ICT POLICY FOR AFGHANISTAN

A digital agenda for development and social change

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Ministry of Communications and IT

Contents

List of Abbreviations Used

ANDS	Afghanistan National Development Strategy
ATRA	Afghanistan Telecom Regulatory Authority
AfCERT	Afghanistan Cyber Emergency Team
ANDMA	Afghanistan National Disaster Management Authority
E-GIF	E-Government Interoperability Framework
FDI	Foreign Direct Investment
G2B	Government to Business
G2C	Government to Citizen
G2G	Government to Government
GIS	Geographical Information System
DCN	District Communication Network
GMS	Government Metadata Standards
ICT	Information and Communication Technology
ISO	International Standards Organization
IVR	Interactive Voice Response
IXP	Internet Exchange Point
MAIL	Ministry of Agriculture Irrigation and Livestock
MDG	Millennium Development Goals
M-Government	Mobile Government
MRRD	Ministry of Rehabilitation and Rural Development
M-Services	Mobile Government Services
NICTAA	National ICT Association of Afghanistan
PKI	Public Key Infrastructure
E-Government	Electronic Government
E-Education	Electronic Education
E-Health	Electronic Health
E-Business	Electronic Business
E-Agriculture	Electronic Agriculture
E-Environment	Electronic Environment
E-Learning	Electronic Learning
E-Services	E-Government Services
VAS	Value Added Service
VCN	Village Communication Network
WHO	World Health Organization
XML	*Extensible Mark Up Language*

1. Introduction

During the last two decades Afghanistan has made considerable progress in the field of information and communication technology (ICT). In 2002 the country had telephone subscription population of some 50000 and in 2013 this is estimated to have risen to about 19 million. The country has evidently come a long way from having just one phone for every 540 persons in 2002 to having one phone for every two persons in 2013. From almost total absence of internet in 2002 the country has now 44 internet service providers with an internet subscription population of nearly one million. The use of computers in the departments and agencies of the Government of the Islamic Republic of Afghanistan has been growing very rapidly in the last ten years. Mobile telephone penetration in the country has surpassed 80 per cent of the population. Several strategic ICT programmes including the E-Government programme is being pursued by the Government to bring in transparency and efficiency in the working of the Government and delivery of public services. Government of Afghanistan continues to be committed to expanding and optimizing ICT within the country to improve governance and public services, accelerate economic development and social change for the benefit of every Afghan. This document describes the digital agenda of the Government during the next ten years including its Vision, Goals and ICT strategies and policy that it intends to follow to achieve its long term vision and strategic goals.

2. Vision 2024

The Government's vision for Afghanistan for the year 2024 is a knowledge based Islamic society where ICT would be a driving force in all aspects of social and economic life, a networked globalised and democratic nation that optimally and fully uses the potential of ICT in trade, commerce, health, education and public governance while maintaining and preserving its tradition and culture.

3. The Policy Context

The Afghanistan National Development Strategy (ANDS) is the Afghanistan Government's blue print of strategic actions and policies for security, governance,

social and economic development and poverty mitigation. The ANDS envisions that by the year 2020 Afghanistan will be a stable Islamic constitutional democracy at peace with itself and its neighbours, standing with full dignity in the international family of nations; a tolerant, united, and pluralistic nation that honours its Islamic heritage and the deep seated aspirations toward participation, justice, and equal rights for all; a society of hope and prosperity based on a strong, private-sector led market economy, social equity, and environmental sustainability. In order to achieve the vision 2020 the ANDS articulates the following national goals:

1. *Security: Achieve nationwide stabilization, strengthen law enforcement, and improve personal security for every Afghan.*

2. ***Governance, Rule of Law and Human Rights:*** *Strengthen democratic processes and institutions, human rights, the rule of law, delivery of public services and government accountability.*

3. ***Economic and Social Development****: Reduce poverty, ensure sustainable development through a private-sector-led market economy, improve human development indicators, and make significant progress towards the Millennium Development Goals (MDGs).*

4. *A further vital and cross-cutting area of work is eliminating the narcotics industry, which remains a formidable threat to the people and state of Afghanistan, the region and beyond.*

Considering the efficacy of Information and Communication Technology (ICT) as a tool for governance, socio-economic development and poverty reduction and the significant level of progress achieved in Afghanistan in recent years in the expansion of telecommunication and ICT infrastructure, adoption of ICT in the government, development of E-Government and penetration of ICT in all aspects of social and economic life the Government is committed to nurturing and developing the ICT sector in the country and promoting the use of ICT in furthering its agenda for achieving security and stability, economic development , social change, transparency and efficiency in governance and public service delivery, reducing poverty in the country and achieving its national development goals as enshrined in the ANDS. Following the ANDS the various Ministries and Agencies of the

Government have developed and implemented their own strategic sector specific development plans and programmes

The ICT policy given herein is based on the Governments' strategies for employment of ICT for governance, public service, social change, economic development and poverty reduction. The ICT policy given here is also closely aligned with the strategic vision of the ANDS and broader national development goals and strategic governance and development programmes of the Government and the sector specific policies in education and human capital development, health, environment, rural development, agriculture, natural resources management, trade, industry and commerce.

4. ICT Policy Goals and Targets

In line with its Vision 2024 the Government will expand and enhance ICT usage in the country, expand the telecommunication and IT infrastructure and services, ensure universal ICT access to all citizens and in general expand the ICT sector. Government recognises that ICTs, if optimally and strategically employed, can be very powerful and effective tools for good governance, economic development and social change. Therefore the approach of the Government would be to optimally employ ICT as a tool for effective and transparent governance and as an enabler in various economic and social sectors. The Government will also strategically promote private sector driven ICT industry as an economic sector in its own right that significantly contributes to national GDP and job creation.

The under mentioned ICT policy goals that the Government has set for itself are derived from the national strategic governance and development goals and priorities as much as the need for promoting ICT industry as an important sector of the economy and encouraging ICT innovation and adoption in Afghanistan at large in order to realise the Vision 2024 of Afghanistan as a progressive knowledge based society.

A. High Level ICT Policy Goals

A.1 The Government will follow an integrated and holistic approach to ICT development in the country which would aim at maximising penetration and

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diffusion of ICT in Afghanistan; both within the Government and at all levels in the Afghan society.

A.2   The Government will develop and promote ICT as an enabler of increased efficiency and productivity in all economic and social sectors and industry domains in the country.

A.3   The Government will optimize the use of ICT in all its departments, agencies and ministries for management of Government operations and a tool for enhanced efficiency, effectiveness and transparency in public governance, and service delivery.

A.4   Government will encourage and promote ICT sector in the country as an important contributor to national economy and venue for employment. The Government aims at increasing the ICT sector's contribution to the national GDP from the current level, estimated at less than 2 per cent, to at least 7 per cent of the total national GDP and employment in the ICT sector from the current level of less than 1 per cent to at least 9 per cent of the total population, by the year 2024.

B.   E-Governance- ICT in Government Policy Goals

B.1   All the Government ministries, departments and agencies both at the central and provincial levels would be optimally computerised and their operations re-engineered, digitized and networked in line with the E-Government and M-Government plan of the Government.

B.2   All public services, other than the ones which cannot be delivered through electronic means, would be delivered as E-Services or M-Services as per the E-Government Plan of the Government.

B.3   Transparency in public sector recruitment, procurement and service delivery would be enhanced though optimised use of ICTs. 90 per cent of all public procurement and recruitment would be ICT based using appropriate E-recruitment and E-procurement systems.

