mobile access networks;
PLAN V	To develop services and applications by local suppliers;
PLAN VI	To build capacity and develop national ICT skills;
PLAN VII	To develop appropriate ICT services for the marginalised/disadvantaged (e.g. the physically challenged);
PLAN VIII	To develop and use Geo-information to better know the ICT market;
PLAN IX	To promote private and community resource centres for affordable universal access/service;
PLAN X	To set up a national information system with relevant ICT indicators and to annually conduct E-readiness surveys.

8-1 To amend the legal and regulatory framework

The objective of this implementation plan is to have a regulatory framework for technology convergence and that enables efficient operators and service providers to enter the market and to offer innovative services as affordable as possible for the benefit of the country:

- To review and amend the Telecommunications Act 2006 to comply with the recommendations of the ECOWAS Supplementary Acts of January 2007.
- To enact a unified licensing regime and to enforce it as soon as possible.
- To avoid any abuse by a dominant stakeholder and ensure a level playing field in the ICT market.
- To promote affordable universal access with appropriate obligations for the licensed operators and service providers.

8-2 To establish the Centre for ICT Intelligence (CII)

In line with paragraph 7-2-1, the objective of this implementation plan is to determine the structure, funding and appropriate law establishing the CII as an independent and autonomous body, that shall be responsible for collating, organising and processing ICT information relevant to e-security matters on the use of ICTs in the public/private spheres of Sierra Leone.

The functions of the CII shall include identifying threats to national ICT networks, analysis of e-security risks, intelligence gathering, developing and reviewing security software, privacy enhancing technologies (PETs), anti-piracy security/encryption tools for music, film and print media.

The CII shall establish a national ICT skills database (and from which employees of the CII shall be chosen) and develop a Unit that shall be tasked with the development of special ICT courses for National Forces at all levels (including the top level National Security Council).

8-3 To improve Internet connectivity

The Government considers broadband access a basic necessity for Sierra Leoneans. This implementation plan shall have the following objectives:

- To ensure broadband Internet access at reduced and affordable cost for the end users by:
 - enabling the landing of submarine fibre optic cable and emerging technologies linking Sierra Leone to the rest of the world, and
 - ensuring that international voice or data traffic has redundant paths that are not provided by the same vendor.
- To rapidly extend the scope and traffic carrying capacity of the current international gateway and to improve quality of service.
- To liberalise the international gateways with a limited number of alternative gateways.
- To build up a fibre optic MAN (Metropolitan Area Network) with appropriate rings to offer a reliable broadband access to all categories of users: wholesale business with

GSM operators, corporate business with ISP, ASP, large enterprises and administrations.

- To build up fibre optic links between the capital and all the main cities of Sierra Leone to allow broadband access to the rest of the country.
- To upgrade the IXP (Internet Exchange Point) to establish a shared network.

8-4 To expand fixed and mobile access networks in remote areas

The objective of this implementation plan is to ensure the expansion and upgrading of the national telecommunications infrastructures across the country.

The priority of NATCOM is for mobile operators to extend and improve their networks in the provinces with better coordination and sharing of infrastructure.

The Government considers that IP-based networks that merge voice telephony with data and image can offer a lot of business opportunities to operators and consumers. NATCOM shall encourage operators to consider the progressive migration of traditional networks (PSTN and GSM) to an all-IP network in their medium and long-term strategies. IP-based networks will facilitate the provision of innovative services and applications. For new entrants, the cost of building or leasing IP networks/links will be significantly lower than those of circuit-switched networks.

NATCOM shall encourage 3G wireless technologies to boost the market for wireless communications. Some initiatives are opening the door for an emerging wireless Internet market even as broadband 3G becomes commercially available. Other network wireless high-speed data technologies are being developed and tested. The entry of WiMax shall be particularly encouraged.

8-5 To develop services and applications by local suppliers

This implementation plan aims at delivering a complete range of affordable services and applications to satisfy different categories of ICT users, and to emphasize the production of local content. In this regard, Government shall:

- Ø Support the development and implementation of ICT services and sectoral applications (e-governance, e-commerce, e-learning, e-health, etc.).
- Ø Facilitate the development of the local ICT industry.

Computer and Accessory costs

The Government shall seek to establish a zero tariff on computers and computer accessories. Cybercafés and community resource centres are to be supported to facilitate the usage of nomadic users and other persons who cannot afford computers at home or for their small business.

Local Content

The Government is keen to ensure the indigenous development of Sierra Leonean content on the Internet. Local service provision currently gives preference to international content and little is available on Sierra Leone culture. Using various forms of Mass Media, it is

anticipated that through the development of ICTs, Sierra Leoneans shall have a prominent voice in the determination of their own image.

