

# African Leadership in ICT

## Assessment of Environmental, Institutional and Individual Capacity Needs for the Knowledge Society in Zambia

### A Situational and Needs Analysis

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This report is part of 4 assessment reports: Mauritius, South Africa, Tanzania and Zambia, plus a summary report, all available at <http://www.GESCI.org/african-leadership-in-ict-aliict.html>

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## Acronyms

ASC	Annual School Census
AIDS	Acquired Immune Deficiency Syndrome
BESSIP	Basic Education Sub-Sub Sector Investment Programme
CBO	Community Based Organisations
CD-ROM	Compact Disk - Read Only Memory
CP	Cooperating Partners
CPI	Consumer Price Index
CS	Community Schools
CSEN	Children with Special Education Needs
CSO	Central Statistical Office
ECCDE	Early Care Childhood Care, Development and Education
ECZ	Examinations Council of Zambia
EoF	Educating Our Future
ESB	Educational Statistical Bulletin
EMIS	Education Management Information System
GER	Gross Enrollment Rate
GIR	Gross Intake Rate
GPI	Gender Parity Index
GRZ	Government of the Republic of Zambia
ICT	Information and Computer Technology
IRI	Interactive Radio Instruction
MOE	Ministry of Education
MoESP	Ministry of Education Strategic Plan
MDG	Millennium Development Goal
NER	Net Enrollment Rate
NGO	Non Governmental Organisation
NIR	Net Intake Rate
NISTCOL	National In-Service Training College
OVC	Orphans and Vulnerable Children
TEVET	Technical Education Vocational Entrepreneurship

## 1. Zambia Profile

According to the Zambia 2010 Census of Population and Housing preliminary report, the country has a total area of 752, 614 square kilometers, with a total population of 13,046,508 ( 6,394, 455male and 6,652, 053 female). It has nine provinces and a total of 73 district. The population growth rate is at 2.8% (2.6% males and 3.0% female). The Human Development Index for the year 2010 was at 0.395 (as against 0.389 for Sub-Saharan Africa and 0.624 for the world). Life expectancy in the same year was at 45.4 years, with an infant mortality of 86.3 for every live 1000 births and an HIV prevalence rate of 15.2%.

According to the Zambia Development Agency (2009), preliminary estimate figures for economic indicators indicated that GDP per Capita in 2009 was 1,100; employment was at 85%, while adult literacy was 70% and the urbanisation rate was 38%. The different sectors contributed to GDP as follows: Agriculture – 5%, Manufacturing – 10.1% Construction – 11%, Mining – 8.4% and Communications – 4%.

Area	752, 614 Square KM
Number of Provinces	9
Number of DistrICT	73
Total Population	13,046,508 (6, 394, 455 Male & 6, 652,053 Female))
Population Growth Rate	2.8% (2.6% male & 3.0% female)
Human Development Index (2010)	.395 (.389 Sub-Sahara Africa & .624 World)
Life expectancy	45.4 yrs
Infant Mortality	86.3
HIV Prevalence	15.2
GDP per Capita (2009)	1,100
Employment (1989)	85%
Adult Literacy	70%
Urbanisation rate	38%
Contribution to GDP	Agriculture – 5%; Manufacturing – 10.1%; Construction – 11%; Mining – 8.4% and Communications – 4%

**Zambia Census Draft Report, 2010; [web.worldbank.org](http://web.worldbank.org) › [Countries](#) › [Africa](#) › [Zambia](#)**

The Education Statistical Bulletin (2009) indicates that Zambia had a total of 8,783 Schools (8,111 Basic education schools and 672 High Schools). There were 3, 617,160 pupils (grade 1-12)

of which 1,846,945 were male and 1,770,215 were female. A total of 3, 352, 365 pupils were pursuing Basic Education (Grades 1-9), while 364, 795 were pursuing High School (Grades 10-12) education. The Bulletin further put the Gender Parity Index (GPI) on pupil enrolment at .97 for Basic education (Grades 1-9) and .87 for High School Education (Grades 10-12). The number of out of school children aged 7 to 13 years was 259, 390 (96,260 males and 163,130 females). There were a total of 5,322 High School children with special educational needs (CSEN), of which 2, 445 were male and 2, 887 were female. Additionally, there were 202, 115 Basic School (Grades 1-9) pupils with special educational needs (CSEN) of which 110, 273 were male and 91, 842 were female. There were 77,362 teachers at basic and secondary schools in Zambia, of these 51% are female. In 2009, the majority of these teachers, 59,186 are at GRZ schools. Interestingly, basic community schools had the highest percentage of female teachers, 64% (2009).

## 2. Zambia Education, ICT, STI and R&D Policy

### i. Knowledge Society Policy & Vision

In Zambia, Knowledge Society developments are anchored in the Zambia Telecommunications Act of 1994 which led to the liberalisation and increased participation by the private sector of the telecommunication industry and the establishment of the Communications Authority (CAZ) in 1994; The Zambia Science and Technology Policy (1996); The Zambia Vision 2030 (in 2005); The Zambia National ICT Policy(Launched 2007); The Ministry of Education ICT Policy; The Zambia ICT Act of 2009; The Computer Crimes and misuse Act and other policy and regulatory framework documents. Through these documents, the Zambian government and stakeholders recognises the need for ICT in the development of the country and set out to address challenges. The government visualizes a Zambia transformed into an information and knowledge based society and economy, supported by consistent development and pervasive access to ICT's by all citizens by the year 2030. ICT in the Zambia National Policy and the implementation plan recognises ICT to be a crosscutting tool for the attainment of the United Nations' Millennium Development Goals (MDGs) in Zambia. It is the desire of the government of Zambia and its people to identify drivers of change in order to entrench use of ICT in the day to day life of its people. It is with this background that the ALICT Programme Needs Assessment is welcome and shall be supported.

The National Vision 2030 is the Zambian government's long-term plan "to be a prosperous middle income nation by the year 2030." The vision emanates from a series of discussions with a range of stakeholders from civil society, the private sector, and within government, and it articulates national and sectoral goals for the socio-economic development of Zambian economy and society. The Fifth National Development Plan (FNDP) from 2006 to 2010 proposed the installation of provincial and district fibre optical cables and the establishment of rural community multi-purpose telecentres. The FNDP represents the engine for developing other forms of ICT including capacity building related to technologies and equipment as well as broadening access content such as news, information, and knowledge resources by the general public. Further information on the overall economic activities in Zambia can be found at [www.zambiachambers.org/index.php](http://www.zambiachambers.org/index.php)

In this respect, the Government's policy goal is to ensure that the country attains sufficient human resource capacity in critical and relevant ICT skills required for developing and driving Zambia's information and knowledge-based society and economy. In order to achieve the above goal, Government outlined the following objectives and strategies:-

### **Objectives**

- Facilitating the creation of Centres of Excellence for training/education in Electronic Engineering (Telecommunications), Computer Science/Information Technology, Media/Information Science etc;
- Facilitating the implementation of a comprehensive human resource development Programme targeting critical skill areas across key sectors of the economy in order to accelerate the development of Zambia's information society and economy; and mainstreaming youth and gender issues in human resource development activities.
- Increasing the institutional capacity in terms of infrastructure and human resource in public and private colleges/universities that offer ICT courses;
- Increasing annual enrolment and output of students in key professional skills areas such as telecommunications/electronics engineering, computer science, media/information sciences etc; and
- Addressing the human resource requirements in key sectors of the economy targeting critical managerial, technical and operator skills.

### **Strategies**

- Develop and implement short, medium and long-term ICT human resource development plans;

- Create favourable conditions for public and private sector organisations to invest in ICT skills development;
- Enhance general public ICT awareness and literacy, especially among the youths and women;
- Provide adequate access to education and training resources for the physically challenge and vulnerable groups;
- Promote and facilitate the integration of ICT in the teaching and learning process at basic (primary), high school and tertiary levels; and
- Allocate a significant percentage of the national budget to integration.

### **Observed Outcomes of the policy initiatives**

With policy initiative, the ICT sector in Zambia has developed into four main sub-sectors: telecommunications, information technology, electronic media, and postal communication. The Zambia telecommunications sector has achieved significant and positive development over the last decade. Building on the 1994 watershed reforms, which opened the market to new entrants, the sector has experienced rapid growth, albeit starting from a very low base. However, low penetration rates and high prices prevailing in the market place suggest that the market is still largely underdeveloped and that there is room for improvement. In the period 2009 to 2010, the government has undertaken major reform initiatives that are intended to further open the market to new entrants and to enhance competition. These measures include the development of a national ICT policy, enactment of the Information and Communications Act in 2009, partial privatisation of the loss-making incumbent ZAMTEL, and liberalisation of the international gateway, which has resulted in significant tariff reductions.

