



REPUBLIC OF GHANA

MINISTRY OF COMMUNICATIONS

**NATIONAL BROADBAND POLICY AND
IMPLEMENTATION STRATEGY**

OCTOBER 2012

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Document Version	Final Version 1.0

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List of Acronyms

ACE	African Coast to Europe
BPL	Broadband over Powerline
BPO	Business Process Outsourcing
CICs	Community Information Centres
DBS	Digital Broadcasting System
DTH	Direct to Home
E1	Erlang
EASSy	Eastern Africa Submarine Cable System
ECG	Electricity Company of Ghana
EPI	Enabling Physical Infrastructure
FCC	Federal Communications Commission
GASSCOM	Ghana Association of Software and IT Services Companies
GES	Ghana Education Service
GDP	Gross Domestic Product
GIFEC	Ghana Investment Fund for Electronic Communications
GIPC	Ghana Investment Promotion Centre
GISPA	Ghana Internet Service Providers Association
GoG	Government of Ghana
G2C	Government to Citizen
G2B	Government to Business
G2G	Government to Government
Gov-Net	Government Network
GSGDA	Ghana Shared Growth and Development Agenda
HR	Human Resource
ICT	Information and Communications Technology
ICT4AD	ICT for Accelerated Development Policy
IIR	Institute of Industrial Research
IP	Internet Protocol
IPLC	International Private Leased Circuit
ISDN	Integrated Services Digital Network
ISPs	Internet Service Providers
ITES	Information Technology Enabled Services
ITU	International Telecommunication Union
IXP	Internet Exchange Points
KACE	Kofi Annan Centre of Excellence in ICT
LGS	Local Government Secretariat
M&E	Monitoring and Evaluation
MAN	Metro Area Network
MDAs	Ministries, Departments, and Agencies
MDGs	Millennium Development Goals
MMDAs	Metropolitan, Municipal, District Assemblies
MoC	Ministry of Communications

NCA	National Communications Authority
NCBC	National Communications Backbone Company
NGO	Non Governmental Organization
NITA	National Information Technology Agency
NSS	National Service Secretariat
OECD	Organization for Economic Cooperation and Development
OHCS	Office of the Head of Civil Service
PAD	Project Appraisal Document
PC	Personal Computer
PIM	Project Implementation Manual
PPPs	Public Sector Reform Secretariat
R&D	Research and Development
SMS	Short Messaging Service
SME	Small Medium Enterprises
SMA s	Small Medium Associations
VoIP	Voice over Internet Protocol
WACS	West Africa Cable System
WIMAX	Worldwide Interoperability for Microwave Access

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EXECUTIVE SUMMARY

In the 21st century, broadband has become a critical infrastructure prerequisite, as ICT bears considerable impact in the creation of the Information Society. Broadband adoption is serving as the foundation for economic growth, job creation, global competitiveness and a better way of life. Broadband is therefore facilitating the development of the entire ICT-enabled sector and unlocking vast new possibilities and also re-engineering existing businesses and industries. Broadband is having profound impact and changing education services delivery, the delivery of health care, the management of energy resources, delivery of public safety, the manner of engagement of government and the citizenry and above all, the provision of access to organize and disseminate information and knowledge.

The growing contribution of broadband stimulation and adoption to increase in the growth rate of nation's revenue generation capabilities requires that, significant actions are undertaken to support fixed and mobile networks utilization of broadband by the citizen for the delivery of valuable applications through innovative devices.

Ghana's economy, especially the service sector, has been experiencing dynamic growth and calls for the development broadband policy and strategy to complement the new ways of utilizing the Internet to involve the public. Accordingly, even though many countries have developed their Broadband Plans, and there might not be the need to re-invent the wheels, it is imperative that Ghana's Broadband Plan is made unique to take cognizance of other contingent factors which might be influential to the realization of the Plan, such as population density, tax incentives, and subsidy programs. And beyond these, the important factor of "contention" that will

be responsive to simultaneous usage of broadband at peak times without compromising the other core factors of speed and cost is relevant for consideration.

Additionally, within the scope of the broadband policy and strategy, note has been taken of key regulatory challenges that need to be addressed to fuel private sector investment and innovation in broadband networks to promote citizens' usage of the facility.

Finally, specific policy and strategy action steps are proposed to spur broadband networks development that will take care of demand and supply factors supporting the concept of contention. A conclusion is offered that broadband growth is still in its very early stages and care must be taken to support the development of a robust M&E process to evaluate process of uptake on sound data base.

SECTION ONE

1.0 Background Statement

The benefits of the "Information Society" become enormous when new forms of IT-enabled services are delivered, enterprises are created to give employment opportunities, new types of innovative skills are created, new sources of wealth and new forms of social interaction avenues are opened to benefit all without geographic limitation. To create the conducive environment to facilitate the harnessing of these advantages, governments, the world over, aim at promoting policies that will encourage the deployment of new technologies which will bring these benefits to citizens and businesses to enhance sustainable growth. But, if these developments are seen as being beneficial, then the lack of them is seen as a cause for concern especially when many people, mostly those already poor or socially disadvantaged in some other way, cannot or do not have access to the new technologies and the opportunities they bring thus making such people or communities "socially excluded" to become victims of the digital divide. One of the challenges directly linked to the development of the Information Society, therefore, is the possession and use of technologies in a participatory and inclusiveness manner to promote sustainable growth and development.

Against this background, it is globally acknowledged that Information and Communications Technologies (ICTs) are cross cutting drivers of sustainable development and they are critical to fully boost the capacity of nations in the realization of the attainment of the Millennium Development Goals (MDGs).

Elaborated in the year 2000, the MDGs challenge all nations to pursue their socio-economic growth in an inter-related and even manner. In an effort, therefore by the Government of Ghana to associate itself with the principle of providing the foundation towards the sustainable attainment of the eight principal goals of the Millennium Declaration, ICT has been identified as a necessity to support the pillars of the Information Society to guarantee a sustainable future that will help increase the participation of the citizenry in business transactions and decision making process in an inclusive manner.

This realization has been acknowledged in Ghana since the adoption of the national ICT for Accelerated Development Policy (ICT4AD) in 2003. The ICT policy advanced the deployment of ICT as a tool for integrating the 14 key areas (pillars) of the ICT4AD policy spanning through accelerated human development; the deployment and exploitation of ICTs in education; facilitating government administration and service delivery, that is, 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 agrobusiness industry; developing a globally competitive value-added service sector – a regional business service and ICT hub; deployment and spread of ICT in the community; promotion of national health; rapid ICT and enabling physical infrastructure development; research and development (R&D), and scientific and industrial research capacity development; legal, regulatory, and institutional framework provisions; promoting a local and foreign direct investment drive in ICTs; and facilitating national security and law and order (GoG 2003: 24).

In pursuit of this objective, under the Ghana Shared Growth and Development Agenda (GSGDA) launched in 2010, the strategy has been reinforced to accelerate the process of transforming Ghana from its current status of lower middle-income country into the higher-middle

income level through the vigorous application of science, technology and innovation to drive sustainable industrialisation especially manufacturing, based on modernised agriculture and sustainable exploitation of Ghana's natural resources, particularly minerals, oil and gas.

It is against this background that GSGDA focuses on the need for the development of appropriate actions and policies that can support the deployment of innovative technologies to help stimulate sustainable economic transformation, job creation, achieve social goals in pursuit of the attainment of the goals of the 14 pillars for Ghana's accelerated development in a systematic, integrative and meaningful way.

Broadband technology and networks are one of such innovative technologies capable of providing the platform for robust ICT infrastructure network when its adoption is universally available to support unimpeded use at all levels of society, to enhance the creation of employment and income earning opportunities for rapid and sustained poverty reduction. Against this backdrop, broadband networks are thus considered as unique, cost-effective and inclusive instrument to spur growth, trade and employment, promote social inclusion, ensure climate monitoring/environmental protection and thereby accelerate the achievement of the MDGs.

The focus of the broadband policy document is therefore to highlight the fundamental importance of broadband networks and technology and their uptake to the sustenance of development and the strategy to be adopted in Ghana to promote broadband availability and also harness the benefits.

1.1 The Broadband Policy and the ICT4AD Policy Context

The Ghana ICT4AD policy acknowledges that to promote the sustainable deployment of ICT, it is vital that the value of the information infrastructure is made contingent upon the ability

to exploit the competitive characteristics of the infrastructure –i.e.: affordability, ubiquitous, accessibility, easiness of use, and the extent of reach. In the light of this, within the context of the ICT4AD the development of the national broadband policy is aimed at achieving the broad strategic goal to promote and facilitate initiatives targeted at the development of reliable, fast adaptive and robust national ICT backbone and infrastructure to support intra and inter-agency electronic service delivery and information exchange to benefit the entire citizen. Specifically, the broadband policy is to complement the attainment of the following strategic objectives:

- To promote the development of world-class ICT infrastructure in Ghana.
- To facilitate and encourage the development of a nationwide physical infrastructure to support sustainable economic growth.
- To increase the overall capacity for the transmission of data, voice, video and internet services nationwide.

The specific strategic goals which the strategy implementation would contribute to achieve include:

- To increase bandwidth capacity available for use in Ghana.
- To facilitate the extension of bandwidth availability to rural and underserved areas of the country to bridge the urban-rural divide in high-speed connectivity.
- To foster the reduction of bandwidth cost and make it affordable.
- To promote demand stimulation so as to enhance broadband investment and growth potentials

1.2 Broadband and the Enabling Physical Infrastructure (EPI) Policy Context

The Enabling Physical Infrastructure (EPI) policy for ICT development in Ghana acknowledges that in the era of knowledge and information society, the ability to transmit data, voice and video in a converged and multimedia manner, over a robust information and communication infrastructure, is crucial to propel nations forward in their developmental process. Without the requisite ICT infrastructure, therefore, the benefits of ICT cannot be harnessed and realised. Therefore, unless issues related to ICT infrastructure have been well defined and addressed forcefully within policy to also enhance investment opportunities, the accelerated growth and job creation agenda perceived with ICT as enabler would not be achieved.

The establishment of robust Broadband networks, as integral part of interconnected telecommunications and allied networks and services to provide adequate and affordable local and international gateways for the deployment of ICT is thus seen as essential.

Therefore, within the context of the infrastructure sub-component of the Enabling Physical Infrastructure (EPI) Action Plan for Ghana the availability of Broadband technology is seen as holding the key to the attainment of “*an IT architectural and infrastructural networks and their propellants that will provide a superhighway for the effective and efficient transmission of voice, data, video and internet services to impact on the transformation of service delivery to promote socio-economic growth*”.

The EPI for IT, in other words, has as its foundation a robust broadband backbone infrastructure founded on multiple technologies, be it wireless, wireline, satellite, fibre, broadband over powerline (BPL) etc. to enhance the development and application of computer and other smart networks and infrastructure that support multimedia services, electronic transactions, and other

services that are useful for modern knowledge-based society mindful of the need to reduce the digital divide both locally and internationally to promote quality of life.

1.3 Cross Sectional Impact of Broadband Policy

1.3.1 e-Government

The efficient e-government system and the successful deployment of e-government plan envisaged to be developed around the Ghana Gov-Net and the Central Gateway, to address and improve public services delivery and also to serve as a catalyst to promote education, good health, commerce, tourism databases are thus dependent on an efficient infrastructure topology that is reliant on high rate of broadband penetration, speed and affordable price. The need for government-wide broadband infrastructure networks which are interoperable, to facilitate the exchange of information among the various Ministries, Departments, and Agencies (MDAs), as well as linkages to the citizens, is therefore considered a priority in developing the broadband strategy for Ghana as it is also desirable to have a capacity of broadband that can be linked to all diplomatic missions of Ghana abroad to enhance government and citizen interaction across boundaries.

