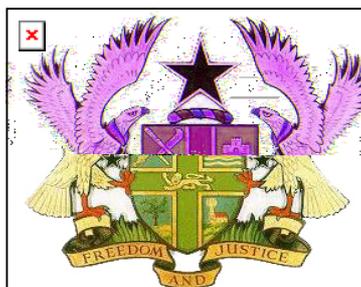


The Republic of Ghana



THE GHANA ICT FOR ACCELERATED DEVELOPMENT (ICT4AD) POLICY

A POLICY STATEMENT FOR THE REALIZATION OF THE VISION TO TRANSFORM
GHANA INTO AN INFORMATION-RICH KNOWLEDGE-BASED SOCIETY AND ECONOMY
THROUGH THE DEVELOPMENT, DEPLOYMENT AND EXPLOITATION OF ICTs WITHIN
THE ECONOMY AND SOCIETY

June 2003

List of Acronyms

FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GICTA	Ghana Information and Communications Technology Agency
GIS	Geographic Information System
HIV/AIDS	Human Immuno Deficiency Virus/Acquired Immuno Deficiency Syndrome
HRD	Human Resource Development
ICT	Information and Communications Technology
ICT4AD	ICT for Accelerated Development
IMF	International Monetary Fund
ITSD	Information Technology Services Division/Directorate
NDPC	National Development Planning Commission
NICI	National Information and Communications Infrastructure
NITC	National Information Technology Commission
PRSP	Poverty Reduction Strategy Paper
R&D	Research and Development
S&T	Science and Technology
SAP	Structural Adjustment Programme
SME	Small and Medium Enterprise
VICI	Village Information and Communications Infrastructure

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THE EXECUTIVE SUMMARY

Summary of the Basic Elements and Provisions of the Ghana Integrated ICT for Accelerated Development (ICT4AD) Policy

Preamble

Nations worldwide have recognized the developmental opportunities and the challenges of the emerging information age characterized by information and communication technologies (ICTs). These technologies are driving national development efforts worldwide and a number of countries in both the developed and developing world are exploring ways of facilitating their development process through the development, deployment and the exploitation of ICTs within their economies and societies.

The Ghana ICT for Accelerated Development (ICT4AD) Policy represents the Vision for Ghana in the information age. It is based on the Policy Framework Document: “**An Integrated ICT-led Socio-economic Development Policy and Plan Development Framework for Ghana**” released in March 2003. The development of this policy framework document was based on a nation-wide consultative process involving all key stakeholders in the public sector, private sector and civil society.

The Ghana ICT for Accelerated Development (ICT4AD) Policy Statement fully takes into account the aspirations and the provisions of key socio-economic development framework documents including: the Vision 2020 –The First Steps; the Ghana Poverty Reduction Strategy (GPRS) (2002 -2004) and the Co-ordinated Programme for Economic and Social Development of Ghana (2003-2012)

The Policy Statement sets out the road map for the development of Ghana’s information society and economy and provides a basis for facilitating the socio-economic development of the country in the emerging information, knowledge and technological age to be dominated by information and knowledge-based economies. The Policy is aimed at addressing a number of *developmental challenges* facing the country as a basis for achieving a number of *policy goals* and *objectives*. The key elements of the Policy Statement are summarized as follows:

The Policy Challenges

The Ghana ICT4AD Policy is designed to aid Ghana’s development process by contributing to addressing the nation’s key developmental challenges. These include:

- The social and economic pressures of a youthful population and the challenges of turning the youthful population into an asset for development
- The poor performance of the economy --- coupled with rapid population growth and declining per capita income

- An economy with low job creation capacity and dominated by an under-performing agricultural sector with weak under-developed industrial and services sector
- The heavy national debt burden characterized by high debt per capita, and high debt-servicing ratio --- factors acting as major constraints on the nation's development efforts
- An under-developed and under-performing private sector with a disproportionate informal sector
- Limited human resource capacity characterized by low professional, technical and managerial manpower base
- Weak scientific research base and under-developed research and development (R&D) capacity
- Relatively high proportion of the population with no educational attainment; a high school drop-out rate and limited access to higher education by the vast majority of the population especially girls and women.
- Narrow export base dominated by traditional exports
- Under-developed physical infrastructure and
- Poor and limited communications and telecommunications infrastructure

The Case for the ICT4AD Policy

The emergence of the information age has brought to the fore, the important role that *information, knowledge* and *technology* can play in facilitating socio-economic development. The effective use of information and knowledge is becoming the most critical factor for rapid economic growth and wealth creation, and for improving socio-economic well-being.

There is no doubt that information; knowledge and technology are increasingly becoming the key drivers for socio-economic development world-wide. A nation's capability to accelerate its socio-economic development process and gain global competitiveness and improve the well-being of its people depends very much on the extent to which it can develop, use, exploit and sell, ---- *information, knowledge* and *technology* in one form or another.

It has been acknowledged that for Ghana to move her industrially weak, subsistence agriculture based economy towards an information and knowledge economy she will need to develop and implement comprehensive integrated ICT-led socio-economic development policies, strategies and plans. With the right sets of policies and action plans it will be possible for Ghana to facilitate its socio-economic development process through the development, deployment and exploitation of ICTs within the economy and society without first going through an extensive industrialization process.

It is however recognized that for the policy to make an appreciable desirable impact on the socio-economic development process of Ghana, it will need to be integrated into the overall

developmental objectives, priorities and programmes of the country. Such an all-inclusive comprehensive 'ICT for development' policy and strategies must be aimed at the implementation of initiatives that could contribute to addressing the key *developmental challenges* facing the country

The Basic Question Addressed by the Policy Statement

How to address Ghana's *developmental challenges* and accelerate the nation's socio-economic development process to improve the socio-economic well-being of its people through the development, deployment and exploitation of ICTs within the society and economy

The Basic Premise of the Policy

Ghana's development process can be accelerated through the development, deployment and exploitation of ICTs within the economy and society

The Basic Motivation of the Policy

Ghana's accelerated development within the emerging information and digital age will not be possible without an ICT-driven development agenda

The Overall Objectives of the Policy

To engineer an ICT-led socio-economic development process with the potential to transform Ghana into a middle income, information-rich, knowledge-based and technology driven economy and society

The Specific Objectives of the Policy

- To create the necessary enabling environment to facilitate the deployment, utilization and exploitation of ICTs within the economy and society
- To support the development of a viable knowledge-based ICT industry to facilitate the production, manufacturing, development, delivering, and distribution of ICT products and services
- To facilitate the modernization of the agricultural sector through the deployment and exploitation of ICTs to improve on its efficiency and productivity.
- To support the development of a competitive high value-added services sector, to serve as an engine for accelerated development and economic growth with the potential to develop into a regional business-services and ICT hub.
- To aid the process of the development of national human resource capacity and the nation's R&D capabilities to meet the changing needs and demands of the economy
- To promote an improved educational system within which ICTs are widely deployed to facilitate the delivery of educational services at all levels of the educational system

- To facilitate a wide-spread deployment and exploitation of ICTs within the society to support the delivery of health and social services
- To support the modernization of the civil and public service through institutional reforms, renewal and the deployment and exploitation of ICTs to facilitate improvements in operational effectiveness, efficiency and service delivery
- To facilitate the development, expansion, rehabilitation and the continuous modernization of the national information and communications infrastructure
- To guide the development and implementation of electronic government and governance, as well as electronic commerce and business strategies and action plans
- To accelerate the development of women and eliminate gender inequalities in education, employment, decision making through the deployment and exploitation of ICTs by building capacities and providing opportunities for girls and women
- To facilitate the development and implementation of the necessary legal, institutional and regulatory framework and structures required for supporting the deployment, utilization and the development of ICTs;
- To facilitate the development and promotion of the necessary standards, good practices and guidelines to support the deployment and exploitation of ICTs within the society and economy

The Strategic Focus of the Policy

To simultaneously target the development of the ICT sector and industry as well as use ICTs as a broad-based enabler of developmental goals, with emphasis on the development, deployment and exploitation of ICTs to aid the development of all other sectors of the economy

The Priority Focus Areas of Policy --- The 14 ICT4AD Pillars

- Accelerated Human Resource Development
- Promoting ICTs in Education – The Deployment and Exploitation of ICTs in Education
- Facilitating Government Administration and Service Delivery – Promoting Electronic Government and Governance
- Facilitating the Development of the Private Sector
- Developing an Export-Oriented ICT Products and Services Industry
- Modernization of Agriculture and the Development of an Agro-Business Industry
- Developing a Globally Competitive Value-Added Services Sector --- A Regional Business Service and ICT Hub
- Deployment and Spread of ICTs in the Community
- Promotion of National Health
- Rapid ICT and Enabling Physical Infrastructure Development
- Legal, Regulatory, and Institutional Framework Provisions
- R&D, Scientific and Industrial Research Capacity Development
- Promoting Foreign and Local Direct Investment Drive in ICTs

- Facilitating National Security and Law and Order

Key Drivers of the Policy

- ICTs as a Social-Enabler (Education, Health, Poverty-Reduction, Income-Distribution)
- ICTs as an Enabler of rapid Socio-Economic development
- ICTs as an Enabler of Government Administration and Service Delivery
- ICTs as a Facilitator of Electronic Government and Electronic Commerce Initiatives
- ICTs as an Engine of the Service Sector
- ICTs as an Enabler of Knowledge-driven Industrial development
- ICTs as an Enabler of the Agriculture Sector
- ICTs as a Driver of Private Sector Development
- ICTs as an Agent for Wealth Creation
- ICTs as a Tool for Bridging the Gender inequality Gap in Social, Economic and Political development

The Principal Questions Addressed by the Policy

- Where we are as a nation?
- Where do we want to get to as a nation?
- When do we want to get there?
- What do we need to do in order to get there?

Concluding

The Policy Statement reflects the nation's total commitment to transform Ghana into an information-rich knowledge-based society and economy to ensure that Ghana and its people fully participate in the information age and enjoy the social, cultural and economic benefits of the emerging information revolution.

The Government and the People of Ghana are wholeheartedly committed to the implementation of the provisions of the Policy to facilitate the process of establishing a prosperous society, with an economy that is globally competitive, dynamic, robust and resilient with respect to the rapid changes and advances that are taking place in the global economy to be dominated by technology-driven information and knowledge economies.

To implement the Policy a number of 4-year rolling plans shall be developed and implemented within the life-span of the Policy – It is envisaged that the Policy will have an operational life of between fifteen to twenty years. --- And as a working and living document, it is anticipated that, necessary periodic revisions will be made in relation to its key elements to meet changing developmental objectives and priorities as well as changes in the global economy and advances in the technological environment.

PART ONE

The Vision to Transform Ghana in the Information and Technology Age

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CHAPTER ONE

THE POLICY BACKGROUND STATEMENT

Ghana in the Information and Knowledge-based Age

The emerging information and knowledge age and the new technological revolution are heralding a new economic and social order characterized by the development, and exploitation of ICTs within all spheres of human endeavor. This era is giving rise to the emergence of information and knowledge-based economies with traditional economic, industrial and commercial activities moving towards knowledge-driven processes with most of the advanced economies progressively being transformed into knowledge-based technology-driven services dominated economies.

These economies are increasingly laying emphasis on economic activities with intellectual content and knowledge. A number of countries are recognizing the need to rapidly develop their knowledge base through massive investments in human resource development laying emphasis on improving, and broadening universal access to higher and quality education and training avenues including on-the-job and in-service skill updates and life-long learning.

Also the need to massively invest in research and development (R&D) efforts to create new products, and services as a way of gaining competitive advantage in an increasingly competitive global economic environment has been given a priority by most nations as part of their effort to develop their information economy and society. The use of these emerging technologies to transform government machineries to facilitate efficiency in operations and service delivery has also been a priority area of Governments worldwide.

There is therefore no doubt that Governments world-wide have recognized the crucial role that ICTs can play in facilitating and accelerating socio-economic development. A number of countries in both the developed and developing world have in place relevant policies and strategic plans that will enable them transform their economies into information and knowledge-based economies. Ghana like other developing countries is equally placed to take advantage of these technologies to facilitate her socio-economic development to aid the process of transforming the nation's economy and society into an information-rich and knowledge-based economy and society.

The emerging information and knowledge economy is no doubt generating opportunities across all sectors in both developed and developing countries. --- It is a new source for the creation of quality jobs, wealth generation and redistribution, rapid economic development and prosperity as well as a means for facilitating global competitiveness. With the emerging information age, ICTs are seen by a number of countries as a key factor for achieving progress in economic and social development. These technologies are offering developing countries like Ghana a window of opportunity to leap-frog the key stages of industrialization and transform their subsistence agriculture dominated economies into a service-sector

driven, high value-added information and knowledge economy that can successfully compete on the global market.

It is acknowledged that in the new information age, although the mere use of *information, knowledge and technology* can improve the socio-economic development fortunes of a given nation. Evidence shows that those nations who in addition are involved in the development as well as the sale of information (and information products), knowledge (and knowledge products) and technology (and its products), are moving faster on the socio-economic development scale compared to others. There is no doubt that in the new emerging economic order, the fundamental basis for wealth creation and national prosperity are information and knowledge and that Ghana cannot afford to be without either of these.

The Challenges, and the Opportunities

It is recognized that if Ghana is to move her industrially weak, subsistence agriculture-based economy towards an information and knowledge economy she will need to develop and implement comprehensive integrated ICT-led socio-economic development policies, strategies and plans set within the wider context of the socio-economic development objectives of the country. There is no doubt that for Ghana to compete and prosper in the new emerging global economy to be dominated by information and knowledge-based economies, she will need to embrace and harness ICTs to facilitate her development process.

Ghana's success in the emerging knowledge revolution and technological age will depend on the extent to which it manages to address the resultant developmental challenges and take advantage of rapidly evolving technologies. It is acknowledged that, although these new technologies present considerable challenges to developing countries like Ghana, they also provide considerable opportunities for sustainable development and for improving competitiveness of key sectors of the economy like: agriculture, industry, and services.

This Policy Statement defines Ghana's ICT-driven development agenda in the information age. The Statement sets out Ghana's road map in terms of the vision, missions, strategies and policy priorities for developing Ghana's information society and economy --- The ultimate objective is to: *accelerate Ghana's socio-economic development process towards the realization of the vision to transform Ghana into a high income economy and society that is predominately information-rich and knowledge-based within the next two to three decades or less.*

Acknowledging Ghana's Developmental Challenges in terms of Key Socio-Economic Development Indicators

The ICT4AD Policy acknowledges that for it to make a desirable and appreciable impact on the country's developmental process it must in addition to being related to the wider social and economic development objectives and priorities of the nation, be aimed at addressing the developmental challenges facing Ghana defined in terms of key socio-economic indicators; ---- with specific reference to the fact that:

- Ghana has a relatively high population growth rate. And that the nation's population based on the current population growth rate of 2.5%, will reach 38 million --- double the 2000 figure by 2028.
- Ghana has a relatively youthful population with close to 60% of the population under the age of 25 years and only 5% of the population over 65 years old

- Ghana's high illiteracy rate with close to 40% of the population above the age of 6 years without any form of educational attainment with only about 3% of the population with tertiary level education has serious implications for the nation's development.
- The country has a high primary school drop-out rate and very low secondary school enrolment rate. --- With close to 50% of junior secondary school leavers failing to progress to senior secondary school and a high proportion of senior secondary school leavers failing to continue their education.
- Close to 40% of Ghanaians currently live below the poverty line of less than \$1 per day and five of the 10 regions of the country currently have more than 40% of their people living in poverty.