B.4   Citizen participation in governance and democratic processes in the country would be strengthen and enhanced through optimal application of ICTs.

B.5.   All citizens of the country would have convenient means to access the E-Services of the Government either on individual access devices or through E-Service centres located within convenient distances (not to exceed 1 hour travel time) from the location of the service recipient.

B.6   The use of ICTs in the justice sector would be promoted to enhance rule of law and transparency in the legal processes. ICT based Systems and applications would be developed and deployed across the country, as a part of the Government's E-Government programme to bring in effectiveness, efficiency and transparency in all the legal institutions and organs of the state.

C.   ICT investment and Industry Development

C.1   The Government will encourage ICT private sector to play a central role in driving economic growth and innovation, while creating employment and generating income through skill development and productivity improvement.

C.2   Private sector investment in the ICT sector would be encouraged to ensure a highly competitive ICT sector resulting in the market prices of ICT products and services to fall to a level equal to or lower than the average markets prices prevailing in central and south Asian countries. Private sector investment in the ICT sector, currently estimated at USD 2 billion is targeted to rise to USD 8 billion by the year 2024.

C.3   The expansion of the domestic ICT industry would be encouraged and promoted so that domestic products and services would be at least 40 per cent of the total ICT products and services marketed in the country.

D.   ICT human resources development

D.1   ICT literacy within the Government would be expanded. 80 per cent of all Government staff at various levels would be ICT literate

D.2   ICT awareness and literacy within the general population of the country would be promoted. 70 per cent of population will be exposed to ICT awareness and / or literacy programmes.

D.3   ICT skills within the country would be increased. All the universities and institutes of higher learning would be encouraged to offer ICT graduate and

post graduate courses as well as short duration ICT courses as per the strategic ICT Skill development plan of the Government.

D.4 ICT education will be mandatory in all primary and schools of the country. ICT education will be embedded within the school curriculum of all schools in the country.

D.5 At least 70 per cent of all school, college and university teachers would be trained in the use of ICT tools and systems in education.

D.6 All primary, secondary schools, colleges, institutes of higher learning and Universities in the country will be equipped with ICT labs and equipment. There will be at least one computer and associated software for every 5 students enrolled.

D.7 At least 30 per cent of all primary and secondary schools in the country would be '*smart' schools"* where education and learning would be based on intensive use of ICTs.

D.8 Electronic Learning (E-Learning) would be promoted and integrated as an important component of the Government policy to eradicate illiteracy and provide universal education to all children and provide a platform for life-long learning and skill development among adults.

D.9 Education management including its planning, monitoring and control at the central and provincial levels would be undertaken using integrated national education management information system.

E. ICT in Health (E-Health) Goals

E.1 E-health and the use of ICTs in the management of health services to the citizens would be promoted. All the public and private sector hospital and health centres would be encouraged to maximise ICT use including development and deployment of hospital information systems, drug control system and patient record management system.

E.2 Telemedicine in the country would be promoted as a part of the Government's policy to provide universal health care services to all citizens of the country. All major hospitals in Kabul, Herat, Kandahar, Jalalabad and

other urban centres would have at least one telemedicine delivery centre and every district would have at least one telemedicine centre with appropriate skilled staff and ICT infrastructure.

E.3 Management of the public health centres and public hospitals and monitoring of the public health would be undertaken with the development and deployment of appropriate health information management system at the national and provincial levels.

F.   Other Major Goals

F.1 All citizens of the country would have access to broadband telecommunication and internet services.

F.2 Content on the web in Dari, Pashtu and other local languages would be increased. This will include entertainment and learning content for various age groups and social segments in the country. The content on the web would be closely controlled and monitored to ensure that it is consistent with the culture and tradition of the country.

F.3 Private sector and non-government organizations will be encouraged to adopt ICTs in the management of their operations and in their interaction with the Government.

F.4 Infrastructure for E-business would be developed and deployed, including public key infrastructure and associated institutions and systems so as to promote on line business transactions, nationally and internationally.

F.6 Appropriate ICT laws and regulations would be developed and deployed to monitor and regulate the ICT sector consistent with the need to respect the human rights of Afghanistan citizens.

5.   Strategic Focus Areas

ICTs are very effective and powerful technologies which leave no aspect of economic and social life untouched. Going by international experience, it can be observed that there is a strong correlation between employment of ICT and positive macro-economic growth. ICTs are highly evolving, innovative and dynamic and impact practically all domains of human life, industries and sectors; both at micro and macro levels. However, to harness ICT for maximum benefit these technologies have to be closed adapted to local conditions and aligned with the local needs.

During the last ten years telecommunication and ICT infrastructure and services have expanded considerably and ICT has made significant penetration in the Government, business and in the Afghanistan society generally. Yet it can be observed that we have a long way to go to realise full benefits of ICT in governance, social and economic development, security and stability and poverty reduction. The Government has adopted a strategic approach to developing the ICT sector and to optimize ICT application and to reach long term ICT goals; and thereby significantly contribute to the achievement of national development goals.

The key ICT result areas for strategic focus of the Government are depicted in the figure below. Apart of the four pillars of the strategy and policy matrix there are three cross cutting areas of strategic importance.
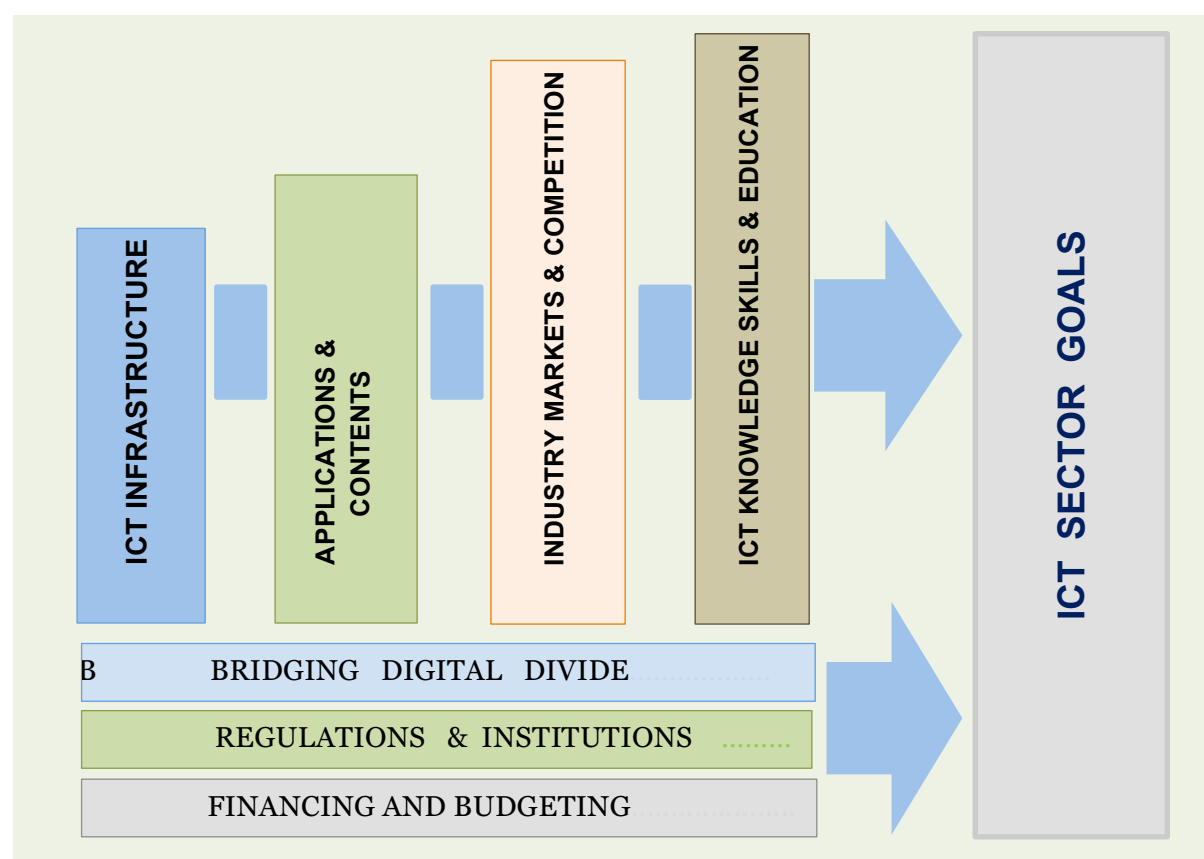
FIG1: ICT STRATEGY AND POLICY MATRIX