1.3.2 The Development of ICT in Education, HR Development and Health Delivery

One of the pillars of GSGDA is “*investing in vigorous human resource development to ensure the development of a knowledgeable, well-trained and disciplined and healthy labour force*”;

Linked to the development and implementation of the ICT in Education and HR Plan, should, of necessity be the availability of appropriate communication and information environment and infrastructure for effective collaboration, learning and R&D. The need to promote equitable access to e-education to benefit remote areas to enhance distance learning and local education is crucial to impact on the development of the broadband strategy, as high speed and affordable broadband internet connectivity to schools, universities and research centres remain supreme to enhance formal, informal and life-long learning under the ICT HR sub-Plan of Ghana.

1.3.3 R&D to Upgrade Competitiveness of ICT Industry to Add Value and Increase Earnings

The development of IT solutions and software, including local content software, is also contingent to the availability of robust and accessible broadband infrastructure platform to enhance innovation and R&D.

1.3.4 e-Health

For Ghana to integrate ICT in health delivery programmes so that access to quality health care delivery will be increased irrespective of geographical location, in developing the broadband strategy, attention has to be paid to the equitable provision of affordable services over a ubiquitous national broadband infrastructure so that Ghana can maintain a sustainable form of development, to nurture a population, which is healthy to promote socio-economic growth.

1.3.5 Community Access

The need to strengthen and improve governing mechanisms and processes is inevitable under the strategy to strengthen national ICT governance. In this connection the successful deployment of ICT as an enabler of poverty reduction to benefit the underserved communities, crucially hinges on the availability of efficient and affordable broadband infrastructure platform to facilitate the development of the requisite information infrastructure to help disseminate development information particularly on health, agriculture, environment and local government to rural communities.

1.3.6 Sustainable Competitiveness of Business in BPO and ITES Industry Segments

Ghana's Investment Promotion Strategy, under the ICT4AD is to use ICT to build sustainable competitiveness for industries to make Ghana a preferred destination for domestic and foreign investments in the ITES/BPO industry particularly in areas that Ghana has the niche amongst emerging destinations across the world and specifically within the African continent.

Promoting Ghana, as an attractive destination for the ITES sector, requires that the requisite people resources, broadband infrastructure and the supporting environment should be in place to open up new ways for innovators and entrepreneurs and also encourage manufacturers to access and use ICT to produce and trade products and services that are knowledge-based. An increase in the number of firms providing international connectivity access in addition to the SAT III requires that measures are put in place to promote sync among service providers to help bring down the cost of broadband access and thereby attract business growth and location nationwide which will in turn support entrepreneurial growth activities in the ICT Enabled services and BPO sectors.

SECTION TWO

2.0 Introduction

This section would set the vision and mission statements for the Ghana Broadband Policy. The vision and mission defined for the broadband policy are components of the overall vision of the Ministry of Communications of Ghana that exists to facilitate the development of a reliable and cost-effective world-class communications infrastructure and services, driven by appropriate technological innovations and accessible by all citizens to enhance the promotion of economic competitiveness in a knowledge-based environment.

2.1 Vision

The vision of the Ghana Broadband Policy is:- “To foster the development of broadband ecosystem, capable of sustaining broadband infrastructure and networks development that support affordable adoption by all citizens to promote economic development and enhance social equality of access to knowledge and information”

2.2 Mission

The mission is:- “To facilitate the provision of ubiquitous, reliable, affordable and fast broadband infrastructure and services nationwide to pave the way for technological innovation, job creation, global competitiveness in business and entrepreneurship and inclusiveness in governance in order to ensure social interventions to improve lives today and for generations.”

2.3 Broadband and the Economy

The Broadband Commission for Digital Development report (2011) makes a strong case for broadband as a driver of economic growth and new jobs, citing country case studies and reports

by leading consultancies that point to increased employment opportunities, higher labour productivity and a strong stimulus to GDP. In low and middle income countries, for example, the report cites World Bank figures indicating a boost of 1.38 additional percentage points to GDP growth for every 10-percentage point increase in broadband penetration.

A study based on data gathered from United States by the ITU further reveals a positive impact of growth of broadband over employment creation, as new forms of technologies are deployed for social services, e-commerce, online education etc. varying from “0.2 per cent to 5.2 per cent for every 1 per cent increase in penetration” (ITU, 2011).

In the light of this statistical revelation, the ITU has thrown the “Broadband Challenge” calling on ‘world leaders, governments, industry and civil society’ to work together to ensure that at least 50% of the developing world’s population, and 40% of its households, would be using broadband Internet by 2015. The challenge underlines the need for the strategy to develop forward looking proposals and outline concrete policy measures to promote broadband availability and adoption and also encourage meaningful content development and utilization by businesses and individuals especially at the local level to promote governance inclusiveness and thereby enhance socio-economic activities.

As Ghana joins the world in policy formulation and discussions to accelerate broadband infrastructure developments towards a ubiquitous high-speed future, there is the need for policy and plan development aimed at increasing the central role of both public and private sectors in improving broadband deployment networks that will offer best quality, affordable and sustainable service to all users.

In the words of Dr Hamadoun Touré, ITU Secretary-General, “to move towards a ubiquitous high-speed broadband future, there is the need for countries to learn from one another’s

experiences and avoid having to re-invent the wheel in defining and deploying the networks that will offer best quality affordable service to all users” (ITU 2011).

2.4 Key Policy Questions to be Pursued in Developing the Broadband Strategy

The rapid adoption of mobile phone usage in Ghana, with a penetration rate of 83% as of March 2012 (NCA, 2012) is quickly closing the digital divide in voice services. But, just as this divide on voice services is closing, another one is opening wider. Consumers, almost everywhere, within Ghana are demanding more services and larger bandwidth, as more and more people realize the benefits of having broadband Internet service, which permits instant access to nearly unlimited sources of information globally.

The knowledge and services provided through such easy access to information is creating unprecedented opportunities and having a dramatic impact on the way people live and work. The shift towards broadband availability and affordability of broadband services in Ghana has therefore been increasing as Ghana develops its enabling environment to attract growth in domestic and international transactions in business processing and e-applications.

Ghana is thus challenged to move with the rest of the world in achieving widespread broadband connectivity through successful roll out of communications backbones that will have profound positive effect on their long-term economic development and delivery of public services. The subject matter of the shift to broadband adoption is thus high on the ICT policy agenda of government.

The **key policy questions** for examination in pursuing this agenda for Ghana are thus:

1. What are the overarching objectives that should guide the definition of Ghana’s broadband policy, strategies and underlying broadband infrastructure?

2. What are the main expectations of operators and service providers in facilitating broadband availability and adoption?

It is a fact that international bandwidth prices have major impact on economic and financial viability of broadband Internet. This has led to major investments by the private sector in new submarine cables circumventing Africa and landing in Ghana (e.g. Eassy in the East; ACE, WACS in the West among others) (World Bank 2011). This is paving the way for the roll out of communications backbones because the development of terrestrial fiber networks is closely linked with the availability of new submarine cable connectivity.

Key policy questions to be considered in this perspective are:

3. What are the tangible impacts on the domestic broadband markets of new submarine cables and what is their expectation?
4. How critical is the existence of terrestrial (national) fiber backbones to support dissemination of mobile and fixed broadband services?

As the privatization and liberalization of the telecommunications infrastructure development and market in Ghana continues to be promoted on competitive platforms, competition among backbone networks has emerged but they have generally focused on the most profitable geographical areas, primarily major urban areas and intercity routes. The majority of the population, living outside major urban areas remain unserved or underserved and are unlikely to benefit directly from broadband backbone infrastructure competition. If backbone networks are to reach beyond these areas, as a universal right of the people, then, some form of public support or incentive is a necessity, this support being more effective if provided in partnership with the private sector.

Additionally, cross-border backbone network connectivity is also necessary to help promote regional businesses in Internet-based communication rather than traditional basic voice communications. This will also enable countries to share infrastructure, build redundant connections to lower cost of higher quality submarine cable connectivity. Currently, Ghana is connected by fibre to its neighbouring countries, Togo to the east and to the north to Burkina Faso. There is a small gap to be closed between Cote d'Ivoire and Ghana. The completion of this inter-nation connectivity to fibre could lead to a further reduction in regional broadband connectivity to promote and attract regional traffic within the sub-region.

The key policy questions for examination in coaching policy and strategies from this perspective are:

5. If broadband backbone networks are to reach beyond major urban areas and intercity routes, what would be the appropriate form of combination of public support or incentive and private sector involvement?
6. What would be innovative frameworks and mechanisms for designing and implementing terrestrial cross border connectivity projects, drawing lessons for example from industry-led submarine cable projects?
7. How can development partners support a mix of catalytic investments and policy reforms to accelerate broadband development within Ghana and the sub-region?
8. What are possible ways to form a cohesive and practical working relationship between the government of Ghana, development partners, and the private sector in the development of innovative solutions to accelerate broadband investment and uptake?

2.5 Policy Challenges that Broadband Policy Should Address

Flowing from the global outlook and taking cognisance of the Ghana ICT4AD Policy – the broadband policy is to address policy challenges of:

- i) Poor and limited communications and telecommunications infrastructure
- ii) An economy with low job promotion potential depending on under-performing agrarian sector.

The policy for Broadband is thus to facilitate the development, expansion and improvement of broadband networks capacity through modernization of ICT infrastructure to enhance ICT deployment in all sectors.

2.6 Major Broadband Policy Objectives

- i) To promote adequate supply in terms of broadband infrastructure to support economic development and improve social cohesion.
- ii) To promote universalization of broadband.
- iii) To stimulate private sector interest in investment in broadband networks, services and application through robust competition.
- iv) To stimulate demand to ensure efficient take-up of broadband services.
- v) To identify gaps in regulations and introduce new ones to facilitate sustainable broadband rollout.
- vi) To ensure efficient allocation and management of scarce spectrum resources and other facilities including the right-of-way and the sharing of infrastructure resources.

2.7 Specific Broadband Policy Goals

- i) To establish relationship between broadband policy and Universal Access/Service policy as to make broadband policy universal by 2015.
- ii) To facilitate the provision of affordable access to broadband infrastructure to offices and businesses by all by 2015.
- iii) To ensure last mile connectivity to communities and homes by 2020
- iv) To promote usage and uptake of broadband via suitable content & applications services
- v) To plan towards converged infrastructure and services delivery to stimulate supply and demand

2.8 The Policy Thrust for Broadband

The thrust of the National Broadband Policy is that broadband is not an end, but rather a tool for furthering the promotion of national e-objectives, to support improvement in education, healthcare, the environment, energy efficiency, oil and gas exploitation, public safety, and the delivery of public services in general.

In particular, the National Broadband Policy is expected to highlight the complimentary roles that Government, the private sector, the civil society as well as non-government actors can play to influence the development of broadband through:

- (1) Robust competition;
- (2) Efficient allocation of assets that the public sector controls or influences such as spectrum and public infrastructure to aid the private sector to deploy broadband;
- (3) Encouraging the deployment, adoption, and use of broadband in areas where the market alone is not enough, particularly the underserved areas where the cost of deployment is too high to earn a return on private capital or where households cannot afford to connect;

- (4) Providing firms and consumers with incentives to extract value from the use of broadband, particularly in sectors such as education, trade, transportation, healthcare, among others.
- (5) Encouraging broadband deployment, adoption, and usage to aid private-sector investment, entrepreneurial activity, job creation, and economic growth, among other areas.
- (6) Community support in allocating land, which is scarce asset, to support shared infrastructure development.
- (7) Encouraging the use of innovative technology such as broadband over powerline to promote broadband availability.