The ICT4AD Policy has also taken into account the fact that:

- Ghana has a predominantly agricultural economy ---- most of which is based on subsistence farming with very little mechanization or application of modern agricultural production methods or practices. The agriculture labour force has a high percentage of women and about 70% of these are illiterate
- The Ghanaian economy has not experienced a major structural transformation since independence. --- And that the majority of the working population (60%) are still actively involved in agriculture with only 13% working in the industrial sector and 28% in the service sector of the economy
- Ghana's industrial base is narrow and its services sector, the second largest contributor to GDP after the agriculture sector, is under-developed
- The informal private sector is by far the largest employment sector of the Ghanaian economy. ---- This sector alone accounts for about 81% of the employed work force, with the formal private sector accounting for only 8% of the employment of the economically active population. Majority of women operate in the informal sector with very little support

The Policy Statement also acknowledges that:

- The job creation capacity of the Ghanaian economy is extremely low. ---- And that most of the employed population are involved in set-ups that do not have the potential to generate additional jobs or employment opportunities.
- Only about 15% of the working population are employees of public and private sector organizations; and that close to 68% of the employed population are self-employed with no employees compared to 5.2% of self-employed with one or more employees.
- Ghana is currently facing a human resource problem in technical and managerial skills and more so in the area of ICT skills.
- Ghana's R&D capacity and capabilities are limited, with the nation's universities and research institutions lacking the necessary capacity to conduct and engage in advanced and cutting-edge R&D work.

The Policy additionally takes into account the fact that:

- Ghana's national debt is a major impediment to economic development; and that, the nation's average national debt per capita (in 2000) exceeded its annual average gross national income per capita. And that Ghana's debt burden measured in terms of its annual debt servicing payments do present the country with a major developmental challenge
- Ghana's current gross national income per capita of \$340 is lower than the average for Sub-Saharan African countries estimated at \$480 and also lower than that of low-income countries estimated at \$420.
- Ghana's aspiration to accelerate its socio-economic development process and achieve a middle income status will require achieving a considerably high growth rate well above its current growth rate. And that Ghana growing at its current economic growth rate will for many years continue to register a gross national income per capita below the current Sub-Sahara Africa average.
- Ghana will require a double figure growth rate of between 10% - 12% per annum sustainable over the next fifteen to twenty years to be able to attain a middle income per capita level of between \$1000 and \$2000 in the next 15 years and over
- Historically, Ghana has never achieved a double figure growth rate. And that the highest GDP growth rate the nation has ever achieved was 8.8% in 1984.
- A lot of efforts will be required to transform the economy from its current low single digit growth rate to a double digit growth rate. And that anything short of a growth rate between 10% and 12% sustained over a number of years will make it extremely difficult for Ghana to move into the middle income zone in the foreseeable future.

Crystallizing the Developmental Challenges Facing the Country

Further to taking into account the current status of key socio-economic indicators in guiding the development of the ICT4AD Policy, the Government also recognizes the need to target the Policy at addressing the key developmental challenges facing Ghana –and these include:

- *The social and economic pressures of a youthful population* --- Ghana's relatively young population of close to 60% of the population under the age of 25 years do present the country with a number of development challenges. Some of the developmental challenges that Ghana is facing as a result of having a relatively young population include those relating to heavy social expenditure budget in areas like: education, training and provision of health and other social services.
- *The challenges of turning the youthful population into an asset for development* --- The lack of policies and initiatives targeted at turning the youthful population into a skilled human resource asset to aid the development of the country may translate into a high unemployable population in the years to come. Turning of the youthful population into an asset for development and the

taking of steps to improve the economy to provide opportunities to a growing population of young people presents Ghana with a key developmental challenge.

- *Rapid population growth and declining per capita income* --- At the current growth rate of 2.5%, Ghana's population will increase by 50% within the next 12 years; reach the 30 million mark by 2020 and will be double the 2000 figure by 2028. This rapid growth in the population could present Ghana with a number of developmental challenges especially if economic growth continues to lag behind population growth.
- *An under-performing agricultural sector* --- Ghana's agricultural sector despite experiencing some improvements in some areas, is seriously underperforming in a number of critical areas. Given that the agricultural sector currently employs 70% of the labour force, contributes close 35% to the GDP and accounts for 57% of foreign exchange earnings, the lack of development in the sector has a number of social and economic implications which could further compound Ghana's socio-economic problems and retard its developmental efforts
- *An economy dominated by the agricultural sector with weak under-developed industrial and service sector* --- The Ghanaian economy is still predominately agriculture-base without a substantial shift towards the services sector and industrial sector as should be expected if the economy were on a rapid growth path and modernizing. The structure of the Ghanaian economy measured in terms of sectorial contribution to GDP indicates that the structure of the economy changed very little over the last 20 years. Putting in place policies and strategies that modernize the agriculture sector while at the same time target the development of the industrial and services sectors to increase their contribution to the GDP constitute a major developmental challenge facing the country.
- *The heavy debt burden* --- Ghana's development is being handicapped by the nation's heavy debt burden measured in terms of: the high national debt per capita, the high national debt as percentage of GDP, the debt service ratio and the debt service to export earnings ratio. The nation's debt per capita in 2000 was \$350 compared to its income per capita of \$340; the national debt as percentage of GDP increased to about 129% by 2000. Ghana's heavy debt burden is compounding its other economic development problems and this is constraining the nation's developmental efforts in a number of areas.
- *The disproportionate informal private sector* ---- Statistics shows that the private sector, is dominated by its informal sub-sector. In other words, the formal private sector forms a very small fraction of the private sector. The informal private sector is also by far the largest employment sector of the Ghanaian economy – accounting for close to 81% of the economically active population, while the formal private sector accounts for only about 8%. The development of the private sector in general and in particular the formal private sector is one of the major developmental challenges facing the nation.
- *The low professional, technical and managerial manpower base* ---- The occupational profile of the economically active population reveals that: only 8.6% are professional and technical people with a lower percentage of 0.3% who are managers and administrators. It is estimated that Ghana has about 174 registered engineers, 53 legal practitioners, 60 certified accountants, 50 architects and surveyors and 145 medical and detail practitioners (including doctors) per million of persons. The low percentage of key technical and professional manpower highlights the relatively low professional and technically skilled human resource capacity of the economy. The development

of a skilled human resource capacity can be singled out as one of the key developmental challenges facing the country.

- *Relatively high proportion of population with no educational attainment* --- Close to 40% of Ghanaians over 6 years of age have never been to school, in other words they have no educational attainment. This figure coupled with the fact that only about 3% of the population had tertiary level education also present Ghana with a major developmental challenge.
- *Low job creation capacity of the economy* --- Close to 68% of employed population are self-employed with no employees. In other words, the majority of the working population work in their own small enterprises and has no other employees apart from themselves. With the economy dominated by the self-employed, who do not have the capacity to employ others, the prospects for generating additional jobs or employment opportunities for a growing young population are very low. The transformation of the economy to improve on its employment generation capacity is a key developmental challenge facing the country.
- *Narrow export base dominated by traditional exports* ---- Ghana's trade with the outside world has for many years registered huge balance of payment (BoP) deficits. The country's small domestic market cannot support the development of the key sectors of the economy. A key developmental challenge facing Ghana therefore relates to the development of a diversified export-led economy targeting key sectors of the economy including the agriculture, services and industrial sectors
- *Under-developed physical infrastructure.* --- Ghana currently suffers from a number of physical infrastructure deficits which is putting a strain on the nation's developmental efforts. The developmental implications of the nation's poor physical infrastructure in the area of: roads, power, water and sanitation is a major developmental challenge facing the country.
- *Poor and limited communications infrastructure* --- The development, expansion and the modernization of the nation's communications infrastructure is a key developmental challenge. A key developmental challenge facing the nation entails the development, expansion and the modernization of the nation's communications infrastructure to achieve universal service and access to basic and value added telecommunications services, support the development of the local ICT industry and aid the country's socio-economic development process.

It is recognized that the socio-economic problems and challenges facing Ghana are likely to be compounded by the new challenges posed by globalization and the information age. And that for Ghana, to make progress in its developmental process, the nation in addition to taking steps to address these developmental challenges will also need to put in place efforts to address the additional challenges posed by globalization and the information revolution.

The ICT4AD Policy Statement sets out Ghana's vision in the information age. It defines the nation's broad vision, and the corresponding missions and strategies to serve as a road map for guiding the country's developmental efforts to aid the process of transforming it into an information and knowledge-based society and economy. The Policy Statement in a nutshell defines the vision and the agenda for developing Ghana's information society and economy.

Summary of the Socio-Economic Development Objectives and Priorities of Ghana

Ghana through the formulation of a number of socio-economic development policy frameworks over the years has identified a number of key developmental objectives to address the developmental problems facing the country. Of these policy frameworks, the key ones are Vision 2020 Socio-Economic Development Framework, the Ghana Poverty Reduction Strategy (2000-2004), the Ghana Science and Technology Policy and the Co-ordinated Programme for Economic and Social Development of Ghana (2003-2012). The key socio-economic development objectives of Ghana as identified in these policy frameworks are:

- To achieve a sustainable development and a population size that is compatible with the provisions of an adequate standard of living for all. And to ensure a population in which all citizens are at least functionally literate and productive.
- To promote the establishment of an open and liberal market economy founded on competition and private enterprise, initiative and creativity that optimizes the rate of economic development and ensures the maximum welfare and material well-being of all Ghanaians.
- To transform Ghana's economy from being dominated by the public sector to one that benefits the enterprise and dynamics of the private sector, supported by an efficient system of administration.
- To transform the economy from one based on smallholder agriculture to a purposefully diversified and productive economy which is capable of adjusting effectively to changes in the world economy
- To develop an agro-based industry and strengthen the development, application and transfer of agro-based technologies, both soft and hard, to support sustainable agriculture production.
- To modernize agriculture to encourage rural development and promote the establishment of a robust and diversified agricultural sector that ensures national food security and an adequate supply of raw materials at competitive prices for industrial production. And to ensure effective and efficient export diversification by making the agricultural sector more price-competitive and export-oriented.
- To develop and promote the country's competitive advantage as a trade and investment gateway to West Africa sub-region.
- To promote the attainment of an efficient, diversified, technologically-progressive and market-driven industrial sector that is capable of sustainable growth.
- To increase the national capacity for industrial production and promote science and technology activities that enhances industrial productivity.
- To encourage private sector development by promoting an enabling environment, including a conducive legal and social framework, for private sector investments in industry.
- To strengthen the private sector in an active way to ensure that it is capable of acting effectively as the engine of growth and poverty reduction

- To encourage technological innovation and effective adaptation of known and mature technologies, and to promote the improvement of local technologies.
- To transform society to become more scientifically based and to improve technology to secure increased productivity in all economic sectors.
- To improve the efficiency of the public service and ensure that it plays a more positive role in economic and social development at all levels.
- To improve the technical proficiency, management skills of the Ghanaian workforce, Enlarge training infrastructure for skills upgrading and match the supply of skilled labour with demand.
- To increase women's access to ICTs by ensuring a gender balance and positive discrimination in favour of the girl child to create a balance in trained information technology manpower.
- To promote women's rights to expression and communication through the use of ICTs and to develop a reporting mechanism to monitor progress towards gender equality in the area of ICTs
- To enhance the delivery of social services to ensure quality and locational equity, particularly with regard to education and health services.

The Ghana ICT4AD Policy is set within the wider socio-economic development framework for Ghana and as such is targeted at addressing a number of the identified developmental objectives and priorities of Ghana set within the wider context of achieving the *Vision for Ghana* through development of the nation's information economy and society.

CHAPTER TWO

THE VISION, MISSIONS, STRATEGIES AND POLICY GOALS

The Vision for Ghana

The Global Vision

To improve the quality of life of the people of Ghana by enriching their social, economic and cultural well-being through the modernization of the economy and society.

The Vision, does not envisage the future of Ghana only in economic development terms -- It acknowledges the need for Ghana to develop politically, socially and culturally to foster: political stability, good governance and system of government; improvement in the quality of life of the people of Ghana; national unity and security; social interaction, cohesion and integration; social justice; environmental protection and the fostering of the cultural heritage and the image of Ghana.

The Vision also aims at enhancing the pride and confidence of the people of Ghana in their abilities and capabilities to develop Ghana into a prosperous nation that is at peace with itself territorially and ethnically.

To contribute to the realization of the Global Vision, within the context of using ICTs as an engine for Ghana's socio-economic development, an ICT4AD Vision shall be pursued.

The ICT4AD Vision for Ghana

To improve the quality of life of the people of Ghana by significantly enriching their social, economic and cultural well-being through the rapid development and modernization of the economy and society using information and communication technologies as the main engine for accelerated and sustainable economic and social development

The ICT4AD Mission Statements

To realize the key aspirations of the ICT4AD vision, the following missions shall be pursued:

Main Mission

To transform Ghana into an information-rich, knowledge-based and technology-driven high income economy and society

Sub-Missions

- To develop Ghana's information and knowledge-based society and economy through the widespread development, deployment, and exploitation of ICTs within the society and economy
- To transform the educational system to provide the requisite educational, and training services and environment capable of producing the right types of skills and human resources required for developing and driving Ghana's information and knowledge-based economy and society
- To develop Ghana's research and development (R&D) capacity and capabilities with the potential to conduct and engage in advanced and cutting-edge R&D work required for supporting the development of a globally competitive information, knowledge-based and high-tech export industry and services
- To transform Ghana into an attractive destination for ICT-related Foreign Direct Investment (FDI) with the potential to become a competitive regional ICT and business hub.
- To develop a highly competitive ICT-led value-added and export-orientated services sector driven by a dynamic ICT services sub-sector and industry
- To develop a knowledge-based, technology-driven light modern industrial sector with a dynamic export-led and globally competitive ICT sub-industry
- To modernize the agricultural sector to substantially improve agricultural value-added and yield and develop a dynamic and vibrant export-oriented agro-business industry

The Broad Strategies for Achieving the ICT4AD Missions

To achieve the missions of the ICT4AD vision, the following broad strategies shall be pursued:

Strategy A:

To transform Ghana into an information and knowledge-driven ICT literate nation

Strategy B:

To promote the deployment and exploitation of information, knowledge and technology within the economy and society as key drivers for socio-economic development

Strategy C:

To modernize Ghana's educational system using ICTs to improve and expand access to education, training and research resources and facilities, as well as to improve the quality of education and training and make the educational system responsive to the needs and requirements of the economy and society with specific reference to the development of the information and knowledge-based economy and society

Strategy D:

To improve the human resource development capacity and the research and development (R&D) capacity of Ghana to meet the demands and requirements for developing the country's information and knowledge-based economy and society

Strategy E:

To promote the development of a globally competitive local ICT industry for the development, production and the sale of information, knowledge, and technology products and services

Strategy F:

To aggressively develop, promote and enhance Ghana's image as a competitive regional destination for ICT foreign direct investment (FDI)

Strategy G:

To promote and facilitate the development of the private sector to serve as a key driver for the development of the economy

Strategy H:

To modernize the civil and public service with the aim to improve its administrative efficiency, effectiveness and service delivery through the implementation of electronic governance and government initiatives set within the wider scope of the institutional engineering and renewal of the civil and public service

Strategy I:

To modernize and expand Ghana's information and communications infrastructure and services to improve universal access and service as well as quality of service (QoS)

Strategy J:

To expand the physical infrastructure of Ghana, including those of power and transport.

Strategy K:

To develop the necessary legal, institutional and regulatory framework and structures required for supporting the development, deployment and exploitation of ICTs within the economy and society.

