

CHAPTER ONE INTRODUCTION

The Ethiopian Government has made the development of information and communications technology (ICT) one of its strategic priorities. This ICT policy is a demonstration of its commitment to the development of ICT both as an industry and as an enabler of socio-economic transformation. The policy stems from the recognition by the Government of ICT as the key driver and facilitator for transforming Ethiopia's predominantly subsistence-agriculture economy and society into an information- and knowledge-based economy and society, effectively integrated into the global economy.

The Millennium Development Goal of the United Nations recognizes ICT as a tool for its attainment. The role of ICT in development was also recognized in the Geneva Declaration of the World Summit on the Information Society (2003) as well as other regional conferences in which Ethiopia has been actively participating. Countries worldwide are using ICT as the driving force by successfully exploiting the opportunities it presents for their social and economic transformation. Towards this end they have adopted policies as a framework for the exploitation and application of ICT. Ethiopia has already embarked on several initiatives to promote the development and application of ICT in recognition of its role for national development. The scope of Ethiopia's ICT policy covers knowledge and information as a tool for development, as well as the development of ICT as a sector or industry.

Aside from being an enabler of socio-economic development, ICT also supports Ethiopia's on-going process of democratization and sound governance. The major areas of ICT application in the area of democratic governance include on-going programs such as civil and public civil service reform, justice reform and decentralization. ICT promotes democratic governance by enabling all citizens to participate in the political process as well as have access to global knowledge and information. Here, the goal of the Government is to ensure that all citizens have equal access to government services as well as equitable access to knowledge and information.

This document articulates policy guidelines and describes critical areas for the development of ICT in Ethiopia. It lays out a road map in terms of the country's overall vision and the corresponding mission and strategies for guiding the Government's efforts aimed at transforming Ethiopia's economy and society into an ICT-driven economy and a knowledge-based society. The document is organized into six Chapters. Chapter I provides the rationale behind the ICT policy and expresses the Government's keen interest in the exploitation and application of ICT for socio-economic development. Chapter II sets the background to the policy. It presents a brief overview of Ethiopia's current social and economic conditions, governance and the problems and challenges facing the country. Chapter III provides a qualitative overview of the current status of ICT in Ethiopia. Chapter IV covers the underlying principles of the policy in terms of vision and mission, goals and objectives, and strategies. It also includes the broad guiding principles underlying the policy. Chapter V sets out the strategic focus of the policy comprising

the human resource base, physical and ICT infrastructure, government administration and service delivery, etc. Chapter VI concludes with a description of the requisite institutional framework for implementing the policy including coordination, monitoring and evaluation and resource mobilization.

CHAPTER TWO BACKGROUND TO THE POLICY

2.1 The Ethiopian Economy

An ICT policy should be set within the wider context of the overall socio-economic development goals and strategies of Ethiopia, and address the problems and challenges facing the country. The policy will therefore start with a brief overview of the Ethiopian economy as the basis for the design of ICT policies, strategies, plans and programs. With an estimated per Ethiopia capita income of US\$100¹, which is far lower than the average for sub-Saharan Africa and that for low-income countries Ethiopia is one of the poorest countries in the world. The Sustainable Development and Poverty Reduction Program (SDPRP) indicates a poverty index of just over 44 percent in 1999/00 for the country as a whole².

Ethiopia has a large population estimated at 74 million³ (2005) and growing rapidly (estimated at 2.6 percent per annum). Agriculture constitutes the backbone of the economy. It accounts for about half of the gross domestic product (GDP)⁴, the largest share of export earnings, and employs 85 percent of the population. In 2004 agriculture accounted for 47 percent of GDP, the services sector for about 41 percent and industry for about 12 percent. The economy has an extremely narrow industrial base, and the services sector, though the second largest, remains undeveloped. Much effort is therefore needed to transform the economy from its current low equilibrium level to higher and sustainable levels of development.

In terms of macro-economic performance, the Ethiopian economy recorded an average growth of 4.5 percent, in real terms, during the period FY00 to FY04. Between FY04 and FY05 the economy registered an average growth of about 10 percent in real terms ranging from 11.6 percent in FY04 to about 8.9 percent in FY05. In spite of significant improvements in economic performance over recent years, the country remains amongst the poorest countries in the world. According to the United Nations Human Development Report (2005) Ethiopia ranked 170th out of 177 countries and is at the bottom in terms nearly of all economic and social indicators including life expectancy (42 years and declining due to the prevalence of HIV/AIDS pandemic), adult literacy (about 40 percent), etc.

Ethiopia's continued backwardness and poverty remains a grave concern to the Government. In order to face the challenges of backwardness and poverty, the Government adopted a long-term development strategy in the 1990s supported by sector-specific policies and strategies, and more recently, a medium-term program aimed at sustainable development and poverty eradication.

¹ According to the purchasing power parity, Ethiopia's per capita income was estimated at US\$800 in 2004.

² The figure shows a reduction from a level of 45.5 percent in 1995/96.

³ About 44 percent is below age 14.

⁴ GDP measures the total output of goods and services for final use produced by a country's residents and non-residents without allocation to domestic or foreign claims. It is calculated without making deductions for depreciation of capital or depletion of natural resources.

2.2 Ethiopia's Development Strategy

Ethiopia's development strategy is guided by the Agricultural-Development-Led-Industrialization (ADLI). ADLI is a long-term agricultural-centered development strategy with agriculture playing a leading role in the growth of the economy. Its broad objectives are to modernize agriculture and improve its efficiency and productivity, ensure food security, create employment opportunities and enhance the country's foreign exchange earnings with the aim to promote the development of a vibrant industrial sector and accelerate overall economic growth. ADLI is supplemented by sector-specific strategies in areas such as health, education, industry, etc.

The SDPRP, which is rooted in ADLI, represents a policy framework for sustainable growth and poverty reduction over a three-year period (FY03-FY05). Its objectives are to ensure sustainable growth and poverty reduction while maintaining macro-economic stability within a decentralized democratic setting. The program focuses on the following major areas:

- Agriculture which is the source of livelihood for the majority of the population; agriculture is also believed to be a potential source to generate primary surplus for growth of other sectors of the economy.
- Strengthening private sector growth and development, especially in industry as a means of achieving off-farm employment and output growth.
- Rapid export growth by increasing the production of high value agricultural products and increased support to export oriented manufacturing sectors particularly intensified processing of high quality skins/leather and textile/garment.
- Deepening and strengthening the decentralization process to shift decision-making closer to grass-root level, to improve responsiveness and service delivery.
- Improving governance to empower the poor and create a conducive environment for private sector growth and development.

The SDPRP points to the need for formulating a comprehensive ICT policy. This is in recognition of the fact that Ethiopia's development can only be accelerated, and poverty eradicated, through a nation-wide development and application of ICT.