**Table 1: Type and Number of Licenses Issued**

Mobile Cellular	03
Internet Service Provision	19
Private Network	24

Carrier of Carriers	03
Basic Voice Services	01
PSTN	01
Public Payphones	01
Public Data Transport	01
Total Licenses	53

*Source: ZICTA*

ZICTA is mandated to establish and administer a Universal Access and Service Fund, which shall be used for the financing of a universal access and service Programme. In this regard, ZICTA has commissioned a Universal Access Programme (UAP) to ensure that ICT are deployed to rural and un-served areas of the country using public funds. ZICTA's UAP consists of the following components, namely: construction of shared passive infrastructure (i.e. communication towers) in rural and underserved areas; establishment of multi-purpose community telecentres (MPCTs); and Internet Points of Presence (PoPs). The implementation of MPTCs is complemented by a project to extend internet service provision to under-served and un-served (rural) areas of Zambia through establishment of PoPs for Internet Service Providers (ISPs). The overall aim of ZICTA UAP is to provide and expand communication and information facilities in order to improve people's quality of life in rural and underserved areas.

It has been observed that the Vision 2030, the Fifth National Development Plan (2004), and the National ICT Policy (2007) all provide for the necessary policy guidance on provision of ICT and establishment of an information society and economy. The ZICTA Act of 2009 provides the framework and opportunity for ensuring universal access to ICT through installation of MPCTs, ISPs and PoPs. What seems lacking is the productive inter-ministerial and inter-agency dialogue to facilitate development of inter-sectoral policies and strategies to guide policy implementation by different ministries, government agencies and civil society. This would help streamline the licensing process and improve accessibility (see the number of licenses in the table below). The mobile sector is characterised by high prices and low penetration levels – a feature usually identified with high concentrated but underdeveloped markets.

There is need for capacity building among the top leadership to facilitate dialogue between the Ministries of Education; Science, Technology and Vocational Training; Communication and

Transport; and Information and Broadcasting. In the absence of dialogue, the Ministry of Education will remain with the facilities under the EBS and ETVS, but they will not utilise them to the full without broadcasting licenses; while the Ministry of Science, Technology and Vocational Training will remain with opportunities in isolated facilities located in various colleges and its agencies, but they will not utilise them to the full.

### **Mobile, Fixed and Internet Customer Growth Trends**

According to Shabeenzu (2010), in 2009, Zamtel's fixed line network had an installed capacity of 162,000 fixed telephone lines out of which slightly above 90,000 lines were active. This translates to a capacity utilization of approximately 56% and fixed-line teledensity of 0.7 phones per 100 people across the country. From 1995-2005, the number of lines grew from 76,000 to 94,665, at an annual average growth rate of 2.4%. However, since 2006, the fixed-line market has experienced a slow but gradual decline, averaging 1% annually, to 90,341 lines in 2009. The decline is mainly due to lack of investment in network maintenance and expansion on the one hand and increased public access to mobile telephony on the other (mobile sector).

The fixed-line network is highly skewed towards urban areas, which account for close to 90% of the PSTN subscribers, but only 55% of the country's population. The network is concentrated in Lusaka and Copperbelt areas, which account for around 50% and 30% of fixed lines, respectively, but less than 38% of the national population. The rural areas, with more than 60% of the population enjoy less than 10% of the fixed lines available. At present, the active fixed lines in Zambia are evenly distributed between commercial and residential subscribers. More than 80% of ZAMTEL's transmission network is digital. A number of microwave trunk routes carry traffic to major provincial centres.

A digital optic-fiber backbone linking Lusaka and Livingstone has been installed as part of ZAMTEL's network upgrade. Traffic to medium-sized towns and rural areas is carried via microwave links that also provide interconnection with neighbouring countries where applicable. In spite of its monopoly status, as at end of 2009 ZAMTEL had fewer than 100,000 fixed and fixed wireless subscribers over the last 40 years and, since 2006, it has lost over 10,000 subscribers. While the two major private operators, namely Zain and MTN, had over 3.5 mobile

million subscribers between them, Zamtel has fewer than 200,000 mobile customers. In 2008, Zamtel registered a ratio of 110 subscribers per employee compared to 586 – the average subscriber base per employee for sub-Saharan African telecommunication operators. The private operators therefore provide an opportunity for the education sector to expand access and improve the quality of education by use of ICT. It enhances opportunities for ensuring equity through provision of open learning and distance education to those living in Zambia's rural set ups.

### **ICT4D policies & plans**

The ICT4D report of 2009 observed that Zambia has a supportive regulatory regime; had opened up the market and reduced license fees. Despite these incentives for investment, the perception of the market was that the regulatory authority could not deal with technological issues such as the international gateway and Voice over Internet Telephony (VOIP) as it should. It was also observed by the private sector that there was lack of technology neutrality. It is also indicated in the report that while civil society and academies were extensively involved during the policy formulation process, they had not been contacted to participate in the implementation process as at 2009. Although the Government had done some work to get the implementation process under way, the pace of doing so was very slow and the private sector had not been engaged in the implementation process. The report observed that lack of collaboration between key market players was a key factor in infrastructure development, resulting in the development of a national fibre backbone by three different players, while the lack of collaboration by the two state-owned institutions was major concern for both service providers and ICT practitioners.

The ICT4D report therefore exposed the opportunities for investment provided by the supportive regulatory framework, opening up of the market by government and reduced license fees. The lack of collaboration was indicative of the need for capacity building among the top leadership to enhance dialogue, development of inter-linked sector based policies and involvement of civil society. The delays by Government to deal with technical issues such as the VOIP, skype and international gateway was indicative of the need for capacity building in technical areas through enhanced partnerships with civil society organisations, while the national fibre backbone provides an opportunity for developing capacities in the utilisation of

the infrastructure and a more efficient and cheaper communication and information sharing platform for the country.

### **Education General Policies, Strategies & Frameworks – Access, Quality, Equity, Curriculum**

The Ministry of Education developed a Draft policy on ICT (2007), whose vision reads, ‘Information and communication technology that will contribute to reach the objective of providing Innovative and productive life long education and training accessible to all by 2030.’ The draft ICT policy (page 24) further states that. “Top Management of the Ministry will seek the involvement and recommendations of the ICT Steering Committee, as necessary, to assist in strategic planning and decisions made towards ICT.” For this policy, distance education comprises different types content delivery modes including the following:

- Use of digital multimedia materials to support class-room courses delivered in electronic format (on CD Rom, via e-mail or the Web) with direct face-to-face contact with an educator. This deliver mode particularly addresses the quality of education.
- One-way distance education courses delivered via broadcasted educative radio or television Programmes or in electronic format (on CD Rom, via e-mail or the Web) for self-learning and continuous learning purposes without support of a teacher or tutor. This delivery mode can assist to address the issue of limited access to education.
- Interactive distance education courses delivered in electronic format (on CD Rom, via e-mail or the Web) with on-line support of a teacher or tutor, communicating via phone, e-mail, MSN, a website or video conferencing. This deliver mode particularly addresses the lack of local access to qualified educators.
- eLearning, or learning through electronic media, which covers a wide set of applications and processes, such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of courses via Internet, intranet/extranet, audio- and videotape; satellite broadcast, interactive TV, CD-ROM, mobile phones, and many more. (Lungwangwa, 2007).

The policy provides opportunities for integrating ICT in Education, as is evidenced by the Ministry of Education's interpretation of the vision 2030 and the definitions of distance education and open learning. The presence of a Steering Committee provides an opportunity for enhanced internal and Inter-ministerial dialogue in the area of ICT. However, the ICT policy and Strategy have remained in draft format since 2007, and the Ministry is unable to broadcast its educational Programmes on its own because it has not been granted broadcast licenses by the Ministry of Information and Broadcasting. These challenges are due to various factors that border on inadequacy of capacity to engage in conclusive internal and inter-ministerial dialogue on policy and strategy formulation by senior management staff. The Draft Policy and Strategy, Educational Broadcasting Services and Educational Television Services have all remained opportunities that the Ministry of Education would have used to enhance the education quality and increase access. They have not been utilised fully due to inadequate capacities among the leadership to secure the required authorisation to use them, and to some extent, inadequate capacities to utilise the available equipment by the members of staff.

### **Education ICT Policies & Initiatives**

According to the Draft ICT policy, the Ministry of Education(MoE) and Ministry of Science and Technology endeavours to integrate ICT in teaching and learning at all levels to assist improve the quality of the education delivery system and provide support to alternative electronic stand alone or distance education systems, thereby increasing access to education. The Ministry also wishes to implement e-Governance to enhance the efficiency of management and administration by deploying education management flow systems at all levels within the educational sector, through integration of ICT. (MoE Draft ICT Policy and Implementation Plan, 2007).