The Policy Objectives

Taking into account the stated missions and strategies for attaining the aspirations of the ICT4AD Vision, the overall and specific objectives of the ICT4AD Policy are as follows:

The Overall Policy Objective

To engineer an ICT-led socio-economic development process with the potential to transform Ghana into a middle income, information-rich, knowledge-based and technology driven economy and society

The Specific Objectives of the Policy

- To create the necessary enabling environment to facilitate the deployment, utilization and exploitation of ICTs within the economy and society
- To support the development of a viable knowledge-based ICT industry to facilitate the production, manufacturing, development, delivering, and distribution of ICT products and services
- To facilitate the modernization of the agricultural sector through the deployment and exploitation of ICTs to improve on its efficiency and productivity.
- To support the development of a competitive high value-added services sector, to serve as an engine for accelerated development and economic growth with the potential to develop into a regional business-services and ICT hub.
- To aid the process of the development of national human resource capacity and the nation's R&D capabilities to meet the changing needs and demands of the economy
- To promote an improved educational system within which ICTs are widely deployed to facilitate the delivery of educational services at all levels of the educational system
- To facilitate a wide-spread deployment and exploitation of ICTs within the society to support the delivery of health and social services
- To support the modernization of the civil and public service through institutional reforms, renewal and the deployment and exploitation of ICTs to facilitate improvements in operational effectiveness, efficiency and service delivery
- To facilitate the development, expansion, rehabilitation and the continuous modernization of the national information and communications infrastructure
- To guide the development and implementation of electronic government and governance, as well as electronic commerce and business strategies and action plans
- To accelerate the development of women and eliminate gender inequalities in education, employment, decision making through the deployment and exploitation of ICTs by building capacities and providing opportunities for girls and women

- To facilitate the development and implementation of the necessary legal, institutional and regulatory framework and structures required for supporting the deployment, utilization and the development of ICTs;
- To facilitate the development and promotion of the necessary standards, good practices and guidelines to support the deployment and exploitation of ICTs within the society and economy

The Broad Policy Goals – The Cornerstones of the ICT4AD Policy

To achieve the aspirations of the ICT4AD Vision for Ghana, a number of broad policy goals serving as the cornerstones of the ICT4AD Policy shall be pursued including those targeting:

- Developing Ghana’s Information Society and Economy
- Pursuing a Multi-Sectorial ICT-Led Socio-Economic Development Goal
- Developing Ghana’s ICT Sector and Using ICTs as a Broad-Based Enabler of Development Goals

The Goal to Develop Ghana’s Information Society and Economy

As key steps towards the realization of the ICT4AD vision, efforts shall be directed at achieving the mission to transform Ghana into an information-rich, knowledge-based and technology-driven high income economy and society.

As part of these efforts, the Government is committed to implementing within the provisions of the broad strategies identified for achieving this mission ---- to within the next two to three decades or less transform Ghana’s predominately agricultural economy and society into:

- A high income economy dominated by trading in ICT products and services
- An economy characterized by a large commercial services sector with a reasonably large and vibrant, ICT services sub- sector and industry
- An economy characterized by a technology-based knowledge-driven industrial sector
- An economy with a globally competitive industrial and services sector which are to a large extent driven by cutting-edge R&D encompassing basic and applied industrial and product development.
- An economy based on a rich pool of highly skilled human resources in critical skill areas relevant for developing and maintaining a competitive edge on the global market
- An economy in which the majority of the working population are either directly or indirectly involved in information and communications related activities
- An economy with a modern, efficient and competitive agricultural sector

- An economy characterized by a wide-spread deployment and exploitation of ICTs within the society to support the delivery of health, education, government and social services
- An economy characterized by a modern educational system within which ICTs are widely deployed to facilitate the delivery of educational services at all levels of the educational system
- An economy in which a reasonable large proportion of the population have access to information and communications technology products and services
- An economy in which the provision and delivery of goods and services of the key sectors of the economy are to a large extent facilitated by information and communications technologies
- An economy in which the provision and delivery of services by government and its administrative machinery are to a large extent facilitated by information and communications technologies
- An economy based on an advanced and reliable national information and communications infrastructure
- An economy based on a literate society with a high proportion of computer literates.

Achieving a Multi-Sectorial ICT-led Socio Economic Development Policy Goals

In line with the goal to pursue a multi-sectorial development policy targeting key sectors of the economy as stated in a number of Ghana's socio-economic development policy frameworks including the Vision 2020, the Ghana Poverty Reduction Strategy Paper and the Co-ordinated Programme for Economic and Social Development of Ghana (2003-2012)

The Government is committed to, the establishment of a globally competitive, diversified and balanced economy that is driven by information, knowledge and skills --- an economy with an ICT-intensive modern industrial sector; a modern, efficient and competitive agricultural sector; and a vibrant ICT-driven, valued added services sector capable of serving as the engine for accelerated economic growth and development.

As part of this commitment, the Government will be implementing a multi-sectorial socio-economic development policy with the following sectorial goals:

- ***Agricultural Sector Development Goal***

To modernize the agricultural sector to improve its efficiency and productivity to ensure food security, generate rural employment; contribute to economic growth and to improve the foreign exchange generation capacity of the sector.

To aggressively promote and facilitate the development of a globally competitive agro-business industry to support the development of a vibrant agricultural value-added industry capable of supporting the development and modernization of the agricultural sector and its allied sub-sectors and industries.

To promote basic and cutting-edge agriculture-based research and related R&D work to improve agriculture yield of main crops and products, improve on agricultural processes and productivity and to

support the development of marketable value-added agricultural products capable of competing on the domestic, regional and the global market.

- ***Service Sector Development Goal***

To develop a competitive high value-added services sector, to generate employment and serve as an engine for accelerated development and economic growth with the potential to develop into a regional business-services and ICT hub for the ECOWAS sub-region and beyond.

The Government is fully aware that Ghana's domestic market is far too small and that for Ghana to grow and accelerate its development process, it must export. The goal is to develop the services sector as a business hub to produce and export its services into the sub-region and beyond is a key priority area of the country's socio-economic development programme

- ***Industrial Sector Development Goal***

To develop a viable knowledge-based ICT production and development industry, a vibrant cottage industry and a mass-consumer products light industry, capable of generating economic growth and employment and producing goods for the domestic market and for export into the sub-regions and beyond.

To increase the efficiency of the operations of the industrial sector to improve on the range of products produced to enable the sector make an increasing contribution to export earnings and supply the domestic market at competitive prices.

To encourage the conversion of agricultural commodities (especially perishable food items) into easily storable products (existing and new products) as manufacturing sector's contribution to stable food prices, enhanced farm prices and farm revenues, and to national food security

The Goal to Develop Ghana's ICT Sector and Use ICTs as a Broad-Based Enabler of Development Goals

The Government as part of this Policy Statement is guided by the principle that if Ghana is to take full advantage of the opportunities of the information age and develop a vibrant multi-sectorial information and knowledge economy, it should not as a nation be just a consumer of ICT goods and services but also a producer and developer of the technology.

The Government believes that development of a local ICT production industry and service sector is as equally important as the deployment, exploitation and utilization of the technology to support the activities of various sectors of the economy and society.

Ghana, as part of its ICT4AD programmes shall be pursuing a policy that lays emphasis on both ICT *Exploitation* and *Production* involving: the utilization and exploitation of ICTs to support the delivery of government services and the activities of various sectors of the economy as well as the production, development and delivery of ICT products and services ---- i.e. towards the development and promotion of an ICT industry and services sector.

These policy provisions will be implemented within five 4-year rolling plans over the next 20 years --- with the 1st, 2nd and 3rd plans laying emphasis on the exploitation and utilization of ICT products and

services to support the activities of various sectors of the economy and the 4th and the 5th plans laying emphasis on the production, development and delivery of ICT products and services.

The Policy is also strategically focused on both the development of the local ICT industry targeted at the export market as well as on using ICTs as an enabler of Ghana's broad developmental goals. The Government believes that: Ghana being an under-developed nation, will need to use ICTs as a broad enabler of its socio-economic development process as well as implementing policies and programmes targeted at the development of the ICT sector and industry. The policy recognizes that the spill-over or catalytic effect of developing the ICT sector on the economy as a whole will not be enough to accelerate Ghana's socio-economic development process.

The Policy goal is to simultaneously focus on developing the ICT industry while at the same time using ICTs to drive other sectors of the economy. This strategy it is hoped will accelerate Ghana's development and spread the social and economic impact of the development, deployment and exploitation of ICTs much faster than a singular focus of the development of the ICT sector.

PART TWO

The 14 Pillars of the ICT4AD Policy

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CHAPTER FOUR

THE 14 PILLARS OF THE ICT4AD POLICY -- DEFINING THE POLICY PRIORITY AREAS AND FOCUS

Policy Commitments and Measures to Facilitate the Process of Transforming Ghana into a Predominately Information-rich and Knowledge-based Society and Economy

To facilitate the process of transforming Ghana into a predominantly information-rich and knowledge-based society and economy, the following priority areas constituting the 14 pillars of the ICT4AD Policy shall be targeted:

- Accelerated Human Resource Development
- Promoting ICTs in Education – The Deployment and Exploitation of ICTs in Education
- Facilitating Government Administration and Service Delivery – Promoting Electronic Government and Governance
- Facilitating the Development of the Private Sector
- Developing an Export-Oriented ICT Products and Services Industry
- Modernization of Agriculture and the Development of an Agro-Business Industry
- Developing a Globally Competitive Value-Added Services Sector --- A Regional Business Service and ICT Hub
- Deployment and Spread of ICTs in the Community
- Promotion of National Health
- Rapid ICT and Enabling Physical Infrastructure Development
- Legal, Regulatory, and Institutional Framework Provisions
- R&D, Scientific and Industrial Research Capacity Development
- Promoting Foreign and Local Direct Investment Drive in ICTs
- Facilitating National Security and Law and Order

ACCELERATED HUMAN RESOURCE DEVELOPMENT

Policy Context

It is recognized that human resource is the key to developing and transforming Ghana from a predominately subsistence agriculture base economy into a predominantly information and knowledge based economy and society. Ghana is however currently facing a human resource problem in technical and managerial skill areas and more so in ICT skills. With only 8.6% of the economically active population which are professional and technical people, with a lower percentage of 0.3% working as managers and administrators it is apparent that, considerable resources and efforts will need to be invested into accelerating the country's human resource capacity if Ghana is to make any appreciable progress towards the realization of the aspiration of the ICT4AD Vision.

Also given that the vast majority of qualified applicants do not have access to higher education, the country is also facing an acute shortage of university and college places --- with less than 30% of qualified applicants gaining admission to the nation's universities and that this is having an adverse impact on the development of the required critical human resources for facilitating the development of the economy.

It is acknowledged that the extent to which Ghana will benefit from the advances and the opportunities of the emerging information age will depend on how the country is capable of developing and harnessing its human resources to initiate, support and maintain its socio-economic development towards an information and knowledge economy. The availability of a diverse pool of technical and managerial skills and professionals in critical skills to design, implement, manage, and use ICT applications and services is most crucial for supporting the development, deployment, exploitation and the application of ICTs for economic and social development.

Specifically on ICT related skills, Ghana like most developing countries suffers from a huge shortfall in critical ICT skills and expertise required for the development and support of ICT applications and systems within the public and private sector. The ICT skill shortage has in fact been identified in a recent survey as one of the factors inhibiting the growth of the ICT sector. Furthermore it is acknowledged that without a sustained effort to train workers in key ICT skills, the limited availability of skilled ICT personnel may place an upper limit on development and deployment of ICT within the economy and society.

For example, many user-organizations in Ghana have not been able to keep up with the rapid technological developments. In some, there is a lack of expertise to digest new information about these technologies and to integrate them into the existing operations of the organization with minimal disruption. Most organizations in the public and private sector face problems in relation to providing continuous training to the user-staff in the rapidly changing aspects of these technologies. This no doubt makes it difficult for them to take full advantage of these technological advances.

Most ICT managers in both public and private sector organizations and establishments cannot keep up with the rapid technological advances. Particular areas include integration of diverse technologies, use of system-development tools, networking, telecommunications and standards. The economy therefore requires a pool of this expertise to support the deployment and exploitation of the technologies and systems within organizational set-ups and as well as support the development of the nation's information and communications economy and society.

On the whole, Ghana's human resource base in key skill areas required for developing the nation's information economy and society need to be improved if the country is to achieve its goal of transforming its agricultural based economy into an information-rich and knowledge-based economy.

Policy Statement

The Government acknowledges that the young population of Ghana of close to 60% under the age of 25 years can be transformed into an asset by adding value to human resources and providing the environment for utilizing these resources for socio-economic development process --- and that ICTs could play a major role in this area. The development of people to support the process of moving Ghana into an information society and economy is therefore top priority of the Government and the crucial role that ICTs can play in this area is fully recognized and shall be promoted by the Government.

As part of the mission aimed at producing the right types of skills and human resources required for developing and driving Ghana's information and knowledge-based economy and society, the Government is fully committed to putting in place and facilitating the implementation of a comprehensive human resource development programme targeting critical skill areas across key sectors of the economy for supporting the development of the Ghana information society and economy.

This policy commitment will in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the low professional, technical and managerial manpower base of the country; the challenges of the social and economic pressures of a youthful population; the challenges of turning the youthful population into an asset for development, as well as the challenges of the relatively high proportion of population with no educational attainment.*

Policy Objectives and Strategies

The Objectives

The broad objectives are:

- To improve the human resource development capacity and the research and development (R&D) capacity of Ghana to meet the demands and requirements for developing Ghana's information and knowledge-based economy and society
- To develop the nation's human resource needs in critical skill areas in all key sectors of the economy
- To promote and facilitate skill improvement and update within the public and private sector
- To harness and fully utilize the nation's human resources
- To target the development of technical and managerial skills development as a priority area
- To develop a pool of knowledgeable ICT workforce in critical skill areas and professions that will be able to contribute to the process of the development of Ghana's information and knowledge economy
- To improve the human resource development capacity of the nation's universities and colleges

The Strategies

- Transform Ghana into an information and knowledge-driven ICT literate nation
- Modernize Ghana's educational system using ICTs to: improve and expand access to educational, training and research resources and facilities; improve the quality of education and training and make the educational system responsive to the needs and requirements of the economy and society with specific reference to the development of the information and knowledge-based economy and society.
- Create the conditions for Government Ministries, Public Sector Organizations (PSO) and private sector establishments to train and up-date the skills of their personnel through in-house training, provision of regular refreshal courses, study and training leaves
- Promote basic training in ICTs skills in all schools and tertiary institutions
- Ensure the development of a large pool of ICT professionals with wide range of state of-the-art ICT skills to meet the manpower needs of the country.
- Encourage the private sector, particularly key industries, to establish comprehensive training programmes for their own workforces, especially in new technologies
- Support and facilitate the training of women in key skills required by the information and knowledge economy
- Encourage life-long learning within the working population to promote on the job training, skills update, further and continuing education and learning within the public and private sector
- Ensure that all citizens who qualify to enter tertiary education in Ghana will benefit from such education, irrespective of their socio-economic background
- Ensure the provision of support to increase access to technical, vocational education and training to all categories of persons with disabilities and other vulnerable groups
- Encourage links between the education and training systems and the industry
- Ensure that traditional apprenticeship system is reformed and strengthened to improve productivity in the informal sector
- Encourage internships, co-opts and work-study programmes in all levels within various institutions.
- Enact laws that provide equal access to physically challenged and vulnerable groups to ICT training and education.