5.1 ICT Infras

On a broad basis the ICT infrastructure includes all hardware, networks, communication equipment and software that enable telecommunication, information

and data management and enable individuals, organizations and businesses to access information resources. However, the most fundamental is the telecommunication and internet infrastructure. The Government's role in the enablement of the telecommunication and ICT infrastructure and services is essential and fundamental. The telecommunication infrastructure in Afghanistan has expanded sharply during the last ten years, guided by the Telecom Policy of Afghanistan. As the ICT technology is dynamic and evolving with new technologies being developed and deployed with improved availability of equipment, supplies and services of computers, telecommunications, multimedia information providers, broadcasting (radio and television) and content it raises many issues regarding interconnection policy and equipment standards for interconnectivity. In addition, in the case of Afghanistan, the availability of ICT infrastructure must be associated with the availability of other basic services like electricity supply which would make the ICT infrastructure usable.

The telecommunication development and regulations will continue to be guided by the Government's *Telecom and Internet Policy.* The basic guiding principles of the Government's strategy and policy in the development of the ICT infrastructure would be the following:

*Universal Access***:** Recognizing the right of every citizen of Afghanistan to affordable telecommunication and internet services the Government's Policy is to enable the rapid growth of affordable communications and internet access to all of its people so they may experience the Digital Age, wherever they are and whoever they may be. Establish a National Backbone Network around the country that connects major domestic population centers and our international neighbors.

Market Driven Free Competition: In the development of the ICT infrastructure of the country the Government will continue to embrace a market regime based on aggressive market liberalization, transparent and non-discriminatory regulation, fair competition and private sector participation.

Licensing and Spectrum Management: ATRA will continue to manage the licensing and spectrum management for telecom, broadcasting and internet services according to the Telecom and Internet Policy and The Telecom Law in force.

Recognizing that the information and communication technology sector is by its nature highly dynamic and innovative with perpetual availability of new technologies and converged services licensing and management policies and practices would be modified and adjusted to facilitate the adoption of the new technologies for the benefit of the consumers.

Internet Development and Expansion: Recognizing that availability of high speed internet at affordable cost is critically important for expanding the demand for internet services and for delivery of government services to the public the Government will set up national IXPs and hierarchical IXPs in collaboration with other countries as well as regional information and communications infrastructure.

Promoting Broadband It will be the strategy and policy of the Government to encourage the development of the broadband communication and internet in the country, both on the supply and demand sides. On the supply side the network operators would be encouraged to go broadband, adopt new technologies and offer VAS and converged services. On the demand side the Government will encourage expansion of demand for broadband internet by adopting and expanding its usage within the government and encouraging schools and other institutions in the country to go broadband.

Information Security: Government will accord highest importance to the protection of the ICT infrastructure as well as information resources under its jurisdiction. Considering the vulnerability of ICT infrastructure and assets to damage and attacks by criminals and terrorists the Government in collaboration with network operators and other stake holders will develop and implement strategies and systems to ensure highest level of security to networks and telecommunication infrastructure in the country. Similarly, the Government will accord the highest level of importance to the protection of the information assets and citizen data that would be routinely in the data bases of the Government at the National Data Centre and other centres within the Government. Afghanistan Cyber Emergency Team (AfCERT) of the Government of Afghanistan in collaboration with the network operators and other stakeholders will develop and implement policies and procedures for quick restoration of ICT backbone infrastructure and services should an attack occur. While the Government

will develop policies and procedures for protecting its information assets and resources it will also develop standards and guidelines for protecting ICT infrastructure and information resources existing outside the Government.

Public Key Infrastructure: The Government will develop and deploy Public Key Infrastructure (PKI) including the hardware, software, policies and associated institutional arrangements so that certification of digital signatures would be possible and online transactions will be undertaken by individuals and businesses in Afghanistan, with confidence.

Accessibility Infrastructure: In accordance with its Universal Access policy the Government will provide broadband telecom and internet coverage to all parts of Afghanistan including last mile connectivity infrastructure. However, Government recognises that provision of ICT infrastructure alone may not assure accessibility to all citizens of Afghanistan. Inability of the citizens to take advantage of the available communication and internet facility may arise due to non-affordability or non availability of individual access devices. To mitigate against these possibilities the Government will establish digital communication and e-Service centres for remotely located communities and rural population of Afghanistan.

5.1.1 Telecom Development and Regulations

Telecommunication infrastructure for voice and data services is central to the development of the *Information Society* that we envision to usher in the next ten years. One of the main goals would be to ensure that the telecom infrastructure covers all parts of the country and that telecom services are available to all communities and people of Afghanistan following the *Universal Accessibility* and coverage principle. At the same time the Government will take all actions as may be necessary to ensure that each Afghan can take advantage of the telecom coverage that is available in accordance with the *Universal Service* principle of the Government.

Government through ATRA will employ the international best practices and methodologies to evaluate, monitor and regulate the telecom and internet coverage and service delivery in all parts of the country and identify *market efficiency gaps* that

exist in the telecom coverage and in collaboration with the Telecom Operators in the country fill the gaps as may be identified from time to time.

Government will determine the *true access gaps*, that is areas where operations may be commercially unprofitable and advise the Telecom operators to provide telecom and internet services in these areas through support from the Telecom Development Fund (TDF).

Through the Telecom and internet policy of the Government competition in the telecom markets of the country will be evaluated and monitored. Market share of telecom operators and telecom traffic at the major gateways and exit points would be perpetually evaluated to monitor the possible dominance of any operator in the market.

Government recognises that *Quality of Service* as a part of the broader question of consumer rights and protection including privacy of consumer data and information from the perspective of the consumers is an important issue and a matter of concern to them. Quality of service regulations and consumer protection laws would be put in place to ensure that the operators meet their *Quality of Service* obligations to their customers.

5.2 Applications and Content

If Afghanistan has to leapfrog into the Digital Age and if the goals of the Vision 2024 are to be realised in the next ten years the ICT penetration and diffusion in the country has to be accelerated. The adoption of ICT by the Government and major private sector organizations, during the last ten years, has been appreciable. This penetration has been so far, however, restricted to only urban centres and to only certain levels in organizations. Horizontal diffusion of ICT across the country to provinces, districts and rural areas has to occur; so also vertical penetration of the ICT has to occur in the organizations that have already made a beginning. The adoption of ICT by individuals, businesses and organizations has shown significant growth in recent years. The main challenges to accelerated ICT penetration and diffusion are the high cost of access devices, lack of accessibility, lack of skills and know how. It will be the policy of the Government to promote and accelerate the ICT

application within the Government and all sectors of the economy and all industry domains and indeed all sections of the Afghanistan society. The following application areas would be particularly focused on.