Guided by this policy thrust, appropriate strategy will be designed to focus attention on the attainment of the following targets set by the Broadband Commission for ITU-Member countries as part of efforts to meet the MDG by 2015:

- a) Make broadband policy an integral part of universal access/service definition.
- b) Make entry level of broadband services affordable by 2015 through effective competition backed by fair regulations.
- c) Ensuring connectivity of at least 40% of households in Ghana, including those in underserved areas to broadband powered Internet access by 2015.
- d) Ensuring at least 40% national universal penetration by 2015
- e) Ensuring universal penetration of 90% by 2020.

2.9 Ghana's Broadband Ecosystem

A key Government objective of the information society creation in Ghana has been to increase the overall capacity for transmission of telecommunications data (bandwidth) to provide high-speed voice, video, and internet services to all districts. As is generally known, bandwidth and Internet Protocol (IP) are regarded as the currency for the future development of a nation. A country's status of development is now being measured in terms of its bandwidth capacity. Indeed research has proved that for every 10 percentage point increase in broadband penetration GDP increases by 1 percent, thus the global focus on promoting high broadband penetration.

Over the past four years, following enormous investments made by the major Industry players, Ghana has seen commissioned, in addition to SAT III, major submarine optic fibre cables to increase bandwidth capacity. To date, Ghana is connected to major submarine cables; The Main One Ghana Ltd cable is supplying additional 1,280 Gigabytes; and Glo Mobile Ltd provides 640 Gbits/s. The West African Cable System (WACS) has since July 2011 landed in Ghana and it is capable of providing additional bandwidth capacity of 5,120 Gbits/s.

Cumulatively, bandwidth capacity available for usage in Ghana is approximately 7,160 Gigabytes (or 7.16 Terabytes), a multiple of 60 times the current capacity supplied by SAT-3 which had been Ghana's main source of international bandwidth connectivity for over two decades. Ghana is thus well positioned as the potential ICT-Enabled Services hub in the sub-region.

Table 1: Affordability Statistics

				2006	2009	2010	2011 Novembe
I	Local Call cost	Fixed	On Network	\$0.05 (¢500)	\$0.06	\$0.04	\$0.04
			Across Network		\$0.06	\$0.04	\$0.04

				2006	2009	2010	2011 November
		Mobile	On Network		\$0.08	\$0.07	\$0.06
			Across Network		\$0.09	\$0.08	\$0.08
ii	Call to USA Cost	Fixed		\$0.15 (¢1,400)	\$0.09	\$0.10	\$0.10
		Mobile			\$0.10	\$0.10	\$0.10
iii	Internet Access Cost		Dial-up \$25-\$35 per month/\$100-\$120 per year		N/A	N/A	N/A
			Broadband: Average Installation fee: ¢1.1 million plus		GHS100	GHS100	GHS100
			Subscription fee of ¢600,000 (GHS 60) per month		\$38 (20GB of data)	\$38 (20GB of data)	\$38 (20GB of data)
					\$28 (10GB of data)	\$28 (10GB of data)	\$28 (10GB of data)
iv	Average Cost of 1 hour of Internet Use (cyber café)			\$1.0	\$0.63	\$0.63	\$0.63
V	Price of full International Private Leased Circuit (IPLC) SAT-3	USA/UK (1E1 or 2MB/s)	Non-GISPA - \$8,000		\$4,500	\$4,500	\$3,500
			Non-ISP - \$12,000		\$4,500	\$4,500	\$3,500
			Non-ISP - \$12,000		\$4,500	\$4,500	\$3,500
			GISPA members - \$5,000				

				2006	2009	2010	2011 Novembe
Vi	Average Satellite Price (1 Mbit) – duplex			\$5,500	N/A	N/A	N/A
Vi i	In-Land Fibre by National Communications Backbone Company (NCBC) for 1E1 (2MB/s)	From Accra to all Regions			-	\$1,300	\$1,103- \$800

Source: National Communications Authority & National Communications Backbone Company/Vodafone

Table 2: Summary of Service Providers as at 30th September 2011

NO.	CATEGORY	NO. AUTHORISED	NO. OPERATIONAL
1.	National Fixed Network Operators	2	2
2.	National Mobile Cellular Network Operators	6	5
3.	Internet Data Service Providers	165	29
4.	VSAT Data Operators	176	57
5.	Direct to Home Satellite Services (DTH)	13	8
6.	Public/Corporate Data Operators	99	25
7.	Fm Stations	227	84
8.	TV Stations	27	11 Free on Air 4 Pay Per View

Source: National Communications Authority

2.10 Evaluation of Outcomes of Existing Infrastructure Policies

The outcome of the implementation of the policies, aimed at addressing the infrastructure limitations, to the deployment of ICTs within the last decade, illustrated below, is indicative that telephony, especially mobile telephony penetration, has improved significantly from 2,997,000

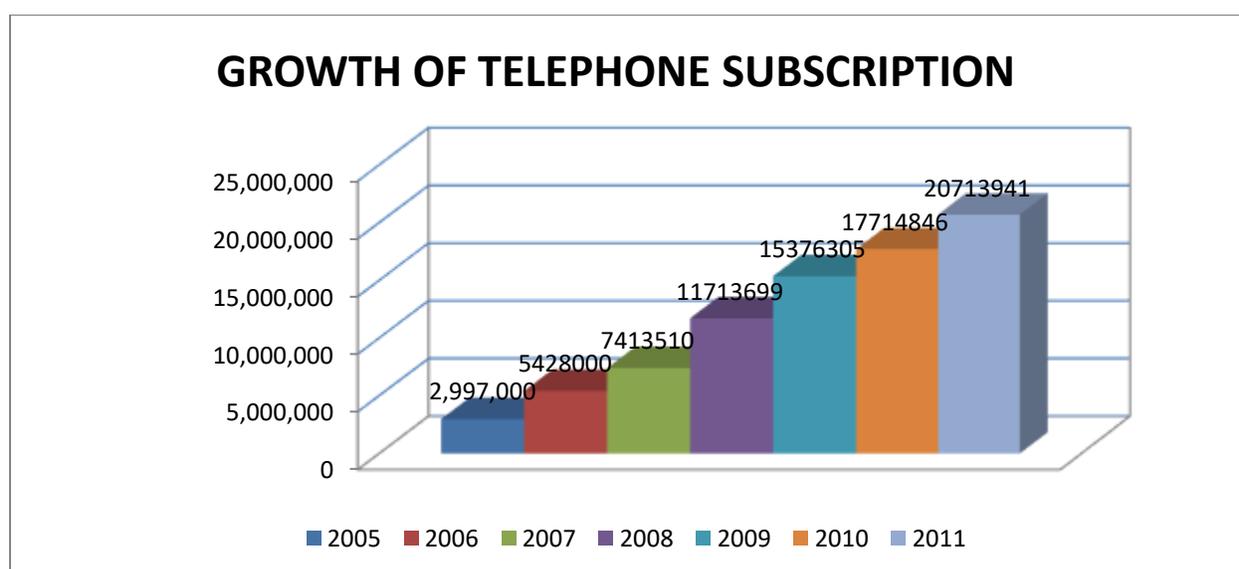
lines in 2005 to 20,713,941 lines in 2011. Teledensity thus improved from 14.98% in 2005 to 86.3% by end of September 2011 given that Ghana’s population has been estimated to be around 24 million.

Table 3: Growth in Telephone Subscription

YEAR	2005	2006	2007	2008	2009	2010	2011
No. Of Subscribers (000's)	2,997,000	5,428,000	7,413,510	11,713,699	15,376,305	17,714,846	20,713,941

Source: National Communications Authority

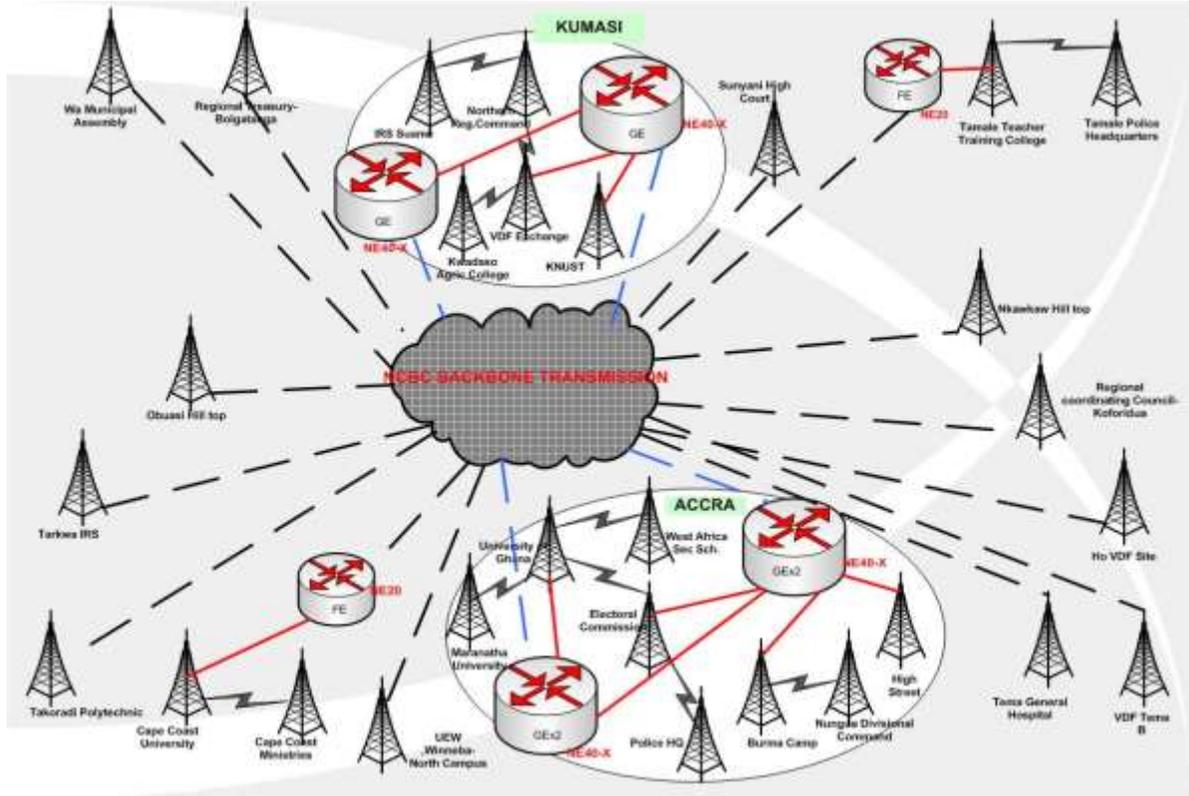
Figure 1: Growth of Telephone Subscription



Additional effort made, under the e-government infrastructure development to bridge the broadband connectivity gap between the capital city of Accra and other parts of the country are schematically illustrated below.