- Ensure that training systems and mechanisms are developed to facilitate coordination and linkage between different sectors of the economy including research institutions and industries
- Promote and enforce high standards in education, vocational training and life-long learning to facilitate the development of a globally competitive quality and professional manpower to support the development of Ghana's information and knowledge-based economy and economy
- Promote world-class standards, to support nation-wide professional ICT skills accreditation
- Promote initiatives targeted at re-training and re-skilling of workers within the civil and public services as well as workers in the private sector to provide them with requisite professional skills and expertise to enable them fully and effectively participate in the development of the information and knowledge economy.

Policy Measures, Instruments and Initiatives

Policy initiatives and measures shall be targeted at:

- developing the critical skill human resource base of key sectors of the economy
- building, upgrading and improving the capacity and facilities and of the nation's universities polytechnics and research institutions to increase their annual intake of students and the output of graduates in key professional skill areas such as engineering, computer science, physical and social science, business, finance and accountancy
- facilitating and supporting the development of the requisite pool of highly skilled human resources; knowledge workers and expertise capable of facilitating the process of developing and supporting a technology-based knowledge-driven industrial sector
- the development of comprehensive human resource base in critical skill areas required for facilitating the development of a vibrant value-added services sector and ICT services industry
- facilitating an investment climate for the mobilization of financial and technological resources; as well as promoting FDI specifically targeting attracting investments that have knowledge and expertise transfer components
- facilitating and promoting the implementation of community-based ICT initiatives as well as national ICT applications with human resource development components; including multipurpose community telecenter projects; teleducation and SchoolNet projects; electronic government and governance initiatives, telemedicine projects; and e-commerce projects among others;
- initiatives to improve and upgrade computer skills and of civil and public servants through in-service training and skill update programmes;
- programmes and initiatives aimed at professional skill development in work places in public and private sector institutions, through, in-service training, distance education and training and life-long learning.

The Key Implementation Agencies, Players and Stakeholders

- The Universities, Polytechnics, Colleges and Research Institutions
- The Secondary, Vocational, Technical and Training Schools and Institutions
- All Government Ministries and Public Sector Organizations
- Private Sector Businesses and Establishments
- Local and Foreign Educational and Training Provision Organizations
- The Civil Society and the Labour Union
- Professional Bodies

PROMOTING ICTs IN EDUCATION ---The Deployment and Exploitation of ICTs in Education

Policy Context

Ghana has a high illiteracy rate of close to 40% of the population above the age of 6 years who have never been to school with only about 3% of the population with tertiary level education. Based on the current population growth rate of 2.5%, Ghana's population will be about 38 million --- double the 2000 figure by 2028. The projected rate of growth of Ghana's population is likely to give rise to a number of socio-economic development challenges including those relating to: pressure on social expenditure in areas like education.

In fact, Ghana's, relatively young population of close to 60% of the population under the age of 25 years, do have the potential to further increase demand for educational places, which is currently limited at all levels of the educational system. Currently the country is experiencing a high primary school drop-out rate and very low secondary school enrolment rate. --- With close to 50% of junior secondary school leavers failing to progress to senior secondary school; and a high proportion of senior secondary school leavers failing to continue their education. A recent survey also shows that the level of computer literacy and awareness in the country is very low and this has been identified as one of the key factors limiting the development of the ICT industry and sector.

It is acknowledged that for Ghana to make any appreciable progress in its socio-economic development efforts, substantial resources will need to be directed at reducing the percentage of the population without any educational attainment, widening access to education to the vast majority of the population and increasing the percentage of the population with tertiary level education.

The key role that ICTs can play in widening access to education to a wider section of the population; and in literacy education and for facilitating educational delivery and training at all levels has been recognized. The Government has acknowledged the need for ICT training and education in the schools, colleges and universities, and to improve the educational system as a whole.

The Policy Statement

As part of the mission to: *transform the educational system to provide the requisite educational, and training services and environment capable of producing the right types of skills and human resources required for developing and driving Ghana's information and knowledge-based economy and society*, the Government is committed to a comprehensive programme of rapid deployment, utilization and exploitation of ICTs within the educational system from primary school upwards.

Policy efforts shall be directed at using ICTs to facilitate education and learning within the educational system and to promote e-learning and education as well as life-long learning within the population at large.

As part of this policy commitment the Government shall put in place policy measures to strengthen science education at all levels of the educational system and as well as promote technical and vocational training with emphasis on the use of ICTs to facilitate the training and learning process.

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the social and economic pressures of a youthful population; the challenges of turning the youthful population into an asset for development as well as the challenges limited human resource capacity characterized by low professional, technical and managerial manpower base of the country*

Policy Objectives and Strategies

The Objectives

- To facilitate the deployment, utilization and exploitation of ICTs within the educational system to improve on educational access and delivery and to support teaching and learning from primary school upwards
- To modernize the educational system to improve the quality of education and training at all levels of the educational system and expanding access to educational, training and research resources and facilities
- To orientate all levels of the country's educational system to the teaching and learning of science and technology in order to accelerate the acculturation of science and technology in society and produce a critical mass of requisite human resource and a well informed citizenry
- To achieve universal basic education and improve the level of basic and computer literacy in the country
- To ensure a population in which all citizens are at least functionally literate and productive
- To expand and increase access to secondary and tertiary education
- To strengthen science education at all levels and in all aspects of the educational system, especially at the basic and secondary levels
- To promote technical and vocational education and training to enhance middle level management in science and technology levels

The Strategies

- Modernize Ghana's educational system using ICTs to improve and expand access to educational, training and research resources and facilities
- Improve the quality of education and training and make the educational system responsive to the needs and requirements of the economy and society with specific reference to the development of the information and knowledge-based economy and society.
- Transform Ghana into an information and knowledge-driven ICT literate nation
- Introduce computers into all primary, secondary, vocational and technical schools

- Promote electronic distance education and training and virtual learning systems to complement and supplement face-to-face campus based education and training systems
- Mainstream ICTs throughout the entire educational system to promote life-long learning
- Transform the educational system to ensure that there is uninterrupted quality education for all Ghanaians from pre-school to age 17 to reduce poverty and create the opportunity for human development.
- Promote ICT awareness computer literacy within the public at large
- Develop and restructure the relevant ICT curricula for all levels of the educational system
- Encourage collaboration between local and international educational institutions to facilitate educational exchange and the promotion of ICT education and training.
- Put in place special schemes to enable students, teachers and educational institutions to purchase computers through attractive financial packages.
- Develop an educational intranet to provide educational materials and tools at all levels of the educational system.
- Leverage the use of electronic distance learning networks to enhance the delivery of ICT education and training
- Develop re-training and re-skilling ICT programmes for the management staff of Ministry of Education and educational institutions at all levels.
- Develop educational management and information systems to improve the quality of management of educational institutions.
- Promote Internet access to all educational institutions including the schools, universities and colleges
- Promote e-learning in the schools and universities
- Strengthen science education at all levels and in all aspects of the educational system, especially at the basic and secondary levels
- Promote technical and vocational education and training to enhance middle level management in science and technology delivery to all sectors
- Facilitate collaboration between the Ministry of Education and various accreditation agencies and examination bodies for ICT education and training.
- Ensure that all universities and colleges take steps to progressively offer their programmes and courses online to broaden access to higher education to a large section of the population and to maximize the quality and efficiency of learning processes, systems and activities.

Policy Measures, Instruments and Initiatives

To achieve the policy objective to develop the educational sector, and improve education access through the deployment and exploitation of ICTs within the educational system, the Government is committed to implementing a number of policy initiatives and measures including those targeted at:

- transforming Ghana into an ICT literate nation and promoting basic literacy and ICT literacy of the population at large through the implementation of special initiatives targeting both the formal and informal educational system from basic level to higher education level.
- modernizing the educational system using ICTs to improve and expand access to educational, training and research resources and facilities;
- promoting and encouraging distance education, including electronic distance education and virtual learning focusing on tertiary level education and training in all fields and disciplines to broaden access to educational and training resource and services to a larger section of the society

The Key Implementation Agencies, Players and Stakeholders

- The Ministry of Education, Youth and Sports
- The Universities, Polytechnics, Colleges and Research Institutions
- Local and Foreign Educational and Training Provision Organizations

FACILITATING GOVERNMENT ADMINISTRATION AND SERVICE DELIVERY --- Promoting Electronic Government and Governance

Policy Context

The civil and public services play a key role in the socio-economic development process of Ghana. And the crucial role that ICTs can play in improving the efficiency of delivery of government services; in reducing (in the long run) the operational cost of these institutions and in bringing government closer to the people has been acknowledged.

The deployment, exploitation of ICTs to support the operations and activities of the civil and public services has been recognized as key to the institutional renewal, re-engineering and the modernization of the civil and public service.

It is however acknowledged that: the mere deployment of ICTs within public and private sector organizations and institutions does not necessary translates into improvements in productivity, efficiency and service delivery which collectively could impact on the overall developmental process of the country. In other words, the deployment of ICTs within public institutions and business organizations and entities will have little or no impact on the nation's development process if not accompanied by a number of organizational and procedural changes as well as changes in attitude to work and work ethics.

It is acknowledged that for ICTs to have a real appreciable impact on Ghana's development there is a need to address a number of critical success factors and conditions at the institutional and organizational levels. ---Some of these include making changes in unproductive organizational systems, structures, procedures and processes, as well as addressing poor attitudes to work and unproductive and inefficient work ethics which could hinder the effective exploitation of these technologies to improve organizational efficiency service/produce delivery, productivity and reduction in operational cost.

The Policy Statement

Acknowledging the crucial role that ICTs can play in the delivery of Government services; bringing government closer to the people; and in facilitating the implementing of the Government's decentralization policy to support the activities regional and district administrative units, the Government is committed to the deployment, exploitation of ICTs to support the operations and activities of the Civil and Public Services as part its commitment to the modernization of the civil and public service to facilitate administrative cost reduction and the promotion of effectiveness and efficiency in the delivery of government services to the people of Ghana.

The Government also recognizing that electronic government and governance initiatives have been demonstrated in a number of countries as crucial for improving government service delivery to the public and bringing government closer to the people is committed to putting in place and implementing a comprehensive e-government and governance strategy for Ghana. In this connection the Government shall be putting in place the necessary mechanisms to facilitate the development of this strategy soon after the release of the Policy Document.

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges limited human resource capacity*

characterized by low professional, technical and managerial manpower base of the country as well as the challenges of the poor performance of the economy and those related to the low job creation capacity of the economy.

Policy Objectives and Strategies

The Objectives

- To reform the civil and public service to improve on its organizational systems, structures, procedures and processes.
- To address the poor attitudes to work and unproductive and inefficient work ethics which could hinder the effective exploitation of ICTs to improve organizational efficiency service delivery, productivity and reduction in operational cost within the civil and public service
- To improve the efficiency of the civil and public service and ensure that it plays a more positive role in economic and social development at all levels
- To facilitate the establishment of an efficient intra-and inter-departmental, inter-sectoral, national and sub-national system of communication, for the necessary feed-back in policy formulation and programme implementation, monitoring and review
- To modernize the operations of the civil and public service through the deployment of ICTs to facilitate administrative cost reduction and its effectiveness and efficiency in the delivery of its services to the public
- To facilitate the development and implementation a comprehensive e-government and governance strategy for Ghana.

The Strategies

- Modernize the civil and public service with the aim to improve its administrative efficiency, effectiveness and service delivery through the implementation of electronic governance and government initiatives set within the wider scope of the institutional engineering and renewable of the service
- Facilitate the delivery of modernized public services in the area of provision of government information, social services, health services and educational services through the deployment and the exploitation of information and communications technologies within the society and the economy
- Promote the exploitation of information and communication technologies within the civil and public service to make public services more efficient, productive and accessible to the public at large
- Provide a favourable environment for the provision of electronic government and electronic business and commerce services
- Deploy ICTs to facilitate the provision of the necessary social and economic infrastructure required for development

- Develop and promote standards, guidelines and procedures to facilitate the acquisition, installations and maintenance of ICT equipments and systems within Government Ministries and other Public Sector institutions and establishments.
- Develop an e-government interoperability framework to facilitate cross-departmental operations of ICT systems and services.
- Improve the human resource capability and capacity within the civil and public service through the encouragement of further training and subsequent retention of skill sets via government sponsored educational, training and skill update programmes
- Promote the deployment and the use of ICTs to facilitate universal access to public and government information and services to support the promotion of the principle and practice of good governance
- Promote the exploitation of information and communication technologies within the civil and public service to make public services more efficient, effective and productive and readily accessible to the public at large
- Encourage information sharing, transparency and accountability and facilitate the process that will lead to reduction in bureaucracy within and between organizations within the civil and public service.

Policy Measures, Instruments and Initiatives

To achieve the policy objective aim at facilitating Government administration and service delivery, specific policy initiatives and measures shall be targeted at:

- initiatives targeted at organizational system renewal, within the civil and public service, aimed at improvement on organizational structures, procedures and processes, as well addressing issues relating to addressing poor attitudes to work and unproductive and inefficient work ethics
- modernizing the civil and public service to improve its efficiency, effectiveness and service delivery through the deployment and exploitation of ICTs;
- initiatives to improve basic computer and professional skills of civil and public servants through in-service training and skill update programmes;
- the implementation of specific programmes to motivate civil and public servants to get involve in ICTs to improve their productivity, efficiency and effectiveness
- the implementation of e-government initiatives including: government to government (G2G), government to business (G2B) and government to citizens (G2C) types of e-government initiatives --
- The implementation of some of these initiatives at the local government and district administration levels will form part of the village *information and communications infrastructure* (VICI) initiative reflecting the implementation of e-government NICI programmes at the local and rural community level.

The Key Implementation Agencies, Players and Stakeholders

- All Government Ministries and Public Sector Organizations (PSOs)
- The Public Enterprise Commission
- The Labour Union

FACILITATING THE DEVELOPMENT OF THE PRIVATE SECTOR

Policy Context

Ghana's private sector is under-developed and dominated by the informal sector which is by far the largest employment sector of the Ghanaian economy. – accounting for about 80% of the employed work force, with the formal private sector accounting for only 7.8% of the employment of the economically active population. Given that close to 68% of employed population are self-employed with no employees and only 5.2% of the employed population are self-employed with one or more employees, the job creating potential and capacity of the Ghanaian economy is extremely low.

Also given that new vacancies in the Government sector are declining on a yearly basis, and the fact that, the majority of the self-employed, do not have the capacity to employ others --- prospects for job opportunities for what is a relatively young population are very low. The need to develop the private sector as a whole and the formal sector in particular to serve as an engine for growth is imperative if Ghana is to make headway in addressing a number of its key developmental challenges. The development of the private sector as one of the strategies to improve the economy's job creation capability is therefore a priority area of Government's overall socio-economic development programme

The Policy Statement

The Government recognizing the critical role that the private sector can play as a key partner in the process of moving Ghana into an information and knowledge economy is committed to promoting and facilitating the role of the private sector in the development and participation in the Ghana information society and economy.

As part of this commitment, the Government will create the necessary enabling environment and put in place the necessary policy programmes, and incentive packages to facilitate the role of the private sector in the nation's development.

The Government is further committed to the creation of a stable economic and investment climate that will assist both domestic and foreign private sector organizations in the development of: the physical telecommunication and communications infrastructure and other ICT infrastructure; the provision of information resources and systems to support the activities of various sectors of the economy; the development of human resources in ICT and other skill areas required by the information economy; as well as in the mobilization of financial resources and other technological resources to aid the process of developing and exploiting the opportunities of the information economy.