To achieve these objectives, the Ministry of Education has partnered with different organisations to implement project based activities, under the structures of the Ministry. Some of the projects and initiatives involving ICT are the following:

## **Open and Distance Education**

The Directorate of Open and Distance Education have at its disposal basic infrastructure such as digital audio recording studios at Kitwe Education Television and Lusaka Education Broadcasting Services. The Zambia College of Open and Distance education (ZACODE) based in Luanshya also provides printing services in addition to designing, developing and printing of self-study materials for upper basic and high school levels. These have provided opportunities for the Ministry of Education to widen the access to quality education and training at all levels. This offered an opportunity for increasing access by use of ICT to broadcast educational Programmes on radio and television, exchanging information among the many players in the provision of educational services and enhancing collaboration among stakeholders at different levels of the Ministry from headquarters to school level. They have provided an opportunity for digitalisation of teaching and learning materials. The opportunities have however remained underutilised due to lack of broadcast licenses.

Additionally, Multi Choice Zambia, School Net and the Ministry of Education established a partnership for cooperation to promote and advance ICT education in Zambia. This partnership has been defined in the MOU in respect to the implementation of resource Computer Laboratory Centres in selected high schools in the Republic of Zambia. To date, 58 high schools have benefited from the 300 DSTV units that have been offered by Multi Choice. The pace at which this agreement is being implemented is very slow. There is need to devise strategies that will increase the rate at which the activities and services are expanding.

The other challenges the Ministry has that are related to open and distance learning include policy and strategy, equipment, and technical competencies of members of staff. The ICT policy and Strategy for the Ministry of Education have remained in their draft form since 2007, the Steering Committee has become inactive and the national e-learning committee became inactive after the conference in 2010. Though the members of staff are able to use current equipment, the extent of use is limited by the skill and competence levels, which require continuous professional development.

The Ministry of Education has great opportunities for enhancing the quality and increasing access to education through integration of ICT. To achieve these opportunities, there is need to

enhance the leadership capacities in internal and external dialogue, policy and strategy and monitoring and evaluation. There is also need to promote creativity and innovation among the members of staff to ensure that the opportunities are seized and sustained.

### **Planning and Information Management**

Under USAID sponsorship, the Education Quality Improvement Programme project (EQUIP 2) has worked with the Ministry of Education since 2004. Initial focus was the Ed\*Assist and EMIS (Education Management and Information System) project. Among the goals of the project are:

- Cascading of institutional capacity through all levels of the education system, from the MOE headquarters to provincial and district offices and schools (through vertical and horizontal systems of organisational learning, knowledge management and capacity building);
- Improving information collection, management and policy implementation through enhanced monitoring at multiple levels;
- Support to evidence based decision making in ways that increase educational relevance and quality; and
- Support to HIV/AIDS workplace Programme for MOE teachers, staff members and their families at provincial, district and school levels.

Over the years, EQUIP 2 has organised symposium in 2009; enhanced education system management between cooperating partners and the Ministry of Education; developed a methodology that is transforming classroom practices, teaching and learning by use of assessment; and built information systems that serve stakeholders at every level of the education system. The project also re-introduced the Education Leadership Training Programme for school head teachers, the Human Resource Information Systems and the Provincial Education Advisory (PEA) office to support underperforming schools.

The EQUIP 2 project activities provide an opportunity for integration of ICT in education through its Ed\* Assist and IMIS. Though the two were introduced, the extent to which management in

the Ministry use them to make informed decisions is limited due to limited opportunities for information exchange. The Education Leadership Training provides an opportunity for enhancing internal dialogue within the Ministry. The widespread connectivity to internet provides an opportunity for cost reduction and enhancing information and knowledge exchange within the Ministry of Education and the use of ICT delivery of e-learning services.

Considering the fact that the EQUIP 2 project ended on 31<sup>st</sup> March, 2011, there is a huge gap for providing the support services the project was providing, while at the same time there is an opportunity to use the platform left by the project to achieve the objectives of building an information society through integration of ICT activities in education. To achieve this, there is need to build the capacities of the leadership in the Ministry of Education to optimise the use of available facilities.

### **Teacher Education**

The Flemish Office for development Cooperation and Technical Assistance (VVOB), through the Better Secondary School Trained Teachers (BeSST) has partnered with the Ministry of Education to improve the quality of high school education in Zambia by supporting the Copperbelt and Nkrumah Colleges of Education. The activities aim at upgrading qualifications of academic staff, reviewing syllabi, providing teaching and learning materials, ensuring that all staff are computer literate, and setting up Continuous Professional Development Committee (CPDC). The specific objectives of the project are to help the Ministry of Education to:

- Update knowledge and understanding of effective teaching and learning;
- Identify and recommend teaching and learning materials;
- Strengthen ICT capacities of staff;
- Facilitate curriculum change;
- Sensitise staff on alternative assessment strategies;
- Foster reflective practice among staff;

- Build capacity in management of change;
- Strengthen research competencies of lecturers.

The project provides an opportunity for improving the quality of teaching and learning through the integration of ICT in teacher education and implementation of capacity building activities on a continuous basis. These activities are supported by the Draft ICT policy of the Ministry of Education (2007) on Teacher Education, curriculum and materials development. However, the Ministry of Education needs to enhance dialogue between curriculum development and teacher education unit in order to enhance the quality of curriculum materials being developed. Additionally, the Teacher Education unit needs to dialogue with the Standards Unit to enhance monitoring of the activities being implemented, while the directorate of planning and information is required for allocation of resources and ICT infrastructure support.

ALICT therefore has an opportunity to help the Ministry enhance internal dialogue among the different directorates, improve policy and strategy by facilitating development of inter-related strategies and activities and external dialogue with cooperating partners (sponsors) of the various activities to enhance value for the support provided to the Ministry. To do so, the capacities of top leadership need to be developed in the areas of dialogue, policy and strategy, monitoring and evaluation. Other important areas are communication skills.

### **Standards and Assessment**

The Examinations Council of Zambia in its endeavours to set, conduct and process examinations of high and comparable standards that reflect the quality of education in Zambia has acquired and installed ICT infrastructure facilities that are part of the Ministry of Education management information system (MIS). The ECZ is able to take advantage of the modern high capacity processing and storage capability with application and data integration that are independent of servers whilst achieving mirroring and backup & speedy recovery. The capacity at the council enables it to process 7.5 GB of 1 year's grade 7 data from data entry comprising scanning of about 2.5 million answer cards (OMR forms) to final printing of results in about 10 days.

The good high speed data captured facilities, OMR technology at ECZ were used by the Central Statistical Office to do data capture of the Zambia National 2000 census. This was the first time that OMR technology was used by Central Statistical Office to do census data capture. The 2000 census scanning comprised about 17 million forms and this was completed in about 90 days, which was a tremendous reduction from the traditional 3-5 years census processing time. The set-up at ECZ is a Local Area Network that is connected to the Ministry of Education enterprise network via wireless link directly connected to MOE HQ and via a DSL link via Zamtel.

The computerisation of the processing of examinations results and the MOE H/Q /ECZ enterprise network allowing access to the Internet, when the majority of the schools do not have computers and cannot have access to the Internet possess challenge to ECZ. In an effort to modernise its methods of getting information from the schools for examinations entry and reducing the period for getting this information from the schools, ECZ has introduced a system where data is captured at school level using a platform that has been developed internally. Although the system is called the electronic registration system by ECZ, it is not online and data has to still be loaded on a CD and eventually be physically offloaded on the system at the ECZ offices. Further interaction with the teachers in schools is made difficult by their limited exposure to computer systems. This imitated interaction causes concern regarding the quality of the information that is submitted to the ECZ computer system.

This provides an opportunity for the establishment a complete electronic system where the schools can enter the students directly on the data base. There is also an opportunity for enhanced interaction between the ECZ and schools in order to resolve any issues that arise from the supplied information without physically having to travel long distances to and from the ECZ by the provincial, district and school staff. The challenge however border on leadership capacity to appropriately use ICT to reduce the cost to information exchange by use of ICT.

### **Science & Technology, Innovation and Research & Development Policies and Initiatives**

The mission of the policy on Science and Technology (1996) is to promote and exploit science and technology as an instrument for developing an environmentally friendly indigenous technological capacity in sustainable socio-economic development in order to improve the quality of life for Zambia. The goals include:

- Enhancing linkages between technology research institutes, the private as well as the public sector in order to encourage demand-driven research and development;
- Developing and sustaining a national scientific and technological capacity and providing highly skilled human resource for increased productivity in the economy;
- Fostering national and international linkages for enhanced technology transfer; and
- Facilitating the acquisition, adaptation and utilization of foreign technology.

The strategies for achieving this broad policy objective include: recognizing gender concern; changing institutional structure; ensuring that research is guided by national developmental goals; establishing a mechanism for increased innovation, transfer, diffusion and commercialization of technology, especially for small and medium scale industries, with emphasis on indigenous technology.