8-6 To build capacity and develop national ICT skills

The objective of this implementation plan is to improve the skills required in an information-based society at different levels:

- Ø High level skills for advanced specialists needed for developing, implementing and operating the hardware and software systems and the security framework.
- Ø Suitable skills for intensive users of specific services and applications.
- Ø Knowledge on the basic and cross-sectoral tools (office automation, computer use, mailing, Internet browsing) for all potential ICT users.
- Ø Basic computer literacy for the population.

8-7 ICT services and skills for the marginalised/disadvantaged

ICT can play a critical role in improving the quality of life of Sierra Leoneans especially those considered to be marginalised and disadvantaged (e.g. the physically and mentally challenged). This plan shall:

- Ø Ensure a training program that equips physically and mentally challenged Sierra Leoneans across the country with basic ICT and work related skills.
- Ø Provide the physically and mentally challenged with work opportunities that allow them to use their new ICT skills.

8-8 Develop and Use Geo-information to better know the market

Planning in general requires a referencing framework to integrate large numbers of different data. Although information can be presented via text, voice or statistical tables, some of these are more intelligently communicated with geo-information tools and techniques, such as Geographical Information Systems (GIS). This implementation plan shall therefore determine the development and use of geo-information as a useful ICT tool for socio-economic analysis of the ICT sector.

8-9 Affordable universal access/service

The objective of this implementation plan is to provide communities with access to affordable ICT services. Universal Access/Service means affordable access to basic ICT services regardless of geographic location. This can only happen with the cooperation of all stakeholders. This implementation plan aims at increasing the use of ICT in poor and remote areas through individual access in households and small businesses, or collective access with private and community resource centres.

8-10 ICT and E-readiness Survey

A national information system with relevant indicators shall be set up to monitor progress on the implementation of infrastructure and services. The system shall be implemented by MIC with support from the National ICT Advisory Council, NATCOM and Statistics Sierra Leone. The indicators shall be culled from the *Partnership on Measuring ICT for Development*.¹

Surveys on E-readiness

An e-readiness survey is a useful tool in determining a country's position in terms of ICT and it serves as an initial phase of any national ICT strategic planning process. This survey shall be conducted annually by NATCOM in collaboration with Statistics Sierra Leone. The results of the survey shall provide a scorecard for all stakeholders. The indicators to be used in the surveys shall be consistent with the list of indicators provided by the *Partnership on Measuring ICT for Development*.

9 CONCLUSION

The Sierra Leone Government, private sector and civil society members recognize the potential offered by ICT in overcoming structural and historical weaknesses inherent in the country and affecting its overall development.

The statements and targets in this document are therefore to accelerate a new phase in the economic growth and social development of Sierra Leone. Above all, they pave the way for the transformation of Government's administrative processes, its communication with citizens, management of public services, education, citizen participation and commerce and all other aspects of the e-lives of Sierra Leoneans.

"If the world is serious about achieving the Millennium Development Goal of halving the number of people living in extreme poverty by the year 2015, ICT must figure prominently in the effort.

Everyone – governments, civil society, and private sector businesses – has a vital stake in fostering digital opportunity and putting ICT at the service of development."²

Kofi Annan,
(Ex) UN Secretary-General

¹ The Partnership on Measuring ICT for Development is an international, multi-stakeholder initiative launched in 2004 to improve the availability and quality of ICT data and indicators, particularly in developing countries. See: www.itu.int/ITU-D/ict/partnership.

² Kofi Annan, (Ex) UN Secretary-General - Extract from the foreword of the UNCTAD E-Commerce and Development Report 2003.

ANNEXES

ANNEXE A. – STRATEGIC POLICY CONSIDERATIONS

The eleven pillars identified in this Policy as key to the socio-economic development of Sierra Leone are:

- Private Sector Business Activity
- Capacity Building and Human Resources in ICT
- Infrastructure and Service Delivery
- Health
- Education
- Natural Resources and Environment
- Agriculture and Food Security
- Good Governance
- Gender, Youth and Social Services
- Media and Civil Society
- Tourism

Each of the pillars is presented under four (4) sections: Issues, Objectives, Challenges and Targets.

- **Issues** – this section focuses attention on the key strategic issues that must be addressed when developing ICT strategies for the pillar presented.
- **Objectives** – this section identifies the goals for the deployment and use of ICT.
- **Challenges** – this section identifies challenges that pose potential threats to the successful implementation of ICT intervention plans in the country.
- **Targets** – this section details the targets identified and the ideal time frames for implementation.

A timeline Gantt chart follows the tourism pillar (A1-11). It provides deadlines for all targets listed in A1 to A11 including those targets not captured as priority issues in the tables under Sections B5-1 to 5-11.

A1-1 Private Sector and Business Activity

A1-1-1 Issues

- a. High investment cost in ICT equipment and peripherals and absence of equipment standards.