2.3 Governance and Development

Good governance is considered as a basic condition of sustainable development. As well as the challenges presented by an agrarian nature of the Ethiopian economy with low output and productivity, problems of governance and capacity building can be addressed through the exploitation and application of ICT. Ethiopia's governance policy involves far-reaching state transformation ranging from the manner in which power is devolved to the grass-roots level, questions of institutional and organizational management and development, and the major elements of

governance comprising accountability and transparency, and efficiency and effectiveness in service delivery.

The first steps taken towards state transformation was the establishment of the federal structure of government in 1995 in line with the provisions of the national constitution enacted the previous year. The constitution of 1994 established a four-tier system of government, with regions divided into 66 zones and over 550 district administrations. Enactment of the constitution and the adoption of the federal system of government was accompanied by initiatives towards state transformation amongst which are the civil service reform and decentralization.

With the devolution of power to regions, implementation of economic policies and development programs shifted from the center to regions. The introduction of fiscal federalism which accompanied the institution of the federal structure of government allows regions to have extensive expenditure responsibilities, particularly for the social sectors and for much of the investment they undertake in economic or physical infrastructure. Regions also have budgetary autonomy and maintain wide-ranging independence over revenue collection and budgetary expenditures.

Civil service reform is an outcome of the federal system of government and was amongst the forerunners of administrative reform programs in Ethiopia. The start-up phase of civil service reform began in 1994, when a task force was commissioned to conduct a diagnostic overview. The primary phase of diagnosis and taking stock of the problems facing the civil service ended in 1996 with the identification of weaknesses in the ways the civil service managed its financial and human resources, delivered services to the public, as well as the performance and monitoring and evaluation of top management. Civil service reform was followed by the deployment of civil servants across regions and districts with the aim to equitably allocate skilled human resources in scarce supply across the country.

District-level decentralization was the second major program towards state transformation. It was initiated in 2001 with the aim to devolve powers from the regional and zonal administrative levels to district administrations beginning with four regions of the country.⁵ *Woredas* (districts) were given greater economic and political powers through legal and administrative measures to implement development plans based on locally determined priorities, consistent with national development goals and priorities. Other reform initiatives included the justice and tax systems.

The Public Sector Capacity Building Program (PSCAP), which was formally launched in 2005, represents an integrative nation- and sector-wide approach to capacity building. It is an integrative implementation framework of a wide range of interventions in state transformation dating back to the 1990s. PSCAP's overall objectives are to accelerate civil service reform, decentralization, the deployment and exploitation of ICT within the civil and public service for efficient and effective service delivery, human resource capacity building, justice system reform, tax reform and urban development. The Government views the program as a means of

⁵ Amhara, Oromia, SNNPRS and Tigray beginning in 2001.

addressing and strengthening issues of governance, transparency and accountability, as well as the on-going process of democratization.

2.4 The Challenges

The above overview of Ethiopia's socio-economic and other problems point to the urgent need to harness the benefits and opportunities offered by ICT to address the complex socio-economic and governance problems facing the country today. These are:

- An economy dominated by backward agriculture with low output and productivity aggravated by global declines in commodity prices.
- Erratic GDP growth arising from extreme variations in weather conditions.
- Low per capita income and near-endemic poverty.
- Low health service coverage and life expectancy aggravated by the prevalence of HIV/AIDS.
- Rapid rate of population growth with a large and youthful population.
- Low human resource base arising from limited access to educational opportunities.
- Poorly developed physical, communications and telecommunications infrastructure.
- Fledgling democratic and governance system.

The Government is convinced that a proactive ICT policy will provide the framework for the exploitation and application of ICT aimed at addressing the numerous challenges facing the country. The policy will support government efforts towards accelerated socio-economic development as well as efforts towards state transformation including the modernization of the civil and public service by enhancing efficiency and effectiveness in service delivery.

This ICT policy provides a comprehensive and coherent framework for defining the future direction of ICT development. Ethiopia's ICT policy is set within the scope of an integrated approach involving the convergence of a host of emerging new technologies comprising computers and computing, telecommunications and broadcasting, and the application of these technologies in all spheres of life. A systematized organization, storage, access and preservation of data and information using these technologies offer new possibilities and opportunities for ensuring sustainable socio-economic development.

CHAPTER THREE THE CURRENT STATUS OF ICT IN ETHIOPIA

3.1 Overview

An ICT policy should start with an assessment of the country's current ICT situation. ICT in Ethiopia at present is at the very early stage of development. Nearly the entire rural population lacks telecommunications infrastructure. The vast majority of the population is dependent only on the conventional and traditional information delivery system, the radio or newspapers. Other major indicators pointing to the low level of ICT development in the country are:

- Limitations in telecommunications network, which is mainly designed for voice grade communication, and limited numbers of both fixed and mobile telephones.
- Lack of skilled human resources coupled with low ICT literacy.
- Low level of Internet service and poor connectivity.
- Underdeveloped physical and telecommunications infrastructure.
- Underdeveloped market for computer hard- and software products aggravated by high cost of acquisition.
- Lack of organized data and information resources, and poor accessibility to those that exist.
- Limited or no public awareness on the role and potential of ICT.
- Undeveloped private sector
- Legal and regulatory constraints.

Not only is ICT least developed in Ethiopia; it is also highly skewed towards major cities and towns, particularly Addis Ababa. In part, this is due to limitations in both physical and ICT infrastructure, and partly due to the limited number of computers. Consequently, while the Internet and other forms of information and communications technology are readily available in Addis Ababa, limited access to ICT by the rural population continues to be a major impediment to the use of ICT nation-wide. These constraints present the Government with real challenges, but also opportunities, for an accelerated development of ICT in Ethiopia.

3.2 Government Efforts

Even though still in its infancy, ICT in Ethiopia has developed rapidly in recent years. In part this is because, in recognition of the vital importance of ICT in the development process, the Government has been undertaking several strategic policy initiatives that promote its development. Initiatives taken by the Government to

promote the development of ICT include the relevant components of PSCAP, in particular ICT capacity building, Electronic government (*woreda-net*) and Electronic education (*school-net*) programs.

The development of ICT in Ethiopia has also been influenced by legal and regulatory measures. These include the 1996 proclamation providing for the introduction of competition and licensing for multiple operators. The private sector has since been active in providing ICT and related goods and services, and several firms provide computer hard- and soft-ware and services at present. Consistent with its policy objectives, the Government has been licensing large numbers of private sector operators to set up cyber-cafes and to engage in sales, installation and service of communications equipment. Although the private sector is expected to take the lead in ICT development, it has so far remained largely undeveloped with operations confined to major urban centers, particularly Addis Ababa, with limited or no activities in the rural areas of the country.

Reform of Ethiopia's telecommunications industry also resulted in the establishment of the Ethiopian Telecommunications Corporation, a public telecom operator providing services in fixed, mobile, Internet and data communications. The establishment of the Corporation was followed by the introduction of Internet service in 1997 and mobile telephone service in 1998. The Corporation has been aggressively expanding rural connectivity in tandem with the Government's decentralization, public and civil reform programs.