The Government has enacted a new legislation which saw the creation of the National Science and Technology Council to provide advice on policy issues related to science and technology and innovation; the National Technology Business Centre to facilitate commercialization of innovations and autonomous research institutes to spearhead research and innovation activities. Government therefore established the Department of Science and Technology (DST) within the M.S.T.V.T to carry out the functions of Developing, Promoting and Monitoring Science and Technology policies in Zambia.

The policy framework and structures provide an opportunity for policy and strategy development, research and innovation, and commercialisation of scientific research products. To ensure the agencies are working towards achievement of set goals, there is need to build the capacities of the leadership to facilitate internal-dialogue within the Ministry, its agencies and civil society; development of inter-related policies and strategies; and monitoring of activities. The NTBC has a documentation centre, whose relevance to science and technology is limited by inadequate research and documentation skills. The centre provides an opportunity for information sharing, which is currently underutilised.

### **Professional Development in Education, ICT and STI**

The government has acknowledged that Zambia's ability to seize the opportunities of the emerging information society will largely depend on the country's capacity to develop and mobilise its human resources. This provides an opportunity for capacity building in the area of ICT. In this respect, the Government's policy goal is to ensure that the country attains sufficient human resource capacity in critical and relevant ICT skills required for developing and driving Zambia's information and knowledge-based society and economy. The willingness by government to develop partnerships on human capital development creates a suitable environment for GESCI to partner with the Ministry of Education to enhance leadership capacity in ICT. [www.scidev.net](http://www.scidev.net)

### **Informational Literacy**

Information literacy is a set of abilities requiring individuals to recognise when information is needed and have the ability to locate, evaluate, and use effectively the needed information. The uncertain quality and expanding quantity of information pose large challenges for society. The levels of information literacy in Zambia are very low. The demographics that relate to ICT, such as tele-density, indicate that Zambia has a high degree of ICT illiteracy. Low information literacy levels, coupled with inadequate access to ICT and other sources of information imply that the levels of awareness on issues that affect humanity are very low among Zambians. Currently, only one in 400 people have a personal computer or laptop; and only one in 100 have access to a telephone. Such statistics indicate that the country faces serious constraints in bridging the digital divide, establishing an information society and developing a knowledge economy. [www.indexmundi.com](http://www.indexmundi.com) Zambia Demographics; [www.ala.org/ala/mgrps](http://www.ala.org/ala/mgrps). This creates an opportunity to support Programmes aimed at enhancing information literacy.

## **Key Actors – Public Private Partnerships & Networks**

### **Computers for Zambian Schools Trust**

The Computers for Zambian Schools is a registered trust established by the local educational and ICT specialists, representatives from the British Council, Ministry of Education, and the Beit Trust. It operates as a partnership between the Computers for African Schools, which is a UK-based registered charity, the British Council, HSBC, the British High Commission, the Beit Trust, SchoolNet Zambia, MTN, ZamNet, and the Zambian Ministry of Education. The British Council has reportedly facilitated the import of duty-free equipment to Zambia. The Beit Trust provided grants to the project and MTN supported the operating costs for the technical centre. To date the project has reportedly sent 4,500 computers that reached 300 schools in Zambia. It is based at a boys' high school in Lusaka where it takes in PCs and refurbishes and redistributes them to schools to be used to support the study of computer studies. The main activities in which Computers for Zambian Schools are involved include training of ICT teachers, distribution of ICT to schools, provision of technical support to schools, and recycling computers in partnership with a South African company. <http://www.cfzs.org.zm>

### **e-Brain Forum of Zambia**

e-Brain Forum of Zambia (eBrain) is a non-profit, membership-based organisation that promotes ICT for development in Zambia. Its objectives are to lobby, advocate, build capacity, and conduct research on ICT for development issues. It has more than 150 members, including both individuals and organisations. Its secretariat is based in Lusaka and it has branches in the Southern province and Copperbelt. It is involved in policy dialogues and awareness raising, and aims to support its membership through brokerage and providing information on other ICT-services and experts. eBrain organises monthly meetings to highlight policy issues and innovations in ICT for development. Knowledge and information sharing is achieved through meetings, newsletters, the eBrain website, e-dialogue (Dgroups) and a shared platform. It has established thematic working groups that bring together practitioners. They focus on the use of ICT in a specific sector or theme, particularly agriculture, education, rural access and, in the future, health. The aim is to bring experiences and expertise together and identify areas of common interest. [www.ebrain.org.zm](http://www.ebrain.org.zm)

### **SchoolNet Zambia**

SchoolNet Zambia was initially established as a short-term pilot project supported by the IDRC in the late 1990s. When this project came to an end, the organisation paused for a while and was then re-started with the support of SchoolNet Africa and its partnership with Multichoice Africa and the Open Society Initiative for Southern Africa (OSISA). With the support of Multichoice Africa and Multichoice Zambia, SchoolNet Zambia was able to promote access to satellite television and video in a few schools in order for learners and teachers to access education channels such as Mindset Learn, Discovery Channel, and National Geographic. With the support of OSISA and in partnership with Computer for Zambian Schools, it extended the PC refurbishment centre. <http://www.schoolnet.org.zm>

### **OneWorldAfrica**

OneWorld Africa is a registered NGO in Zambia which forms part of the OneWorld International online network of media and human rights practitioners and civil society organisations. OneWorld Africa has been involved in lobbying and advocacy on ICT for development issues in Zambia, including education. OneWorld Africa has an Education Support Network Project that involves volunteers in the development of teacher support materials for nine schools in the country. OneWorld Africa also has a collaborative partnership on thematic channels such as its learning channel, which provides information on education opportunities for individuals and institutions across the globe. Another is its kids' channel which provides a host of information and learning opportunities for children. [Africa.oneworld.net](http://Africa.oneworld.net)

### **University of Zambia and Copperbelt University**

The University of Zambia and the Copperbelt University offer computer science as a study subject, and both institutions have invested in ICT infrastructure. The University of Zambia installed PCs with Internet connectivity in its regional offices. The Copperbelt University has a curriculum development centre that develops the syllabus on computer studies for Grades 1 to 9 with Grades 10 to 12 following international syllabuses on ICT. [www.unza.zm](http://www.unza.zm)

### **UNESCO Distance Learning Course on Telecentres**

In 2004 UNESCO supported the establishment of three learning centres in five African countries including Zambia. The project provided the centres with digital radios, data interfacing equipment, and technical backup, which enabled large numbers of local learners to participate in a course on telecentres. The course was delivered using the combined live audio and slide show (CLASS) technology of WorldSpace Corporation. [www.wougnet.org/Support/WSRP/sdl](http://www.wougnet.org/Support/WSRP/sdl)

### **Resource Co-operative Society**

The International Institute for Communication and Development (IICD) supports the Resource Co-operative Society in Ndola, which uses computers to conduct small-scale training for students and members of the community in lifelong skills to improve their employability. [www.iicd.org/articles/NdolaRCS](http://www.iicd.org/articles/NdolaRCS)

### **The Electronic Communications and Transactions (ECT) Act No. 21 of 2009**

The Act provides for the development of a safe, secure and effective environment for the consumer, business sector and the Government to conduct and use electronic communications; promotes legal certainty and confidence, and encourages investment and innovation in the electronic communications industry; facilitates the creation of secure communication systems and networks; and allows the legal interception of electronic communications and admissibility of intercepted communications. [www.parliament.gov.zm/index.php](http://www.parliament.gov.zm/index.php)

### **ICT Integration in Multi-Media and Recording**

The award-winning Chawama Youth Project helps young people in the township of Chawama. The centre offers 'life skills' courses in subjects such as Auto Mechanics, Tailoring, Carpentry, and ICT to improve the young people's chances of finding work. IICD support the project since 2006. Over three hundred people have been trained and the centre has integrated ICT components into several courses. Teachers are using the internet to enhance content (e.g. by accessing diagrams of engines using Google Images instead of drawing on the blackboard); hand-outs are being produced quickly; existing lesson plans are now being stored and re-used. [www.iicd.org/projects/zambia-cypro](http://www.iicd.org/projects/zambia-cypro)

## **ii. Desk research analysis – Assessment of KS Status in Zambia and ICT, Education and STI Pillars**

Zambia has the national policy, vision and mission and national policy in ICT are in place and supportive of the integration of ICT in Education and implementation of capacity building Programmes through partnerships. Various Ministries have developed their ICT sector based policies and strategies that fit into the national policy and strategy. The Ministry of Education has developed an ICT policy and implementation strategy, but these have remained in draft for over three years. The Ministry of Education's activities related to development of curriculum materials, e-learning, classroom teaching and learning, delivery of education through radio and television, development of teacher capacities and development (digitalisation) of distance learning materials, all provide an opportunity for integration of ICT in education to improve quality and increase access. The supply of ICT hard and software, Education Management Training and the VVOB activities related to CPD and support to Colleges of Education, all create opportunities for implementation of capacity building activities in ICT, in accordance with the national and Ministry of Education policies and strategies. The Ministry of Science, Technology and Vocational Training has developed an ICT Policy and established three implementing agencies namely NSTC; NCSR; and NTBC, in addition to TEVETA. Civil society organisations and professional associations such as e-Brain, School Net and Computer Society of Zambia, to mention a few, worked together with government to develop the policy, but now they have not been invited to participate in implementation. The organisations sat on national and sector based ICT committees, which are no longer very effective after the policy was launched. The national e-Learning committee is no longer active and its role seems conflicting with the Ministry of education Steering Committee on issues of ICT. Infrastructure such as the EBS, ETVS, and the ZACODE are underutilised because of various factors that include non-issuance of broadcast licenses by the Ministry of Information and Broadcasting to the Ministry of Education. Meanwhile, the proliferation of Community Radio Stations and private television stations has created further opportunities for integration of ICT to enhance quality of and increase access to access.