- b. Insufficient supply of ICT hardware and software. Import duty on ICT hardware accessories.
- c. Very high costs of data communications and lack of real broadband access.
- d. Some imported terminals, internal cabling and CPE devices do not conform to engineering standards.
- e. Absence of online business services.
- f. Absence of a legal framework for the operation of e-commerce.
- g. Dominance of the informal sector in business, making it difficult, if not impossible to mainstream modern information systems into the management of this sector.
- h. Lack of support for internal cabling by construction companies.

A1-1-2 Objectives

- a. To facilitate disbursement of government services and information electronically, e.g. business registration and other business start up services.
- b. To establish industry standards for infrastructure, application and services.
- c. To eliminate the use of arbitrary discretion in official transactions and facilitate a level playing field for all investors and traders.
- d. Facilitate intra country electronic commerce.
- e. To reduce dumping of obsolete and inappropriate technologies without proper standardization.

A1-1-3 Challenges

- a. Unavailability of reliable and stable power supply in the country for a power intensive and electric-based industry like the ICT sector.
- b. Lack of awareness of the wealth generated for businesses that adopt technology.
- c. High tariffs and taxes imposed on ICT equipment.

A1-1-4 Targets

- a. Establish a national online new business registration portal with tax return filing system via Internet by 2010.
- b. Establishment of a convergent regulator that takes cognizance that its role includes growth and development of nascent facets of Sierra Leone's ICT industry.
- c. Enact a Data Protection Law by 2010.
- d. Adopt necessary reforms in Government policy as to allow small local enterprises to emerge in the ICT market, especially reforms supporting technical activities in ICT, service providers and local content creation by end 2009.

A1-2 Capacity building and Human resources in ICT

A1-2-1 Issues

- a. Lack of sufficient skilled ICT human resource at both technical and managerial levels;
- b. Lack of in-country training nationwide and education opportunities in ICT subjects at advanced and professional levels.
- c. The present regulatory environment is not conducive to Job creation in the ICT sector.

A1-2-2 Objectives

- a. Develop ICT human resource to support and sustain the envisaged ICT-led business, industry and services sectors.
- b. Data and information to be made available on employment in the ICT sector.
- c. Exploration of new job opportunities like “teleworking” and on-line job market resources.

A1-2-3 Challenges

- a. Insufficient education and training opportunities in basic skills as well as specialization in ICT to support a sustained growth in ICT based activities.
- b. Limited availability of data on employment opportunities in ICT sector.
- c. Lack of standardization of skills and contents of ICT programs offered in the country mushrooming the growth of unorganized ICT education and training centres.
- d. Low level awareness of ICT potential for development in Sierra Leone at policy level.

A1-2-4 Targets

- a. Create an online database on the available ICT skilled human resources in the country by 2010.
- b. Establish monitoring, standardization and accreditation mechanism for ICT education and training programs offered by various institutions in the country by 2010.
- c. Enact a suitable Labour law /Wage policy for ICT workers serving public and private organisations in the country by 2010.
- d. In collaboration with ECOWAS/WATRA/CTO/ITU/ECA, establish an advanced training institute dedicated to ICT by 2012.
- e. Determine numbers of national ICT certified professionals required for relevant technologies by end 2009.

A1-3 Health

A1-3-1 Issues

- a. Harnessing of ICT tools and applications for supporting health services, hospital and laboratory services.
- b. Effective monitoring of the health care systems in the country through an integrated Health Management Information System (HMIS) (including traditional medicine).
- c. Legal framework for promotion of e-Health programs like telemedicine.

A1-3-2 Objectives

- a. To improve communication systems nationwide between health care centres/hospitals by utilizing ICT applications.
- b. To use ICT to extend the reach of scarce resources nationwide by audio and video transmission systems.
- c. To use ICT to create a health information database and further facilitate dissemination of medical information within existing clinical systems.
- d. To strengthen the ICT human resource of the Health sector.

A1-3-3 Challenges

- a. High medical costs in advanced diagnostic equipment and medical services.
- b. The lack of well equipped laboratories and trained pathologists.
- c. Lack of adequate ICT human resources within the health sector.

A1-3-4 Targets

- a. Launch a nationwide programme of designing, implementing and managing strategic ICT applications in health sector involving communities, NGOs and professionals by 2010.
- b. Introduce a national integrated Health Management Information System in various phases to connect all the healthcare centres and major hospitals and laboratories through ICT by 2011.

A1-4 Education

A1-4-1 Issues

- a. Insufficient highly ICT skilled education sector workforce in the application of ICT in teaching and in the management of the education system.
- b. Absence of ICT literacy as a mandatory basic component of formal education programmes.
- c. Lack of resource mobilization and equitable distribution of adequate number of ICT tools among various educational institutions.
- d. Limited use of ICT as an education tool to enhance education in the classroom.