Figure 2: e-Government Infrastructure Network - WIMAX

e-Government



NITA (c) 2012

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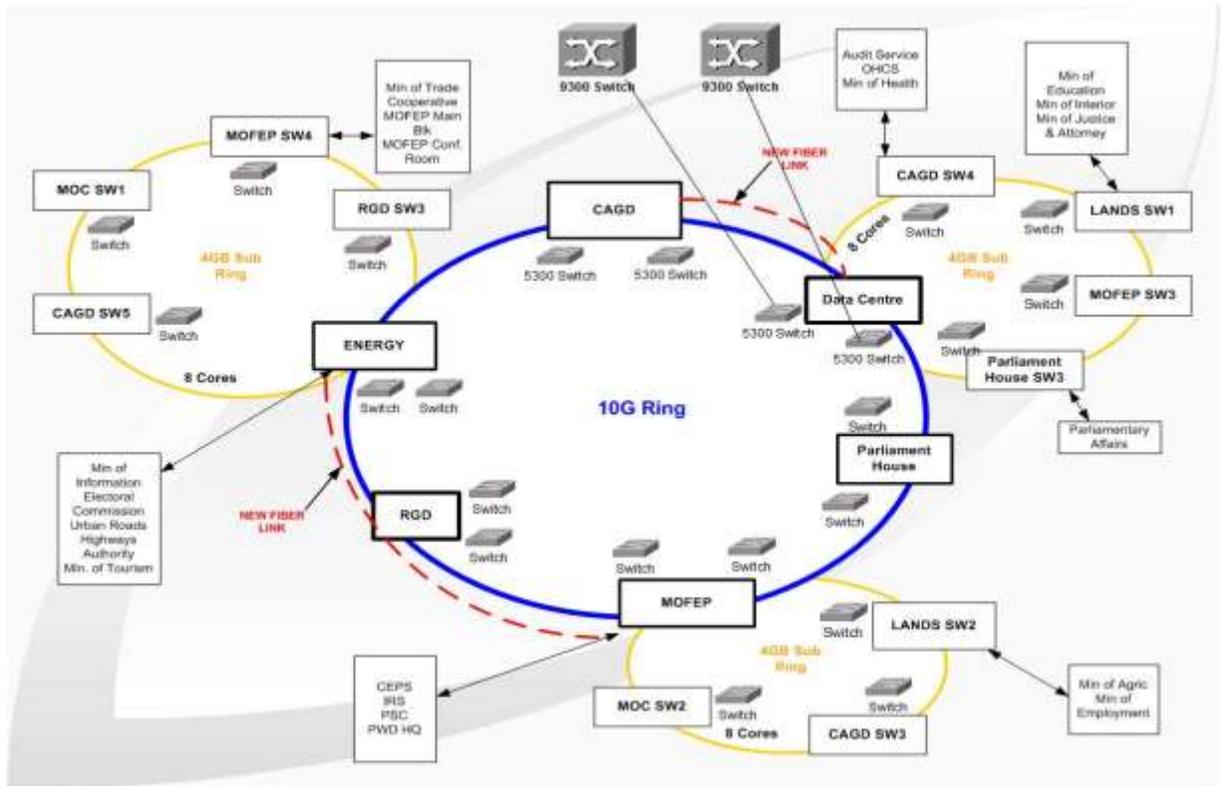
Source: NITA

2.11 Coverage of e-Government Network

The e-Government network has been designed to transmit broadband to reach up to 1050 sites in Accra connecting all the ten regional capitals, including 170 Districts. 550 locations are via wireless last mile access networks and up to additional 500 locations via fiber and other networks. In Accra alone 75 Ministries Departments and Agencies (MDAs are connected of which 35 are via fiber and 40 via WiMAX . The Accra Metro Area Network (MAN) is illustrated below.

Figure 3: e-Government Infrastructure Network - MAN

e-Government



Source: NITA

Cumulatively, Ghana currently has a total bandwidth capacity of approximately 7,160 Gigabytes (or 7.16 Terabytes). To link all regions and districts and over 1500 additional MDAs to high speed broadband, the second phase of the e-Government Network platform development commenced in April 2012.

2.12 The Gap and Challenges to Broadband Infrastructure Development

The appreciative capacity of broadband infrastructure developments notwithstanding, there still remains a huge gap in infrastructure access between the urban and the rural areas. The improvement in telephone penetration and growth, accounted for above appear to be an urban

phenomenon, leaving many of the rural areas underserved. The stagnation in the growth of fixed lines connectivity is also worrying as it constitutes just 1% (285,863) fixed line subscription out of the total figure of 21,660,021 mobile cellular subscription as at end of first quarter 2012 (NCA, 2012).

An additional challenge is the high cost of E1 bandwidth capacity price. Even though the wholesale price has dropped significantly from a 2008 figure of \$4,500 per E1 to \$800 by the last quarter of 2011, the retail price is not affordable for majority of the citizen to benefit from internet connection. Monthly subscription of US\$60 to US\$100 for broadband DSL internet Service at the speed of 256kbps, for domestic service is considered high to meet the pockets of the average citizen in Ghana, mindful of the national daily minimum wage of about \$2.0. Most Ghanaian internet users therefore access the internet through collective access points – cybercafés, work and school (Frempong et al., 2005). Even from these locations, internet access cost is still considered higher as it costs an average \$1.30 to browse for an hour in a cybercafé and there are only 5.2 personal computers per a 1000 inhabitants as of 2006 (ITU, 2007).

2.12.1 Broadband and Fiber Optic Backbone Link

The existing National Fibre Backbone, installed by both the public and private sector concerns stretches from the south through the western corridor to the north and back to the south. There is thus a missing loop in the north-eastern part of Ghana. As no private sector concern has shown interest in developing that loop, the proposed expansion of the National Fibre Backbone to be undertaken by government is to complete the loop from the Eastern corridor stretch (Bawku to Ho) and increase bandwidth availability to the general public. The infrastructure development will

also make the National Fibre Backbone very resilient, reliable and provide redundancy for the network to withstand any disruption of service. The missing link is marked with red dots as below:

Figure 3: Country Status of Fibre Network

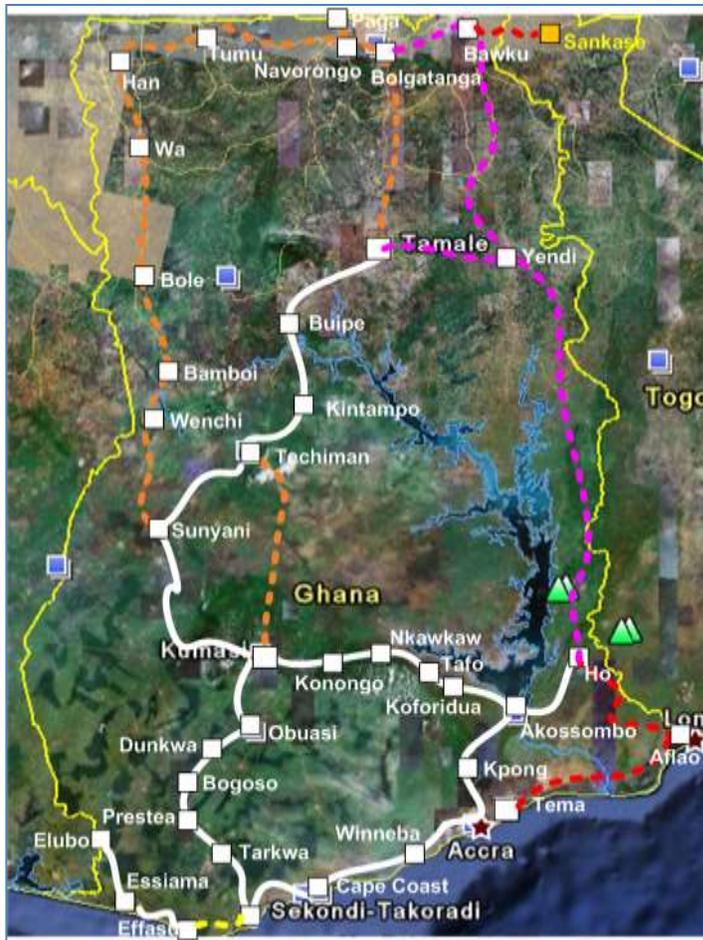


Source: NITA

The diagram depicts the in-country fibre layout deployed by both the Public and Private Investment.

Figure 4: Current National Fibre Backbone Infrastructure





Legend

Source: NCBC

2.12.2 Ensuring Universal Access to Connectivity

The infrastructure statistics discussed above suggest that many Ghanaians living in remote and underserved communities are not benefiting from the digital boom and are lagging behind in the march towards e-government implementation. Indeed the situation for the rural dwellers is worsened by the low income of the rural populace. To correct the imbalance therefore the government, through the Ghana Investment Fund for Electronic Communications (GIFEC), has also initiated projects that will facilitate citizens' access to connectivity and thereby government activities. They include the school connectivity program, which aims to install internet access and

computers and other IT accessories in all senior secondary schools and colleges of teacher education, as well as technical and vocational schools.

The most important development in the area of getting the citizen interested in government and governance is the establishment of 120 Community Information Centres (CICs), linked to the internet, an initiative commenced in 2005 to provide access to information to help create avenues for communication to bridge the digital divide between rural and urban dwellers (MoC, 2009; Awotwi & Owusu, 2010).

To ensure the sustainability of this project, for the full benefits of the intervention to be reaped, there is the need for Government to attract and sustain private sector-led ICT adoption in the sustenance of the Community Information Centre initiative. Even though the government has intervened and has built 120 CICs out of the 250 proposed to benefit each constituency of the country, to encourage mass rural e-government diffusion, government will have to put in place community level policy incentives to attract the private sector to vigorously pursue the development of ICT in the rural areas. A private-sector-community partnership to promote the diffusion of ICT is likely to give a quicker impact to e-government uptake at the community level and this should be the policy focus instead of relying on purely government driven initiatives (Oppong-Tawiah 2010).

The next section describes the nature of the broadband strategy.

2.13 The Broadband Networks Strategy

It has been asserted that better telecommunications infrastructure, technology use and innovation, and the readiness for a networked society accounts for substantial growth in nations revenue generation and income. Against this backdrop the national broadband strategy should have the unique characteristics of aiming at improving communications and information exchange in a

manner that will make broadband the key enabler in the creation of networks to make ICTs pervasive and cross cutting and also foster the dissemination of information and knowledge by separating content from the physical location.

The broadband strategy in effect has to facilitate digital and virtual services delivery that will also promote decline in marginal cost as the seamless application of ICTs lead to substantial efficiency gains in production, distribution and markets and thus reduce cost of transaction.

For the broadband strategy to facilitate these crucial links to propel economic growth, well defined action steps and programmes have to be put in place and implemented to promote sustainable applications in social interventions to the benefit of the citizen in health, education, economic opportunities in governance, commerce, agriculture, gender empowerment and participation, as well as sustainable environmental management. Above all demand side initiatives and interventions to stimulate and drive broadband uptake and usage have to be introduced through the provision of affordable ICT tools and a programme to bridge the digital illiteracy.

The next section examines the key strategy questions to be examined and the direct impact of the implementation of the strategies drawn to support the priority focus areas of the ICT4AD policy.

2.13.1 Key Strategy Questions

a) Defining of Broadband in General Terms

Various countries have different measurement of what their working definition of broadband is. What therefore should guide the working definition of Broadband for Ghana?

On account of statistical revelation that 10% growth in Broadband penetration accelerates economic growth by 1.38 percentage points in low/middle income countries (WB, 2010), further collaborated that 10% increase in Broadband household penetration contributes to GDP boost of

from 0.1% to 1.4% (McKinsey 2011), and taking account of Ghana's policy prescription for the promotion of technologically neutral electronic communications landscape, the proposition for redefining broadband for Ghana is "*a general purpose technology that stimulates growth in the wider economy and creates business opportunities*".

b) What is the Technical Definition of Broadband?

The traditional notion that has guided the technical definition of Broadband has depended on parameters relating to type of network connectivity or minimum transmission speed. In the case of the ITU, therefore, Broadband is defined as the "Transmission capacity that is faster than the rate of Integrated Services Digital Network (ISDN) at 1.5 or 2.0 Megabits per second (Mbit/s)".