5.2.1 E-Government: ICT in Government

During the last ten years the Government has vigorously followed on the application of ICT for improving its administration and delivery of public services. Towards this end the Government has undertaken a number of initiatives, projects and programmes. This has included the design and development of the E-Government strategic master plan, E-Government Systems Architecture, E-Government Interoperability framework (E-GIF), National Data Center, National ID card project, E-Government Resources Centre, training and skill development activities and a large number of projects at the level of individual departments and agencies of the Government aimed at digitizing the operations and development of ICT infrastructure. The aim of the Government is to develop and deploy the E-Government in a phased manner corresponding to the development of the readiness of the various agencies of the Government. The Government is currently designing and developing M-Government, as a component part of the its broader E-Government agenda so that the wide penetration of the mobile phones in the country, currently covering 80 per cent of the country's population, can be taken advantage of as an effective means of connecting with the citizens, delivering public services effectively at lower cost, enhancing citizen participation and democracy and the overall efficiency of the public administration. The following major policies will guide the Government to accelerate its E-Government transformation.

- Government will be service oriented and citizen focused and will follow a bottom up phased approach in developing and deploying E-Government in the country.
- Government recognises that maximum efficiency and governance effectiveness can be achieved only if all the component agencies and departments of the Government operate as parts of a single connected and coordinated Government rather than as independent, disconnected units. This

whole of the Government approach will be the guiding philosophy of the Government.

- The E-GIF standards and policies already developed by the Government will guide the implementation of the E-Government. The Government recognises that for effective development and roll out of E-Government it is essential that the individual technical systems at various departments and agencies of the government should interoperate with each other, exchange data with each other and virtually operate as a single system. For this to happen uniform and compatible policies and standards have to be used all across the government. These policies, developed as a part of the E-GIF, will be implemented across the Government

- The policies, guidelines and technical standards that form a part the Government's E-GIF will be followed by all the departments, agencies, ministries and government institutions at all levels in the Government as a mandatory requirement.

- *Open and Free standards*: As a policy the government would adopt open and free technical standards rather than proprietary standards. However, in exceptional circumstances if a proprietary standard is accepted as a technical standard by the Government there must be a strong justification for its acceptance.

- *Internet and world wide web*: Government recognizes the importance of internet and the World Wide Web as the basic platforms on which the emerging knowledge and information society of the world rests. Therefore alignment of all government of Afghanistan ICT systems with the internet and the World Wide Web and adoption of all common specifications used on the internet and World Wide Web would be a central policy of the government.

- *Extensible Markup Language (XML):* With the emergence of XML as the preferred means of data exchange between data systems the world over, XML would be used as the primary standard for data exchange between ICT systems of the government.

- *Content Management in Government:* The Information content and documents of the government of Afghanistan in English and official languages

of the country: Pashtu and Dari, would be managed using the Government of Afghanistan metadata standards (GMS) based on internationally accepted Dublin Core Model (ISO 15836)

- *Delivery Channels*: It would be the policy of the Government to support multiple channels for service delivery. Although desktops and laptop computers using browser technology would be main means of accessibility, the systems adopted by all government departments and institutions should permit access and service delivery thorough other means like the public kiosks, web TVs and mobile devices; and should also interface and integrate well with the traditional means of personalized service delivery.

- *Universal Service*: In line with the policy of the government to provide service universally to cover all citizens of Afghanistan irrespective of their location, gender, age, status and education, special attention would be given to the needs of citizens with visual or other disabilities in the design and deployment of technical systems, especially in the formulation of standards related to access, presentation and customer interface.

- *Information Security in Government*: Government recognises that Information is an important resource in the knowledge society that we envision for our country. At the same time we recognize that threats to its integrity and safety are manifold. Therefore the protection of data and information resources within the government of Afghanistan; whether in its databases, documents, applications or in transit over its networks; will be accorded the highest priority by all agencies, organs and institutions of the Government.

- *E-Services and M-Services*: Public Services to be delivered by the Government through electronic means will be developed and implemented in a phased manner in accordance with the E-Government Strategic Master Plan and M-Government Strategic Master Plan of the Government. These services will be designed and developed in service oriented manner to maximise the citizen satisfaction and minimise the development time and costs. E-Government and M-Government G2G, G2B and G2C applications and services that enhance Government efficiency, transparency and delivery of public services will be accorded the highest priority.

- *E-Government Institutional Arrangement*: E-Government Directorate and E-Government Resources Centre within the Ministry of Communication and IT will be the main organs of the Government responsible for the planning, development and deployment of the E-Government programme of the Government including auditing the quality of E-services, Implementation of the E-GIF and provision of support to the agencies of the Government in the implementation of its various E-Government initiatives.

5.2.2 E-Education: ICT in Education

Government recognises that it faces difficult challenges in reaching its strategic goals to expand educational opportunities to all its citizens, provide lifelong educational opportunity to all and mitigate wide spread illiteracy in the country. The Government also recognises that ICT application could be an effective tool for delivery of education, improving the learning process and in better managing the education sector of the country. The Government is committed to expanding the use of ICT for education and optimise its application in the education sector. The ICT in Education strategy of the Government would be multipronged consisting of the following component parts

- Expand ICT education & integrate ICT from primary school level,
- Expand ICT as an enabler for better learning and teaching process,
- Expand ICT use for remote education,
- Expand ICT as a means for better education management
- Expand ICT as a tool for better scientific research and innovation.

The following ICT in education policies will be followed:

- ICT education will be mandatory in all primary and secondary schools of the country. ICT education will be embedded within the school curriculum in all schools in the country.
- Government Schools, Colleges and Universities will be provided adequate ICT infrastructure, computing resources and broadband internet to ensure availability of ICT to teachers, students and administrators

- Private educational institutions will be required to computerise

and provide for ICT in their institutions as a mandatory precondition for institutional registration and licensing.

- Private educational institutions at the primary, secondary and tertiary levels will be encouraged, through the provision of fiscal and monetary incentives, to adopt ICTs, establish adequate ICT infrastructure and systems in their institutions.

- Government will, in a phased manner, transform all primary and secondary schools into smart schools, where intensive use is made of ICT as an educational tool both by the students and teachers.

- Government will launch an intensive programme of education for teachers on the use of ICT in education. These educational courses for teachers will be provided in the local languages of choice of teachers.

- Electronic Learning (E-Learning) would be promoted and integrated as an important component of the Government policy to eradicate illiteracy and provide universal education to all children and provide a platform for life-long learning and skill development among adults. Considering the universal availability of mobile phones in the country, m-learning content and courses would be developed and offered as a part of the E-Learning programme of the country.

- To encourage girl education in the country e-learning education centres integrated with the local level community centres and mosques, will be established in rural and remote areas, which would have the resources to hold distance classes in a culturally acceptable manner.

- Education management including its planning, monitoring and control at the central and provincial levels would be undertaken using ICT based integrated national education management information system.

- Educational Institutions of Higher learning, both in the private and public domains, will offer degree courses at bachelors and masters levels in ICT related subjects as a mandatory requirement. The institutions of higher

learning will be encouraged to offer research based ICT degrees at masters and doctorate levels.