A1-4-2 Objectives

- a. To introduce ICT education in all institutions of higher learning and to upgrade current ICT programmes.
- b. To ensure school leaving students at the secondary and techvoc level are ICT literate.
- c. To enable all teachers to be competent users of ICT as a tool to enhance the teaching and learning process, educational planning and administration.
- d. To develop special ICT education and training programmes for out of school youths, unemployed/senior citizens (in phases), physically challenged (people with special needs) and illiterates.
- e. To ensure sustainable ICT education and training programmes, including e-learning in collaboration with the private sector and community organisations.
- f. To encourage research and development in ICT and education at universities and research institutions including country specific applications.
- g. To develop an e-library system in collaboration with the Sierra Leone Library Board for holding national and culturally specific content and the establishment of the digitization of historical artefacts at the University of Sierra Leone.

A1-4-3 Challenges

- a. Sustained political will to implement ICT in the education system;
- b. The high cost of introducing and maintaining ICT programmes in schools and institutions of higher learning;
- c. Training of teachers and educators in the use and application of ICT in teaching, learning, research, planning and administration;
- d. Integration of ICT into the existing school curriculum;
- e. Providing basic infrastructure (such as solar energy) in institutions for introducing ICT education and training programmes; and
- f. Resistance to change; and
- g. Security at all levels.

A1-4-4 Targets

- a. Ensure that the Educational Management Information System solution is geo-enabled and integrated with other information systems and databases by 2012.
- b. All teacher training institutions will offer basic computer literacy and ICT orientation courses based on UNESCO's ICT Competency Framework to all incoming trainees by 2010;
- c. A national ICT literacy curriculum will be developed for all schools for its incorporation in the general education systems by 2010/2011.
- d. All tertiary education institutions will be equipped with ICTs and integrated into their academic and administrative systems by 2010/2011.

- e. Tertiary education institutions to increase by 50% the output of ICT graduates by 2013.
- f. A research and development centre dedicated to innovation to be established at one of the two universities by September 2010;
- g. ICT in-service skilled training for staff already on the job and full training for new recruits from 2010;
- h. Teaching licence to be introduced and annually renewed based on successful completion of a continuing professional development course from 2010.

A1-5 Natural Resources and Environment

A1-5-1 Issues

- a. Inadequate geographical data on our natural resources.
- b. Rampant deforestation and degradation of the environment especially land degradation.
- c. Unplanned mining, fishing and hunting activities and housing constructions.
- d. Environmental pollution as a result of erosion, road construction, urbanization, industrialization, farming, sewage and waste disposals.
- e. Smuggling and illegal poaching of natural resources.

A1-5-2 Objectives

- a. To obtain complete geographical data of natural resources.
- b. To raise awareness about the consequences of rampant deforestation through ICT tools.
- c. To provide access to ICT tools in areas threatened by environmental degradation and natural disasters;
- d. To monitor and regulate the mining and fishing activities in the country to ensure environment preservation and natural resources sustainability through geo-enabled information systems.
- e. To put in place an ICT-based early warning system on natural resources, disasters and environmental degradation to anticipate crises in advance, thus enabling governments to be more proactive and to respond more effectively when the need arises.
- f. To capacitate and equip the anti smuggling unit with ICT based knowledge and equipment.

A1-5-3 Challenges

- a. Limited skilled personnel and ICT/GIS equipment.

- b Identification of alternative sustainable sources of revenue for perpetrators of environment degrading activities.
- c High level of environmental degradation as a result of human activities.
- d Ineffective communication systems limit the effectiveness of responses by the Government and other organizations to cases of environmental disasters.

A1-5-4 Targets

- a. Provision of relevant ICT/GIS equipment and skilled personnel.
- b. To develop a comprehensive information communication system on environment to generate and disseminate adequate information about mining, hunting and fishing activities by 2015.
- c. To launch the process of producing a national State of the Environment (SoE) report every three to five years, by 2010, as one of the regular outputs of the Environmental Information System, and feeding, among others, the Africa Environmental Information Network (AEIN), the Africa Environment Outlook (AEO) initiatives of the United Nations Environment Program (UNEP) and the African Ministerial Conference on the Environment (AMCEN) respectively.

A1-6 Agriculture & Food Security

A1-6-1 Issues

- a. Low productivity and market access opportunities/limited information for the farmers.
- b. Poor collaboration amongst agriculture stakeholders to use ICT to provide commercially relevant and reliable information to consumer groups and marketing bodies.
- c. Uncontrolled extension of agricultural areas at the expense of forest, grassland and other land units, putting at risk the equilibrium of natural ecosystems.