In summary, Zambia has vast potential for achieving its vision of 'Information and communication technology that will contribute to reach the objective of providing Innovative

and productive life long education and training accessible to all by 2030' through inter-related policy and strategies, internal and external dialogue (within government, civil society and financiers), planning and implementation of inter-related activities and better coordinated policy implementation processes. To achieve the vision, there is need for a capacity building Programme that will target at building collaboration, enhancing planning and strategic skills and monitoring and evaluation of activities.

### 3. Field research

#### i. Summary of Findings

##### High level interviews

During the high level interviews, the following were observed;

- Both government and civil society organisations appreciated the fact that Zambia had the capacity to develop a knowledge society and knowledge economy, but this was mostly affected by lack of capacity to pool human, financial and materials resources together among the high level leadership. The top leadership lack the capacity to establish inter-ministerial and inter-sectoral coordination mechanisms on KS pillars of Education, Science and Technology and Innovation, as evidenced by the non-functioning of the national E-learning Committee after the conference ended in 2010.
- The ICT policy implementation has been placed under the government through the Ministry of Communication and Transport and its regulatory agent, ZICTA. However, the Ministry and Agent do not seem to have the capacity to develop, communicate and give direction to knowledge society vision, mission and values as articulated in the ICT and other policies in Zambia. As a result, key ministries and government agents have failed to fit into the vision, mission and values and hence are developing sector based policies that are poorly coordinated. The key implementing agents therefore cannot develop an adequate strategy for achieving the policy and neither can they monitor the implementation process adequately. There is therefore lack of guidance on policy

strategy and implementation, due to inadequate capacities to develop and harness these.

- Other organisations such as University of Zambia, eBrain and Computer Society, just to mention a few, were actively involved in policy formulation, but have been alienated from leadership in implementation. This has caused capacity shortages among government implementation units as these civil society organisations can only participate through the national and sector based steering committees, which are quite ineffective since the end of the e-learning conference.
- There is need for the Ministry of Education to clearly define the roles of committees and other structures such as the e-learning Committee and the ICT Steering Committee. This is because e-Learning is a component of ICT, it has been misunderstood to be a coordinating ICT activities.
- The capacity to manage dialogues and relations with key internal and external stakeholders on KS or its pillars inclusively and constructively seems to be lacking among top leadership.

### **Middle level interviews**

The middle level officials seem to be going on with activities as planned every year, as long as the activities are funded.

In the Ministry of Education, Directorate of Open Learning and Distance Education has continued exposing the e-learning bus from province to province. They have also continued to develop radio Programmes and developing materials for distance learning at the Zambia Institute for Distance Education with an aim of making some of their materials digital. The Directorate of Teacher Education and specialised Services has continued orienting teachers to ICT and improving their teaching skills through the CPD Programme, with the support of VVOB. The Curriculum Development Centre, under Directorate of Standards and Curriculum has continued with curriculum reforms with little reference to development of digital materials. The

Directorate of Planning and information has continued expanding access to ICT through supply of hardware and software and installing internet connectivity, with support of USAID/EQUIP2 project, but with little consideration for use of ICT in the teaching and learning classroom process. It may therefore be observed that though the different directorates in the Ministry of Education were working towards a knowledge society, lack of coordination of effort reduces the benefits of the Ministry's efforts to the teacher and learner.

Meanwhile, civil society organisations have been sitting on the national committee and sector based committees. Their contribution is limited to the agenda of the committees and although they have continued to influence policy formulation through different fora, they have no official role in the implementation of the ICT policies and others related to the Ks and its pillars. Though some of them have implemented successful Programmes, there is no room for replication as these activities are considered done in their complimentary role to government efforts, and not in partnership.

The Ministry of Science, Technology and Vocational Training has had similar experiences. TEVETA involved the civil society during formulation of the curriculum in Computer Science, while the same civil society sat on the Ministry's policy formulation committee until the policy was achieved. They also sit on the committees of various agents; but are not part of the policy implementation team for the Ministry.

It may therefore be concluded that middle level staff seem to have some skills and knowledge that can move the nation towards a knowledge society and economy, but they lack leadership guidance and policy coherence within their ministries and sectors and across sectors. Inadequate policy and poor strategic guidance has affected the implementation of activities which may have moved Zambia towards a knowledge society. Lack of clear guidance on civil society participation at technical level has robbed the nation of valuable contribution, due to lack of extrapolation of best practices from civil society organisations in government institutions. It is evident that though policies and infrastructure exist, government lacks the much needed human resource capacities to pool resources together and utilise them to achieve a knowledge society,

in accordance with the vision 2030. Intra and inter- ministerial collaboration and partnerships need to be redefined to influence implementation of the set policies and strategies.

### **Leadership Competency Importance-prioritization Survey**

During the field research a Leadership Competency importance-prioritization survey was conducted with senior level and middle level officials in Ministries visited. 21 questionnaires were completed and returned to the field team on the days of the visits. Table 2 presents a profile of the respondents.

**Table 2: Profile of the respondents (N=21)**

<b>Profile</b>	<b>No of Respondents</b>
Senior Level Management	7
Middle level Management	14

The survey involved two questions.

- In the first question, the senior and middle level officials were asked to indicate their perceived level of importance on each of thirteen ICT & KS competency standards for leaders drawn from the three environmental, organisational & individual level domains of the ALICT leadership framework. They used a three-point Likert scale (1 for unimportant, 2 for moderately important and 3 for important) to rate the competencies.
- In the second question, senior and middle level officials were asked to identify three leadership competencies that would require priority development for the pilot phase. For this question, the officials used numbers (No. 1 for 1<sup>st</sup> priority, No. 2 for 2<sup>nd</sup> priority and No. 3 for 3<sup>rd</sup> priority) to identify their priorities.

## Senior Management

The information in table 3 presents what senior management perceived as leadership competencies that would be important, moderately important and not important in relation to the establishment of the KS and its pillars of ICT, Education, Science and Technology and Innovation. The competency importance levels were ranked on the basis of 13 leadership competencies that were rated by managers. The ranking results in ascending order were as follows:

- National leadership capacity to establish inter-ministerial and inter-sectoral coordination mechanisms on KS pillars of Education, ICT and STI was ranked number 1;
- National leadership capacity to develop inter-related policies, strategies and plans on the KS and its pillars of Education, ICT and STI; Organisational leadership capacity to translate the KS (ICT or Education or STI) vision, mission, value framework into strategic (medium term) and operational (concrete and short term) objectives and actions and Leadership ability to develop key messages about the significance and parameters of KS pillars of ICT, Education and STI for organisational and national development were jointly ranked at 2.
- National leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy; Organisational leadership ability to design, establish and manage a system for measuring financial and operational performance for delivering on KS (ICT, Education & STI) goals and objectives; and Leadership capacity to create organisational environment that is conducive to achieving KS progress in pillars of ICT, Education and /or STI came in a joint ranking position of 5.
- Organisational leadership capacity to develop its vision, mission and values based on national Knowledge Society (KS) vision and policy; Organisational leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making; and learning on inter-related ICT, Education and STI policy and strategy came in joint ranking position of 8.

In the position of least importance was organisational leadership capacity to manage dialogues and relations with key internal and external stakeholders on KS or its pillars (ICT, Education, and STI) inclusively and constructively. This leadership competency was ranked 12.