The Government's commitment to the development of ICT is also reflected in rising public expenditure in the sector. Public investment in ICT infrastructure and services increased substantially from a paltry US\$29 million in 2002 to US\$300 million in 2004. Increases in investment have resulted in improvements in ICT infrastructure and services nation-wide both in the public and private sectors.

Technologies and services that have particularly experienced expansion include telephone infrastructure and services, mobile/cellular telephone, mobile radio communication, pay-phones, the Internet, Internet cafe services and community centers, which provide a broad range of multi-purpose communication services such as the telephone, fax, computer, e-mail and media services.

Even though recent trends in the development of ICT have shown dynamic growth in both infrastructure and services, ICT in Ethiopia still remains the least developed as compared to countries in sub-Saharan Africa and elsewhere in the world. Proper data communication network is only beginning to make its appearance, the number of computers remains negligible, and the availability of computer hard- and soft-ware products limited.

It is clear, therefore, that much remains to be done, and the Government is determined to step up efforts for the development of ICT in the interests of sustainable growth and poverty reduction, as well as for deepening the process of democratization and good governance. The Government is already taking aggressive measures towards this end and has embarked on programs aimed at improving and expanding physical and ICT infrastructure and services as the backbone for the development of a robust ICT sector in the country.

CHAPTER FOUR

THE POLICY VISION, MISSION, GOAL, OBJECTIVES AND STRATEGIES

4.1 The National Vision

To transform Ethiopia from a poverty-stricken country to a middle-income economy and society with deep-rooted participatory democracy and good governance based on the mutual aspirations of its peoples.

4.2 The ICT Vision

To improve the social and economic well being of the peoples of Ethiopia through the exploitation of the opportunities created by ICT for achieving rapid and sustainable socio-economic development, and for sustaining a robust democratic system and good governance.

4.3 Mission

To develop Ethiopia into a socially progressive and prosperous nation with a globally competitive, modern, dynamic and robust economy through the development, deployment and exploitation of ICT within the economy and society.

4.4 The Goal of the Policy

Taking into consideration the vision and mission stated above, the goal of the ICT policy is to vigorously promote an ICT-driven socio-economic development process and transform Ethiopia from an agriculture-based economy and society to a predominantly knowledge- and information-based economy and society with deep-rooted democratic culture and good governance.

4.5 The Broad Objectives of the Policy

The broad objectives of the ICT policy are to:

- Develop ICT as a globally competitive industry, and as an engine of growth.
- Create the necessary conditions for the rapid development of ICT within the economy and society to accelerate Ethiopia's socio-economic development process.
- Promote and facilitate an extensive use of ICT in support of key sectors of the economy including agriculture, industry and the services sectors.
- Transform Ethiopia into a knowledge- and information-based society and economy.
- Promote the use of ICT for modernizing the civil and public service to enhance its efficiency and effectiveness for service delivery, to promote good governance and reduce wastage of scarce resources.

4.6 Strategies

In order to achieve the goals and objectives of the ICT policy enunciated above, the Government will steadfastly pursue the following broad strategies.

- Design service network systems that allow citizens and private companies to communicate with public authorities.
- Set up organizational structures for ICT within federal and regional governments to coordinate implementation of the national ICT policy.
- Adopt methods and procedures to ensure that systems of information in government institutions are developed, coordinated and efficiently utilized.
- Develop guidelines, procedures and organizational structures to ensure the integration of ICT in strategic public sector development programs.
- Promote the development of a competitive ICT sector comprising hardware and software production, and services.
- Promote and facilitate the participation of civil societies and communities in ICT development.
- Develop effective and productive use of the national radio frequency spectrum resources.
- Design and implement computerized information systems and applications with emphasis on priority sectors such as agriculture, health, education, etc.
- Support the development of ICT systems and programs that enhance the participation of women and the disabled.
- Establish an accreditation council which provides technical backing to ensure the quality of ICT education and training.
- Automate all public service delivery systems on network platform to maintain and deliver basic information.
- Establish public information gateways or portals to harness, develop and integrate public information resources.
- Strengthen institutional capacity in government, educational institutions and in the private sector to deliver ICT services (e.g. education and training, hardware and software development, applications, etc.).
- Maintain collaborative relationships with professional associations in ICT.
- Promote bilateral and multilateral cooperation with organizations involved in the development and promotion of ICT.

4.7 The Guiding Principles of the Policy

Implementation of this ICT policy will be guided by the following general principles which underpin the Government's solemn commitment to use ICT as a tool for rapid economic growth, and for alleviating and eventually eradicating poverty.

- The Government shall provide strategic leadership and facilitate implementation of the ICT policy.
- Human resources development shall be accelerated by expanding access to education and training and improving quality using ICT and by ensuring the responsiveness of education and training to the needs of the society and economy.
- The Government shall create a conducive environment to enable the private sector develop a competitive ICT industry producing ICT products and services for the local market and exports.
- Ethiopia's physical and ICT infrastructure and services shall be expanded with a view to improving universal access to ICT.
- The Government shall actively promote the exploitation and application of ICT as an integral part of the country's development policies, strategies, plans and programs and use it to fight poverty, ignorance and disease.
- Unhindered access to ICT by the youth and the disabled shall be ensured and gender inequalities shall be gradually eliminated by building the capacity of women and girls in the use of ICT.
- The Government shall actively collaborate with the private sector, civil society organizations and communities to promote and encourage the use of ICT towards transforming Ethiopia to a knowledge and information age.
- The Government shall put in place the necessary conditions to facilitate the exploitation and application of ICT in all sectors of the economy and all spheres.
- Cooperative practices and spirit shall be promoted and the necessary coordination amongst various stakeholders for a cost-effective development of ICT shall be established.
- Multilateral, bilateral and regional cooperation in regard to ICT development in the country shall be fostered and strengthened.
- Implementation of this policy shall take into consideration regional and global development initiatives in ICT and best practices

CHAPTER FIVE THE STRATEGIC FOCUS OF THE ICT POLICY

5.1 Background

Ethiopia's ICT policy is an integral part of the country's larger development goals and objectives. While the goal is to rapidly transform the country's subsistence agricultural-based economy and society into a predominantly knowledge- and information-based economy and society, the focus of the policy will be on the following areas considered strategic for the country's ICT development process. Even though ICT cuts across all sectors the above areas have been prioritized in order to optimize the impact of the policy but also because of limitations in resources.

- Human resource development
- Physical and ICT infrastructure development
- ICT for governance/E-Government
- ICT industry and private sector development
- Electronic commerce
- Community access and service delivery
- Local content and applications development
- ICT for research and development
- ICT systems security and standards
- The legal and regulatory environment
- Promotion of ICT in education
- Use of ICT in health
- ICT for agricultural modernization

The objectives and strategies against each of the sectors or issues identified above are articulated below. These are neither exhaustive nor exclusive, however, and are intended to indicate some of the most common issues for incorporation into policies and strategies, plans and programs related to the development of ICT across sectors and issues.