A1-6-2 Objectives

- a. To provide information on the improvement of yield for farmers through strategically located resource centres.
- b. To use ICT for providing information and access to markets for locally produced goods.
- c. To train farmers on user-friendly ICT tools to enable them to market their products (nationally and internationally), and get online access to market-oriented information.

A1-6-3 Challenges

- a. The functional literacy level of some farmers is very low making it a barrier to the widespread adoption of ICT.
- b. Extensive adoption of ICT tools by farmers as the return on investments is not always immediately apparent.
- c. High cost of equipment and lack of enabling telecommunications infrastructure as well as stable power supply poses a major obstacle to the widespread adoption of ICT especially in rural areas.

A1-6-4 Targets

- a. ICT department should be established within the Ministry of Agriculture to spearhead advance of ICTs in the sector by end 2009.
- b. Equip the extension and research sections in the Ministry of Agriculture with ICT tools by end 2009.
- c. Improve the Ministry of Agriculture's website by making it interactive and dynamic end 2009.
- d. Farmers should be educated on the values and importance of ICT by 2010 and on the use of renewable energy in farming by 2012.
- e. Using geo tools to conduct aerial survey and digital mappings to show current status of farming ecologies by 2010.

A1-7 ICT Infrastructure and Services Delivery

A1-7-1 Issues

- a. Low penetration of the Fixed-line telephony services country-wide;
- b. Low teledensity overall (fixed-line and mobile);
- c. Inadequate international information bandwidth;
- d. Inadequate and old technology national information backbone;
- e. Limited and low capacity in energy sources to power ICT devices;
- f. Contention over international gateway exclusivity held by SierraTel;
- g. Security in communication;
- h. Poor and inadequate ICT infrastructure for e-commerce activities;
- i. Low capitalization for ICT development;
- j. ICT use and awareness is not pervasive;
- k. Clarification on management of Sierra Leone's Country Code Top Level Domain name (ccTLD, .sl);
- l. High cost of ICT services and products particularly the mobile telephony services;
- m. Service delivery mainly at narrow band speeds.

A1-7-2 Objectives

- a. Increase fixed-line penetration and capacity;
- b. Land fibre optic cable in Sierra Leone;
- c. Modernize the technology of the national backbone;
- d. Explore alternative sources of energy;
- e. Liberalize the provision of International gateway services;
- f. Encourage the provision of adequate bandwidth and security for e-commerce and related services;
- g. Make ICT services affordable;
- h. Government to source funds to develop ICT;
- i. Create a Technology/Science Park.

A1-7-3 Challenges

- a. Difficulty to attract investment because of the smallness of the Sierra Leonean ICT market;
- b. Difficulty in raising the buying power of the average Sierra Leonean.

A1-7-4 Targets

- a. Land international fibre in Sierra Leone by mid 2011;
- b. Build national fibre backbone by end of 2009;
- c. Establish technical and administrative structure for the Internet Exchange Point by 3rd quarter of 2009;
- d. Establish a framework for the management of the top level country code .sl domain name by the end of 2009;
- e. Expedite the licensing process of Service Providers by end 2009;
- f. Effective regulation of mobile tariffs.

A1-8 Good governance

A1-8-1 Issues

- a. Over centralised system of administration and lack of access to basic social services for the majority of the rural populace.
- b. An overburdened judicial system with outdated laws, inadequate personnel and logistical problems, leading to backlog of cases, delays in proceedings and too many adjournments, making it difficult for the poor to access impartial and equitable justice.
- c. Poor record of service delivery, especially to the poor, by a civil service plagued with low salaries and poor conditions of service, limited training opportunities.

- d. A relatively weak parliamentary oversight, lack of policies to protect the vulnerable and weak; inefficient channels of communication resulting in weak and ineffective service delivery mechanisms.
- e. Poor financial control and asset management.
- f. Poor human resource management.
- g. High Government expenditure.

A1-8-2 Objectives

- a. To improve the quality of public sector governance through ICT interventions like e-government programmes to build an open and transparent administration and guarantee delivery of services to the poor.
- b. To facilitate online channel of transactions between government and citizen. Transactions may include: Electronic payments and benefits transfer (pensions and benefits, family allowance, scholarships, etc.), payment of taxes, licenses, bills, fines, and registration of businesses, births, deaths, marriages.
- c. To promote transparency in the functioning of Government through open access to Government information that could be disclosed to the public through MDA websites.
- d. To use online discussion forums that can play an important role in raising awareness among communities on social development issues and encourage more active participation.
- e. To ensure implementation of a Financial Management System along side an Asset Management System to manage Government finances and assets.
- f. To implement a Human Resource Management System to manage performance in MDAs with individual objectives cascading from ministerial performance management contracts.
- g. Use of ICT to cut expenditure and ensure value for money in Government MDAs.