### **Middle Management**

The ranking of information from middle management level was as follows:

- National leadership capacity to establish inter-ministerial & inter-sectoral coordination mechanisms on KS pillars of Education, ICT and STI; and Organisational leadership capacity to translate the KS (ICT or Education or STI) vision, mission, value framework into strategic (medium term) and operational (concrete and short term) objectives and actions were jointly ranked number 1.
- National leadership capacity to develop inter-related policies, strategies and plans on the KS and its pillars of Education, ICT and STI; and Leadership ability to develop key messages about the significance and parameters of KS pillars of ICT, Education and STI for organisational and national development were jointly ranked 3;
- National leadership capacity to develop, communicate and give direction to Knowledge Society (KS) vision, mission and values; and Organisational leadership ability to design, establish and manage a system for measuring financial and operational performance for delivering on KS (ICT, Education & STI) goals and objectives were jointly ranked 5;
- National leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy; Organisational leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy; and Leadership capacity to plan, manage and encourage organisational modernization, creativity and innovation related to KS and pillars of ICT, Education and/or STI were jointly ranked 7;

- In the position of least importance were organisational leadership capacity to develop its vision, mission and values based on national Knowledge Society (KS) vision and policy; and Leadership capacity to create organisational environment that is conducive to achieving KS progress in pillars of ICT, Education and /or STI jointly. These competencies were ranked at 10;
- National leadership capacity to manage implementation of inter-related plans, strategies, and Programmes on KS and ICT, Education and STI pillars ranked at 12; and finally
- Organisational leadership capacity to manage dialogues and relations with key internal and external stakeholders on KS or its pillars (ICT, Education, and STI) inclusively and constructively ranked at 13.

**Table 3: Leadership competencies that would require priority development**

	Senior Level Officials				Middle Level Officials			
	Mean	SD	Rank (out of 13)	Overall Rank	Mean	SD	Rank (out of 13)	Overall Rank
ICT competency standards for teachers								
<b>Environmental</b>	<b>2.66</b>			<b>2</b>	<b>2.83</b>			<b>1</b>
KS dialogue National leadership capacity to establish inter-ministerial & inter-sectoral coordination mechanisms on KS pillars of Education, ICT and STI	3.00	0.00	1		3.00	0.00	1	
KS Vision National leadership capacity to develop, communicate and give direction to Knowledge Society (KS) vision, mission and values	2.71	0.24	5		2.86	0.13	5	
KS Policy & Strategy National leadership capacity to develop inter-related policies, strategies and plans on the KS and its pillars of Education, ICT and STI	2.86	0.14	2		2.93	0.07	3	
KS System Management National leadership capacity to manage implementation of inter-related plans, strategies, and Programmes on KS and ICT, Education and STI pillars	2.14	0.14	13		2.57	0.26	12	
KS M&E National leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy	2.57	0.29	7		2.79	0.18	7	
<b>Organisational</b>	<b>2.51</b>			<b>3</b>	<b>2.73</b>			<b>3</b>
KS dialogue Organisational leadership capacity to manage dialogues and relations with key internal and external stakeholders on KS or its pillars (ICT, Education, STI) inclusively and constructively	2.29	0.24	12		2.30	0.23	13	
KS Vision Organisational leadership capacity to develop its vision, mission and values based on national Knowledge Society (KS) vision and policy	2.43	0.29	10		2.71	0.22	10	
KS Policy & Strategy Organisational leadership capacity to translate the KS (ICT or Education or STI) vision, mission, value framework into strategic (medium term) and operational (concrete and short term) objectives and actions	2.86	0.14	2		3.00	0.00	1	
KS System Management Organisational leadership ability to design, establish and manage a system for measuring financial and operational performance for delivering on KS (ICT, Education & STI) goals and objectives	2.57	0.29	7		2.86	0.13	5	
KS M&E Organisational leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy	2.43	0.29	10		2.79	0.18	7	
<b>Individual</b>	<b>2.71</b>			<b>1</b>	<b>2.81</b>			<b>2</b>
KS Effective communication Leadership ability to develop key messages about the significance and parameters of KS pillars of ICT, Education and STI for organisational and national development	2.71	0.24	5		2.93	0.07	3	
KS Creativity and innovation Leadership capacity to plan, manage and encourage organisational modernization, creativity and innovation related to KS and pillars of ICT, Education and/or STI	2.86	0.14	2		2.79	0.18	7	
KS Motivation & Collaboration Leadership capacity to create organisational environment that is conducive to achieving KS progress in pillars of ICT, Education and /or STI	2.57	0.29	7		2.71	0.22	10	

**Note: The mean scores in bold represent the weighted average of competencies for each domain**

In examining the senior and middle manager rankings of the competency domains in table 3, it is clear that both senior and middle management staff were in agreement on a number of leadership competency levels. They identified dialogue, policy and strategy leadership competencies at national and organisational levels as important and hence ranked them highly. The senior and middle management level staff also ranked the vision at national level highly. The officers were in agreement about the importance of monitoring and evaluation at national and organisational levels, which they considered moderately important. Overall, senior and middle management were in general agreement on organisational level competencies which they ranked as a number three priority on a weighted mean scale of 1 to 3.

The differences were however observed where the senior management ranked creativity and innovation leadership competencies highly, while the middle management staff ranked them lowly. While the overall weighted rankings by senior management placed the national level competencies at number 2 and individual level competencies at number 1; middle management placed the national level competencies at number 1, and the individual level competencies at number 2, giving a clear opposite in prioritisation. The conflict may be arising from the fact that middle management believe that although the policies and strategies may be in place, senior management has not effectively communicated the strategies for implementing the existing policies. On the other hand, inadequate expertise and lack of dialogue among the government ministries, agencies and civil society have robbed the key institutions of the opportunity to work towards a shared vision in the light of the KS and its pillars.

**Please refer to Appendix 4 - “Importance – Prioritization of Leadership in ICT & KS Competency Analysis”** for a detailed summary table analysis of the collected data.

## **ii. Field research analysis – assessment of emerging opportunities needs**

The emerging opportunities and needs were identified from the senior management and middle management staff. From the identified needs and observed emerging opportunities, areas of priority for capacity building were established as follows:

### **National/Environmental Level**

The findings established the need to build leadership capacity to:

- establish inter-ministerial and inter-sectoral coordination mechanisms;
- develop inter-related policies, strategies and plans;
- translate the KS vision, mission, value framework into strategic (medium term) and ICT competency standards for teachers;
- use of M&E systems and practices as evidence based foundation for planning, decision making and learning on inter-related ICT, education and Science and Technology policy and strategy.

### **Organisational Level**

The findings established the need to build leadership capacity to:

- manage dialogue and relations with key internal and external stakeholders on KS or its pillars of ICT, Education, Science and Technology, and Innovation inclusively and constructively;
- translate the KS vision, mission, value framework into strategic (medium term) and strategic (medium term) and operational (concrete and short term) objectives and actions
- use M&E systems and practices as evidence-based foundation for planning, decision making and learning on inter-related ICT, Education, Science and Technology and Innovation policy and strategy.

### **Personal Level**

The findings established the need to build leadership capacity to:

- develop key messages about the significance and parameters of KS pillars of ICT, Education, Science and Technology and Innovation for organisational and national development;

- create organisational environment that is conducive to achieving KS progress in pillars of ICT, Education, Science and Technology and Innovation
- plan, manage and encourage organisational modernization, creativity and innovation related to KS and its pillars of ICT, Education, Science and Technology and Innovation;

In summary, it may be observed that senior management suggests that the reason for lack of satisfactory ICT integration in education was lack of skill and expertise among the middle management staff. On the other hand, middle management suggests that senior management have not done enough to put systems and strategies in place. This situation is not healthy and hence requires immediate intervention through capacity building.

## 4. Conclusions and Recommendations

### Conclusion

From the study results, it can be observed that Zambia has the ICT policies, policy implementation plans and supporting regulatory instruments in place, although, in some instances, the policies still need finalization and approval. The mobile telephone access is high while the computer and Internet access and utilisation is very low. It is clear that the attainment of a knowledge society where use of ICT part of everyone's way of life shall not be a reality. The country requires drivers and managers with expertise in the KS pillars of ICT, Education and Science and Technology, especially at senior and middle management levels. The national level strategy and coordination mechanisms, interrelationships among sector and ministry based policies and strategies, ability to translate the vision, mission and value frameworks into strategies and activities and to develop messages about the significance of the KS pillars for organisational and national development are also lacking. The current organisational environment, where capacity building tools such as the curriculum does not adequately support use of ICT for education is therefore not very conducive to achieving KS progress in pillars of ICT, Education, science and Technology and Innovation.