5.2 Human Resource Development

5.2.1 Overview

The Government is in the process of implementing ICT education and training in secondary and tertiary educational institutions with the aim to create ICT literacy as the basis for the proliferation of ICT professionals in the country. These include vocational training as well as diploma and degree programs in computer science, electronics, software engineering etc. offered at college and university levels. Amongst public sector institutions providing training is the Institute for Telecommunications and Information Technology offers basic training in computer applications and is planning to offer graduate courses in telecom engineering, management and information technology. The private sector has also been providing basic computer and software applications training. Computer training centers have been mushrooming in recent years, and this has improved the general level of computer literacy in the country with more skilled users of computers.

In spite of the major efforts on the part of government and the private sector, the human resource base in the field of ICT in Ethiopia is far from developed and is exacerbated by brain drain to developed countries in search of better opportunities. The problem seriously constrains not only the development of ICT in the country; it also frustrates government efforts aimed at socio-economic transformation.

With developments in ICT-driven initiatives, the demand for ICT-skilled professionals is expected to rise substantially in the future. Human resource development is therefore a challenge that needs to be addressed as a matter of urgency, because there can be no sustainable ICT development without adequate human resource base. Therefore, Ethiopia's ICT policy assigns a strategic role to ICT human resources development along the following objectives and strategies.

5.2.2 Goal

Establish highly skilled ICT human resource base for transforming Ethiopia into a knowledge- and information-based society and economy.

5.2.3 Objectives

The broad objectives of ICT in the area of human resource development are:

- To formulate and implement a comprehensive ICT human resource development policy and strategy.
- To improve the overall human resource and skill-base within the civil and public service.
- To train professionals within the civil and public sector to operate and manage computer systems in government ministries and agencies.
- To increase the supply of adequately trained ICT personnel, particularly in the area of engineering, electronics, computer hard- and soft-ware, telecommunications, etc.
- To establish career structures for ICT professionals.
- To develop national guidelines, standards and curricula for ICT education at all levels.
- To establish an accreditation system for ICT education and training centers and institutions in the public and private sectors.
- .To designate an ICT center of excellence from amongst ICT training institutions, universities or colleges.
- To encourage and promote collaborative industry-academic networks for sharing knowledge, experiences and best practices.

5.2.4 Strategies

- Develop and implement short- medium- and long-term ICT human resource development plans.
- Promote ICT skills development at all levels of the school system with the aim to increase the supply and diversity of ICT skills to eliminate the current critical shortage and to meet the expected future growth.
- Encourage and support the private sector, both in educational institutions and industrial establishments, to introduce and strengthen ICT training.
- Identify and aggressively develop the country's ICT human resource requirements in key areas of the economy through focused ICT education and training.
- Strengthen key institutions offering ICT education and training and establish new institutions.
- Re-orient engineering and other ICT-related courseware to accommodate new developments in ICT for greater responsiveness to the needs of the industry.
- Create an environment conducive to job creation and satisfaction to minimize brain drain.

5.3 Physical and ICT Infrastructure

5.3.1 Overview

At the most basic level, Ethiopia should equip itself with the requisite infrastructure comprising roads, power and communications networks, which constitute the backbone of ICT development. The country needs modern and efficient infrastructure to optimize the benefits provided by ICT. The availability and coverage of infrastructure facilities is particularly critical to countries such as Ethiopia where the large majority of the population lives in rural areas.

In recognition of the fact that Ethiopia's physical and ICT infrastructure is undeveloped at present, both in coverage and quality, the Government will play a key role in promoting its development nation-wide.

In order to attain the objective of developing physical and ICT infrastructure the Government will pursue the following objectives and strategies.

5.3.2 Goal

Promote infrastructure development including physical and telecommunications and communications infrastructure as a backbone for ICT development.

5.3.3 Objectives

- To develop, modernize and expand the country's communications and telecommunications infrastructure and services aimed at improving coverage and quality, and for providing universal access to knowledge and information.
- To establish information infrastructure comprising broadband communications' backbone and access network in support of an integrated and multi-media services, and also to distribute data warehouses and services to cater to the needs of key sectors of the economy as well as for the delivery of government services.
- To develop, modernize and upgrade physical infrastructure and services.
- To expand rural and urban connectivity to facilitate access to the global information and communications infrastructure, networks and systems.
- To encourage domestic and foreign private investment for the development of ICT infrastructure and the provision of services.
- To promote effective use of the national radio frequency spectrum.
- To explore and develop cost-effective alternative sources of energy.
- To ensure that ICT infrastructure and systems are utilized effectively and efficiently.

5.3.4 Strategies

- Modernize and expand the national grid in order to support the expansion of ICT infrastructure.
- Promote a competitive ICT industry for the manufacture of hard- and software products for the domestic and export markets through appropriate incentive packages.
- Encourage the local industry to assemble, repair and maintain computer hard- and soft-ware and communications equipment.
- Stimulate private sector investment, both domestic and foreign, for the development of physical and ICT infrastructure.
- Develop national and regional high-speed networks.
- Provide ICT services to users at affordable prices.

5.4 ICT in Government/E-Government

5.4.1 Overview

In recognition of the critical role of ICT for democratization and good governance, the Ethiopian Government has taken wide-ranging measures for its development both at the federal and regional levels. Within the framework of PSCAP, the Government initiated series of measures to make the civil and public service more efficient and effective in the delivery of government services, along with institutional reforms, improvements in working processes and procedures, and attitudinal changes.

The program is being carried out within the framework of what has come to be known as electronic government (*E-government*) and the *woreda-net* program. The program links up government at federal and regional levels networking some 600 districts. *E-Government* provides for the use of ICT within the public sector, including federal, regional and regional levels of government and aims at providing efficient service delivery and good governance. The aim is to deploy and let federal and regional government institutions access ICT in order to facilitate their operations and activities, and to improve the delivery of services and information to the public at large.

The Government intends to expand and deepen the use of ICT in the public and civil service with the following objectives and strategies.

5.4.2 Goal

Deliver efficient and effective public and civil service to all citizens.

5.4.3 Objectives

- To increase the ability of the federal and regional governments to serve citizens and businesses better through the enhancement and improvement in government's responsiveness to citizens and businesses.
- To reduce administrative, operational and transaction costs of federal and regional governments' administrative activities, and to improve service delivery functions and operations through the reduction of operational inefficiencies and unnecessary excessive paperwork.
- To transform the system of government into a *citizen-centered* government, and to facilitate the process of bringing the government closer to the people so as to make it easy for citizens to obtain services and interact better with government machinery and agencies at the federal and regional levels.
- To develop and implement a robust, flexible, and scalable, information and communications infrastructure to support federal and regional level intra- and inter-agency electronic service delivery and information exchange.
- To provide access to information and government services by the public and enhance good governance and strengthening the democratic process.