These policy commitments shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the disproportionate informal private sector; the challenges of the low job creation capacity of the economy as well as the challenges of the narrow export base dominated by traditional exports, the under-developed physical infrastructure and the poor and limited communications and telecommunications infrastructure*

Policy Objectives and Strategies

The Objectives

- To facilitate the development of the private sector by promoting an enabling environment, including a conducive legal and social framework, for private sector investments in industry
- To transform Ghana's economy from being dominated by the public sector to one that benefits the enterprise and dynamic of the private sector, supported by a efficient system of system administration
- To promote and encourage the expansion and the contribution of the formal private sector to the economy
- To maintain a fair and competitive private enterprise system which prevents the exercise of monopoly power
- To strengthen the private sector in an active way to ensure that it is capable of acting effectively as the engine of growth and poverty reduction
- To encourage productivity growth in all key sub-sectors of the private sector
- To support the development of a capital and knowledge-intensive industries
- To develop fiscal mechanisms that can quickly respond to the fast changing needs of an ICT based economy.
- To implement reforms to position the economy to secure capital inflow, retain capital and encourage local and foreign direct investment in the area of ICT services and related products.
- To encourage the development of favourable fiscal policies to ensure that Ghanaian ICT products and services are globally competitive.
- To fuel the development of economic sub-sectors, asset accumulation, and fiscal activities that arise from ICT use
- To promote investment, innovation, R&D and diffusion of ICTs within the economy

The Strategies

- Promote policy initiatives aimed at facilitating the active participation of small and medium enterprise (SMEs) in the local ICT industry and services sector
- Promote and facilitate the development of the private sector to serve as a key driver for the development of the economy
- Promote the development of a globally competitive local ICT industry for the development, production and the sale of information, knowledge, and technology products and services

- Stimulate investment and growth in the ICT sector through the creation of a favourable fiscal and investment climate for the development of a globally competitive ICT-enabled economy.
- Create an enabling environment that empowers stakeholders in trade and commerce with the underlying infrastructure to improve productivity and positively position the nation for global competition and business.
- Promote public private partnership (PPP) to accelerate the development and implementation of policies as well as the necessary legal and technical standards to support widespread implementation of electronic commerce.
- Facilitate the establishment of Free-Zone ICT Parks and incubator facilities that will be equipped with the necessary infrastructure to promote and support ICT-related business.
- Establish a National ICT Development Fund, which amongst its other activities, will provide venture capital finance to start -up ICT-related small and medium enterprises (SMEs)
- Work with both the domestic and foreign private sector as an effective development partner
- Equip technology development institutions and private sector establishments with modern technology tools to enable them produce useful capital equipment and machinery
- Create a diversified, innovative and fully integrated industrial sector with active participation of the private sector
- Reduce the economic and non-economic cost of doing business to enable the private sector to flourish

The Key Implementation Agencies, Players and Stakeholders

- Ministry of Private Sector Development
- Ministry of Trade and Industry
- Ministry of Economic Planning and Finance
- The Private Enterprise Foundation
- Private Sector Businesses and Establishments

DEVELOPING A GLOBALLY COMPETITIVE VALUE-ADDED SERVICES SECTOR – A Regional Business Service and ICT Hub

Policy Context

The need for Ghana to develop a regional competitive advantage in the area of ICT exploitation and production through the development of a competitive ICT industry and services sector has been recognized. The development of the services sector into a highly competitive value-added sector has been identified as key to transforming Ghana's economy into a high income economy with the potential to create wealth and quality jobs.

It has been established that the inability of the local ICT sector to attract adequate capital through domestic and foreign direct investment has been one of the main obstacles to the development of a globally competitive local ICT industry and a valued-added services sector.

The Policy Statement

The Government acknowledges that ICTs can serve as the engine for developing the services sector of the economy into a competitive regional business services and ICT hub to provide a world class ICT services targeted ranges of off-shore, banking and financial services to business communities in the region and beyond. The Government is committed to putting in place the necessary policy measures and provides to facilitate this process.

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the disproportionate informal private sector; the challenges of the low job creation capacity of the economy* as well as *the challenges of the narrow export base dominated by traditional exports*

Policy Objectives and Strategies

The Objectives

- To transform Ghana into an attractive destination for ICT-related FDI with the potential to become a competitive regional ICT and business hub.
- To develop a highly competitive ICT-led value-added and export-orientated services sector driven by a dynamic ICT services sub-sector and industry
- To aggressively promote Ghana as an ideal destination for ICT related FDI within the sub-region.
- To promote international competitiveness and a secure a place for Ghana in the international economic system
- To harness and fully utilize Ghana's human, cultural and natural resources and effectively exploit her favourable geographical position for the sustainable development of the economy

The Strategies

- Promote and facilitate the development of the private sector to serve as a key driver for the development of the economy
- Take steps to address the constraints that inhibit productivity and growth in the services sector and to ensure favourable conditions for innovation and ICT diffusion in this sector removing obstacles to productivity and employment growth, including barriers to entry particularly for SMEs
- Promote improvements in the quality of services and products within the services and industrial sector
- Encourage technological innovations to support product development and service provision and delivery
- Modernize the banking system and promote the use of financial market instruments in business transactions and de-emphasize cash transactions.
- Promote and support electronic banking and financial services provision
- Promote the development of a globally competitive local ICT industry for the development, production and the sale of information, knowledge, and technology products and services
- Encourage and facilitate the use of, open electronic marketplaces, secure e-business solutions, electronic signatures, electronic public procurement and electronic payment systems to support the development of electronic commerce in the country

Policy Measures, Instruments and Initiatives

To achieve the policy objective of developing a globally competitive value-added services sector, specific policy initiatives and measures shall be targeted at:

- promoting the development of the services sector targeting in particular the development of the ICT services sub-sector and industry;
- promoting the development of and the use of international standards, and best practices to guide the production and the provisions of services within the economy;
- promoting and encouraging both domestic and foreign direct investment targeting the services sector including the ICT service sub-sector;

The Key Implementation Agencies, Players and Stakeholders

- Ministry of Finance and Economic Planning
- Ministry of Private Sector Development
- Ministry of Trade and Industry
- Small and Medium Scale Development Agencies
- Chamber of Commerce and Industry
- Private Sector Businesses and Establishments

DEVELOPING AN EXPORT-ORIENTED ICT PRODUCTS AND SERVICES INDUSTRY

Policy Context

The Ghana ICT sector is under-developed, a recent study shows that the majority of the companies in this sector are small-to-medium scale ICT companies and most of these are mainly involved in distributive activities like retailing and the distribution of computer products and services, mainly computers and their peripherals and standard application software and packages.

On the whole there is very little activity in the area of the production and development of ICT products for example assembly of computer hardware systems like personal computers. Apart from a handful of companies, most of which are small-scale set-ups involve in local assembly on a limited scale, the majority of companies retailing computer hardware import them as complete systems which they retail to the public.

The majority of the applications software (mostly standard of-the-shelf products) on the Ghanaian market are not developed locally. The Ghanaian software development industry is still under-developed with only a couple of establishments involved in limited software development work; the majority of these are into customizing applications for clients with very little done in the area of developing systems from the scratch. In exception of a number of accounting, banking and database applications where there is some local software development efforts, the vast majority of Ghanaian companies involved in implementing ICT systems used imported software as turnkey 'off-the-shelf' software or slightly customized systems.

On the whole, the majority of the ICT-related companies and service providers, trade in products and services with very little local context. In otherwise the vast majority of the companies locally trade in ICT products and services that have far less than 100% local context.

A number of factors have been identified as inhibiting the growth of the local ICT industry. For example, given that the majority of ICT products on the Ghanaian market are imported, with very little local component; import duties and taxes on computer products and services are seen as having negative impact on the expansion of the ICT sector, a major part of which is involve in retailing of ICTs products and services. In fact, de-incentives like taxation and in particular import duties on computer products and services have been identified as a major factor inhibiting the growth of the Ghana ICT sector.

The growth of the ICT sector is also being inhibited by lack of infrastructure development in areas like transport, telecommunications, and electricity. For example the lack of the electricity infrastructure in some sections of the country has been identified as a bottleneck to the expansion of ICT-related services.

Also it is acknowledged that the development of Ghana's information and knowledge economy will require a vibrant ICT industry that focuses on export oriented ICT products development and the provision of world-class services

The Policy Statement

As part of the mission aimed at: *developing a highly competitive ICT-led value-added and export-orientated services sector driven by a dynamic ICT services sub-sector and industry and to develop a knowledge-based, technology-driven light modern industrial sector with a dynamic export-led and globally competitive ICT sub-industry*, the Government shall be promoting a number of ICT production initiatives targeted at developing the local ICT industry in areas like assembling of computers for the local market and export; the development of a local industry for the repair and maintenance of ICT equipment; the development of software for the domestic and export market; the provision of ICT services to support other sectors of the economy

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the disproportionate informal private sector; the challenges of the low job creation capacity of the economy, the challenges of the weak scientific research base and under-developed research and development (R&D) capacity, as well as the challenges of the narrow export base dominated by traditional exports*

Policy Objectives and Strategies

The Objectives

- To promote and support the development of a local industry for the manufacture, assembly repair and maintenance of computer and communication equipments and products
- To promote and facilitate the development of a world-class software development industry targeting both the domestic and the export market
- To stimulate, promote and encourage innovation within the ICT industry and sector as a basis for promoting growth within the industry, provision of quality of services and the development of advance and reliable communications infrastructure
- To transform the economy through rapid industrialization
- To maintain a favourable investment climate for investment in manufacturing and provide the necessary economic infrastructure for industry
- To restructure the production base with a view to changing the sectoral composition of the economy
- To increase the efficiency of production and productivity in all sectors of the economy

The Strategies

- Promote and facilitate the development of the private sector to serve as a key driver for the development of the economy
- Promote the development of a globally competitive local ICT industry for the development, production and the sale of information, knowledge, and technology products and services

- Encourage the development of a secure broadband information and communications infrastructure to support the development and provision of world-class off-shore ICT services in the areas like software development, financial services and other ICT services targeted at the export market
- Promote, stimulate and support the development of innovative local content and applications in the area of information and communications technologies to meet the needs and requirements of the nation
- Stimulate growth of the local ICT industry through Government patronage of local ICT industry products and services.
- Improve the environment in which enterprises, especially SMEs develop and grow, in particular by increasing their access to information, support services and investment capital and resources, in particular those targeted at the ICT industry and services sector
- Promote the development of a broad engineering base, especially in the maintenance, repair and fabrication of machinery and equipment
- Promote the development, adoption and enforcement of international standards within the ICT industry to facilitate the development of a world-class and globally competitive local ICT industry and services sector.
- Aggressively develop, promote and enhance Ghana's image as a competitive regional destination for ICT foreign direct investment (FDI)

Policy Measures, Instruments and Initiatives

Specific policy initiatives and measures shall be targeted at:

- putting in place and implementing special tax packages, instruments, and incentive programmes and mechanisms to promote the development of the local ICT production industry
- promoting the development of a globally competitive local ICT industry
- creating the necessary enabling regulatory framework for facilitating the deployment, exploitation and the development of ICT products, services and systems within the economy and society
- promoting the development of a globally competitive local ICT industry for the development, production and the sale of information, knowledge, and technology products and services
- enacting the various legislations and laws that could promote the development of a vibrant and modern industrial sector

The Key Implementation Agencies, Players and Stakeholders

- Ministry of Finance and Economic Planning

- Ministry of Private Sector Development
- Ministry of Trade and Industry
- Small and Medium Scale Development Agencies
- The Ghana Investment Promotion Center
- The Ghana Free Zones Board
- The Private Sector Foundation
- Chamber of Commerce and Industry
- Private Sector Businesses and Establishments

MODERNIZATION OF AGRICULTURE AND THE DEVELOPMENT OF AN AGRO-BUSINESS INDUSTRY

Policy Context

Ghana's agricultural sector the bedrock of the economy has been under-performing for a number of years. The sector is predominantly subsistence agricultural based with very little mechanization or the application of modern agricultural production methods or practices.

Ghana which currently depend on cocoa for most of its export earnings lost its position as the World leading producer of cocoa to Cote d'Ivoire and now competes with Indonesia for the second position, producing on average 390 metric tons per year compared to Cote d'Ivoire annual average output of 1200 metric tons. The country's annual agricultural yield in cocoa --- its major agricultural output is low in comparison with its neighbours. --- Ghana annual average agricultural yield in cocoa based on Year 2000 figures is only 2.5 ('000 of hectogram per hectare) compared that of Cote d'Ivoire estimated at 5.6 and that of Nigeria at 4.2; Cameroon at 3.1 and Sierra Leone at 3.5.

Also a recent study shows that the Ghanaian economy has not experience a major structural transformation since independence. ---The majority of the working population (60%) are still actively involve in agriculture with only 13% working in the industrial sector and 28% in the service sector of the economy

The Policy Statement

As part of the mission to: *modernize the agricultural sector to substantially improve agricultural value-added and yield and develop a dynamic and vibrant export-oriented agro-business industry*, the Government is committed to putting in place the necessary policy measures and mechanism to facilitate this process.

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the poor performance of the economy and the disproportionate informal private sector; the challenges of the low job creation capacity of the economy as well as the challenges of the narrow export base dominated by traditional exports.*

Policy Objectives and Strategies

The Objectives

- To establish a robust, diversified and commercially based agricultural sector that ensures food security, supplies adequate raw materials to industry, contributes to export earnings and provides producers with incomes comparable to earnings outside agriculture
- To promote the modernization of agriculture to encourage rural development in order to achieve the above long-term growth

- To encourage and support the modernization and commercialization of the operations of the key sub-sectors of the agriculture sector
- To ensure effective and efficient export diversification by making the agricultural sector more price-competitive and export-oriented
- To promote and facilitate the development of an agro-business industry
- To strengthen the development, application and transfer of agro-based technologies, both soft and hard, to support sustainable agriculture production
- To increase crop, livestock and fisheries production and processing through the use of more efficient methods and inputs
- To promote the supply of adequate raw materials at competitive prices for the manufacturing sector
- To improve the quality and value addition to agricultural produce
- To ensure the availability, affordability and utilization of food in sufficient quantities all year round

The Strategies

- Promote the deployment and exploitation of ICTs to support the activities of the agriculture sector including, the production, processing, marketing and distribution of agriculture products and services
- Facilitate the commercialization of the key sub-sectors of the agricultural sector and industry to improve their competitiveness
- Improve current agriculture practices, which remain predominantly traditional and rain-fed
- Encourage market research through the use of ICTs to improve access to established foreign markets and to break into new markets for both traditional and non-traditional exports
- Develop Geographical Information Systems (GIS) applications to monitor and support sustainable environment usage in areas like land and water management, offshore resource exploitation, yield assessment and livestock management
- Develop food insecurity and vulnerability information and mapping systems to assemble, analyze and disseminate information on who the food insecure are, where they are located, and why they are food insecure
- Revitalize agriculture extension services by empowering and equipping farm extension service workers with relevant ICT skills
- Establish an agriculture information system to provide support for the planning, production, storage and distribution of horticultural crops, livestock, and fisheries products
- Create ICT awareness for all types of farmers at all levels nationwide

- Encourage market research through the use of ICTs to improve access to established foreign markets and to break into new markets for both traditional and non-traditional exports
- Utilize ICTs to link farmers and farmer groups to resources and services that they need to improve their livelihoods through agricultural productivity, profitability and food security
- Deliver real-time information and customized knowledge to improve farmers' decision making ability to align farm output with market demands, and to improve productivity
- Modernize rural technologies for more efficient agricultural production and processing
- Establish clear forward and backward linkages between agricultural education (formal and informal), research and development, farming, agro-industry and marketing
- Improve research competence and promote the application and transfer of new technologies, such as biotechnology, to support improved agricultural production
- Drastically reduce pre-harvest and post-harvest losses in agricultural production, through the development and adaptation of improved technologies, particularly for food storage and preservation
- Identify and address land ownership and tenure issues that are retarding agriculture development in the country
- Develop and implement suitable irrigation methods and techniques in all agro ecological zones in the country
- Promote and support agricultural research as well as cutting-edge agriculture-based R&D targeting the development of a modernize and globally competitive agriculture sector
- Develop new agricultural non traditional export products and strengthen the production and value addition to existing ones in order to boost the rural economy
- Strengthen research-extension-farmer linkages to ensure that technologies developed are appropriate to the needs of farmers
- Promote the development of food preservation and processing, through participatory technology development
- Encourage the production of cash crops such as cashew and replanting of cocoa in the traditional cocoa growing areas with high yielding and diseases resistant planting material and increasing fertility of soils
- Strengthen extension services to farmers through training and motivation of extension service providers
- Encourage mechanized and modernized large-scale plantations and small holders and out-growers in targeted raw materials on commercial farming bases
- Promote the creation of agriculture export production villages

- Improve rural infrastructure development and encourage irrigation farming
- Support the private sector to add value to traditional crops such as cocoa
- Strengthen the production of non-traditional export commodities to enhance the foreign exchange earning power of the country.