### Recommendations

The capacity building Programme to be developed by GESCI should cover the following:

Topic/Module	Objective	Topics
Dialogue	To establish and strengthen the capacities of senior and middle management staff to dialogue on KS and its pillars of ICT, Education, Science and Technology and Innovation;  To strengthen capacity for Ministries to engage partners.	<ol style="list-style-type: none"><li>1. Zambia's policies on the knowledge society and its pillars of ICT, Education , Science and Technology and Innovation</li><li>2. Identifying key players in KS and its pillars and the need for dialogue</li><li>3. Establishing inter-ministerial and inter-sectoral coordination mechanisms</li><li>4. Managing dialogue and relations with key internal and external stakeholders on KS or its pillars inclusively and constructively</li></ol>

Topic/Module	Objective	Topics
Policy and Strategy	<p>To strengthen the capacities of senior and middle management staff to develop inter-related policies and strategies and plans on KS and its pillars;</p> <p>To translate the KS vision, mission and value framework into strategic ICT competency standards for teachers;</p> <p>To integrate ICT in work plans and education</p>	<ol style="list-style-type: none"> <li>1. Developing inter-related policies, strategies and plans</li> <li>2. Translating the KS vision, mission, value framework into strategic (medium term) and operational (concrete and short term) objectives and actions</li> <li>3. Activity planning and budgeting</li> </ol>
Monitoring & Evaluation	<p>To develop and strengthen national and organisational level capacities to establish, implement and use M&amp;E systems and practices as evidence based foundation for planning, decision making and learning</p>	<ol style="list-style-type: none"> <li>1. Project proposal writing</li> <li>2. Project planning and management</li> <li>3. Developing project indicators</li> <li>4. Defining monitoring and evaluation</li> <li>5. M&amp;E systems design and development</li> <li>6. Using M&amp;E information for planning and decision making</li> <li>7. Developing a learning product</li> </ol>
Personal development and management	<p>To develop and strengthen national, organisational and individual capacities to communicate effectively on the KS progress in pillars of ICT, Education, Science and Technology and innovation</p>	<ol style="list-style-type: none"> <li>1. Effective communication ; the need to develop key messages about the significance and parameters of KS and its pillars</li> <li>2. Creativity and innovation; the need to plan, manage and encourage organisational modernization, creativity and innovation related to KS and its pillars of ICT, Education, Science and Technology and Innovation;</li> <li>3. Motivation and collaboration; the need to create organisational environment that is conducive to achieving KS progress in pillars of ICT, Education, Science and Technology and Innovation</li> </ol>

## Appendices

### Appendix 1: References

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## Appendix 2 : List of Interviewed Persons & Key Actors

### Ministry of Education:

1. V. M. Muyatwa – Director - Directorate of Open and Distance Learning  
[vmuyatwa@moe.gov.zm](mailto:vmuyatwa@moe.gov.zm) Mobile: +260 977 718 240
2. Mr C. Ndakala – ICT System Development Manager- Directorate of Planning and Information  
[cndakala@moe.gov.zm](mailto:cndakala@moe.gov.zm); [cndakala@yahoo.co](mailto:cndakala@yahoo.co);
3. Esva Chizambe – Principal Education Officer - Directorate of Teacher Education and Specialised Services [echizambe@moe.gov.zm](mailto:echizambe@moe.gov.zm); Mobile: +260 977 690 196;
4. Sam S. Zulu – Senior Education Officer, Special Education [szulu@moe.gov.zm](mailto:szulu@moe.gov.zm) Mobile +260 975 430 808;
5. Lazarus Kaliran – Principal Curriculum Specialist – Directorate of Standards and Curriculum  
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6. Ms. Mweetwa – Senior Education Officer Mobile +260 977 850 639;
7. Athanasius Mulenga – Principal Education Officer - Directorate of Open and Distance Learning [amulenga@moe.gov.zm](mailto:amulenga@moe.gov.zm) +260 977 761 941;

### Ministry of Science, Technology and Vocational Training –

8. Mr. Kaluba – Director – Science and Technology;
9. Mrs. A. Kombe – Chief TEVET Officer [amkombe@mstvt.gov.zm](mailto:amkombe@mstvt.gov.zm) Mobile: +260 977 833 686

### e-Brain Forum

10. Mr. Lee Muzala – National Chairperson Mobile +260 977 843 926

### The Zambia ICT Authority

11. Mr. L. Kakubo – Director – International Relations [lkakubo@zicta.zm](mailto:lkakubo@zicta.zm) Mobile: +260 955 772 426

### Computer Society of Zambia

12. Mr. Makuni – Former President +260 977 885 597

### The University of Zambia Computer Centre

13. Mr. Collins Chinyama – Director [collinschi@gmail.com](mailto:collinschi@gmail.com) Mobile +260 955 751 051

### National Technology Business Centre

14. Dr. Tambatamba – Director [mjamatamba@ntbc.co.zm](mailto:mjamatamba@ntbc.co.zm) Mobile +260 955 770 593;
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18. Edwin Sigande – Officer [esigande@ntbc.co.zm](mailto:esigande@ntbc.co.zm) Mobile +260 976 986 040;

### Examinations Council of Zambia

19. Teza Nakazwe – Principal Officer [tnakazwe@yahoo.com](mailto:tnakazwe@yahoo.com) Mobile +260 955 754 781;

### Zambia Institute of Special Education

20. Laurence Mumba – Head of Department, department for Education of the Visually Impaired  
Mobile +260 977 489 688

### Appendix 3: Leadership capacity questionnaire

## African Leadership in ICT (ALICT) Survey on Leadership Competencies

The table below lists three Leadership competency domains for *national environmental, organisational and individual levels* which are based on inputs from stakeholders as well as inputs from the leadership development literature.

#### Importance – Prioritization of Leadership in ICT & KS Competency Domains

1. How important are each of the Leadership in ICT & KS competencies? (Please tick as appropriate).
2. Identify the *top three priorities* you would like the African Leadership in ICT (ALICT) Programme to focus on in the pilot phase  
(Write the no. 1 beside the 1<sup>st</sup> priority competency; the no. 2 beside the 2<sup>nd</sup> priority competency; and the no. 3 beside the 3<sup>rd</sup> priority competency)

Leadership in ICT and Knowledge Society (KS) Competency Domains		Important	Moderately important	Not important
National Environmental Level	<b>KS dialogue</b>  National leadership capacity to establish inter-ministerial & inter-sectoral coordination mechanisms on KS pillars of Education, ICT and STI			
	<b>KS Vision</b>  National leadership capacity to develop, communicate and give direction to Knowledge Society (KS) vision, mission and values			
	<b>KS Policy &amp; Strategy</b>  National leadership capacity to develop inter-related policies, strategies and plans on the KS and its pillars of Education, ICT and STI			
	<b>KS System Management</b>  National leadership capacity to manage implementation of inter-related plans, strategies, and Programmes on KS and ICT, Education and STI pillars			

<b>Leadership in ICT and Knowledge Society (KS) Competency Domains</b>		<b>Important</b>	<b>Moderately important</b>	<b>Not important</b>
	<p><b>KS M&amp;E</b></p> <p>National leadership capacity to use M&amp;E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy</p>			
<b>Organisational Level</b>	<p><b>KS dialogue</b></p> <p>Organisational leadership capacity to manage dialogues and relations with key internal and external stakeholders on KS or its pillars (ICT, Education, STI) inclusively and constructively</p>			
	<p><b>KS Vision</b></p> <p>Organisational leadership capacity to develop its vision, mission and values based on national Knowledge Society (KS) vision and policy</p>			
	<p><b>KS Policy &amp; Strategy</b></p> <p>Organisational leadership capacity to translate the KS (ICT or Education or STI) vision, mission, value framework into strategic (medium term) and operational (concrete and short term) objectives and actions</p>			
	<p><b>KS System Management</b></p> <p>Organisational leadership ability to design, establish and manage a system for measuring financial and operational performance for delivering on KS (ICT, Education &amp; STI) goals and objectives</p>			
	<p><b>KS M&amp;E</b></p> <p>Organisational leadership capacity to use M&amp;E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy</p>			
	<p><b>KS Effective communication</b></p> <p>Leadership ability to develop key messages about the significance and parameters of KS pillars of ICT, Education and STI for organisational and national development</p>			
<b>Individual Level</b>	<p><b>KS Creativity and innovation</b></p> <p>Leadership capacity to plan, manage and encourage organisational modernization, creativity and innovation related to KS and pillars of ICT, Education and/or STI</p>			
	<p><b>KS Motivation &amp; Collaboration</b></p> <p>Leadership capacity to create organisational environment that is conducive to achieving KS progress in pillars of ICT, Education and /or STI</p>			

## Appendix 4: Importance – Prioritization of Leadership in ICT & KS Competency Analysis

During the field research a Leadership Competency importance-prioritization survey was conducted with senior level and middle level officials in Ministries visited. 21 questionnaires were completed and returned to the field team on the days of the visits. Table 2 presents a profile of the respondents.