5.4.4 Strategies

- Expand ICT application to support the modernization of the civil and public service to enhance the operational and functional efficiency and effectiveness of government administration and service delivery, including supporting electronic initiatives at the federal, regional and local levels of government.
- Promote information sharing, transparency and accountability and reduce bureaucratic red tape within and between organizations.
- Strengthen data ware-housing to promote trade and commerce, and to enhance the delivery of government services.
- Develop and expand ICT-based services such as government-to-government, government-to-business, government-to-customer, etc.
- Establish computerized information systems for the delivery of community-based government services.
- Introduce ICT into organs of public administration at the federal, regional and district levels and connect to a comprehensive electronic service network.
- Re-engineer the public sector to enhance the efficiency of government services.
- Integrate the civil and public service computerization program into the activities and operations of federal and regional governments.
- Implement local area networks (LANs) and wide area networks (WANs) linking all federal, regional and district-centered government organizations.
- Design and implement government information systems and networks (Govnet) and portal structures (Intranet).
- Formulate ICT projects aimed at facilitating WEB presence in federal and regional government organizations.
- Develop innovative and high impact applications at the national and sectoral levels and ensure inter-sectoral and inter-regional collaboration in information exchange.
- Develop programs with focus on ICT-supported governance and service delivery at federal and regional levels.
- Develop programs to improve and upgrade the computer skills of civil and public servants through on-the-job training.
- Develop standards, guidelines and procedures regarding the acquisition, installation and maintenance of ICT systems in public sector institutions.

5.5 ICT Industry and Private Sector Development

5.5.1 Overview

The Ethiopian Government considers the private sector an engine of growth in ICT development and a strategic partner. It is obvious that the development of the economy in general and ICT in particular critically depends on active participation by the private sector. Even though the private ICT sector at present is quite small, it has shown dynamic growth in recent years with individuals and small businesses providing services and employment.

Since the private sector plays a crucial role in accelerating the process of transforming Ethiopia into a knowledge- and information- economy and society the Government is committed to removing obstacles constraining its development.

5.5.2 Goal

Develop an efficient and globally competitive ICT industry.

5.5.3 Objectives and Strategies

- Stimulate the private sector as a key driver in the development of ICT in particular and economic growth in general.
- Encourage domestic and foreign direct investment for the development of ICT by creating an enabling legal, regulatory and institutional framework.
- Encourage the private sector to develop a globally competitive ICT industry and services including hard- and software manufacturing and assembly, repair and maintenance, supported by special incentives.
- Put in place appropriate incentives to develop the competitive capacity of the private sector in the international market.
- Promote Ethiopia's full participation in local and international ICT business and trade.
- Use ICT for entrepreneurial development in small and medium businesses.
- Offer special incentives to the private sector to provide ICT services to rural areas.
- Establish business incubators to assist entrepreneurs in ICT and related businesses to translate ideas into productive and marketable ventures.
- Promote the development of ICT parks with focus on local and export markets.

- Develop effective partnership between government and the private sector.
- Promote links between ICT firms on the one hand and government agencies, research institutions, universities and professional services on the other.
- Attract skilled nationals residing overseas for knowledge and skill transfer.

5.6 Electronic Commerce

5.6.1 Overview

Electronic commerce (e-commerce) involves entails on-line trading in goods and services via electronic media such as the Internet and traditional delivery systems. E-commerce facilitates the delivery of goods and services, reduces transaction costs through electronic payment and provides access to global markets. Its broad categories are: *business-to-business* (B2B), *business-to-consumer* (B2C) and *business-to-government* (B2G). In recognition of the potential of e-commerce in Ethiopia, this policy reflects the Government's commitment to its development in the context of the following objectives and strategies.

5.6.2 Goal

Ensure Ethiopia's effective participation in national, regional and global trade

5.6.3 Objectives and Strategies

- Create awareness on the benefits of e-commerce and trade amongst the general public.
- Promote the development of the necessary human and technical resources to support implementation of e-commerce.
- Support and facilitate Ethiopia's full participation in both local and international electronic commerce, business and trade.
- Modernize the banking system to facilitate the development of e-commerce and trade.
- Upgrade and expand communications and Internet delivery infrastructure.
- Facilitate active participation by key stakeholders in the private and public sectors in local, regional and global e-commerce.
- Encourage government participation in e-commerce, especially in the area of online tender and procurement of goods and services.
- Enact laws and regulations that promote and facilitate electronic cash payment systems to promote the development of e-commerce.
- Provide incentives to domestic and expatriate investors.

- Make the Internet a secure environment for local, regional and global e-commerce to ensure effective consumer protection and confidence in doing business online.
- Put in place the requisite legal and regulatory framework and provisions to facilitate domestic, regional and global e-commerce development.
- Enact laws to protect intellectual property rights related to electronic commerce and trade.

5.7 Community Access to ICT and Service Delivery

5.7.1 Overview

The development of ICT in Ethiopia and the country's transformation to a knowledge- and information-based economy and society will depend upon access by the country's rural population to ICT. Since the vast majority of Ethiopia's population lives in rural areas and is largely illiterate, this indeed is a real challenge facing the Government for developing ICT in Ethiopia. The Government therefore recognizes that transformation into the information age will require addressing the challenges of rapidly spreading ICT to rural communities at the grass-roots level.

5.7.2 Goal

To ensure access to ICT by Ethiopia's rural population.

5.7.3 Objectives and Strategies

- Accelerate implementation of community-based national initiatives such as the school-net, e-government, tele-centers, etc. to facilitate community access to global information networks.
- Establish a computer-based information system for the delivery of government services targeting communities.
- Promote the development of public information kiosks.
- Facilitate the exploitation and application of ICT-based services within communities.
- Encourage social groups to participate in the provision and dissemination of ICT-based products and services.
- Create public awareness for attaining the country's socio-economic development objectives, for establishing a full-fledged democratic society with good governance, and for transforming Ethiopia to a knowledge- and information-based society.
- Promote ownership of computers and Internet connectivity nation-wide.

- Encourage the private sector to expand community-based ICT initiatives to rural areas.

5.8 Local Content and Applications Development

5.8.1 Overview

Ethiopia has a large population with cultural and linguistic diversity. Patterns of settlement are such that the population is dispersed over wide and inaccessible areas geographically with little developed physical and ICT infrastructure. Creating locally-relevant content and applications for this large population across terrains difficult of access, and using upwards of 80 languages is a real challenge.

In order to obtain maximum benefits from opportunities provided by ICT, appropriate ICT content and applications need to be developed and tailored to user needs and local conditions. This will facilitate the availability of knowledge and information in a language that is understood by ordinary people, and will enhance accessibility to all citizens in urban but particularly rural areas.