- Educational Institutions of Higher Learning in the country would be encouraged to collaborate and cooperate with each other to share computing resources, establish national online library and undertake joint educational and research projects on ICT related subjects.

- Institutions of Higher Learning and Research will be encouraged to establish campus wide electronic learning and research environment and collaborate with each other and with other regional and international institutions of higher education and research to develop and deploy integrated and interoperable ICT infrastructure and systems to enable collaborative education and research.

5.2.3. E-Health: ICT in Health

Even though the last ten years has seen considerable improvement in the public health, the overall situation remains grim, with low life expectancy, high child and maternal mortality indicators. The availability of public health services in the country, especially in the remote and rural areas of the country is poor due a variety of reasons including lack of trained health workers, doctors and nurses, lack of health infrastructure and hospitals and indeed lack of financial resources to expand the public health infrastructure. Government sees ICT as an effective tool to mitigate the constraints that we currently face in improving public health services. We recognise that ICT cannot replace the services of a doctor or the caring provided by a trained nurse but it can leverage the meagre resources that we have to reach a larger population and bring in efficiency in the public health domain.

The following would be the strategic focus of the Government in the ICT in Health area:

Expand the use of ICT by health institutions in the country including hospitals and clinics through the provision of resources and training and establishment of the ICT infrastructure in these institutions.

Promote use of ICT for monitoring and control of public health in the country and establishment of systems for prevention of spread of disease and early warning systems in case of impending epidemic.

Develop health sector management system and standards for health data exchange and sharing among national health institutions compatible with WHO and other international health organization systems, standards and guidelines.

Promote ICT and mobile technology based system for health sector monitoring, patient data exchange, surveys and field data collection.

Disseminate health information on disease prevention and health guidelines for citizens and health workers in the local languages using multiple delivery channels including mobile devices.

Promote telemedicine and e-health in the country, through the establishment of the required telemedicine infrastructure and skills in the country.

The major e-health policy of the Government would be as follows:

- Government will maximise and optimize the application of ICT in the public hospitals and clinics through the establishment of ICT infrastructure and systems and enhancement of the staff skills.
- Government will expand ICT use in the Ministry of Public Health and all its institutions and in all other agencies of the Government connected with Public Health for the purpose of enhancing efficiency and effectiveness in the Management of public health in the country.
- *National Health Sector Information Management system* will be developed and implemented for planning, managing and monitoring public health and delivery of public health services across the country.
- *Health Data and Information Standards* included in the E-GIF developed by the Government will be the standard for health information management to be adopted by all the health institutions, both in public and private domain, in the country.

- *Citizen's personal data and patient data* collected by the Government health institutions will be maintained secure in the databases of the Government and will be considered as the private information of the citizens and will not be disclosed to any unauthorised entity except to other health institutions for the purpose of delivery of health services or except through the applicable legal process.

- Government recognises that it has limited resources to reach the needed public services to all its citizens. Therefore the Government will leverage its resources to provide better and faster medical services through e- health and telemedicine.

- *Doctors, nurses and other health workers will be trained* in the use of ICT for delivery of health services at various levels from health clinics in districts and hospitals to referral hospitals in urban centres.

- *M-Health*: Government recognises the ubiquity of mobile phones in the country and therefore will develop and deploy mobile based applications for delivery of basic public health services as well as use mobile based ICT system for dissemination of health information, health warnings and encourage citizens to seek health related services and information using mobile phones and other mobile devices.

- *Telemedicine development and roll out:* To leverage its health related resources the Government will develop the Telemedicine infrastructure both at the delivery and receipt ends, in a phased manner from the pilot stage in some hospitals and some districts in the beginning to a nationwide rollout in ten years. Telemedicine infrastructure will be based on international standards and practice. It would be designed to interoperate with such networks available in the neighbouring countries so that Telemedicine services could also be sourced internationally as the situation demands.

- *Quality of Health Services*: Government recognises the importance of delivery of quality health services to every Afghan. Health services which are timely, affordable and delivered in the most efficient manner with minimal errors. Delivery of high quality drugs and patient services is essential to improving the health of every citizen. Towards this end Government will optimise use of IC

technologies like bad coding and Radio Frequency Identification (RFID) to minimise errors and to maintain control on the delivery of hospital services and medication process, which includes prescribing, order communication, product labelling, packaging, compounding, dispensing, distribution, and administration.

5.2.4. E-Business: ICT in Business and Trade

The Afghanistan's traditional products including carpets, rugs, leather products, handicrafts, fresh fruits, flowers and dry fruits have large international market. On account of lack of systematic market development, instability in the country and simple lack of knowledge in the international market have limited the country's market share to a low level. Application of ICT in international business development could open out international market for Afghan products. Adoption of ICT in business is also expected to bring in efficiency in the operation of the Afghanistan business sector thereby reducing costs and increasing profits. The expansion of mobiles in the Afghanistan for communication and other value added services like mobile money transfer and mobile wallet applications are significantly influencing the day to day lives of individual Afghans as much as facilitating financial transactions between business partners thereby expanding overall business volumes.

The following strategies and policy on E-business will be followed:

- Government will encourage private business organisations and trading houses to adopt ICT within their organizations. This will be done through provision of incentives and tax relief on ICT investments and ICT imports, technical guidance and support.
- Government will create an enabling environment for business organizations to adopt ICT and conduct online business with confidence. Towards this end the Government will establish the Public Key Infrastructure and digital signature certifying organization so that online business transactions could be undertaken with confidence.

- Government in collaboration with the Private business associations will encourage establishment of online business portals for various product groups of the country, which would disseminate information about the Afghan products to international markets and disseminate market information to local businesses; provide a platform to local business to conduct online business with their customers in the local and international markets.

- Government will develop and deploy ICT based applications that would make interaction of the business organizations with the Government easy and fast. This will among others include Business Registration, Online Custom Duty payment, Online filing of Tax Returns and other similar applications.

- Government will promote and encourage mobile technology and other innovative ICT applications that would facilitate business transactions and trade expansion in a cash less environment. This would among others include banking laws and regulations that facilitate cashless business transactions, establishment of mobile e-money operators and their agents in all parts of the country and increase in cap on the payments made by businesses for Government services and taxes using cashless instruments and methods.

5.2.5. E-Agriculture: ICT in Agriculture

More than seventy per cent of the population of Afghanistan is engaged in Agriculture and the economy of the country is virtually based on Agriculture. Most of the products that the country exports abroad are agro products. Thus the development of the agriculture sector is closely related to national economy and social wellbeing of the people of Afghanistan. The importance of the Agriculture cannot be over emphasized. Only about 10 per cent of the total land area is now cultivated and most of the cultivated land is rain irrigated or irrigated by streams. The policy of the Government is to expand farm production through expansion of the area under cultivation and increase in land productivity. Rural income would expand

if agriculture production expands and if higher prices are obtained by farmers for their produce. The rural landscape will also change if the crop mix can change leading to higher total income to farmers. And indeed if the agro products could be processed and valued added before reaching the local and international markets. These strategic moves to develop the Agriculture sector and therefore the rural economy can be leveraged through the application of ICT.

The Government's E-Agriculture Policies are:

- Government, through the Ministry of Agriculture, Irrigation and Live Stock (MAIL) will adopt ICT in the planning, management and monitoring of the Agriculture sector and in the delivery of Agriculture related services to farmers and other stake holders connected to the sector.