The Organization for Economic Cooperation and Development (OECD) which consists of 30 of the world's industrialized countries, including the United States on their part defines Broadband as "a network capable of speeds of at least 256 kbps downstream and at least 64 kbps upstream".

The Federal Communications Commission (FCC) on the other hand has a definition of "high-speed lines as faster than 200 kbps in at least one direction".

For Canada it is defined as the "capacity to provide Internet speed for data transmission at or above 128 kbit/s".

For Great Britain there is a forward looking definition for Broadband as "super fast connectivity to 90% of every county by 2015 and ensuring the delivery of minimum 2 Mbits/s universally by 2015".

Malaysia, on its part has adopted two-tiered definition for high speed Broadband:

- a) Speed of 1 Mbps for rural services;
- b) Speed of 2 Mbps to support national Broadband subscription

South Korea which occupies high level on the broadband penetration ladder had added the dimension of “subscribers per capita” which has widely contributed to its success in promoting high rate of penetration of broadband access in South Korea.

2.14 Factors to impact on a Technical Definition for Ghana

A World Bank study (2010) on broadband strategy for developing countries advocates the adoption of the “ecosystem” approach that includes the networks, the services the network carries, the applications they deliver and the users, in an attempt to marry the traditional notion with demand and supply factors.

This guidance can be a basis for the reshaping of a definition for Ghana. However, taking into consideration that all the definitions examined above do appear to overlook the notion of ‘contention’ it is imperative that in an era of technological convergence, and the need to ensure universal access to the use of Broadband, the definition to be adopted for Ghana takes cognisance of the strategic view of the notion of “contention”, where contention is explained as the “simultaneous usage of broadband by all in a manner that will still make the speed of access higher without fluctuation especially at peak times”. This consideration is important as it has been observed, for example, that under the universal electrification project the neglect of contention factors has led to power supply being provided to as many communities and homes only for the load at peak periods to be so high that many cannot get access full capacity of their electrical requirement. The need for contention ratio to be factored into the technical definition of broadband, such that potential maximum demand for actual bandwidth capacity can be maintained at all times is thus relevant.

2.14.1 Factors to Play in the Technical Definition

- i) “ICT” = Investment in high speed networks
- ii) PCs per 100 population/users simultaneous share of bandwidth (Contention)
- iii) “Speed” = download speeds in kbps
- iv) “Content” = Internet hosts per 100 pop.
- v) Capacity to aid local content creation
- vi) “Platform” competition to drive easy market entry
- vii) Technology – avenues for deployment of market oriented multiple technologies.
- viii) “Services” = their quality and universal availability to schools, hospitals, SMAs etc.
- ix) “Applications” = e-Commerce, Govt led demand e-Gov, e-learning, digital content, local content, media development.
- x) “Users” = Low cost computers & terminals, Digital literacy programmes, community access points in underserved areas.
- xi) “Price” = services at lowest price per bits.
- xii) “Social Media and Inclusiveness” =U-Tube, Facebook etc.

The dependency of all elements mentioned above is crucial for the determination of a technical definition for Broadband that will sustain holistic policy and strategy that will ensure Ghana’s leap to ensure substantial increase in the adoption rate in the Information and Knowledge Society.

2.14.2 Sustainable definition

Ghana’s technical definition therefore is expected to go beyond the consideration of an “Ecosystem Approach” i.e. the complete set of relationship among various elements that depend on high speed connectivity to interact in different ways. It again has to go beyond the placing of emphasis on the impact of Demand Factors for Adoption vrs Supply Factors for Access and

Networks contributing to Broadband adoption and the consequential socio-economic benefits. It includes, in addition to all the above considerations, the element of ‘contention’ which is key in ensuring universal broadband usage at all times at speed capable of guaranteeing adequate capacity usage especially during peak times and affordable price irrespective of geographic location.

2.14.3 Supply Factors Consideration

- a) Examination of the impact of Telecom/ICT policies and regulations that serve to build capacities
- b) Examination of the introduction of tax incentives that encourage infrastructure building in underserved areas.
- c) Exemption granted by the legislature to broadband service providers that extend services to rural areas from paying tax deductions into the Universal Service Fund.
- d) Local Loop Unbundling –Incumbent offer of full access to the new players.
- e) Bit-Stream Access – Incumbent installs a high-speed **access** link to the customer's premises.
- f) Co-location of services.
- g) Sustaining ongoing Ghana’s Universal Services Programme for broadband initiatives
- h) Sustaining ongoing broadband service delivery and applicable standards.

2.14.4 Specific Technical Definition

The technical definition for broadband for Ghana taking into consideration all the factors discussed above, and guided by the ecosystem and contention criteria that should also ensure that broadband

diffusion becomes part of universal service can be stated as bandwidth that provides internet speeds greater than 2 Mbps by 2020.

This definition is premised on the fact that Ghana is endowed with four (4) high capacity international undersea cables coupled with extensive in-land terrestrial fibre cables and the provision of WIMAX connectivity nationwide. It must however be noted that as a proactive strategy to ensure that the objectives set herein is attainable, a three-tier definition is being adopted to address the needs of the various category of users identified.

These are as follows:

- a) Tier 1: Speed of 2Mbps dedicated for heavy users;
- b) Tier 2: Speed of over 2Mbps shared for communities, groups, etc;
- c) Tier 3: Speed of 1Mbps for domestic users

2.15 Surmounting the Blockages to Supply side indicators

An identification of Fixed/Wireless/Mobile Broadband Service Providers has been made. Other Content and Applications Services Providers have also been identified in charts provided above. It is however not clear what the baseline data are available to serve as the baseline figures for tracking the progress of strategy implementation, monitoring and evaluation as the following baseline data are lacking and where available are only speculations without scientific bases:

- i) Total Broadband Subscribers in Ghana.
- ii) Total fixed Line Broadband Subscription
- iii) Total Mobile Broadband subscription
- iv) Total Household with Internet Access
- v) Community PC Ownership
- vi) The current level of Internet and broadband access in Ghana?
- vii) The penetration of Personal Computer (PC) in the country to aid broadband Internet uptake?
- viii) What uniform standards for broadband connectivity is Ghana adopting?
- ix) What unit price in bits can be classified as affordable?

To set the base for these indicators there is the need for a study to be carried to identify the base line for these indicators to build a reliable M&E data base to support strategy evaluation. The National Information Technology Agency would have to build capacity to quickly collect bottom-up database for local broadband uptake, speeds and prices.

2.16 Regulatory Blockages Gap Analysis

For a sustainable strategy to be evolved the following regulatory questions have to be addressed to encourage the deployment of multiple technologies to enhance increase in Broadband capacity to support delivery of services in an era of technological convergence. The questions posed for evaluation to be addressed to eliminate blockages to growth in Broadband capacity improvement follows:

- a) Are regulatory frameworks used for telephone services well suited for application to VoIP providers or only restrictive to the specific situation?
- b) Are regulatory identification and classification of VoIP services as well as the development of transitioning approaches to full IP-based world supportive of broadband deployment?
- c) Are charge rate structures and rates based on call termination and origin points relevant in VoIP?
- d) Are complementary frameworks for interconnection agreements between circuit and IP based networks required?
- e) Do regulatory strategies promote incremental change and adaptation?
- f) What impact has regulations got on the request of Industry to the development of innovative solutions to increase penetration of broadband services?
- g) Is Industry motivated by regulatory and financial incentives to invest?
- h) What is the level of subscriptions if such innovative approaches exist?

2.17 Benefits and Impact of Regulatory Considerations

Considerations, when given to address the regulatory challenges and questions posed above will inure to the nation the following strategic advantages to boost broadband access, affordability and demand:

- a) Address challenges of stimulating demand in underserved areas
- b) Support regional specific measures and flexible policy and regulatory approaches that will be attractive to private sector investors and players in the Broadband Industry.

- c) Promote and support the increase in the establishment of the number of SME businesses providing broadband services.
- d) Policy complements of provision of suitable taxation regimes, financing mechanisms and government contracts as incentives for SME businesses. (Public Procurement Act needs a re-look to spur up local content)
- e) Would spur regulatory flexibility to support the competitiveness of markets through the pricing of services and the types services that can be bundled in underserved areas.
- f) Would spur up the approaches for consideration of a convergence of multiple services (e.g., telephony, data and broadband) over IP networks.
- g) Promote integrated regulatory approaches for co-existence of pre-existing services such as telephony and new competing services such as VoIP as well as the evolution from non-IP networks to converged networks.
- h) Stimulate high demand drivers to promote deployment of broadband networks for new services such as VoIP and cost effectiveness of utilizing multiple network topologies and spectrum bands in service delivery of existing services (e.g., international calls).
- i) Enhance the introduction of effective regulatory management mechanisms on
 - a) Interconnection
 - b) Spectrum re-farming
 - c) Co-existence of traditional and new services.
 - j) Promote flexible allocation and technical uses of broadband spectrum.
 - k) Effective spectrum management to promote variety of technologies to be used to provide broadband and related services.

l) Promote measures to facilitate the introduction of favourable spectrum allocation that will encourage broadband demand and network deployment using multiple applications.

2.18 Demand Side Initiatives

The demand side initiatives to be addressed as public policy issues include:

- i) Intensified governmental intervention to increase public awareness to demand, given the high costs of deployment of broadband networks, especially in rural and remote areas;
- ii) Partnership between the regulatory authority and other ministries in promoting the development and extension of e-government services, which will in turn stimulate demand for broadband services.
- iii) E-government services to improve citizen's opportunities and communications services for citizens, especially those in poor, marginalized segments of society.
- iv) Supporting the development of relevant Internet content in local languages
- v) Lowering the cost of end-user terminals through import duty and other tax reductions and possibly subsidizing broadband equipment for social services in schools, hospitals, etc.
- vi) Support low-cost terminals/boxes to promote DBS service delivery and uptake in homes.
- vii) Educating citizens about the benefits of broadband while further developing Internet skills
- viii) Providing a legal framework for e-commerce and other applications
- ix) Ensuring that consumers have enough information on providers and pricing options as well as available technology.
- x) Preparing consumers to embrace digital migration as a channel for 2-way high-speed data transmission services.

SECTION THREE

3.0 Specific Measures to Spur Growth in Rural Adoption

The strategic measures to be adopted to break the urban syndrome for broadband adoption in favour of universal adoption will entail the implementation of the following measures.

- i) The harmonization of broadband and universal service and access policies to facilitate rural access and demand possibilities for financing broadband infrastructure to reach beyond the market.

- ii) The use of government finance as direct investment through public-private partnerships (PPPs)
- iii) The adoption of open-access independent management of national broadband networks e.g. Eastern Corridor Fiber.
- iv) The use of the Universality Fund resources as a subsidy under competitive tendering for supply of infrastructure.
- v) The grant of incentives to service providers typically to reduce costs and prices and stimulate the use of enhanced services.
- vi) Government to develop a mobile broadband policy as a component of an m-Government strategy to promote the use of the over 21,000,000.00 mobile phones in use in the country, especially as the features are easy to use to promote value added services that will also spur up broadband adoption.

3.1 Specific Strategy Programmes and Initiatives

- i) Develop strategic action plan for promoting community access and usage of Internet.
- ii) Develop Strategic action plan for promoting use of Broadband by SMAs
- iii) Facilitate content and service development in key sectors such as education, health, business and finance which in turn stimulate and encourage broadband uptake and usage
- iv) Develop strategy for Increased PC Penetration and Internet literacy program.
- v) Facilitate regulatory innovation that will promote VoIP services as an option to existing ISPs in addition to the provision of regulatory incentives to both existing and potential

operators to offer Triple Play and Fibre-To-The-Cabinet and Fibre-To-The-Home (World Bank 2010).