The Government is committed to the development of locally-relevant ICT content and applications consistent with specific local situations, and that are sure to add value to the daily lives of communities. Following are the objectives and strategies of the policy with respect to content and applications development.

5.8.2 Objectives and Strategies

- Localize the existing global knowledge and content for use at the national and local levels.
- Promote the local development of ICT content and applications, as well as multi-media based content for social and cultural interaction.
- Develop government portal and messaging solutions and interoperability between national and local languages in order for citizens to have unhindered and transparent access to government services.
- Develop content for preserving the values, wisdom and acquired knowledge of traditional communities and cultures.
- Adopt content and access structures for distribution at the national and sectoral levels.
- Support the print and publishing industries with content production targeting communities.
- Support electronic media-backed archive management, retrieval, utilization and disposal.

- Encourage multi-media-based content and application development, mass communication and information delivery.
- Support and promote initiatives for content and applications development based on local languages, mass communication and information delivery.
- Encourage public and private sector publishers to enable the larger public to access information on key policies, topical issues, programs, products and services.

5.9 Research and Development (R&D)

5.9.1 Overview

R&D activities in general and in ICT in particular in Ethiopia at present are far from developed. In part, this is because of meager resources allocated to R&D activities. It is obvious, however, that for the country to establish a firm foundation for rapid progress in overall socio-economic development as well as in the development of ICT, adequate resources need to be allocated to R&D activities.

The Government considers investment in R&D a necessary precondition for a sustained development not only of ICT but also for scientific progress. In recognition of the important role that R&D plays in facilitating the country's socio-economic development process in general and ICT in particular, the Government commits itself to the following specific objectives and strategies.

5.9.2 Objectives and Strategies

- Develop an ICT R&D policy and strategy.
- Ensure that research projects and programs aim at solving local problems, meet national needs and enhance the development of professional skills.
- Allocate adequate resources to R&D for hard- and soft-ware development, communications, information networks, technology, etc.
- Promote applied and need-based R&D activities.
- Promote R&D in areas such as standard character-set, language interoperability, electronic dictionaries and thesaurus, and multilingual search engines for widely spoken indigenous languages to facilitate accessibility.
- Support R&D in institutions involved in research such as higher educational institutions and laboratories.
- Encourage participation in research undertakings by ICT professionals.
- Network R&D activities conducted by public and private establishments for sharing best practices from lessons learned across sectors.
- Provide incentives to the private sector to invest in R&D activities.
- Disseminate information on new developments in ICT arising from research findings.

- Harness R&D capabilities and global best practices by promoting collaboration between the country's ICT centers of excellence and those of other countries.

5.10 ICT Systems Security and Standards

5.10.1 Overview

The exploitation and application of ICT requires both a secure environment and appropriate standards. While the fundamental role of ICT for social and economic development is well recognized, ICT may also be a destructive tool when placed in the hands of those bent on doing evil. Without appropriate security the use of computers and the Internet involve risks regarding loss of records, corruption of information, and malicious attacks on users including individuals, businesses and governments.

The ad hoc development of ICT in Ethiopia has inevitably resulted in the absence of coordination and random acquisition and application of varying systems and standards, duplication of efforts and wastage of scarce resources. The Government therefore recognizes that, in addition to measures to ensure a safe use of ICT, its development will need to be guided by appropriate standards and best practices.

Since information security and standards constitute integral parts of the process of ICT development, the Government will give priority to the creation of a safe and secure ICT environment as well as appropriate standards. The Government is committed to taking measures aimed at putting in place systems and guidelines within the framework of this policy.

5.10.2 Objectives and Strategies

5.10.2.1 ICT Security

- Safeguard national, institutional and individual security.
- Address national security implications arising from the widespread application of ICT within the economy and society.
- Facilitate the enactment of the necessary laws and legislative instruments to govern and regulate cyber-related activities including laws relating to intellectual property rights, data protection and security, freedom of access to information, computer and cyber-crime and other cyber-laws to facilitate Ethiopia's unhindered and effective participation in the information society.
- Introduce and enforce appropriate legal measures against misuse of systems and data.
- Develop ICT and related regulatory frameworks, based on legislation, in order to address ICT's socially undesirable activities.
- Protect networks, data and information systems against attacks and unauthorized access, and protect the rights of citizens.

- Ensure the enforcement of legal measures against misuse of systems and data, negligence or non-compliance to data disaster prevention and recovery procedures.
- Introduce measures for protecting the Ethiopian public against the negative and undesirable impacts of ICT such as cyber-crimes, digital frauds, pornography, etc.
- Equip law enforcement agencies with appropriate ICT infrastructure and services.
- Establish and strengthen institutional and human resource capacity in the public and private sectors to ensure network security.
- Regularly monitor the network for possible intrusions, virus attacks and illegal activities.
- Create data and information security awareness by ICT users.

5.10.2.2 ICT Standards

- Promote the development and adoption of the necessary standards and good practices to support the exploitation and application of ICT in the public and private sectors, and in the society at large.
- Ensure the compatibility of information processing methods for the reliability of data/information.
- Standardize data collection, processing and data exchange procedures.
- Take appropriate measures to ensure that ICT will be used in all sectors based on international interoperable standards.
- Establish standards and guidelines harmonized at national and regional levels for the deployment and exploitation of ICT in the country.
- Develop and implement guidelines and standards for the control of quality management in the delivery of ICT services and products by the private sector
- Develop standards and guidelines for the application of ICT in schools, colleges and universities.
- Implement guidelines and standards for quality control and management for ICT products and service delivery.
- Adopt regional and international standards and best practices in the development of ICT rules, guidelines and regulations.
- Establish standards for interconnectivity and interoperability of computer networks.
- Introduce character setting and keyboard layout for local language computerization and adopt UNICODE technology.
- Promote cooperative endeavours between national security agencies and similar agencies in other countries for collaboration and for sharing best practices.

- Keep abreast of developments on current best practices for implementing policies and procedures relating to ICT security.

5.11 The Legal and Regulatory Environment

5.11.1 Overview

The exploitation and application of ICT requires an appropriate legal and regulatory environment. This is both in terms of ICT as a sector or industry and ICT as a tool and facilitator of social and economic development. The Government acknowledges that the existing ICT legal and regulatory framework in Ethiopia at present is either outdated or inadequate to meet the challenges of a fast-growing national and global ICT sector.

In view of dynamic developments in the global and national ICT environment, urgent reforms are needed in Ethiopia's legal and regulatory regime to facilitate and guide the development of ICT in the country. Appropriate policy and regulatory reforms are also needed to ensure equitable, reliable, and affordable access to ICT. The Government is therefore committed to the following legal and regulatory framework to guide and facilitate the development and application of ICT in Ethiopia.