- Government will develop its institutional capacity and ICT infrastructure and systems to enable provision of timely advice and extension services to farmers on various aspects of agriculture, horticulture, animal husbandry, agro processing and other related subjects. Mobile phones and devices, TV and radio will be the preferred channels of delivery of E-Agriculture services.

- Government will develop and deploy optimal ICT based agriculture project and programme planning and M&E systems to systematically plan, monitor and evaluate agriculture and rural development projects in the country.

- Government will develop and deploy dynamic Agriculture information databases and ICT systems to disseminate up to date information on Agriculture markets, prices, supply and demand using mobile devices, computers, TV and Radio as delivery channels.

- Government will develop and deploy databases and ICT systems which would enable provision of weather, soil, and other Agriculture information of use and interest to farmers on mobile phones, computers, TV or radio.

- ICT based *Early warning systems* will be developed and deployed on impending crop disease, climate change, floods and adverse weather conditions.

- Government recognises that the rural development and agriculture are very intimately intertwined. Therefore the Government's concerned agencies and

departments including MAIL and MRRD will collaborate in the development of E-Agriculture services and coordinate these with other services that are delivered through traditional channels.

- ICT awareness and basic know how of the rural agriculture community would be raised through mass media campaigns using mobile devices, TV and Radio

- ICT based on demand and interactive E-Agriculture and rural development services will be made available in local languages on mobiles and computers, Radio and TV in user friendly manner.

5.2.6. E-Environment and Natural Resources Management:

Management of the country's environment and its natural resources is a priority for the Government. During the recent decades of war and instability the environment has been badly damaged with deleterious consequences on climate, natural water supply, soil condition and productivity and quality of life of the people. Afghanistan is richly endowed with natural resources including minerals and natural gas deposits to the tune of several trillion United States dollars. These resources have remained largely unused or have been exploited in a random manner by warring factions to finance war or terror activities. Government is committed to managing its environment systematically and to responsibly and sustainably use its national natural resources for the benefit of the people. The focus of the Government would be to apply ICT in Environment and Natural Resources management to enhance planning, management and monitoring capacity of the Ministry of Mines and Ministry of Environment; develop environment and natural resources data bases and GIS information repositories, maps and applications for use across the Government.

Government ICT Policies in the management of the environment and country's natural resources are as follows:

- Government will develop infrastructure, systems and skills within the Government for optimal adoption of ICT for the purpose of efficiently managing its environment and natural resources including land, water, forests

and mineral deposits and for their sustainable and responsible use for the benefit of the people of Afghanistan.

- Local and traditional knowledge and practices in the management of the environment and country's natural resources would be captured and integrated with the modern practices in these fields using the appropriate ICT tools and techniques.

- Environment and natural resources databases and information repositories and, maps will be developed and made available across the government as a common resource of the country.

- Government will develop and deploy appropriate GIS and remote sensing applications and systems to support the Environment and Natural Resources Management system of the Government.

5.2.7. ICT in Disaster Management:

Afghanistan is prone to disasters. Afghanistan National Disaster Management Authority (ANDMA) of the Government has developed the strategic national plan for disaster management which aims at the provision of early warning to citizens and other government functionaries of the likely disasters, enhance the disaster preparedness of the Government and provision of post disaster relief and rehabilitation. ICTs have considerable applicability in these fields of activities of the ANDMA and indeed the role of ICT is crucial in disaster management.

ICT policy of the Government in disaster management is as follows:

- Government recognising the important role ICT can play in the management of disasters will provide the ICT infrastructure, equipment, communication devices and software applications as required to equip ANDMA and other connected agencies of the Government at all levels to efficiently undertake their mandate.

- Government will enhance ICT skills of staff in ANDMA and other relevant agencies and will also provide appropriate ICT training to community leaders across the country especially in disaster prone areas of the country.

- Periodic mock drills will be undertaken to ensure that the communication networks and other ICT systems are at the top working condition at all times.

5.2.8. ICT in National Security

The welfare and development of a nation goes hand in hand with the level of security and stability that it enjoys. One of the important focus area of ANDS is national security, which in the context of Afghanistan is the most important strategic key result area, as the country faces possible threats from individuals and organizations within and outside the country. ICT role in supporting national security is important and indeed indispensable.

Government's ICT policy for national security is as follows:

- Government will optimise the use of ICT in the tasks of national security. For this purpose the required ICT infrastructure, systems and applications will be developed and deployed in the appropriate agencies of the Government including the Ministry of Interior, Ministry of Defence , National Police and others as may be required.

- Government will provide ICT training as appropriate to staff of the all agencies connected to national security and enhance and refresh these skills at periodic intervals.

- National security intelligence network will be supported with ICT systems and the state of the art technologies in information gathering and analysis, to maintain an edge over the adversaries and enemies of the nation.

- Cyber security infrastructure and systems will be strengthened and kept in constant state of readiness to prevent damage to vital installations of the country and minimise damage should an attack occur.

- Security at the borders and all entry points will be strengthened with the application of ICT to thwart moves by undesirable elements, with bad intentions to gain entry into the country.

- Database of elements considered as threats to national security and peace will be developed and maintained and will be accessible to authorised officers and security staff of the Government.

5.2.9. Development of Local Content

Existence of the locally relevant content in local languages is crucially important to promote use of internet and to accelerate the adoption of ICT in the day

to day life of society. Afghanistan ICT ecosystem is characterised by lack of content in Dari and Pashtu and other languages and content that is relevant to local conditions. With the expansion of the internet it is easy for anyone to access content from distant markets and communities. This accessibility for the growth of foreign knowledge has its limitations as to its relevance to local conditions and may indeed undermine the local cultural heritage. The foreign knowledge acquired on the web should be strategically matched by collection and dissemination of local knowledge and content that is relevant to local conditions. ICT systems and internet should be indeed a conveyor of locally relevant messages and information, providing opportunities for local people to interact and communicate with each other, expressing their knowledge, heritage and culture in their own languages. Government has taken a lead to develop ICT terminology in Dari and Pashtu through its localization project. Additionally, E-GIF mandates the development of Government vocabulary in Dari and Pashtu. These and other initiatives of the Government for expansion of local content and localization of content will need to be accelerated in the next ten years.

Government's ICT policy on promotion of local content will be:

- Government will encourage the use of local language applications and content in its systems and websites and portals.
- Government will provide free access to its archives and information repositories on national culture, tradition, art and religion to local content developers.
- Government will encourage the use of Dari and Pashtu by local content developers in order to promote local culture, art and entertainment content to attract local users and Afghan Diaspora.
- Government will discourage content which is considered detrimental to the cultural values and religious sentiments of the people of Afghanistan.
- Government will encourage the local communities to gather and develop local content and upload the same on to local social networking sites.
- In collaboration with the universities, social and cultural associations and organizations in Afghanistan the Government will encourage development of

local content for entertainment and education for wider dissemination on the web.

5.2.10   Digital Media

Media plays an important role in mass communication, entertainment, education, public participation and strengthening democracy. The Government's overall policy has been to promote free democratic media within the guidelines given by the Government and within the law of the land. With the application of new ICT the media's reach and influence increases enormously. We have now a large digital media sector in the country with web publishing, 55 TV stations-both national and regional and more than 170 radio stations. With the fibre optics and satellite communication expanding the media's reach and influence is expected to increase. Considering the important role media broadcasting can play in the country for information dissemination, education, entrainment and indeed in overall socio-economic development of the country, the Government is committed to developing the sector with modern IC technologies and to provide a rational and effective framework to govern the establishment, ownership, control, management and delivery of information, entertainment and educational services to Afghans through the provision of efficient and reliable broadcasting.