Policy Measures, Instruments and Initiatives

To achieve the policy objective modernizing the agriculture sector and developing an agro-business industry the Government is committed to implementing policy initiatives and measures targeted at:

- improving the mechanization of the agriculture production process as well as improving irrigation capacity and the use of fertilizers to improve productivity and yield per hectare
- special agriculture development policy instruments, and incentive programmes including special budgetary packages and investment incentives to promote the development of the agriculture sector;
- promoting and facilitating the development of the physical and social infrastructure --- targeting the rural areas to support the development of agriculture sector;

The Key Implementation Agencies, Players and Stakeholders

- Ministry of Food and Agriculture
- Ministry of Private Sector Development
- The Council for Scientific and Industrial Research
- Small and Medium Scale Development Agencies
- Chamber of Commerce and Industry
- Private Sector Businesses and Establishments

DEPLOYMENT AND SPREAD OF ICTS IN THE COMMUNITY

Policy Context

As part of the strategy to facilitate the deployment and exploitation of ICTs in the society and economy, special efforts will need to be directed at promoting the use of these technologies in rural, urban and underserved communities. It is acknowledged that the development of Ghana's information society will depend on the level and the spread of access to these technologies, and their resources, services and applications.

Also it is recognized that although ICTs could advance Ghana's socio-economic development, the benefits of that development may not necessarily spread to all sections of the society. -- There is therefore a need for specific efforts to be made in terms of policies and special initiatives aimed at ensuring and enhancing the possible distributive effects of the developmental impacts of these technologies to the community at large. Steps will need to be taken to put in place special ICT initiatives to directly address poverty reduction within targeted communities and sections within the society and taking corrective measures to mitigate and address specific income distributive issues arising from the developmental impacts of the deployment and exploitation of ICTs within the economy and society.

It is further acknowledged that although rural ICT deployment and exploitation initiatives can be successful and can have impact of the social and economic outcomes of rural people, most of these initiatives cannot have an appreciable impact on accelerating the socio-economic development process of rural communities and beyond if their success are not replicable and/or scalable.

The Policy Statement

The Government acknowledging that Ghana's entry into the information age will require rapid extension of access to ICTs to all sections of the community. --- To reach out to, and benefit, the majority of the population in for instance health, education and e-commerce, and as such is committed to taking special policy measures to extend ICT applications, services and access to the wider community including those in the rural areas where many of the most disadvantaged and remote communities are.

As part of this commitment the Government will:

- Implement a number of community-based initiatives within the rolling (NICI) plans that will be developed to implement the provisions of the ICT4AD Policy.
- Put in place measures to develop and implement village information and communications infrastructure (VICI) initiatives targeting the implementing of NICI programmes at the local government and district administration levels.
- Commit to putting in place specific ICT policy measures and initiatives targeted at the disadvantaged sections of the Ghanaian population including the visually, mentally and physically impaired and disadvantaged.
- Put in place a mechanism to ensure the participation of women in developing the information society and to ensure that information and communication policies at all levels are engendered, and geared toward meeting specific developmental needs of women.

- Commit to building the capacity of the national machinery responsible for women and children, to encourage more participation of women and children in ICT initiatives and industry by addressing gender based inequalities and instituting gender-sensitive policies.

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the social and economic pressures of a youthful population; the challenges of turning the youthful population into an asset for development, the challenges of the poor performance of the economy as well as the challenges of the relatively high proportion of the population with no educational attainment, the high school drop-out rate and limited access to higher education by the vast majority of the population especially girls and women.*

Policy Objectives and Strategies

The Objectives

- To speed-up the process of the deployment and exploitation of ICTs within all communities
- To promote equal and universal access to information and communications technologies services and resources to all communities, and within this context, policy directives shall be put in place to ensure and facilitate equal access for women, the disadvantaged, the disabled, and rural and under-served communities
- To improve public access to information and services to facilitate business and administrative processes to increase productivity and facilitate economic growth.
- To encourage and speed up the process of the diffusion of information and communication technologies within the society and economy
- To diversify and improve the quality of information; increasing accessibility to ranges of information resources within and outside the country and creating a supportive environment for the development of the mass media and the private press through the deployment and exploitation of ICTs.
- To assist in achieving the targets of the Ghana Poverty Reduction Strategy

The Strategies

- Encourage and promote the widespread access to information and communications technologies services and applications within the economy and society
- Speed up the process of the provision of e-government, e-health, e-learning, e-commerce services within the country
- Promote initiatives targeted at facilitating the process diffusion of ICTs within the communities in the rural and under-served and under-resourced areas
- Ensure and enhance the possible distributive effects of the developmental impacts of the deployment and exploitation of ICTs within the society.

- Encourage public and private partnerships (PPPs) to facilitate the roll-out of community-based ICT initiatives
- Support the strategic use of ICTs to strengthen women’s networking initiatives and community – based activities that defend and protect the rights of women to participate equally in civil and public life
- Include ICTs in the drive to reduce illiteracy both as a tool and a part of the curriculum for functional literacy programmes
- Deploy ICTs to support activities and programmes aimed at improving the quality of health of the citizenry

Policy Measures, Instruments and Initiatives

To achieve the policy objective to promote the deployment and exploitation of ICTs within the community, special policy initiatives and measures shall be targeted at:

- implementing community-based national ICT programmes and initiatives including telemedicine, multi-purpose community telecenters, teleducation and schoolnets initiatives
- promoting the implementation of e-government initiatives including: government to government (G2G), government to business (G2B) and government to citizens (G2C) types of e-government initiatives
- promoting initiatives aimed at the strengthening of Ghana’s democratic institutions and good governance through ICTs
- community-based *village information and communications infrastructure* (VICI) initiatives reflecting NICI programmes and initiatives at the local community-level.
- special ICT initiatives targeted at the disadvantaged communities and sections of the Ghanaian society, including the underserved communities and the physically and mentally challenged

The Key Implementation Agencies, Players and Stakeholders

- All Government Ministries and Public Sector Organizations
- Private Sector Businesses and Establishments
- International and Donor Agencies
- Local and International NGOs
- The Civil Society and the Labour Union

PROMOTION OF NATIONAL HEALTH

Policy Context

Information and communications technologies are increasingly being deployed to facilitate the delivery of health services in a number of countries. These technologies are providing a number of opportunities to facilitate the modernization of the operations of the health delivery system in Ghana to improve access to the nation's limited health facilities and resources and to provide access to health information and other services to a wider section of the community.

Key areas of possible applications include: the implementation of telemedicine systems; the development of health information and management systems; the deployment of ICTs to facilitate the spread of health and medical services to rural and under-served areas; the use of ICTs to support medical education and training among others.

Specifically in the area of public health information, it is acknowledged that ICTs can be used to facilitate the collection, analysis and the dissemination of information to support health education and awareness creation as well as for supporting decision making related to health and population-wide issues.

Policy Statement

The Government is committed to implementing a number of initiatives aimed at facilitating the widespread deployment and utilization of ICTs to support the activities and the operations of the health delivery system throughout the country. Specific initiatives will include implementing a national telemedicine programme to support nation-wide health service delivery including rural and community-based health services as well as to support community-based continuing medical education of health professionals.

The Government as part of this commitment shall invest in ICT based healthcare systems to ensure that Ghanaians have access to appropriate healthcare delivery. This will include networking healthcare institutions to collate information, share data and communicate online, establishing internet connectivity and access to healthcare professionals, and making ICT skills acquisition mandatory for all healthcare professional.

Policy Objectives and Strategies

Objectives

- To improve the health status of the population while focusing efforts on reducing inequalities in health.
- To promote the implementation of telemedicine applications within the Health Delivery System
- To integrate and deploy ICTs in health program delivery with targets for health education, training and preventive detection.

- To support the dissemination of preventive information for the general public, and in particular for HIV/AIDS.
- To utilize ICTs as a tool for collecting community information; linking health care professionals and enhancing health administration, remote diagnostics, and distribution of medical supplies.
- To increase geographical, financial and socio-cultural access to health services
- To improve quality of health delivery, improving health-worker-performance and responsiveness to client needs
- To improve the efficiency of health service delivery, improving cost effectiveness and planning, management and administration.

Strategies

- Network all healthcare institutions to collate information, share data and communication online.
- Restructure the healthcare system by providing a national databank to support on-line national healthcare information, administration and management at primary, regional and tertiary levels.
- Establish full internet connectivity and access for healthcare professionals at all levels (primary, regional and tertiary).
- Make ICT skills acquisition mandatory for all healthcare professionals
- Utilize ICTs for the establishment of Health Management Information Systems across primary, regional and tertiary healthcare systems.
- Use ICTs to provide education and to combat major national health threats such as HIV/AIDS, malaria, etc and as an enabler for the provision of the proposed National Health Insurance driven health service.

The Key Implementation Agencies, Players and Stakeholders

- Ministry of Health
- College of Health Sciences
- Tertiary Health Institutions
- Universities and Health Research Institutions
- Nugochi Memorial Institute for Medical Research
- Ghana Health Service
- Ghana Medical Stores
- The Council for Scientific and Industrial Research
- Private Sector Businesses and Establishments

RAPID ICT AND ENABLING PHYSICAL INFRASTRUCTURE DEVELOPMENT

Policy Context

It is acknowledged that the level, scale and speed of the socio-economic development envisaged in the *Ghana ICT4AD Vision* cannot take place without the necessary modern physical infrastructure: roads and general utilities; social infrastructure; and the necessary modern telecommunications and communication infrastructure. In fact evidence points to the fact that telecommunications and communications infrastructure deployment and usage is a necessary precondition for sustained economic growth in Ghana. There is no doubt that development of a nation's communication infrastructure will be essential for speeding up the process of the deployment and exploitation of ICTs within the society and economy.

On the whole, Ghana's physical, telecommunications and communications infrastructure is currently under-developed and limited in coverage. It is acknowledged that special policy measures and initiatives will need to be aimed at developing the communications infrastructure to improve universal access and service --- And that this policy measures will need to be directed at creating the necessary legal, regulatory and institutional enabling environment to facilitate the development of the telecommunications and communications infrastructure to improve the coverage of the network and its services.

The Policy Statement

The Government is committed to facilitating the rapid development, upgrade, improvement and deployment of the necessary infrastructure in all key areas. And as part of this policy commitment, specific policy measures shall be put in place to facilitate the creation of the necessary legal, regulatory and institutional enabling environment to support the development of the nation's physical and communications infrastructure.

The Government is also committed to improving communication facilities and to diversifying the means of access through the utilization of appropriate telecommunications systems. And as part of this strategy shall be facilitating increasing access to telecommunication facilities; and the rehabilitation and strengthening of telecommunication and communication facilities as well as the necessary physical infrastructure

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the under-developed and under-performing private sector; the challenges of the limited human resource capacity characterized by low professional, technical and managerial manpower base; as well as the challenges of the weak scientific research base and under-developed R&D capacity of the country.*

Policy Objectives and Strategies

The Objectives

- To promote and facilitate initiatives targeted at the development of a reliable, fast adaptive and robust national ICT backbone and infrastructure
- To facilitate and encourage the development of the nation's physical infrastructure
- To promote competition in the communications industry to increase customer choice and promote the provision of affordable services within the communications industry
- To promote the development and the use of a world-class information and communications infrastructure for the country
- To ensure that as far as possible development is not constrained by inadequate transport, communications and energy

The Strategies

- Modernize and expand Ghana's information and communications infrastructure and services to improve universal access and quality of service (QoS)
- Expand the physical infrastructure of Ghana, including those of power and transport.
- Promote the development, and deployment of basic and broadband and multi-platform communications infrastructure to facilitate public access to information and services
- Put in place special ICT promotion packages, policy instruments and incentives to facilitate the expansion of the information and communications infrastructure
- Employ science and technology in ensuring the supply of sustainable, affordable, safe and reliable energy
- Develop human resources to support the deployment and rehabilitation of modern and state-of-the-art ICT infrastructure
- Promote R&D programmes relating to alternate energy sources such as solar energy, biomass, nuclear, wind and other renewable energy sources to supplement the current traditional energy sources

Policy Measures, Instruments and Initiatives

Specific policy initiatives and measures shall be targeted at:

- developing the necessary legal, institutional and regulatory framework and structures required for supporting the development of the communications infrastructure

- developing the necessary highly skilled ICT human resources required for supporting the development and maintenance of an advanced information and communications infrastructure and systems
- promoting international standards, and best practices that could among other things aid the process of the development of an advanced and reliable information and communication infrastructure and the improvements in quality of service (QoS) within the local communication services sector
- promoting and facilitating the development of the private sector to generate enough demand for advanced and reliable information and communication services
- the creation of conditions for an investor friendly telecommunications environment; including those targeting the liberalization of the ICT sector and encouragement of private investment in the ICT sector
- the development of the local communications industry towards competitiveness
- promoting and facilitating a stable and competitive investment climate to attract both domestic and foreign direct investment
- promoting and facilitating the development of the physical and social infrastructure --- targeting the rural areas

The Key Implementation Agencies, Players and Stakeholders

- Ministry of Roads and Highway
- Ministry of Communications and Technology
- Ministry of Energy
- Telecom Operators and Backbone Infrastructure Providers

R&D, SCIENTIFIC AND INDUSTRIAL RESEARCH CAPACITY DEVELOPMENT

Policy Context

The important role that industrial and scientific research as well as research and development (R&D) can play in developing a nation's capacity and capabilities to develop advanced products and services industry and sector to facilitate its development process has been acknowledged. For most countries, investments in R&D have been identified as a precondition for a sustained socio-economic development.

In both the developed and developing nation's the driving force behind the development of high-tech industries and services targeted at the export market has been huge investments in R&D efforts. In fact, various studies have established a link between economic development and the level of investments in R&D as well as basic and applied scientific and industrial research. For example, evidence drawn from a number of countries, has established a strong link between the number of scientists and engineers involved in R&D (per million persons) and the high tech exports (in million dollars) of countries.

It is acknowledged that Ghana's research and development capacity (R&D) is limited and evidence shows that very little R&D work is being undertaken in industry and in the nation's universities and research institutions. Most of these institutions lack the necessary capacity to conduct and engage in advanced and cutting-edge R&D work required for supporting the development of a globally competitive information, knowledge-based and high-tech export industry and services sector. In fact, evidence shows that less than 5% of the Ghana's scientists and engineers in the universities, colleges and industries are involved in R&D.