- vi) Develop growth enabler mechanisms such as:
 - a. Price reductions for the use of infrastructure,
 - b. Unified licensing for service providers
 - c. The setting of strict annual broadband penetration targets.
 - d. Content and e-commerce development incentives
 - e. Lowering of the price and tax barriers on the broadband terminal equipment.

3.2 Other Related Specific Action Plan Coverage

- i. Provision of an independent, scalable, and efficient communication backbone.
- ii. Upgrade and Extend Existing Fibre Network
- iii. Explore investment in innovative broadband solutions including Broadband Over Powerlines.
- iv. Create Operational and Technical Management model
- v. Ensure the extension of broadband facility to all schools.
- vi. Use government as an anchor tenant to boost local access to broadband.

- vii. Undertake government-led demand aggregation through e-government applications through broadband networks.

- viii. Ensure non-discriminatory access for service, application and content providers in an environment of network neutrality.
- ix. Develop ICT Network Infrastructure to ensure Interoperability of MDAs systems.
- x. Promote Universal Access.

- xi. Promote creation of digital content to boost broadband uptake.

- xii. Promote adoption by Industry
- xiii. Establish Legal and Regulatory Status of Management.
- xiv. Provide Backbone High speed Internet Connectivity.

3.3 Strategy Challenges

From policy and strategy implementation stand point, the challenges that must be addressed would include:

- The low budgetary allocation made to cover ICT infrastructure development at national level.
- The development of a professionally, technically, managerially sound and competent team to evolve a management model for the management of broadband infrastructure.
- The ability to attract donor confidence and support that PPP model will be the best approach to the management of the infrastructure.
- The ability to attract bilateral, multilateral and development partner support to undertake massive broadband triple-play infrastructure development.
- The need to ensure uptake by majority of the populace to give value to investment in broadband infrastructure.
- Information availability on cost, availability, terms and conditions is made highly perfect.
- Ensure adequate connectivity on account of availability, suitability and reliability of requisite infrastructure to improve upon the average link uptime estimated at 95 percent in Ghana to move up to the internationally accepted norm of 99.5 percent – 99.95 percent.
- The rapid change in the functionality of new technologies.
- The high level of digital illiteracy.

3.4 Programmes and Action Lines

The annexure enclosed contain the outline of the Programmes and Action Lines to be pursued under the Broadband Strategy to give effect to the Policy Objectives outlined.

APPENDIX

Appendix -1

BBS-01	National Initiative to Develop Mobile Broadband Strategy as a Component of m-Government Policy
	<p>Taking advantage of the key features of the next generation public services, in terms of citizen centricism, restructured government, participatory, measurable and transparency in governance, this Planned Action is aimed at achieving broad objective of intensifying government intervention to improve citizens' opportunities to access and use of communications services to maximize the uptake of broadband usage.</p> <p>The Planned Action is targeted at the following specific objective:</p>

<p>The Relevant Plan Specific Strategic Objectives and Goals</p>	<ul style="list-style-type: none"> To enhance the ubiquity of the use of mobile phones in public good governance and thereby increase demand for broadband internet services. <p>The Strategic Goals which the policy will contribute in achieving include:</p> <ul style="list-style-type: none"> To promote demand for quick access to integrated data and location based services to spur up demand for broadband. To get public sector IT systems geared to interoperability with citizens to bring about the benefits of usage to increase take-up of broadband. To facilitate the prime mover of broadband up-take through awareness creation 			
<p>Relevant Achievable National ICT4D Policy Objectives & Goals</p>	<ul style="list-style-type: none"> To pave the way for innovative public sector governance based on the use of mobile technology in support of public service and information delivery. To minimize blockages to geographic coverage and economic barriers to access to voice and mobile data services. 			
<p>Relevant ICT4D Policy Implementation Expectations</p>	<ul style="list-style-type: none"> Increase the penetration rate and the degree and types of mobile phone data uses via broadband technologies delivery in: <ul style="list-style-type: none"> a) Health b) Education c) E-Commerce d) Investment e) Communications f) Civic participation g) Safety ; etc 			
<p>Type of Planned Action</p>		<p>National Policy Initiative</p>		
		<p>In recent times questions are being posed about the impact of e-government on public service delivery and organizational efficacy. In the case of Ghana, a number of investments have been made in e-government initiatives over the past decade but have not resulted in the desired transformation in service delivery. While many people possess mobile phones, there are still many citizens and less privileged individuals without access to the Internet who still have no realistic chance of accessing government services. M-government is now looked upon as a viable alternative solution.</p>		

<p>Background to Planned Action</p>	<p>There is the therefore the need for new models to be created to turn the mobile service penetration level now estimated at about 80% in Ghana to a positive advantage. Given the advancement of mobile technologies penetration therefore, Government has to turn to m-government to realise the value of mobile technologies for responsive and inclusive governance to enhance social and economic development, public service delivery, operational efficiencies and thereby promote active citizens participation.</p> <p>A strategic action to move towards the implementation of m-vision will undoubtedly drive the uptake of broadband technology deployment towards public sector change and inclusive governance.</p>
<p>Description of Planned Action</p>	<p>The m-government policy development initiative is to take advantage of mobile technology explosion to increasingly affect the process by which government intends to reach out to the citizenry to add value to the main drivers for the use of mobile phones as government takes advantage of the evolving trends making broadband available everywhere to improve lives today and for generations.</p>
<p>Planned Action Implementation Rationale</p>	<p>The rationale behind the development of the m-government policy is to take advantage of availability of mobile technology to ensure accessibility of services to all, including marginalized citizens which include persons with disability and those with inadequate levels of digital literacy. By so doing Government will have created the opportunity for widespread usage of and demand for mobile technology via broadband platform to enable the private sector expand services to the reach of all as much more broadband becomes available.</p>
<p>Planned Action Specific Goals</p>	<p>To develop for Ghana an m-government policy that will transform governance from e-government to m-government platform and thereby drive the awareness and demand for broadband usage and the benefits to both government and the citizens in a more connected society.</p>
<p>Planned Action Implementation Prerequisites and Requirements</p>	<ul style="list-style-type: none"> • There is the need for additional data to be gathered to support the extent of broadband digital divide in Ghana. This study has been commissioned and will impact on the policy formulation. • Conducting a thorough audit of the kind of transformation that e-government has brought about so an m-government policy will

	depend to a large extent on its potential to optimize e-government rather than depreciate efforts gained with e-government so far.	
Planned Action Time-Frame	Q4, 2012 to Q2, 2013	
Strategic Goal Impact Assessment		
Anticipated/Envisaged Impact/Contribution to Achieving Strategic Goal	<ul style="list-style-type: none"> • Improvement in citizens' opportunities to access and use of communications services to maximize the uptake of broadband usage. support the intensification of government intervention to. • The intensification of Government's intervention and efforts will spur private sector initiatives in delivery of new model of services to the underserved and disadvantaged communities in the society and thereby increase broadband deployment. • The strategic pursuit of m-government that will stimulate the transformation in public services delivery and also help empower previously excluded and disadvantaged communities as equality to access is enhanced. • The associated increased flexibility from wider menu of services provision will in turn promote broadband uptake. 	
How to Assess Impact/Contribution	<ul style="list-style-type: none"> • Private sector taking leadership advantage to develop a market of on-line users that is not fully in place. • An expanded citizens knowledge of effective mobile application models thus contributing to broadband uptake. 	
Planned Action Deliverables and Targets		
Planned Action Deliverables	Time-bound Measurable (TBM) Targets	Candidate Implementation Agencies
The Development of the National m-government policy.	The Ministry Communications to facilitate the development of the policy and have it validated by stakeholders in both the demand and supply segments by end of Q1, 2013	<ul style="list-style-type: none"> • MoC • NCA • NITA • GASSCOM • Telecom Operators

		<ul style="list-style-type: none"> • EndUsers/Citizens/Businesses/MDAs • Application Developers • Content developers • Infrastructure providers • NGOs and • Civil society • Disadvantaged community
Launching of National Policy	Formal approval of policy sought and launched Q2, 2013	Ministry of Communications
Planned-Action: Outputs, Outcomes and Beneficiaries		
Planned-Action Key Output(s)	A National m-Government Policy blueprint for Ghana	
Planned-Action Expected Outcome(s)	A policy document that will outline governments commitment to promoting adoption factors for mobile technologies such that it will lead to strategic approach to increase take-up of broadband usage and boost demand to enhance competition in supply to also help bring down broadband prices.	
Anticipated Beneficiaries	<p>The entire citizenry</p> <p>The Government Service delivery machinery</p> <p>The private sector in application development</p> <p>The mobile service and allied services providers.</p>	
Resource Mobilization and Costing		

Financial Resource /Cost Implications of Planned Action	The implementation of the initiative will require financial resources for research studies and consultancy support.	
Anticipated Funding Sources	Government of Ghana budgetary resources; Donor Community	
Total Anticipated/Estimated Cost of Planned Action (US\$)	USD 80,000 – USD 100,000	
Project Implementation Management, Monitoring and Evaluation		
Detailed Project Implementation Document Required (PID)?	<p>The requirements for the project are;</p> <ul style="list-style-type: none"> • Detailed Project description and implementation objectives, goals, and outcomes, deliverables • Implementation timelines and key deliverables • Detailed project costing and budget 	
Lead Implementation Organization	Ministry of Communications	
Supporting Implementation Agencies and their Assigned Responsibilities	Supporting Implementation Agency	Assigned Responsibility
	NITA	Provision of data access
	NCA	Provision of data
Planned Action Critical Success Factors	<ul style="list-style-type: none"> • M-government positioned as a complementary dissemination channel for e-government • A well calculated and steady pace of m-government implementation to reduce the risk of “stillborn policy”. • Financial resources availability to support research and consultancy services • Accuracy of data to support reliable projections • Ability to impart knowledge and gain the commitment of the less literate in ICT • The affordability of the price of broadband service to all irrespective of geographic location. • The intensification of market competition in broadband infrastructure and service delivery • The creation of an environment that balances the fostering of m-government growth and user promotion. 	

<p align="center">Planned Action Implementation Risk Factors</p>	<ul style="list-style-type: none"> • The inability of MoC to mobilize the required funds. • The lack of implementation to enhance broadband uptake. • The lack of technical collaboration • Implementing m-government initiatives on ad-hoc basis. • Disregarding the challenges of e-government and thinking m-government will resolve all issues on inclusiveness.
<p align="center">Planned Action Implementation/Performance Monitoring and Evaluation Indicators</p>	<ul style="list-style-type: none"> • Decrease in broadband access cost to promote uptake • High usability of technology for all including physically challenged persons to increase demand for broadband. • Percentage of populations covered by 3G-4G services to facilitate broadband subscription. • Increase in mobile aspect of the devices exploited for value-added applications. • Percentage of Ghanaians with sufficient digital literacy skills.
<p align="center">Planned Action Implementation Monitoring and Evaluation Responsibility</p>	<p>Ministry of Communications</p>
<p align="center">Additional Comments and Remarks</p>	
<p>The development of the National m-Government Policy is a priority project to enable the mobile aspect of the devices to be fully exploited and m-government positioned as a complementary dissemination channel for e-government to promote the up-take of broadband usage.</p>	

Appendix- 2

BBS-02	National Initiative to Foster the Development and Sharing of Local Content
	Broadband Internet service is the most used form of Internet access because of its potential for high access speeds. Notwithstanding, one of the reasons commonly adduced as hindering the mass uptake of broadband is the associated high access cost. Closely associated to this constraint is whether the applications and content available on the Internet are relevant to the people in a given community to motivate the people to adopt broadband usage. Statistical figures show that up to 70 per cent of Web content is in English, this can be especially difficult in economies and communities where users are not comfortable using English.