**Table 1: Profile of the respondents (N=21)**

Profile	No of Respondents
Senior Level Management	7
Middle level Management	14

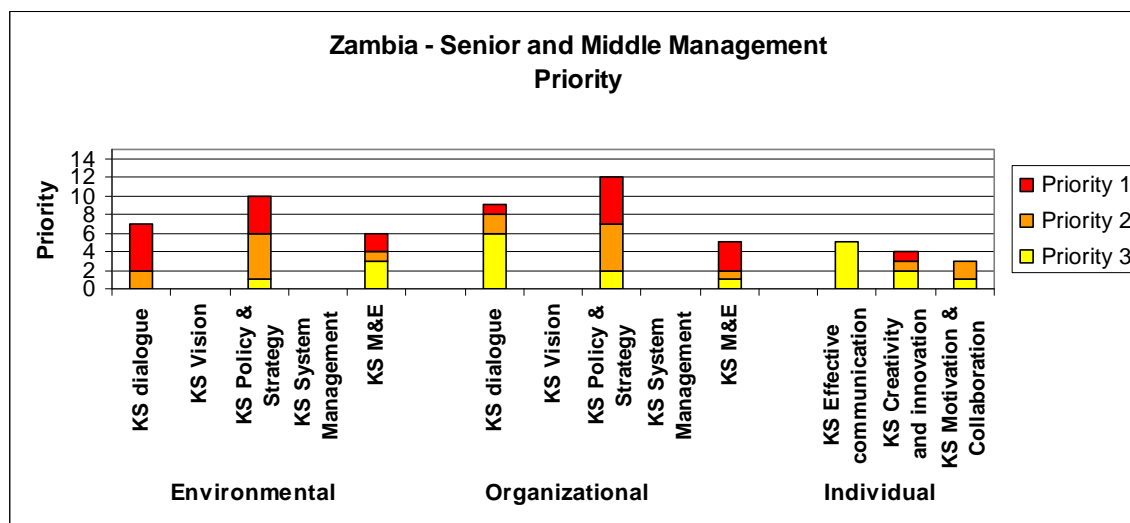
The survey involved two questions.

- In the first question, the senior and middle level officials were asked to indicate their perceived level of importance on each of thirteen ICT & KS competency standards for leaders drawn from the three environmental, organisational & individual level domains of the ALICT leadership framework. They used a three-point Likert scale (1 for unimportant, 2 for moderately important and 3 for important) to rate the competencies.
- In the second question, senior and middle level officials were asked to identify three leadership competencies that would require priority development for the pilot phase. For this question, the officials used numbers (No. 1 for 1<sup>st</sup> priority, No. 2 for 2<sup>nd</sup> priority and No. 3 for 3<sup>rd</sup> priority) to identify their priorities.

Competency areas of the KS	Senior Level Officials				Middle Level Officials			
	Mean	SD	Over all Rank	Rank (out of 13)	Mean	SD	Over all Rank	Rank (out of 13)
<b>Environmental</b>	<b>2.66</b>		2		<b>2.83</b>		1	
<b>KS dialogue:</b> National leadership capacity to establish inter-ministerial & inter-sectoral coordination mechanisms on KS pillars of Education, ICT and STI	3.00	0.00		1	3.00	0.00		1
<b>KS Vision:</b> National leadership capacity to develop, communicate and give direction to Knowledge Society (KS) vision, mission and values	2.71	0.24		5	2.86	0.13		5
<b>KS Policy &amp; Strategy:</b> National leadership capacity to develop inter-related policies, strategies and plans on the KS and its pillars of Education, ICT and STI	2.86	0.14		2	2.93	0.07		3
<b>KS System Management:</b> National leadership capacity to manage implementation of inter-related plans, strategies, and Programmes on KS and ICT, Education and STI pillars	2.14	0.14		13	2.57	0.26		12
<b>KS M&amp;E:</b> National leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy	2.57	0.29		7	2.79	0.18		7
<b>Organisational</b>	<b>2.51</b>		3		<b>2.73</b>		3	
<b>KS dialogue: Organisational leadership capacity to manage dialogues and relations with key internal and external stakeholders on KS or its pillars (ICT, Education, STI)</b>	2.29	0.24		12	2.30	0.23		13

Competency areas of the KS	Senior Level Officials				Middle Level Officials			
	Mean	SD	Over all Rank	Rank (out of 13)	Mean	SD	Over all Rank	Rank (out of 13)
<b>inclusively and constructively</b>								
<b>KS Vision:</b> Organisational leadership capacity to develop its vision, mission and values based on national Knowledge Society (KS) vision and policy	2.43	0.29		10	2.71	0.22		10
<b>KS Policy &amp; Strategy:</b> Organisational leadership capacity to translate the KS (ICT or Education or STI) vision, mission, value framework into strategic (medium term) and operational (concrete and short term) objectives and actions	2.86	0.14		2	3.00	0.00		1
<b>KS System Management:</b> Organisational leadership ability to design, establish and manage a system for measuring financial and operational performance for delivering on KS (ICT, Education & STI) goals and objectives	2.57	0.29		7	2.86	0.13		5
<b>KS M&amp;E:</b> Organisational leadership capacity to use M&E systems and practices as an evidence-based foundation for planning, decision-making and learning on inter-related ICT, Education and STI policy and strategy	2.43	0.29		10	2.79	0.18		7
<b>Individual</b>	<b>2.71</b>		<b>1</b>		<b>2.81</b>		<b>2</b>	
<b>KS Effective communication:</b> Leadership ability to develop key messages about the significance and parameters of KS pillars of ICT, Education and STI for organisational and national development	2.71	0.24		5	2.93	0.07		3
<b>KS Creativity and innovation:</b> Leadership capacity to plan, manage and encourage organisational modernization, creativity and innovation related to KS and pillars of ICT, Education and/or STI	2.86	0.14		2	2.79	0.18		7
<b>KS Motivation &amp; Collaboration:</b> Leadership capacity to create organisational environment that is conducive to achieving KS progress in pillars of ICT, Education and /or STI	2.57	0.29		7	2.71	0.22		10

Note: The mean scores in bold represent the weighted average of competencies for each domain



<b>IMPORTANCE</b>	High	<b>Quadrant III:</b> High Importance, Low Priority	<b>Quadrant IV:</b> High Importance, High Priority
		Environmental Level-KS Vision  Organisational Level-KS System Management  Individual Level-KS Effective communication	Environmental Level-KS dialogue  Environmental Level-KS Policy & Strategy  Organisational Level-KS Policy & Strategy  Individual Level-KS Creativity and innovation
	Low	<b>Quadrant I:</b> Low Importance, Low priority	<b>Quadrant II:</b> Low Importance, High Priority
		Environmental Level-KS System Management  Organisational Level-KS Vision	Environmental Level-KS M&E  Organisational Level-KS dialogue  Organisational Level-KS M&E  Individual Level-KS Motivation & Collaboration
		Low	<b>PRIORITY</b> High

## Appendix 5 : Factors enabling & constraining development towards a Knowledge Society in Zambia

<i>Factors</i>	<i>Enabling Features / Opportunities</i>	<i>Constraining Features / Challenges</i>
Knowledge Society	<p>National Vision 2030 is the Zambian government’s long-term plan “to be a prosperous middle income nation by the year 2030.”</p> <p>The government visualizes a Zambia transformed into information and knowledge based society and economy, supported by consistent development and pervasive access to ICT’s by all citizens by the year 2030</p>	
Infrastructure	<p>With policy initiative, the ICT sector in Zambia has developed into four main sub-sectors: telecommunications, information technology, electronic media, and postal communication</p> <p>ZICTA is mandated to establish and administer a Universal Access and Service Fund</p>	<p>Low penetration rates and high prices prevailing in the market place suggest that the market is still largely underdeveloped and that there is room for improvement</p>
ICT In education	<p>The Ministry of Education developed a Draft policy on ICT (2007), whose vision reads, ‘Information and communication technology that will contribute to reach the objective of providing Innovative and productive life long education and training accessible to all by 2030.’</p> <p>The Ministry of Education has great opportunities for enhancing the quality and increasing access to education through integration of ICT. To achieve these opportunities, there is need to enhance the leadership capacities in internal and external dialogue, policy and strategy and monitoring</p>	<p>The Ministry of Education has developed an ICT policy and implementation strategy, but these have remained in draft for over three years.</p> <p>Challenges related to open and distance learning include policy and strategy, equipment, and technical competencies of members of staff</p>

<i>Factors</i>	<i>Enabling Features / Opportunities</i>	<i>Constraining Features / Challenges</i>
	<p>and evaluation. There is also need to promote creativity and innovation among the members of staff to ensure that the opportunities are seized and sustained.</p> <p>Focus on content and e-learning.</p> <p>The Ministry of Education’s activities related to development of curriculum materials, e-learning, classroom teaching and learning, delivery of education through radio and television, development of teacher capacities and development (digitalisation) of distance learning materials, all provide an opportunity for integration of ICT in education to improve quality and increase access.</p>	
<p>Science and Innovation</p>	<p>The mission of the policy on Science and Technology (1996) is to promote and exploit science and technology as an instrument for developing an environmentally friendly indigenous technological capacity in sustainable socio-economic development in order to improve the quality of life for Zambia.</p>	<p>The NTBC has a documentation centre, whose relevance to science and technology is limited by inadequate research and documentation skills. The centre provides an opportunity for information sharing, which is currently underutilised</p>