Also it has been established that linkages between industry and research institutions and universities to facilitate collaborative research and R&D work is rare. In the few cases where some R&D work is being undertaken in the nation's universities and research institutions, they are not linked to industry. In other words, the required linkage between industry and the research institutions, that is necessary to commercially drive R&D work and its outputs is virtually non-existent in Ghana.

The Policy Statement

The Government acknowledges that if Ghana is to make any progress in developing a high-tech export industry, a lot of efforts will need to be directed at investing more in R&D and developing the nation's scientific and industrial research and R&D base devoting particular attention to establishing linkages between industry and the research institutions and universities involved in R&D. As part of these efforts the need to increase the number of scientists and engineers involved in R&D work both in industry and in the universities and research institutes is also recognized.

The Government is committed to promoting and supporting R&D initiatives in industry, research institutes and universities to enhance Ghana's capacity to develop, produce, manufacture and assemble ICT products and services as a step towards developing a globally competitive ICT service sector and industry. As part of this commitment Government shall promote partnership, collaborations and linkages between local R&D Institutions and foreign Centers of Excellence to speed up the process of knowledge and know-how transfer to Ghanaians.

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the weak scientific research base and under-developed research and development (R&D) capacity; the challenges of the limited human resource capacity characterized by low professional, technical and managerial manpower base; the challenges of the disproportionate informal private sector; the challenges of the under-developed and under-performing private sector; the challenges of the low job creation capacity of the economy as well as the challenges of the narrow export base dominated by traditional exports*

Policy Objectives and Strategies

The Objectives

- To support and strengthen scientific research and R&D within the nation's universities and research institutions as a basis for promoting the development of a globally competitive local ICT sector and industry.
- To promote and encourage industrial based R&D to facilitate innovation and product development and service improvement and advancement
- To develop world-class service sector and industry through the promotion of advanced R&D within the economy
- To enhance industrial technology development infrastructure
- To promote and facilitate R&D work targeting recyclable materials technologies and application to minimize industrial waste in the environment

The Strategies

- Improve the research and development (R&D) capacity of Ghana to meet the demands and requirements for developing Ghana's information and knowledge-based economy and society
- Promote agricultural research as well as cutting-edge agriculture-based R&D targeting the development of a modernize and competitive agriculture sector
- Encourage R&D activities aimed at the development of tools, equipment and machinery for industries and encourage quality assurance in manufacturing
- Support biomedical research and improvement in the general health delivery system and promote and support research into plant medicine to complement allopathic medicine
- Facilitate capacity building in all science and technology areas, which hold promise for enhanced national development, including engineering design and industrial technology systems
- Promote knowledge acquisition and development of technologies in the new and emerging sciences of biotechnology, materials science, microelectronics and laser technology

- Encourage and fund ICT R&D in the nation's universities and research institutes
- Create incentives for industries to set up ICT-related R&D centers in the universities and research institutes through faculty chairs, matching grants and focused joint projects.
- Institute mechanisms for soliciting ICT research projects that will be made open to both research institutes and universities to facilitate the selection of good and innovative projects for national development.
- Fund vacation and sabbatical visits of expatriate ICT experts and researchers to facilitate the process of knowledge and expertise transfer and sharing through collaboration with local counterparts
- Establish ICT R&D institutions with unique and clear mandates and encouraging industries and organizations to establish similar institutions
- Setup up national level institutional framework and structures for taking process development at academic institutions and R&D laboratories closer to industrial acceptance.
- Provide incentives to local R&D institutions to enter into collaborative research with foreign universities as well as with local companies and multinationals.
- Facilitate the acquisition, adaptation and dissemination of new developments in ICTs.
- Facilitate the transfer of technology and collaboration on R&D between local Centers of Excellence and international R&D centers.

The Key Implementation Agencies, Players and Stakeholders

- The Universities, Polytechnics, Colleges and Research Institutions
- The Council for Scientific and Industrial Research (CSIR)
- Private Sector Businesses and Establishments

LEGAL, REGULATORY AND INSTITUTIONAL PROVISIONS AND STANDARDS

Policy Context

The development and implementation of a suitable legal and regulatory framework and environment can among other things support the development of the local ICT sector and in addition ensure a competitive environment for the development and provision of communications services, stimulating innovation, creating scope for price reductions, and increasing consumers' choice. The rapid changes and developments within the communications sector brought about mainly by the advances in technologies and services has made it necessary for countries to create and operate a dynamic legal and regulatory framework that is responsive to technological changes and advances.

Also given that most nation's legal and regulatory framework most often lags behind technological developments and advances, it is imperative that countries operate in a dynamic and responsive legal and regulatory environment that takes advantage of these technological advances, promote innovation and enhances consumer choice and preferences.

It is acknowledged that Ghana's existing legal and regulatory framework for supporting the development of the communications sector was primarily designed to manage the transition from monopoly to competition and was therefore focused on the creation of a competitive market and the rights of new entrants. The Government recognizes the need to periodically review the operations, provisions and the directives making up the legal regulatory framework in the light of rapid developments in the communications industry, characterized by technological advances evolutions and the resultant changes in user demand, and choices and preferences.

It is also acknowledged that rapid changes and developments in the communications industry and sector that has given rise to convergence between communications, telecommunications, broadcasting and information technologies, service, platforms and systems, need to be reflected in the country's legal and regulatory regime and framework aimed at supporting and facilitating the development of the ICT industry and sector.

It is recognized that with such foreseen and anticipated changes in the communications industry, Ghana's legal and regulatory policy framework for guiding the development of the ICT industry will need to take account of these developments in particular

The goal is to as far as possible create a flexible and dynamic legal and regulatory framework and system that restrict regulation to the necessary minimum, reinforce competition within the industry and sector, while ensuring that the basic rights, choices and preference of consumers continue to be protected, and the principle of universal access and service reinforced.

The Policy Statement

The Government acknowledges that the development and the exploitation of ICTs in the economy and society as well as the development of the information and knowledge economy will need to be supported and facilitated by appropriate legal provisions and legislation; regulatory framework and provisions as well as institutional structures.

The Government is therefore committed to promoting and implementing a communications sector legal and regulatory framework that is *open and transparent* in the development and application of its rules, regulations, directives and provisions; caters for and promote competition and innovation; exhibits the characteristics of *clarity* in terms of its directives and laws: *predictability* in that its directives and laws must lead to predictable results, outcomes and consequences for business decisions and *relevance* in that its directives and laws reflects the pertinent subject matters and issues of the ICT sector and industry.

As part of this commitment, specific policy measures shall be taken to facilitate universal service and access to basic and value added telecommunications services; the creation of conditions for an investor friendly communications environment; the development of the communications industry towards competition, while taking steps to facilitate the active involvement of local companies in the industry and as well as promoting liberalization of the sector and private sector investment in the ICT sector.

The Government also acknowledges that the deployment, exploitation and the development of ICTs in Ghana will need to be guided by appropriate standards, best practices and guidelines. The Government is therefore committed to facilitating this process.

The Government is also committed to the enactment of the necessary cyber laws and legislative provisions to govern and regulate cyber-related activities within the country. Legislation to promote and facilitate electronic commerce and other Internet-related activities in the country shall be enacted in addition to facilitating the enactment of laws relating to: intellectual property rights; data protection and security, freedom of access to information; computer and cyber crime and other cyber-laws, necessary for facilitating their country's participation in the information age and economy.

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the disproportionate informal private sector; the challenges of the low job creation capacity of the economy* as well as *the challenges of the narrow export base dominated by traditional exports and the challenges of the weak scientific research base and under-developed research and development (R&D) capacity.*

Policy Objectives and Strategies

The Objectives

- To facilitate the full, effective and timely implementation of the necessary legal and regulatory framework to provide the basis for creating a competitive environment that offers incentives to promote investment and innovation within the ICT sector to improve access and quality of the service.
- To ensure regular and periodic response to the rapidly changing phenomenon in the ICT industry, characterized by the development, advancement and convergence of information and communication technologies, systems and services by addressing emerging and necessary legal and regulatory issues and mechanisms that seeks to accommodate technological evolutions, advancement and other developments within the information and communications industry.
- To establish a harmonized legal and regulatory framework to facilitate the regulation of electronic communications and information exchange and interchange as well as communications networks and services; --- covering all technologies and delivery platforms and systems including fixed

and wireless based satellite and terrestrial networks, systems and platforms for the transmission of voice, data, and video.

- To provide for the development of a legal and regulatory environment that takes into account the issue of convergence of communications technologies that is making it possible for data in the form of text, audio/voice and video to be transported through a variety of networks including broadcasting, computer, telecommunications etc to be accessed from a variety of access platforms and devices.
- To enact the necessary cyber-laws including those relating to: intellectual property and copy rights; data protection and security, freedom of access to information; computer and cyber crime and other cyber-laws, necessary for facilitating their country's participation in the information age and economy.
- To address ethical issues of the digital culture and protect the rights of the child

The Strategies

- Promote a technology-neutral legal and regulatory framework -- that is responsive to rapid changes in the global communications industry and allows for the introduction of new technologies and services within a dynamic and robust facilities-based competitive environment that provides for service delivery and competition between different access methods and delivery platforms.
- Aim at technological neutrality and accommodate converging markets.
- Support the development and implementation the necessary legal and regulatory framework that is consistent with international and national laws, regulations, technical standards, and obligations.
- Ensure that the development, deployment and exploitation of ICTs within the economy and society and related legal and regulatory provisions will balance and protect community and individual interests, including privacy and data protection issues.
- Promote and facilitate the development of the private sector to serve as a key driver for the development of the country's ICT industry.

Policy Measures, Instruments and Initiatives

To achieve the policy objective to develop the necessary legal, institutional and regulatory framework and structures required for supporting the development, deployment and exploitation of ICTs within the economy and society special policy initiatives and measures shall be targeted at:

- creating the necessary enabling regulatory framework for facilitating the deployment exploitation and the development of ICT products, services and systems within the economy and society
- the promotion of international standards and best practices in the use of ICT to aid the development, provision and delivery of goods and services by key sectors of the economy;
- promoting international standards, and best practices that could among other things aid the development, provision and delivery of goods and services by key sectors of the economy; support

the development of an advanced and reliable information and communication infrastructure and the improvements in quality of service (QoS) within the local communication services sector

- promoting universal service and access to information and communication technologies services and systems. Some of the initiatives shall be targeted at expanding access to under-served areas and communities and making access to services affordable to a larger section of the population in an equitable manner.

The Key Implementation Agencies, Players and Stakeholders

- Ministry of Communications and Technology
- National Communications Authority

PROMOTING FOREIGN DIRECT INVESTMENT DRIVE IN ICTs

Policy Context

It is acknowledged that the development of Ghana's information society and economy will require substantial investments in terms of financial, technological and other resources including human resources. For example, the development of the nation's physical and communications infrastructure to the level that could facilitate and support the rapid development of the country will require substantial financial and technological resources which will need to be mobilized from both direct domestic and foreign investment.

It is also acknowledged that the realization a number of the other policy goals like: implementing a comprehensive accelerated human resource development programme, the deployment and spread of ICTs within the community through the implementation of a number national ICT projects and initiatives; the deployment of ICTs in the educational system, the development of the private sector and an export-oriented ICT products and services industry as well as the modernization of the agricultural sector will also require massive investments in terms of financial, human and technological resources.

Policy Statement

The Government is fully committed to putting in place the necessary policy measures, directives mechanisms that will facilitate the mobilization of the necessary financial and technological resources through both domestic and foreign direct investment to accelerate the development of key sectors of the economy including agriculture, industry and services sectors.

As part of this commitment, special policy initiatives and measures shall be put in place targeted at promoting FDI drive in ICTs aimed at mobilizing the necessary financial, capital investments and other resources to facilitate the development of the ICT industry and sector. Also to be promoted are joint venture between local and foreign companies to facilitate resource mobilization and technology transfer to accelerate the development of key sectors of the economy. Capital investment initiatives and investments with R&D component as well as human resource development components in the area of ICT skills and other information economy related skills to aid Ghana's socio-economic development process will also be encouraged and facilitated.

This policy commitment shall in addition contribute to addressing some of the other identified developmental challenges facing Ghana, including: *the challenges of the disproportionate informal private sector; the challenges of the low job creation capacity of the economy, the challenges of the weak scientific research base and under-developed research and development (R&D) capacity as well as the challenges of the narrow export base dominated by traditional exports*

Policy Objectives and Strategies

The Objectives

- To facilitate the mobilization of the requisite financial, technological and other resources required for supporting the implementation of various policy initiatives with resource mobilization implications
- To promote and facilitate domestic and foreign private sector investments in ICT Infrastructure development
- To support and facilitate the mobilization of private sector funding to support community-based ICT initiatives and projects
- To facilitate the mobilization of private sector funding for human resource development capacity building in key sectors of the economy
- To promote FDI with R&D, knowledge transfer and joint partnership components

The Strategies

- Promote local and foreign direct investments in the development of communication infrastructure
- Encourage and facilitate the domestic and foreign private sector to invest in the development of the national information and communication infrastructure
- Facilitate an investment climate for the mobilization of financial and technological resources; as well as promoting FDI specifically targeting attracting investments that have knowledge and expertise transfer components
- Use the financial system as an effective instrument for mobilizing capital for development
- Encourage the private sector to support funding for R&D activities, especially to cater for the needs of the small, micro, and medium enterprises (SMMEs) which can be nurtured to become the cutting edge for the commercialization of novel products or processes
- Transform Ghana into an attractive destination for ICT-related FDI with the potential to become a competitive regional ICT and business hub.
- Develop a highly competitive ICT-led value-added and export-orientated services sector driven by a dynamic ICT services sub-sector and industry
- Develop a knowledge-based, technology-driven light modern industrial sector with a dynamic export-led and globally competitive ICT sub-industry

Policy Measures, Instruments and Initiatives

To achieve the policy objective to promote and facilitate an accelerated human resource development policy initiatives and measures shall be targeted at:

- promoting and encouraging both domestic and foreign direct investment targeting the services sector including the ICT service sub-sector
- implementing budgetary and tax incentive programmes and packages aimed at encouraging private sector organizations to invest in human resource development and community-based ICT initiatives

The Key Implementation Agencies, Players and Stakeholders

- The Ghana Investment Promotion Center
- The Ghana Free Zone Board
- The Export Promotion Council
- Ministry of Trade and Industry
- Ministry of Finance and Economic Planning
- Private Sector Businesses and Establishments
- The Labour Union

FACILITATING NATIONAL SECURITY AND LAW AND ORDER

Policy Context

The deployment, exploitation and utilization of ICTs within the economy and society raises a number of security and privacy and consumer protection issues that need to be address as part of the efforts to facilitate the socio-economic development process of the country. Some of these security concerns have national security and law and order implications while others relate to the protection of individuals and organizations from unlawful acts using the technology. Specific examples include cyber-crimes which have national security implications, unlawful access to critical information, computer and communications networks and resources; electronic frauds targeted mainly at the banks and the financial sector among others.

In most countries, security of networks and communications has been identified as a major area of concern for the development of the digital economy. Networks and information systems are now supporting services and carrying data and information of great value to governments business and individuals. The transmission of sensitive and critical information through local and global electronic messaging networks involves an element of security risk to governments, organizations and business establishments.