5.11.2 Objectives and Strategies

- Establish appropriate legal and regulatory frameworks to facilitate the development, utilization and application of ICT in all spheres of life.
- Formulate legal frameworks pertinent to the development of information resources and services, and for their integration into development policies, strategies and programs.
- Ensure the protection of intellectual property rights in ICT.
- Review and improve upon existing policies, laws and regulations to facilitate the exploitation and application of ICT.
- Remove existing policy, legal and regulatory impediments to the development of ICT.
- Enforce electronic media supported archival presentation, utilization and disposal.
- Create a conducive legal and regulatory environment that facilitates domestic and foreign investment for the development of ICT.
- Ensure that ICT policies, laws and regulations accommodate the interests of the disadvantaged members of the society and build their capacity.
- Put in place appropriate incentives and regulatory instruments to promote investments needed for the development of ICT in rural areas of the country
- Review and improve upon licensing procedures to ensure access to a wide range of ICT services, particularly in the rural areas.

- Periodically review the legal and regulatory framework in order to keep abreast of developments in national and global ICT industry.

5.12 ICT For Sector Development

The policy is strategically focused on the development of priority sectors of the economy, including sectors such as education, health and agriculture.

5.12.1 ICT and Education

5.12.1.1 Overview

The Ethiopian Government acknowledges education and training as the cornerstone of social and economic development. Ethiopia's young population (about 45 percent is under the age of 15 years) can be transformed into a valuable asset provided value is added to human resources quality using ICT. In order for Ethiopia to move into the knowledge and information age, and be integrated into the global economy, there is a need to vastly expand educational opportunities, modernize the educational system and improve its quality.

ICT facilitates the development of education and enables both individuals and countries to meet the challenges presented by the knowledge and information age. ICT is particularly crucial to Ethiopia because the vast majority of its population lives in remote areas and continues to be disadvantaged educationally. Therefore, the Government commits itself to the exploitation and application of ICT for educational development in the context of the following objectives and strategies.

5.12.1.2 Goal

Ensure that ICT as an integral part of education and training at all levels.

5.12.1.3 Objectives

- To ensure that ICT is an integral part of the national education system, improve and expand access to quality ICT education, and make the educational system responsive to the changing needs of the country consistent with the demands of a knowledge- and information-based economy and society.
- To develop ICT literacy and skills at the primary, secondary and tertiary levels of education.
- To promote ICT culture and awareness through basic universal education to ensure functional and computer literacy.
- To promote technical and vocational education and training using ICT.

- To develop standards and guidelines for the deployment and exploitation of ICT in schools, colleges and universities.
- To eliminate gender inequalities in education and in the society in general by encouraging and promoting access to CT by women.
- To provide the necessary training and skills to those with disabilities to facilitate unhindered access to ICT.
- To promote Internet-connected schools and higher education institutions to speed up mass ICT literacy.
- Transform the existing traditional public libraries into a digitally networked system of libraries using ICT, and establish new ones.
- To broaden access to education and training opportunities by promoting electronic distance education and virtual learning
- To promote private sector participation in ICT-related education and training. In secondary and tertiary education.
- To collaborate with the private sector, bilateral and multilateral organizations in promoting ICT-assisted education and training in the country.

5.12.1.4 Strategies

- Upgrade schools curricula to include ICT at colleges and universities.
- Train a critical mass of computer-literate teachers for teaching ICT and improve their working conditions.
- Employ expatriate lecturers from overseas as a stop-gap measure.
- Equip educational institutions with ICT resources, including computer hard- and soft-ware.
- Encourage the production, acquisition and mass distribution of educational materials, basic electronic media and facilities at affordable prices.
- Devise affordable financial packages and schemes for teachers and students to acquire ICT including computer hard- and soft-ware.
- Expand the on-going electronic education program to embrace all levels of education and training across the country.
- Link schools, colleges, universities and libraries electronically to enable both teachers and students access distant knowledge and information.

- Develop special ICT training programs for women and the disabled in order to address gender and social inequities.
- Mobilize resources to purchase ICT equipment and improve connectivity within educational institutions.

5.12.2 ICT for Improved Health Service

5.12.2.1 Overview

Several countries are known to exploit ICT in modernizing the health sector. Its specific applications include the delivery of health services in areas such as tele-medicine, health sector management, database on health information, health education, etc. The application of ICT in support of health service delivery is of particular importance to countries such as Ethiopia with underdeveloped infrastructure, and with a large segment of the population living in inaccessible rural areas. The Government will commit itself to a nation-wide application of ICT for health service delivery, with the following specific objectives and strategies.

5.12.2.2 Goal

Modernize and expand improved health services coverage using ICT.

5.12.2.3 Objectives

- To ensure the effectiveness of the national health policy and strategy (which is based on preventive measures) through public dissemination of medical information using the Internet on ways to prevent contagious diseases such as sexually transmitted diseases, HIV/AIDS, tuberculosis and basic health care.
- To address issues specific to the health sector such as the supply, registration and management of pharmaceutical products and medical equipment, health education, laboratory management, personnel and inventory management, logistics, etc.
- To introduce a health-net program for health professionals to keep abreast of developments on diseases and their cures.
- To create databank on the health system and disseminate information aimed at improving health service delivery, coverage and quality across the country.
- To establish electronic health information network at the federal and regional levels linking hospitals and health centers with access to health resources.

5.12.2.4 Strategies

- Promote the development of tele-medicine applications and improve access to cost-effective health care services in rural areas.
- Upgrade and modernize the administration and management of health service across the country using ICT.
- Provide training using ICT, including distant education, for health personnel.
- Create an electronic information network for rapid access by health professionals throughout the country on health, pharmaceutical information, etc.
- Use ICT to disseminate health messages to prevent the spread of disease.

5.12.3 Agriculture

5.12.3.1 Overview

Agriculture forms the backbone of Ethiopia's economy. It employs over 80 percent of the rural population and accounts for an equally large share of export earnings. Modern agricultural inputs are limited, and there has been no perceptible change in the structure of production in the past several years. Predominantly subsistence in nature, the sector continues to be characterized by low output and productivity despite concerted efforts made by the Government for its accelerated development.

Ethiopia's agriculture remains hostage to the vagaries of nature. Slight aberrations in climatic conditions, which have become more and more frequent in recent years, have devastating consequences on the performance of agriculture, and by derivation on overall economic performance. In recognition of the potential use of ICT for agricultural modernization, the Government is committed to the exploitation and application of ICT in the context of the following objectives and strategies.

5.12.3.2 Goal

Modernize agriculture and radically increase output and productivity.

5.12.3.3 Objectives

- To promote the application of ICT to improve agricultural efficiency and productivity, and ensure food security.
- To establish national agriculture database on the country's agricultural potential.
- To create an integrated agricultural information system using ICT for the dissemination of data and information to peasants/farmers across the country.
- To establish database on world commodity prices and provide peasants/farmers with up-to-date information.