<p>The Relevant Plan Specific Strategic Objectives and Goals</p>	<p>This Planned Action is aimed at achieving Broad Strategic objectives:</p> <ul style="list-style-type: none"> • To ensure policy coherence for local content development and sharing. • To nurture mobile content development, as, mobile phones usage, become ubiquitous and thus enhance broadband demand. • To support the development of the local ICT content development sector by the private sector • To promote technological improvement in Internet Protocol Television (IPTV) and voice services that may be bundled in a triple play package to enhance broadband access. • To promote interest of mobile phone operators to content development • To enhance the ubiquity of the use of mobile phones in public good governance and thereby increase demand for broadband internet services <p>The strategic goals are:</p> <ul style="list-style-type: none"> • To promote demand for Internet usage and development • To facilitate the reduction of access prices as government intensifies its intervention to improve citizens’ opportunities to access and use of communications services to maximize the uptake of broadband usage. • To bring down high cost of access to non-local content and promote demand. • To promote a model content balancing approach as local Internet Exchange points are supported to trigger a virtuous circle of overall network growth. • To get public sector IT systems geared to interoperability with citizens to bring about the benefits of usage all ICT devices including TVs, mobile phones and computers to increase take-up of broadband • To enhance Open Knowledge Mobile Network as a means of communications and e-commerce through the development of short-message-services (SMSs) to boost broadband usage even at the community level.
<p>Relevant Achievable National ICT4D Policy Objectives & Goals</p>	<ul style="list-style-type: none"> • Foster open source content development • To support the production and development of content in local languages without relying on English only for content. • Promote human capital development and local capacity of experts with skills to complement Government’s efforts at putting public-sector data on the Internet and thereby generate broadband usage. • Create domestic Internet exchanges • Promote competition in the value added service sector under a liberalised telecom market segment.

Relevant ICT4D Policy Implementation Expectations		<ul style="list-style-type: none"> • To promote the development of local content to bring down high cost of access to non-local content. • To minimize the diversion of available OPEX into long haul bandwidth, and give much opportunity for the development of local access networks. • To facilitate growth by reducing revenue which depends to some extent on broadband access, resulting in a vicious circle which limits overall broadband network growth and usage. • To promote a model content balancing approach as local Internet Exchange points are supported to trigger a virtuous circle of overall network growth. • To complement market driven efforts for broadband deployment through government’s strategic intervention towards broadband deployment as a way to counter local and global digital divide. 		
Type of Planned Action		National Policy Initiative		
Background to Planned Action		<p>The content that is most important to people is content in their own language and also relevant to the communities in which they live and work. These communities may be defined by location, culture, language, religion, ethnicity or area of interest. Individuals may belong to many communities at the same time. Since communities evolve, it is certain that what is relevant to communities will change over time. This relevant content is what is often referred to as “local content”</p> <p>One of the key factors, influencing people in the adoption of broadband technology, is whether the applications and content available are relevant to them. To this end, successful broadband economies have been able to produce content in local languages without relying on English only for content.</p> <p>Local content development, if it involves multimedia such as videos and audio files, commonly, requires high amounts of broadband bandwidth, especially if the files are to reach segments of the population with lower literacy levels.</p> <p>Implicitly the larger the file sizes of multimedia local content, the more bandwidth requirement that may need to be sent over expensive international networks if local Internet Exchange Points (IXP) are not</p>		

	<p>easily accessible to content providers. Certainly, local firms wishing to distribute higher-bandwidth content would face much higher prices if their Internet traffic had to be exchanged internationally. This constraint therefore serves as a de-motivating factor to drive local content development.</p> <p>In Ghana this phenomenon has adversely contributed to the absence of local content development thus affecting the degree at which communities access data, multimedia and video services in the language that will be economically advantageous for them to use. This barrier to innovation in local content development largely contributes to the inability of the citizens to maximize the potential use of internet from the demand side. Consequently, from the supply side, because users are few in Ghana cost of operation becomes high and most of the times passed on to the few users.</p> <p>To break this vicious cycle, the planned action is to set up a Local Content Board to foster the development of local content and also ensure that local Internet Exchange Points will be established to help bring down the high cost associated with the utilization of internationally controlled exchange points.</p>
<p>Description of Planned Action</p>	<p>While more content in local languages should increase all Internet use, broadband adoption may especially benefit. This is because local language content gives users more reasons to stay online and users who spend more time online are often quick to upgrade to faster connections. The Planned Action will entail:</p> <ul style="list-style-type: none"> • Setting up a Local Content Board • Supporting the development of Local Internet Exchange Points • Nurturing research and development in local content so that multimedia services can be rendered to benefit communities to impact on their socio-economic lives. • Promoting reduction in costs and the relevance of the services so high speed broadband Internet can attract much usage and increase up-

	<p>take from the demand side to balance supply conditions on a competitive platform.</p> <ul style="list-style-type: none"> • Implementing reasonable intellectual property protections
<p>Planned Action Implementation Rationale</p>	<p>Ghana, in nurturing the emerging Information Society (IS) has developed a number of Information and Communication Technology (ICT) policies aimed at improving the penetration of ICTs in the country. In achieving the sustainable development of the IS, a strong area of convergence is local content development and application.</p> <p>The rationale behind the strategic action to move towards the fostering of content development and application is informed by proven research to the effect that while content in local languages increase all Internet use, broadband adoption especially benefit. This is because local language content gives users more reasons to stay online and users who spend more time online are often motivated by the ability to quickly upgrade to faster connections. Content development will therefore undoubtedly drive the uptake of broadband technology deployment in Ghana towards public sector change and responsive governance and subsequent price decline for end users.</p>
<p>Planned Action Specific Goals</p>	<ul style="list-style-type: none"> • To set up a Local Content Board to specifically nurture the development and production of local content on the Internet as an instrument of industrialization. • To define the process to stimulate demand for broadband usage and the benefits to both government and the citizens in a more connected society. • To enhance competition and investment in content and application delivery in sectors such as education, trade, agriculture, health, IT Innovation, the environment, and development co-operation under m-Government. • To promote intellectual property rights regime that protects creators' interests while enabling fair use and adaption.
<p>Planned Action Implementation Prerequisites and Requirements</p>	<p>No specific pre-requisite as plan is in furtherance of the creation of Ghana's knowledge management process.</p>
	<p>Q4, 2012 to Q1, 2013</p>

Planned Action Time-Frame	
Strategic Goal Impact Assessment	
Anticipated/Envisaged Impact/Contribution to Achieving Strategic Goal	<ul style="list-style-type: none"> • Support the development of local content to improve citizens’ opportunities to access and use the Internet and other communications services to maximize the uptake of broadband usage. • Encouraging innovation in creation of content to meet communities need to access content typically in their own language in the communities in which they live and work. • The delivery of local content services to the un-reached and disadvantaged communities in the society will further help increase broadband deployment and uptake as access to the use of the internet increases and subsequent price declines for end users. • Enforcement of network neutrality so ISPs will treat all traffic equally, whether content, application or service • The development of e-learning and distance education applications as interests of creators’ is balanced with the larger goals of enabling knowledge. • Content creation encouraged at all levels in Ghana, within the country, especially at the local and community levels, to ensure that the citizenry do not remain information consumers of a content conceived by others and thereby be motivated to use broadband technology in application.
How to Assess Impact/Contribution	<ul style="list-style-type: none"> • Private sector taking leadership advantage to develop a market of on-line users that is now not fully in place. • An expanded citizens knowledge of effective mobile application models thus contributing to broadband uptake. • An increase in content creation as a result of security for creators. • The development of additional internet exchange points
Planned Action Deliverables and Targets	

Planned Action Deliverables	Time-bound Measurable (TBM) Targets	Candidate Implementation Agencies
Set up a Local Content Board	The Ministry Communications to facilitate the development of the policy and have it validated by stakeholders in both the demand and supply segments by end of first quarter 2013	MoC NITA GASSCOM GISPA Telecom Operators EndUsers/Citizens/Businesses/MDAs Application Developers Content developers Infrastructure providers NGOs and civil society in the communications sector
The Development and sharing of Local Content .		
Planned-Action: Outputs, Outcomes and Beneficiaries		
Planned-Action Key Output(s)	A National Content Development Board capable of exploiting the potential of positive synergies across different policy areas, such as technology, trade, competition, investment, agriculture, health, education, the environment, and development co-operation on m-Government platform to increase on-line content to spur broadband uptake established.	
Planned-Action Expected Outcome(s)	<ul style="list-style-type: none"> A policy document that will outline government's commitment to promoting content development, the adoption of which will have ripple effect on m-government, such that, it will lead to strategic approach to increase take-up of broadband usage and boost demand to enhance 	

	<p>competition in supply to also help bring down broadband prices.</p> <ul style="list-style-type: none"> The use of ICTs to preserve and foster cultural identity and linguistic diversity through the creation and dissemination of content in local languages and formats, not only for an equitable IS but also for sustainable development to spur up broadband usage. 	
Anticipated Beneficiaries	<p>The entire citizenry.</p> <p>The Software Industry players</p> <p>Telecom Companies</p>	
Resource Mobilization and Costing		
Financial Resource /Cost Implications of Planned Action	<p>The implementation of the initiative will require financial resources for research and consultancy studies as well as the setting up of the Local Content Development Board</p>	
Anticipated Funding Sources	<p>Government of Ghana budgetary resources; Donor Community</p>	
Total Anticipated/Estimated Cost of Planned Action (US\$)	<p>USD5 80,000 – USD 700,000</p>	
Project Implementation Management, Monitoring and Evaluation		
Detailed Project Implementation Document Required (PID)?	<p>The requirements for the project are;</p> <ul style="list-style-type: none"> Detailed Project description and implementation objectives and goals, and outcomes, deliverables Implementation timelines and key deliverables Detailed project costing and budget 	
Lead Implementation Organization	<p>Ministry of Communications</p>	
Supporting Implementation Agencies and their Assigned Responsibilities	Supporting Implementation Agency	Assigned Responsibility
	NITA	Provision of data access
	NCA	Provision of data

	GIFEC	Consideration of project as universal obligation
<p align="center">Planned Action Critical Success Factors</p>	<ul style="list-style-type: none"> • The use of ICTs to preserve and foster cultural identity and linguistic diversity through the creation and dissemination of content in local languages and formats, not only for an equitable IS but also for sustainable development. • Financial resources availability to support consultancy project • Investment in the equipment for an IXP set-up. • Successful exchanges that require a mixture of vision, technical skills, marketing ability, managerial know-how, infrastructure maintenance and an increasingly competitive domestic market for communication services. • Accuracy of data to support reliable projections • Ability to impart knowledge and gain the commitment of the less literate in ICT • The affordability of the price of broadband service by all irrespective of geographic location. • The intensification of market competition in broadband infrastructure and service delivery to foster usage of broadband and thereby bring down end user price. • The uptake of e-learning as tutorials, training materials and software interfaces are presented in local languages • The ability to meet the content needs of persons with various forms of disabilities. 	
<p align="center">Planned Action Implementation Risk Factors</p>	<ul style="list-style-type: none"> • The inability of MoC to mobilize the required funds. • The lack of implementation to enhance broadband uptake. • The lack or scarcity of local technical expertise in the field. • The lack of clear scope of operation as the definition of “local” appears vague. • The absence of digital literate populace. 	
<p align="center">Planned Action Implementation/Performa</p>	<ul style="list-style-type: none"> • Improvement of Internet access through with support of local IXPs, • The development of a new model for development and sharing of local content • Decreasing access prices for ICT end users. 	