A1-8-3 Challenges

- a. Renewing the Government's ICT infrastructure for an effective e-Government system that allows end-to-end execution of government business processes.
- b. Efficient and effective public access through affordable/available Internet points of access especially in the rural areas to enable the citizens in remote areas to securely tap into government services from home, school, office, libraries, public electronic kiosks, and community resource centres.
- c. Popularisation of ICT tools for administering the work of MDAs e.g. intranet emails, electronic calendars, and word processing, document management and workflow applications for tracking work progress and status, and decision support and management applications.

- d. People are hesitant to use government services through the Internet because of concerns about disclosure of information to third parties, lack of cyber laws to check violation of privacy and intellectual property rights etc.
- e. Inadequate financing for e-government initiatives; a general lack of managerial, technical, and operational capacity for designing, deploying and executing e-government applications along with high training and retraining costs for Government employees.

A1-8-4 Targets

- a. Interactive websites for all ministries, departments and agencies by December 2009.
- b. Introduction of a pilot e-Government programme in a few selected ministries, departments and agencies by December 2009.
- c. Adoption of necessary laws facilitating acceptance of electronic communication as authentic records in government services by December 2009.
- d. Rolling out of IFMIS (Integrated Financial Management System) by January 2010.
- e. Rolling out a Performance Management System by June 2010.
- f. Implementation of a government video conferencing centre to reduce costs where applicable;
- g. Implementation of a government inter-communication system and VOIP system to reduce costs on internal and international calls.

A1-9 Gender, Youth and Social Services

A1-9-1 Issues

- a. Limited access to ICT for women, youth and the physically challenged, especially in rural areas.
- b. Gender imbalance in ICT education and training.
- c. Capacity building of welfare departments and community workers to leverage ICT for development of women, youth and the physically challenged.
- d. Limited use of ICTs in social service delivery, especially in areas related to women, youth and the physically challenged.

A1-9-2 Objectives

- a. To create awareness of the use and benefits of ICT in issues concerning women, youth and the physically challenged.
- b. To build capacity and training of women and youth in ICT and encourage greater access to ICT for women, youth and the physically challenged through resource centres established for such purposes countrywide.

- c. To set up Internet access points throughout the country especially targeting women, youth and the physically challenged to provide affordable and easy access to ICT for them.
- d. To use the capabilities of the Internet and e-commerce to facilitate the access of women, youth and the physically challenged to business and entrepreneurial opportunities.
- e. To ensure the dissemination of national, regional and international welfare policies, plans and activities concerning women, youth and the physically challenged through a website and mailing lists that will enhance access to information on issues related to them.

A1-9-3 Challenges

- a. Inadequate resources (human, material and financial) for the launching of a national programme to promote ICT among women, youth and the physically challenged.
- b. Lack of gender-sensitive commitments due to traditional/social/cultural inhibitions.
- c. Low level of literacy among women, youth and the physically challenged, especially at the grassroots.
- d. Low interest in mathematics, science and technology subjects at secondary school level by girls.
- e. Unavailability of stable electricity supply, especially in the rural areas.
- f. High cost of ICT training programmes.

A1-9-4 Targets

- a. Building of websites giving information on development issues concerning women, youth and the physically challenged by 2010.
- b. Introduction of subsidised/incentives-based (e.g. awards, scholarships) ICT programmes for women, youth and the physically challenged in educational and ICT training institutions by 2010.
- c. Establishment of rural women's multimedia resource centres and Internet cafés on a pilot basis targeting women and youth that are also accessible to the physically challenged by 2010.
- d. Development of special training and educational materials for the physically challenged in training and educational institutions by 2010.
- e. Establish on-the-job ICT training for physically challenged (e.g. call centres, assembly line work etc.).

A1-10 Media and Civil Society

A1-10-1 Issues

- a. Capacity building for media personnel and civil society organisations on ICT.
- b. Availability of ICT equipments for media houses and community workers.
- c. Creation of a vibrant and organized civil society to influence Government policies and programmes in favour of the poor.
- d. Building technical capacity and mobiles necessary resources to effectively carry out effective media and civil society watchdog functions.

A1-10-2 Objectives

- a. To increase awareness of Media and civil society organisations and personnel on ICT tools and applications.
- b. To train media personnel and civil society actors in the use of ICT
- c. To create the enabling environment where ICT will be accessible and affordable to the media personnel and civil society members.
- d. To build capacity for the media staff (Print and Television) to be able to illustrate their production by maps easy to generate

A1-10-3 Challenges

- a. Inadequate resources (human, material and financial) for using ICT in the functioning of media houses and civil society organizations.
- b. Lack of regulatory mechanism to watch misuse or abuse of ICT by unscrupulous organisations and media (e.g., pornography, sectarian propaganda over the Internet).
- c. A general lack of awareness about the utilities of ICT in the various media sectors.