Increased protection of the networks and information systems is therefore necessary to guide against various types of attacks and unauthorized access. Also the growth of attacks and fraud conducted on electronic messaging and communications networks and system in the recent years threatens to undermine consumers' confidence in online services, electronic commerce and the effective functioning of electronic markets and government systems.

The Government acknowledges the need for a policy statement on how these security issues can be addressed within the broad policy framework aimed at the development of Ghana's information and knowledge-based society and economy.

The Policy Statement

The Government is committed to putting in place policy measures and mechanisms to address national security and law and order issues relating to the deployment exploitation and the utilization of ICTs within the economy and society. As part of this commitment, policy directives shall be put in place to address security issues relating to privacy, data and consumer protection as well as those relating to the security of computer networks and information systems and their information and data contents.

Specific attention shall be devoted to addressing national security issues relating to protection of government computer networks and information systems against various types of attacks on their availability, authenticity, integrity and confidentiality.

Policy mechanisms, and measures shall also be put in place aimed at the protection of the Ghanaian public from undesirable impacts of the digital age and economy in general and in particular those relating to the Internet including the spread of pornographic materials, cyber-crimes and digital frauds. Also to be targeted are national security and law and order implications of the Internet as well as issues relating to

aspects of the Internet that can potentially damage or corrupt Ghana's cultural heritage, national image and national identity.

The Government as part of its policy commitment to addressing national security and law and order through the deployment and exploitation of ICTs will:

- Use ICTs as an essential tool for combating contemporary and emerging security threats and challenges.
- Implement ICT applications and services to enhance command and control activities within the Security Agencies and aid in their interaction with the general populace.
- Research and implement solutions that will enable interaction between the Security Agencies and the populace and to facilitate and augment the resources available to these Agencies in the following areas; informing citizens and government; the pursuit and tracking of criminals and other criminal activities; and the management of the operations of these agencies to improve efficiency
- Facilitate the deployment of the required infrastructure for advancement of ICTs and related services within the Police force and the Military service.
- Implement training standards for members of the security forces to be carried out by current members of the forces and as part of the training regime for entry into those forces.
- In consultation with the Office of the Attorney General ensure that the legal framework necessary for the security forces to deploy and use ICTs in carrying out their duties are drafted and enacted.
- Explore the use of ICTs by the Security Agencies to enable collaboration with similar external bodies in the delivery of their duties.

The Key Implementation Agencies, Players and Stakeholders

- The Security Agencies
- Ministry of Interior
- Private Sector Businesses and Establishments

PART THREE

Institutional Arrangements and Provisions for Supporting the Implementation of the ICT4D Policy

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CHAPTER FIVE

ADDRESSING POLICY IMPLEMENTATIONAL AND INSTITUTIONAL ISSUES

Commitments to Addressing the Critical Success Factors and Conditions Necessary for the Development of the Ghana Information Society and Economy

The Policy Statement recognizes that ICTs per se cannot have an appreciable impact on the developmental process unless their development, deployment and exploitation within the society and economy are backed by addressing a number of critical success factors and conditions. The basic premise is that: the development, deployment and exploitation of ICTs within the economy and society can contribute to and accelerate Ghana's socio-economic development process **provided** some critical success factors and conditions are addressed at the: national, and organizational levels as well as at the level of individuals in the work place and in the society at large.

The Government is committed to addressing the critical success factors necessary for the realization of the *Ghana ICT4AD Vision* and it is committed to putting in place the necessary policy measures, actions and step to ensure that the following broad critical success factors and requirements are met and addressed:

- Active high profile national ICT champion --- the President
- Top level political and economic leadership, support, commitment and championship of the *ICT4AD Vision for Ghana*
- A clear national ICT4AD Vision, Missions and Strategies and Government's endorsement and commitment to the Vision and the Missions
- The goodwill and support of the people and their endorsement of the need for the ICT4AD Vision and stated missions and their realization
- Strategic Government Ministry to facilitate and coordinate the policy and plan development process on behalf of the Government.
- Dedicated policy decision makers, and professionals, cutting across the public and private sector committed to the process
- The identification and the setting of realistic policy objectives and plan programme targets that can be achieved within a given time frame
- Nation-wide policy and plan development consultative exercise involving key stakeholders within the public and private sector to facilitate across the board inputs into the process and its deliverables and
- Logistic support and facilitation for the ICT4AD process.

The Government is further committed to taking all necessary steps within its power to ensuring that the following key enabling environment critical success factors crucial for achieving the objectives and the goals ICT4AD Policy are met:

- Good Governance, the rule of law, respect for human rights
- Attainment of social justice and equity
- Functioning Democracy and Democratic Institutions
- Prevailing Peace, National Unity and National Security
- Sustainable Un-Interrupted Political Stability
- Sub-Regional Stability and Calm
- Stable Economic Policy Environment
- Sound Socio-economic Development Policy and Priorities Setting Framework
- Stable Economic Liberalization Environment
- Stable Economic Investment Climate

The Government is also committed to ensuring that the following necessary legal, regulatory and institutional environment critical success factors and conditions are met:

- Relevant Legal and Legislative Provisions to support the ICT4AD Policy and Plan implementation process
- Enabling Regulatory Environment necessary for implementing specific relevant components of the ICT4AD policies and plans
- Institutional Structures and Arrangements to facilitate and support the policy and plan implementation process

To ensure the successful implementation of the policy initiatives at the organizational and institutional level, the Government shall take steps to facilitate the process of addressing a number of organizational level critical success factors including:

- Promoting the required and necessary changes in relevant organizational and institutional structures, processes, and procedures conducive for the effective implementation of the ICT4AD policy and plan initiatives involving the effective deployment and exploitation of ICTs within these organizations
- Facilitating, promoting and encouraging the necessary changes in unproductive attitudes to work, duty and service that could hinder the effective deployment and exploitation of ICTs to improve organizational efficiency, productivity, activities, operations and service delivery
- Supporting the process to have at work places; motivated, disciplined and adequately remunerated work force committed to work and bringing about the necessary organizational changes conducive for the effective deployment and exploitation of ICTs within their organizations and institutions.

The Government is also committed to taking steps to address the following facilitating environment critical success factors:

- Well-Educated and Informed Society
- Modernized and Efficient Civil and Public Service
- Financial and Technological Resource Availability and Mobilization
- Human Resource Availability in Key Skill Areas
- Disciplined, Motivated and Patriotic Citizens led by Inspired, Dedicated Committed and Uncorrupt Political, Economic and Social Leadership

Commitment to the Development and Implementation of Rolling Plans to Implement the ICT4AD Policy Commitments

As a working and living document, it is anticipated that during the life-span of the Policy, necessary periodic revisions shall be made in relation to its key elements to meet changing developmental objectives and priorities as well as changes in the global economy and advances in the technological environment.

The Government is committed to developing and implementing a number of 4-year rolling plans to implement the provisions of the Policy. – It is envisaged that the Policy will have an operational life of between fifteen to twenty years. The rolling plans will be developed and implemented in series with each addressing to varying degree specific aspects of the broad policy issues and commitments of the ICT4AD Policy Statement.

The 1st Rolling ICT4AD Plan [2003- 2006]

Goal: To support the development of an economic base and environment for accelerated growth and development towards transforming Ghana into an information-rich knowledge-based society and economy

Priority Policy Areas of Focus

- Accelerated Human Resource Development
- Promoting ICTs in Education
- Facilitating Government Administration and Service Delivery
- Facilitating the Development of the Private Sector
- Developing an Export-Oriented ICT Products and Services Industry
- Modernization of Agriculture and the Development of an Agro-Business Industry
- Developing a Globally Competitive Value-Added Services Sector
- Deployment and Spread of ICTs in the Community
- Promotion of National Health
- Rapid ICT and Enabling Physical Infrastructure Development
- Legal, Regulatory, and Institutional Framework Provisions
- R&D and Scientific and Industrial Research Capacity Development
- Promoting Foreign and Local Direct Investment Drive in ICTs
- National Security and Law and Order

Strategic Focus of the Plan

Laying *more* emphasis on ICT deployment and exploitation and *less* emphasis on the production, development and delivery of ICT products and services

The 2nd Rolling ICT4AD Plan [2007- 2010]

Goal: To *improve* the economic base and environment to further accelerate growth and development towards transforming Ghana into an information-rich knowledge-based society and economy.

Priority Policy Areas of Focus

- Accelerated Human Resource Development
- Promoting ICTs in Education
- Facilitating Government Administration and Service Delivery
- Facilitating the Development of the Private Sector
- Modernization of Agriculture and the Development of an Agro-Business Industry
- Developing a Globally Competitive Value-Added Services Sector
- Deployment and Spread of ICTs in the Community
- Promotion of National Health
- Rapid ICT and Enabling Physical Infrastructure Development
- Legal, Regulatory, and Institutional Framework Provisions
- National Security and Law and Order

Strategic Focus of the Plan

Laying *more* emphasis on ICT deployment and exploitation and *less* emphasis on the production, development and delivery of ICT products and services

The 3rd Rolling ICT4AD Plan [2011- 2014]

Goal: To support the *consolidation* of an economic base and environment for accelerated growth and development towards transforming Ghana into an information-rich knowledge-based society and economy

Priority Policy Areas of Focus:

- Accelerated Human Resource Development
- Promoting ICTs in Education
- Facilitating the Development of the Private Sector
- Developing an Export-Oriented ICT Products and Services Industry
- Modernization of Agriculture and the Development of an Agro-Business Industry
- Developing a Globally Competitive Value-Added Services Sector
- Deployment and Spread of ICTs in the Community
- Promotion of National Health
- Rapid ICT and Enabling Physical Infrastructure Development
- R&D and Scientific and Industrial Research Capacity Development

- Promoting Foreign and Local Direct Investment Drive in ICTs
- National Security and Law and Order

Strategic Focus of the Plan

Laying *equal* emphasis on ICT deployment and exploitation and on the production, development and delivery of ICT products and services

The 4th Rolling ICT4AD Plan [2015- 2018]

Goal: To further *enhance and strengthen* the production base of the economic to accelerate development and growth towards achieving an information-rich knowledge-based society and economy.

Priority Policy Areas of Focus

- Developing an Export-Oriented ICT Products and Services Industry
- Modernization of Agriculture and the Development of an Agro-Business Industry
- Developing a Globally Competitive Value-Added Services Sector
- R&D and Scientific and Industrial Research Capacity Development
- Promoting Foreign and Local Direct Investment Drive in ICTs

Strategic Focus of the Plan

Laying *more* emphasis on the production, development and delivery of ICT products and services and *less* emphasis on ICT deployment and exploitation

The 5th Rolling ICT4AD Plan [2019- 2022]

Goal: To facilitate the process of *sustaining* economic development and growth towards improving national prosperity and global competitiveness

Priority Policy Areas of Focus

- Developing an Export-Oriented ICT Products and Services Industry
- Developing a Globally Competitive Value-Added Services Sector
- R&D and Scientific and Industrial Research Capacity Development
- Promoting Foreign and Local Direct Investment Drive in ICTs

Strategic Focus of the Plan

Laying *more* emphasis on the production, development and delivery of ICT products and services and *less* emphasis on ICT deployment and exploitation

Commitment to the Development of Agency-Specific ICT Policy Statements

As part of the process of facilitating the ownership of the policy implementation process at the implementation agency level, designated agencies including the Government Ministries, Regional Co-

ordinating Council (RCCs) and the Public Sector Organizations (PSOs) shall develop their respective *ICT Policy Statement* in line with the overall ICT4AD Policy Statement.

Specifically each agency-specific ICT Policy Statement shall incorporate:

- Vision and Mission Statements of the Ministry/PSO/RCC set within the context of the national ICT4AD Policy Statement
- Broad Strategies to be pursued by the Ministry/PSO/RCC towards the realization of its visions and missions.
- Specific ICT policy goals of the Ministry/PSO/RCC aimed at facilitating the process of the deployment and exploitation of ICTs to support its operations and activities within context of its stated vision and missions.
- Key areas of commitments of the Ministry/PSO/RCC in relation to the deployment and exploitation of ICTs to facilitate specific areas of its operations, activities, services and/or its strategic ICT goals.
- Statements relating to the deployment and exploitation of ICTs within the relevant sector of the Ministry/PSO/RCC to support activities within the sector and facilitate and improve the delivery of services within the sector

Commitment to the Development and Implementation of Sector-Specific ICT Implementation Strategies

The Government as part of the broad objectives to facilitate the development, deployment and exploitation of ICTs within the economy and society is committed to developing and implementing the following *Sector-Specific ICT Implementation Strategies* set within the wider context of the provisions of the national ICT4AD Policy Statement

- The Electronic Commerce and Trade Development Strategy for Ghana
- The Electronic Government and Governance Strategy for Ghana
- The Telecom and Communications Sector Policy Statement
- The National ICTs in Education Strategy
- The National ICTs in Health Strategy
- National Strategy on ICTs and Gender
- National Electronic Security Strategy

The Government is also committed to developing from time to time as the need arises, other sector-specific ICT strategies and Policy Statements set within the broader aspirations of the national ICT4AD Policy.

Policy Commitment to putting in place an Enabling Institutional Framework for Supporting the ICT4AD Policy and Plan Development, Implementation and Coordination

The need for putting in place suitable institutional arrangements and structures to support the policy and plan development and implementation process has been recognized. The Ghana ICT4AD policy and plan development and implementation process shall therefore involve the setting up of relevant coordinating and facilitating structures and institutional arrangements.

The Government shall make provisions for putting in place the various institutional structures and bodies for facilitating the coordination of the ICT4AD policy and plan development and implementation efforts in Ghana. A number of these structures and bodies are envisaged. To start with the Government is setting up the *National Information Technology Commission (NITC)*, the *NITC Working Groups*, and the *Ghana Information and Communications Technology Agency (GICTA)*.

- ***The National Information Technology Commission (NITC)***

The NITC shall be a high powered national body to be chaired by the President with the mission to provide national leadership for Ghana's ICT4AD process. The membership of the NITC shall be made up of the Vice President, the Speaker of Parliament, a number of senior Cabinet Ministers and distinguished representatives from the Private Sector, Academia, Civil Society, and Labour Organizations.

The Body shall be responsible for advising the Government on all matters relating to the development and implementation of national ICT policies, strategies and plans to accelerate the process of transforming Ghana into an information-rich, knowledge-based society and economy. The NITC on behalf of the Government shall be responsible for: (i) coordinating the development of Ghana's ICT4AD Policy, Strategies and Plans (ii) supervising the work of GICTA and other government agencies involved in the implementation of programmes, projects and initiatives that forms part of government ICT4AD Policy, Strategies and Plans and (iii) commissioning and setting up the NITC Working Groups, and supervising their work.

- ***The Ghana Information and Communications Technology Agency (GICTA)***

The Ghana Information and Communications Technology Agency (GICTA) shall be set up as a statutory and autonomous national agency to act as the national ICT4AD implementation and coordination body under the direct supervision of the NITC and act as its secretariat. GICTA shall in collaboration with the National Development Planning Commission (NDPC) and the Ministry of Communications and Technology and other relevant Ministries and Agencies coordinate on behalf of the NITC, activities and initiatives aimed at the development and the implementation of national ICT4AD policies, strategies and plans.

- ***Information Technology Services Divisions/Directorates (ITSDs)***

As part of the institutional arrangement to facilitate the implementation of the ICT4AD Policy and Plans at the organizational level, the Government is committed to setting up relevant institutional structures to facilitate the deployment and exploitation of ICTs within the civil and public service. To this end policy directives and measures shall be put in place to facilitate the setting up of Information Technology Services Divisions/Directorates (ITSD) within Government Ministries and Public Sector Organizations (PSOs) and Agencies.