During the last ten years the mobile technology and internet diffusion in the country has been fast. Now nearly 19 million people subscribe to mobile phone services and nearly 2 million Afghans use internet. Parallel to the expansion of internet and mobile connectivity the social media, primarily Facebook, Twitter and Youtube, adoption and use is also increasing at an unprecedented pace. The social media development in the country is a welcome development to enhance the democratic and participatory processes in the country and bring in the youth and other social groups into the national mainstream.

The policy of the Government for the digital media development is:

- Government will encourage the growth and development of broadcasting and media industry that is efficient, competitive and responsive to the needs of the people of Afghanistan.

- Government will create an enabling environment to increase investment into the broadcasting, increase competition and adoption of modern technologies to provide top rated services at affordable prices.

- Government will encourage the growth and development of digital social media in the country. Though at the present time the social media platforms are mostly foreign based Government would encourage the local private companies, non-governmental organizations, academia and social groups to launch local social media vehicles and platforms to accelerate the growth of responsible social media in the country.

6.0   ICT Industry, Markets and Competition

From a meagre start in 2002 the ICT industry in Afghanistan has shown significant growth with 59 Information Technology (Hardware, Software, IT Service Companies) , 44 Internet Service Providers and 06 Telecom Operators constituting the ICT industry at present. The present ICT industry sector comprises telecom operators, Internet service providers, IT consulting companies, software companies,

hardware companies and networking companies and some ICT trading firms. Even though there has been growth in the ICT industry during the last ten years the growth is not commensurate with the potential opportunities that exist. If the ICT sector Vision 2024 is to be achieved and Afghanistan has to leap frog to be a knowledge society in the next ten years the ICT industry has to grow and develop at a much faster rate than it has in the last ten years. ICT industry has to develop both as a supplier of ICT products and services to local market supporting the ICT led transformation of various social and economic sectors and as an industry sector in its own right. On both counts the ICT industry development is important. Nurturing the young technical talent of the country is another area that would need serious considerations. This will include amongnst others the technical and management support to young technologists in the country who may wish to start their ICT based business ventures but may be handicapped on account of lack of capital and business knowhow. Local ICT enterprises would need to be incubated to maturity, provided with incentives and support to raise capital, manage business and market their products and services.

The main challenges to the development and growth of the ICT industry are lack of trained manpower, high cost of support services, high cost of inputs, lack of infrastructure and investment. The basic economic development principle of the Government, as enshrined in the ANDS, is development of private sector led market economy with the Government to create an enabling environment for industry to prosper. Government is pursuing the same strategy in the development of the ICT industry. In pursuance of this strategy the Government has taken various initiatives including the *Technology and E-Government Complex* Project aimed at nurturing new ICT industries to maturity within a developed controlled environment and *Innovation support programme (ISP)* which is aimed at supporting mobile technology innovation and diffusion.

The main tenets of the Government's ICT Industry policy are:

- Government will promote ICT industry growth by encouraging private sector investment into this industry through the provision of a mix of fiscal and monetary incentives.

- Government will encourage and promote development of local ICT industry Special programme assistance would be designed to promote local hardware assembly units, business process outsourcing (BPO) companies and call centres to feed local and export markets.

- Government will encourage increased competition in the ICT markets of the country leading to a decrease in the cost of ICT products and services for the ultimate benefit of the consumers and expansion of the market for ICT products and services in the country.

- Government will offer preferential treatment to local ICT firms in Government contracts for ICT products and services.

- Government will develop and nurture a culture of ICT innovation and entrepreneurship through grants and prices and technical support and guidance to the emerging ICT entrepreneurs in the country.

- Government will enact appropriate laws to protect the Intellectual Property Rights (IPR) of ICT innovators.

- Government will promote, encourage and support research and development activities in the areas of ICT and strengthen the national capability to develop research programs and locally relevant projects in the ICT field.
- Government in collaboration with NICTAA will identify such ICT product and or service areas in which the country could have natural advantage as possible ICT areas to be developed for export markets

7   ICT Knowledge, Skills and Education

Government recognises that lack of ICT awareness, knowledge and skills in the country is a serious constraint to the development of the ICT sector, and indeed to the adoption and diffusion of ICT in the country. Lack of ICT awareness among the leaders and managers in the Government, private sector and other organizations makes it difficult for these managers to take ICT related decisions optimally. Lack of ICT awareness among the general population is an even more serious constraint as out of ignorance and lack of knowledge large sections of the population think of ICT as tools for the educated and sophisticated. ICT managers and technologists are also in short supply. A recent study by the *World Bank supported ICT Sector Project* has indicated that the demand for ICT professionals in the country is likely to triple from the current 88000 to over 350000 by 2015. The same study has estimated 25 million ICT users in the country by 2015. Serious gaps have been identified between demand and supply of ICT skills at various levels in the country.

The Government, private sector and educational institutions in the country have undertaken several initiatives to mitigate ICT skill shortage in the country. ICT academies have been established, graduate level courses in ICT are now being offered in almost all the universities in the country. Private institutes of technology have been established that offer short specialized courses in ICT as well as diploma and bachelors level education in ICT. It is however observed that at the present time there is no established standardised process for evaluation or certification of the different courses offered by various training centres. Access to Online and distance learning for ICT is also still limited. The training facilities are mostly located at few urban centres.   In the government and private organizations, banks, trading firms

and non-government organizations ICT training activities are now being undertaken to create awareness, impart basic ICT skills to users and to develop skills of technical ICT personnel. Though these activities are encouraging the Government has to take strategic long term action to accelerate the development of the ICT knowledge base and skills in the country and has to follow policies for ICT skill development across the country.

The ICT skill shortage has to be seen in its broader context. Hard choice has to be made between increased reliance on imported ICT human capital versus developing a local cadre of ICT experts. Though the country will continue to import specialised ICT skills in selected areas but the vast majority of ICT skills must be locally developed. ICT education at the primary and secondary school levels will be integrated into the normal education curriculum in parallel to the expansion of the ICT education at University and Technical Vocational levels to mitigate the ICT skill shortage in the long run. In addition, there are opportunities for enhancing ICT skills though online education, life-long learning and distance education.

Government's policy for development of ICT Awareness, Knowledge and Skills will be as follows:

- Recognizing the: wide spread lack of ICT awareness knowledge and skills in the country the Government in association with civic society, business organizations and non-governmental organizations will launch mass media campaigns to enhance ICT awareness among general population using all multimedia channels including TV, Radio, print and digital media.

- Government will develop and launch programmes for ICT education and awareness for Government, business and community leaders and managers. Government managers will be required to attend short duration mandatory formal ICT awareness courses.

- Government will expand the ICT education at the university level thorough expansion of the volume of enrolment for ICT degree courses, expansion of the ICT vocational training institutes and integration of ICT into the normal curriculum of primary and secondary schools, colleges and universities.

- Government will encourage universities, institutes and training institutes in the country to offer their courses in e-learning mode, using internet, computers and mobile as delivery system, in parallel with courses offered traditionally so that students and working individuals not able to attend classes due to financial reasons and time constraints can attend these courses online, at their convenience.

- Government will give special attention to providing new learning and ICT access opportunities for women and youth, the disabled and disadvantaged, particularly disenfranchised and illiterate people, in order to address social inequities.