A1-10-4 Targets

- a. Launch a national programme of training on ICT for the media personnel and civil society organisations by 2010.
- b. Introduce a discounted tax-regime on ICT equipment like computers etc imported by media personnel and civil society organisations by 2010.
- c. Encourage media houses to host online editions by 2010.
- d. Extend radio/television coverage to entire country by 2012.

A1-11 Tourism

A1-11-1 Issues

- a. Poorly developed tourist attractions.
- b. Limited number of tourism related websites.
- c. Negative and poor media publicity/image of the country.

A1-11-2 Objectives

- a. To make Sierra Leone a premier tourist destination.
- b. To use ICT to market locally produced goods.
- c. To attract local and foreign investment in tourism.

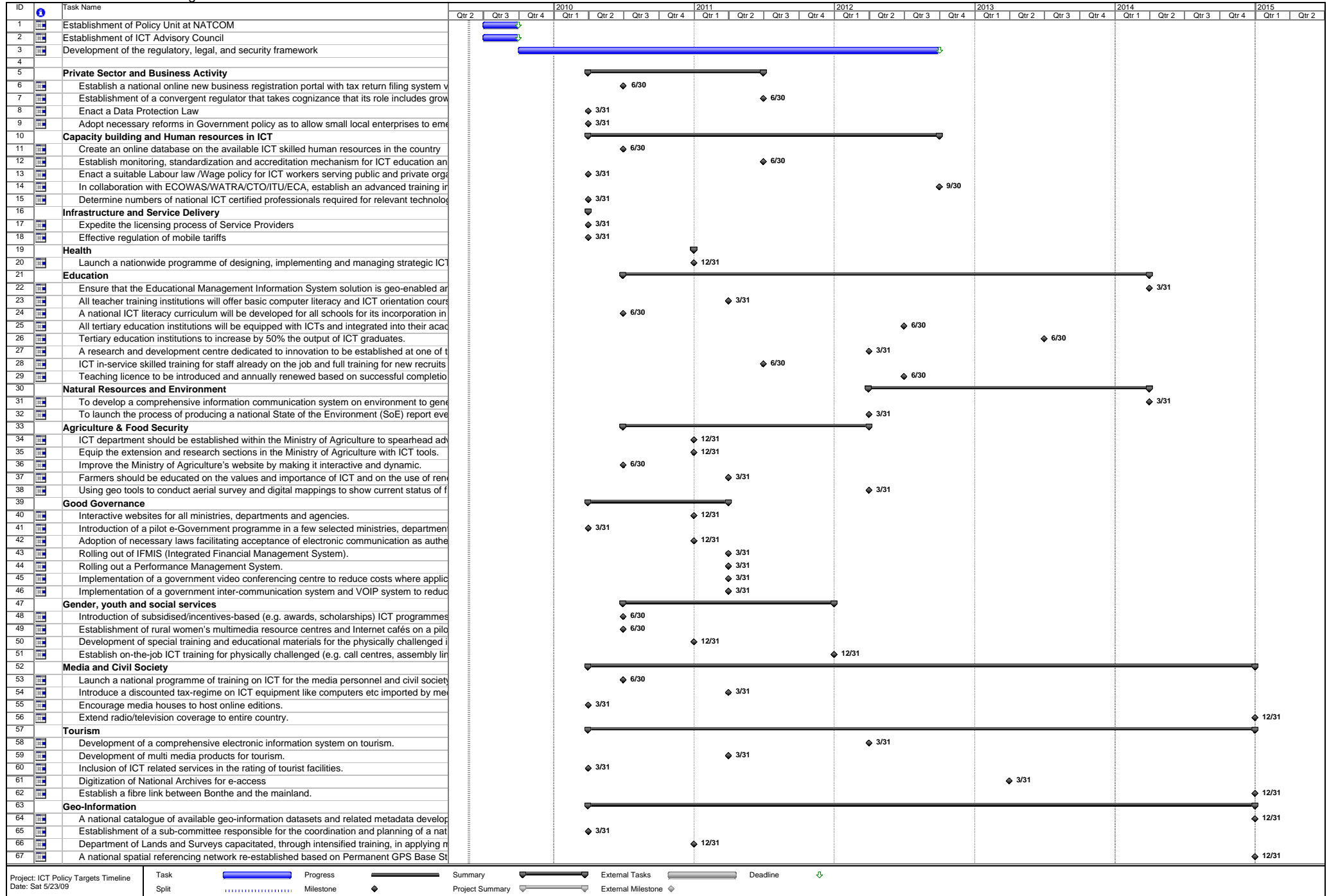
A1-11-3 Challenge

- a. Inadequate ICT infrastructure (including electronic payment systems).