- To encourage farmers' associations to advertise and sell their produce on the Internet.
- To assist community-based information centers offering basic computer skills to farmers, extension workers and other beneficiaries in rural areas.
- To provide farmers' associations and rural extension workers with natural resources management techniques and practices.
- To develop and maintain a nation-wide geographical information system to monitor agricultural land use and manage natural resources.
- To facilitate access to regional agro-meteorological database and early warning systems at federal, regional and district levels.

5.12.3.4 Strategies

- Facilitate access by farmers to ICT by putting in place rural multi-media centers through special online agriculture portals to facilitate the availability of data and information.
- Establish computer networks connecting all regions and agricultural institutions to disseminate information on agricultural technology resulting from research findings.
- Provide farmers with strategic information on opportunities to market their products globally, and get online access to market-oriented information.
- Develop appropriate training programs to educate farmers in the use of ICT in agriculture, and keep them abreast of current developments in commodity prices.
- Promote the application of ICT by agro-based industries to add value to the country's agricultural produce.

CHAPTER SIX A FRAMEWORK FOR POLICY IMPLEMENTATION

6.1 Overview

A key element of the ICT policy is the required institutional framework for its implementation. Because of the cross-cutting nature of an ICT policy success in its implementation needs the involvement of all sectors and levels of government, the private sector, civil society organizations and the international community. From this perspective, it is imperative that the Government should create a conducive legal and regulatory environment, mobilize public and private sector resources, strengthen and/or set up relevant institutions, and provide strategic leadership for implementing the policy. Strategic leadership is required to coordinate ICT initiatives across all sectors and regions and among all stakeholders involved in ICT development, each with specific roles and responsibilities. This will enhance cross-sectoral linkages, optimize synergies and avoid overlapping of efforts and duplication of scarce resources. It will also promote an holistic approach to the development of ICT in the country.

While the Government will assume leadership for implementing the policy, the following are some of the key stakeholders and players with political, executive and other responsibilities who will play specific roles expected of them.

- The Parliament
- The judiciary
- The private sector
- Educational and research institutions
- Civil society organizations
- Mass media
- The international community, etc.

6.2 Institutional Arrangements

In recognition of existing institutional shortcomings to support and facilitate ICT development, the Government has put in place the necessary institutional building blocks required for the development of a robust ICT sector. In part, the measures taken were dictated by the rapid evolution of the ICT industry world-wide and its fast development on the home front.

Amongst the measures taken thus far is the establishment of the Ethiopian Information and Communications Technology Development Agency (EICTDA) under the Ministry of Capacity Building. The Agency is mandated to formulate ICT policies and strategies, and coordinate their implementation. Its basic objective is to create a conducive environment for the development of ICT, and for its effective application to the process of national development with major functions to “use information and communication technology in such a way that it contributes to the nation’s socio-economic development and the building of democracy and good governance”.

Other key players and stakeholders facilitating supporting the development and implementation of ICT include the Ethiopian Science and Technology Commission,

the Ethiopian Telecommunications Agency, which is a regulatory body, the Ethiopian Telecommunications Corporation, the Ethiopian Broadcasting Agency and the Institute for Telecommunications and Information Technology. Additionally, the ICT policy also gives due consideration to the following:

- Establishing National ICT Council (NICTC) to be chaired by the Minister of Capacity Building. Members of the NICTC will constitute representatives of key government offices, the private sector, the academia, professional and civil society organizations, and labor unions.
- Developing adequate and sustainable capacity at all levels of government and across sectors for formulating and implementing national ICT programs and projects.
- Articulating public and private sector partnership modalities for national ICT development.
- Integrating on-going ICT-related programs and projects into national ICT development plans and programs.

The Government will further commit itself to making the necessary changes to existing institutions as well as make new arrangements as and when the need arises to facilitate implementation of the policy. The various elements of the policy need to be revised periodically with changes in the country's development priorities, as well as global ICT environment.

6.3 Monitoring and Evaluation

There is a need to put in place mechanisms to ensure that the development and implementation of ICT policies and strategies, as well as plans and programs are well coordinated. In this respect, EICTDA will be responsible for coordinating, monitoring and evaluating implementation of the policy. EICTDA will provide the institutional framework for designing mechanisms to ensure that implementation of the policy is on track, and that it is regularly monitored and evaluated. This is in order to ensure that policy goals, objectives and targets are achieved, and that corrective and timely measures are taken, including revision of the policy when and as the need arises. The mechanisms include the following.

- Coordinating implementation of the national ICT policy, plans, programs and strategies.
- Ensuring that there are no duplications or overlapping of efforts which result in wastage of resources in the process of ICT plan and program development.
- Establishing performance indicators and targets to measure effectiveness.
- Setting standards to ensure effective project management and accountability for national and sector-specific programs and projects.

- Strengthening partnership and collaboration with regional and international organizations for best practices.
- Actively promoting the development of ICT as a sector in collaboration with stakeholders.
- Recruiting and retaining adequately qualified staff to enhance the Agency's functional capability for Ethiopia's accelerated ICT development.

6.4 Mobilization of Resources

The scarcity of resources is amongst challenges facing the country for implementing the goals and objectives of this policy. Therefore, in addition to its political commitment and proactive leadership role, the Government will also play a leadership role in mobilizing resources and attracting investment. Among other things, the Government shall:

- Raise funds from domestic and external sources to establish an ICT development fund.
- Encourage public, private and community sector partnerships to jointly invest in ICT development.
- Introduce special tax incentives to create an attractive environment for ICT enterprise development.
- Create a conducive investment environment to attract financial and technological resources through foreign direct investment.
- Annually allocate funds equivalent to a reasonable proportion of GDP for ICT development.
- Work out supportive policies for financial institutions to devise lending mechanisms to promote loans for investment in ICT-related projects.

6.5 The Way Forward: National ICT Master Plan

What remains to be done subsequent to the formulation of the present national ICT policy is the creation of a strategic direction as a road map for its effective implementation. In much the same way as there have been no institutional arrangements to guide ICT development up until recently, there also have been no comprehensive plans or programs to guide the development of ICT in the country. Consequently, numerous institutions have taken the matter into their own hands, and have attempted to address their own specific needs independently.

The strategic framework entails the development of a national ICT master plan along with the mobilization of the requisite resources for its implementation. The master

plan will define benchmarks, targets and responsibilities for monitoring and evaluating performance in policy implementation. Government agencies will formulate their specific plans and programs within the framework of the objectives and strategies set out in the national master plan. Both the national plan and sector plans and programs will be supported by action plans as guides for implementation.

In order to facilitate implementation of the ICT policy at federal and regional levels of government, and to draw up sector-specific ICT policies and strategies, plans and programs the Government will establish appropriate structures in public sector organizations and encourage the private sector to do likewise.

The final goal is of the ICT policy is to provide a framework for the deployment and application of ICT nation-wide in all sectors of the Ethiopian economy and by all citizens in all spheres of life.