- Government in association with NICTAA, Kabul University and other universities and ICT related academic institutions; will develop standards for examination and evaluation of the quality of ICT courses offered by the various ICT training institutions in the country. All ICT training institutes in the country will be required to follow these standards.

- Government in collaboration with the private sector will develop and put in place appropriately designed service categories for different cadres of ICT personnel and define minimum salary scales for each category in order to secure their retention and better on the job performance.

- Government in collaboration with the private sector and universities and ICT training institutes will develop and implement internship schemes so that ICT students will earn while they learn.

- Government will encourage lifelong learning by providing ICT related training and skill enhancement opportunities to its employees.

- Government will develop e-courses on various ICT related subjects integrated with appropriate Learning Management System and encourage its employees to complete the courses online at their convenience. Private sector organizations will be encouraged to do likewise.

- Government will encourage the universities and ICT related institutions of higher learning to collaborate to develop digital learning content in Dari and

Pashtu on ICT subjects and establish a national ICT e-library accessible to all students and individuals interested in ICT.

8. Bridging Digital Gap

Digital Divide or Gap is commonly referred to as lack of infrastructure for communication and accessibility to telecommunication and internet so that some sections of the population are left out of the digital revolution that is globally sweeping across. In the case of Afghanistan the Digital Gap challenge has to be seen in a much broader perspective. Digital Gap in Afghanistan is multidimensional. On one hand we have a large section of the population that is remotely located where the telecommunication, internet and accessibility infrastructure is non-existent and is not yet of a standard that would enable all services to be delivered.. On the other hand we have large sections of population which are excluded from the digital mainstream due to other constraints like lack of knowledge of how to make use of ICT and internet, cultural constraints that do not allow women and girls to use computers and internet, financial constraints that prevent some sections with low income to spare money for computers or internet time, lack of applications and contents in local languages and of local relevance that discourages many not to go onto the ICT/ internet bandwagon, a large section of the population (more than half in rural areas) are illiterate, defined as people who can neither read nor write any language- making it difficult for them to participate in the ICT revolution and lastly we have a large population of weakly abled or disabled people. The issues of digital divide cut across all strategic ICT focus areas. These have been broadly considered in this document under various strategic and policy areas mentioned above. However, the challenges of digital divide are very significant and important to warrant policies that are specifically targeted to mitigate them.

Governments policies on eradication of Digital Divide are as follows:

• In accordance with its *Universal Service Policy* to reach Government services to every citizen of Afghanistan the Government will ensure that all citizens of Afghanistan participate in the digital revolution irrespective of their location, social status, gender, income, education and cultural background.

- Government recognises that due to tradition and culture women have not had opportunities to fully participate in the social, economic and political life of the country. Women have also had limited opportunities for education, especially in fields considered as too technical and traditionally radical. Government will increase the enrolment of the women in ICT courses of Universities and colleges and increase their employment in the ICT technical and management areas, in the public service.

- Government will encourage the private sector and non-governmental organizations to increase employment of women in the ICT area both at technical and management levels.

- Government recognises that provision of telecommunication and ICT infrastructure alone is not enough for rural population to take advantage of the ICT potential for development of rural areas. Government will take a holistic approach to ICT as a tool for delivery of public services and development of rural areas. ICT infrastructure and services for rural areas will be designed and developed in parallel to other non ICT inputs that may be required to make ICTs productive and usable in such rural communities.

- Government in collaboration with civic society will encourage rural and disadvantaged communities to adopt ICT in areas where its impact for the betterment of the lives of these communities would be maximum.

- Government will ensure that the ICT based public services are provided in the local languages, user interfaces with Government technical systems are friendly and are closely aligned with the user needs.

- Government will develop and deploy ICT service delivery systems keeping in mind the needs of special population groups like youth, old persons, physically and visually disadvantaged persons.

- In parallel to its policy to eradicate wide illiteracy in the country the Government will develop systems for delivery of ICT based public service systems which provide for voice based services like IVR based services on mobile phones and would allow for assistance to users by Government staff, in areas and communities where it is required.

9.0 Laws and Regulations

The Telecom and Internet Policy 2003 and the supporting Telecom Law has been the main instruments for regulating the ICT sector. As the ICT penetration and adoption is picking up both within the Government and within the society at large new sets of laws have been drafted coming under what is termed as the ICT law. The ICT Law of Afghanistan is now in at the final stage of enactment. The draft ICT law is aimed at facilitating E-Afghanistan programme of the Government.. The aim of the Law is to facilitate and regulate electronic communications and transactions; to provide for protection of consumers and personal data in the electronic environment, to set out the framework for domain name registration and regulation, the framework for content regulation, to prevent abuse of information systems and encourage the use of e-government services. ICT infrastructure covering the Telecom and internet laws and regulations must be supported by laws and regulations in the use ICT in the Government and society. In this regard the Government's policy would be as follows:

- Government will design and implement e-government and e-administration regulations in the form of laws, government decrees, ministerial or municipal decrees in order to establish necessary legal environment for adoption of technology in the Government and delivery and use of E-Services.

- Appropriate Monitoring and Evaluation system will be developed and implemented in the various agencies of the Government to continually monitor and regulate the development of the E-Government and attainment of E-Government policy goals of the Government.

- Government recognises that adoption of ICT by businesses is crucial for raising Afghanistan's productivity potential and future growth prospects. The adoption of ICT and development of e-commerce will stimulate micro level efficiency and thereby the economy of the country as a whole is expected to get a boost. Appropriate regulatory system will be developed and implemented across the Government to monitor E-business and commerce in the country.

- Appropriate regulations would be developed and implemented to monitor the use of ICT in education, health, agriculture and other major ICT applications areas.

- Appropriate mechanism and laws will be developed and implemented to monitor, evaluate and regulate the uptake and penetration of ICT in the society at the level of households in the rural and urban areas as well as overall social and economic impact of ICT.

9. Financing and Budgeting

The implementation of the above mentioned ICT sector policy will require investment that can run into hundreds of millions of United States Dollars. ICT sector has been an important contributor and the largest recipient of the foreign direct investment (FDI). It is estimated that the ICT sector has so far attracted FDI to the tune of close to US dollar 2 billion. As the ICT sector grows the tax receipts from the sector would correspondingly grow. The Government's strategy for financing the ICT sector development would involve expansion of the ICT sector and therefore tax receipts from the sector, expansion of the FDI, better financial management and optimization, monitoring and financial controls, enhancement of private public partnership and fund raising from international philanthropic and aid organizations and expansion of support from international development organizations.

Government's Policy on ICT financing and budgeting would be as follows:

- Government will adopt the principle of *minimization of the cost of ownership* in evaluating all its ICT investment projects.
- Government will adopt a holistic and enterprise wide ICT investment planning and control process thereby avoid duplication and wasted investments.
- Government will create a conducive investment environment in order to attract foreign direct investment into the ICT sector.
- Government will encourage Afghan diaspora to invest in the ICT and ICT related sectors of the economy.
- Government will encourage private public partnership in expanding investments into the ICT sector. Many of the strategic projects would be left

for the private sector to undertake under supervision of or in partnership with the Government. In principle the growth of the ICT in the country would be private sector led within the overall policies and guidelines of the Government.

- Government will seek expanded donor support to expand ICT infrastructure and ICT services and seek financial assistance of international development and philanthropic organizations for projects that would have considerable social and economic impact.