A1-11-4 Targets

- a. Development of a comprehensive electronic information system on tourism by 2010.
- b. Development of multi media products for tourism, digitization of national archives.
- c. Inclusion of ICT related services in the rating of tourist facilities.
- d. Establish a fibre link between Bonthe and the mainland.

Timeline chart of targets listed under A1 to A11



ANNEXE B. – THE POSTAL SECTOR

B1 Issues

- a. The emergence of Internet and web technologies has reduced the use of postal services.
- b. Loss of confidence in postal services delivery because of malpractices and use of obsolete equipment.
- c. Poor and dilapidated postal services infrastructure.
- d. Inadequate financial support to enhance and expand the postal sector.
- e. Inefficiency in postal services delivery.
- f. Inadequate training of postal staff.

B2 Objectives

- a. Increase access to high quality and affordable universal postal services.
- b. Pro-active research and development to ensure high levels of technical and service standards in the sector.
- c. Increase cooperation with regional and global postal services organisations, authorities and agencies.
- d. Increase private sector participation in the postal services and security in deliveries to restore public confidence.
- e. Further strengthen cooperation between Sierra Leone and the International postal community.
- f. All post offices to be required to adhere to minimum service standards against which performance will be monitored.
- g. The Government is committed to the liberalization of the postal sector (mail and courier service segment). Further liberalization will be undertaken in line with prevailing economic and market conditions.
- h. Exclusive services for the universal service provider: delivery of letters, postcards, printed paper and small packets (weights up to 350grams maximum), printing and issuance of postage stamps and philatelic materials; provision of private letters boxes and street posting boxes.
- i. Non-exclusive market segments will consist of Courier Services, Parcel Services, Direct Mail Marketing Services, Postal Financial Services, Electronic and Hybrid Mail Services, Distribution of Publications and Agency Services such as, payment of taxes, Municipal service charges, Electricity, Motor vehicle licenses, and Pensions.

ANNEXE C. – GEO-INFORMATION

C1 Introduction

Geospatial Information (GI), also referred to as geographic information, geo-information, spatial data or geospatial data, identifies the geographic location and characteristics of natural or man-made features and boundaries, in, on or above the earth. A map is a typical example of GI. A GI characteristically has two main components, namely location information and attributes information.

GI also describes the situation and characteristics of a country in terms of coordinates, place names, postal addresses and other criteria. In today's modern society of administration, economy, and science as well as in the private sector, GI is the basis for processes, planning, measures and decision-making. GI has become essential to most areas of human economic and social activity including environmental protection, agriculture, fisheries, mineral resources, computer science and telecommunications, education, culture, insurance and health care, national defence, home security, civil protection and disaster control, logistics and waste management etc.

The growing realisation of the immense importance of GI to economic planning and development in recent decades has led to the emergence of a myriad of geospatial data providers, coming from various agencies of government and the private sector and mostly still acquiring and storing data in analogue formats. Uncoordinated efforts in GI data collection and use of obsolete procedures can result in overlaps and duplication. A national policy is therefore necessary for regulating, coordinating and mandating data production, access, sharing, exchange and quality.

In order to realise the enormous economic benefits of GI, Sierra Leone requires a National Spatial Data Infrastructure (NSDI) to provide easy access to national geospatial data (instead of data kept manually in shelves or drawers) and to mainstream the use of GI into the Government's decision making process.

C2 Issues

- a. Inadequate core geographical data sets and thematic data sets, and the lack of a national geographic information strategy.
- b. MDAs slow to adopt contemporary technology for resource and environmental data acquisition, analysis and management.
- c. The organizations that were established to acquire and provide core fundamental data have largely been unable to meet the data demands.

C3 Objectives

- a. Conduct a multidisciplinary assessment of the status of GI in Sierra Leone.
- b. Introduce the use of modern equipment (Satellite images and GPS technology) to capture spatial data and the use of modern GIS tools to produce more accurate maps for planning.

- c. Develop a national geospatial data infrastructure that is capable of adequately supporting the economic and developmental needs of the country.

C4 Targets

- a. A national catalogue of available geo-information datasets and related metadata developed as a result of a full assessment of the status of GI in Sierra Leone, by December 2009.
 - b. Establishment of a sub-committee responsible for the coordination and planning of a national geospatial data infrastructure initiative by September 2009.
 - c. Department of Lands and Surveys capacitated, through intensified training, in applying modern GPS and GIS tools and techniques to collect land related information and to produce corresponding maps accurately and speedily, by September 2014.
 - d. A national spatial referencing network re-established based on Permanent GPS Base Stations by January 2010.
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