<p>nce Monitoring and Evaluation Indicators</p>	<ul style="list-style-type: none"> • Evolution in content development and benefits for education and skills development, infrastructure, trade, services, and technological and human resources development.
<p>Planned Action Implementation Monitoring and Evaluation Responsibility</p>	<p>Ministry of Communications</p>
<p style="text-align: center;">Additional Comments and Remarks</p>	

Appendix – 3

<p>BBS-03</p>	<p>Programme to Extend Universal Broadband Access and Use</p>
<p>The Relevant Plan Specific Strategic Objectives and Goals</p>	<p>The Planned Action is aimed at achieving the Broad Strategic Goal: To achieve a nation-wide broadband coverage for national ICT, development, voice, data and multimedia communication deployment and resources to ensure that the largest proportion of rural, peri-urban and urban population have access to affordable and reliable ICT infrastructure and resources including: high-speed Internet access, affordable computer and communication resources and equipment. Specifically the Planned Action is targeted at the following strategic objectives:</p> <ul style="list-style-type: none"> • To migrate the Universal Service Fund to broadband to improve access to ICT. • To ensure universal access to broadband network services. • To redefine universal service obligation for communication service providers in services like telephone, TV transmission and postal services to include functional internet connection as part of the universal service obligation. • To promote competition in broadband communications industry to increase customer choice and promote the provision of affordable services within the industry.

	<ul style="list-style-type: none"> • To ensure broadband affordability so broadband-eligible people take advantage of the service. • To promote competition among firms for least-cost subsidies. • To ensure that as far as possible communications infrastructure development is not constrained by geographic location and thereby help bridge the digital divide in broadband deployment • To make the provision of broadband an integral part of universal access and service obligation of Government so that all areas of the country will have access to voice, video, multi-media and data transmission. <p>The specific strategic goals which the implementation of the Planned Action could contribute to achieving include:</p> <ul style="list-style-type: none"> • To facilitate the spreading, utilization and exploitation of ICT's. • To promote the development and deployment of basic broadband and multi-platform communications infrastructure to facilitate public access of information and services. • To facilitate the development of physical and social infrastructure, targeting the rural areas. • To put in place special ICT promotion packages, policy instruments and incentives to facilitate the expansion of information and communication infrastructure • • To facilitate the development, expansion, and rehabilitation of and the continuous modernization of the national information and communications infrastructure
<p style="text-align: center;">Relevant Achievable National ICT4D Policy Objectives & Goals</p>	<ul style="list-style-type: none"> • To facilitate the development, expansion, rehabilitation and the continuous modernisation of the national informative and communications infrastructure. • To facilitate the deployment of and spread of ICT in the Community to serve as avenues for wealth creation • To facilitate the offering of low-cost broadband services to under-privileged households. • Facilitate the creation of an online clearinghouse for broadband ideas and best practices.
	<ul style="list-style-type: none"> • Contribute towards the need to address the telecom infrastructure deficit and open the rural areas to ICT deployments in voice, data, multimedia and other related services. • Facilitate the expansion and modernisation of the nation's communication infrastructure so that 2/3 of the population living in rural areas can have access to broadband connectivity by 2015.

<p>Relevant ICT4D Policy Implementation Expectations</p>	<ul style="list-style-type: none"> • Facilitate and encourage the development of ICT business at the community level. • Promote IT goods subsidy practice to motivate all parties to contribute towards the financing of the extension of rural access to broadband. • Facilitating the improvement to rights-of way management to reduce infrastructure connectivity cost and time saving for new investors in the broadband connectivity industry. • Promote the “dig-once” policy to allow joint deployment along public infrastructure services lines. • The establishment of a mechanism for uniform rental rates regime to be established on common purpose access poles to simplify the extension of broadband access to underserved areas. 			
<p>Type of Planned Action</p>		<p>National Policy Review Initiative</p>		
<p>Background to Planned Action</p>	<p>Currently, in Ghana, there is no obligation for communication service providers in services like telephone and postal service to include functional internet connection as part of the universal service obligation. To facilitate the spread and use of broadband the plan is intended to ensure that universal service obligation will also include functional Internet connection.</p> <p>The planned action therefore is intended to promote the use of subsidies as specific incentive instruments for physical support to broadband development ahead of the market trends.</p>			
<p>Description of Planned Action</p>	<ul style="list-style-type: none"> • This initiative will target the extension of telephony and data facilities to the rural areas on a turnkey basis. • It will entail sourcing and obtaining concessionary loan facility, which will make service cost to be affordable. • It will also enhance connectivity to the fibre backbone to upgrade rural service to be Internet connectivity ready to boost broadband uptake. 			
	<p>The rationale for this planned action is to make the provision of broadband an integral part of universal access and service obligation of Government and the private sector service providers so that all areas of the country will have access to voice, video, multi-media and data transmission. The Plan will further help:-</p>			

<p>Planned Action Implementation Rationale</p>	<ul style="list-style-type: none"> • To promote broadband service availability at affordable prices to enable the population to participate equitably in internet deployment. • To develop an economy characterized by a wide spread deployment and exploitation of ICTs within the society to support the delivery of health, education, governance and social services. • To promote an economy in which a reasonably large populace have access to information and communications technology tools. • To develop an economy that sees the promotion of access to telecommunications as a human right for development. • To promote an economy which will completely decentralize the creation of economic growth through broadband deployment.
<p>Planned Action Specific Goals</p>	<ul style="list-style-type: none"> • To open up the rural areas to receive broadband-based telecom services to enhance their socio-economic activities. • To encourage District Assemblies to be guided by the national framework to draw local plans for broadband adoption to improve communications within and without the district. • To offer the enabling broadband connectivity to 2/3 of Ghanaians in rural areas by 2015 to enhance the deployment and utilization of ICT within the society. • To agree with service providers to define minimum rate of downstream traffic of a functional Internet access to rural areas to be not below 2 Mbps and at a reasonable price. • To meet global goal of universal access and service. • To promote subsidies financed by government budgets • To improve the capacity of GIFEC to improve upon the fund’s mechanism to collect and distribute subsidies in a more competitive manner.
<p>Planned Action Implementation Prerequisites and Requirements</p>	<p>The design of the Planned Action should be such that it will complement but not conflict with roll-out plan of Telecom operators. There will therefore be the need to consolidate the fiber infrastructure database of all Telcos as the starting point for building routes database for all relevant stakeholders to enhance redundancy.</p> <p>The development of a national broadband policy to give policy direction to this Planned Action is also relevant.</p>

	To complement the development of the Broadband Policy there will be the need to undertake Internet Digital Divide Analysis to measure levels of diffusion and usage patterns in different sectors of the Ghanaian economy in both urban and rural access.	
Planned Action Time-Frame	Q4, 2012 to Q4 2014	
Planned Action Deliverables	Time Bound Measurable Targets	Candidate
Define the broad objectives, target population, and levels of funding of the subsidy programs	GIFEC to define in its strategic plan by Q4, 2012	GIFEC
Identify specific service needs and choices for prospective beneficiaries and communities	Q1, 2013	GIFEC/NITA
Private firms compete for bids for the identified projects	DO	GIFEC
Enforcement of quality of service and pricing standards to protect consumers and scale-up broadband uptake.	DO	NCA/NITA
Putting in place special ICT promotion	DO	GIFEC/ITES/NCA/GIPC

packages, policy instruments and incentives to facilitate the expansion of information and communication infrastructure		
Planned-Action: Outputs, Outcomes and Beneficiaries		
Planned-Action Key Output(s)	Ensure universal access to broadband network services that balances supply access and demand access.	
Planned-Action Expected Outcome(s)	<ul style="list-style-type: none"> • The development of an economy that sees the promotion of broadband access to telecommunications as a human right for development. • The increase in the uptake of broadband in an economy characterized by a wide spread deployment and exploitation of ICTs within the society to support the delivery of health, education, governance and social services. • The promotion of an economy in which a reasonably large populace utilize broadband-based technologies to have access to information and communications technology tools. • The promotion of an economy which will completely decentralise broadband deployment in the creation of wealth and economic growth. 	
Anticipated Beneficiaries	<p>All the citizenry; especially those in underserved areas</p> <p>The Private Sector</p>	
Resource Mobilization and Costing		
Financial Resource /Cost Implications of Planned Action	The implementation of the planned action will entail the mobilization of financial resources on cost sharing basis between government and the private sector.	
Anticipated Funding Sources	<ul style="list-style-type: none"> • Government budget complemented by donor support. • Private sector investment 	

Total Anticipated/Estimated Cost of Planned Action (US\$)	USD 200 Million.	
Project Implementation Management, Monitoring and Evaluation		
Detailed Project Implementation Document Required (PID)?	<ul style="list-style-type: none"> • The strategic plan of GIFEC should spell out clearly the complimentary roles that Government, the private sector, the civil society and NGOs can play as actors in broadband infrastructure and technology development. The Plan should also focus on demand driven initiatives as pre-requisites to support investment drives in the sector. • The National Communications Authority should consider the regulatory action of agreeing with telecom operators within the country to take up broadband deployment with universal service considerations to facilitate increase in broadband connections without geographic limitations. 	
Lead Implementation Organization	Ministry of Communications	
Supporting Implementation Agencies and their Assigned Responsibilities	Supporting Implementation Agency	Assigned Responsibility
	GIFEC/NITA/ITES/GIPC	Coordinate the sourcing and provision of subsidies to promote functional Internet connections especially to far-flung areas.
	NCA	Examining the regulatory impact in relations to the Telcos reclassification for broadband universal service obligations.
Industry Players	Competitive engagement in broadband deployment	
	<ul style="list-style-type: none"> • Ability of users to pay for cost of broadband bandwidth as to increase up-take. • The tailoring of service features to users' needs and preferences to drive up-take. • The establishment of potential growth for service 	

<p align="center">Planned Action Critical Success Factors</p>	<ul style="list-style-type: none"> • The ability to balance regulative actions with stable and reliable sources of subsidies to promote the development of next generation broadband networks. • The availability of long-term financing sources • The establishment of an alignment of business opportunities with service providers strategies. • The strengthening of the institutional capacity of GIFEC to manage and coordinate competition subsidy mechanism. • Massive increase in end-users.
<p align="center">Planned Action Implementation Risk Factors</p>	<ul style="list-style-type: none"> • Lack of collaboration from Telecom Service operators and other service providers. • The inability of telecom operators to cooperate with government for the fear that broadband service obligations will impose an unfair burden on the industry. • The misconstruing of the involvement of government in promoting broadband uptake from the perspective of economic and social equality as interference in telecom market deregulation. • Inability of Ghana Post to accept the challenge of digitization of its postal network as part of the universal service provision obligation.
<p align="center">Planned Action Implementation/Performance Monitoring and Evaluation Indicators</p>	<ul style="list-style-type: none"> • Indicators to measure the number of broadband connections by service providers. • Indicators to measure broadband penetration rates • Indicators to measure the quality of service to ascertain if minimum downstream Internet access rate for underserved areas as well as minimum download rate are being met by service providers. • Indicators for accessing if most economically advantageous bids are being utilized to sustain programme.
<p align="center">Planned Action Implementation Monitoring and Evaluation Responsibility</p>	<p>Ministry of Communications</p>
<p align="center">Additional Comments and Remarks</p>	
<p>Migrating the Universal Service Fund to broadband, is a necessary transformation process to drive the information society agenda.</p>	

Appendix – 4

BBS-04	Promoting Demand for Broadband Networks and Services
The Relevant Plan Specific Strategic Objectives and Goals	<p>Taking advantage of the key features of the next generation public services, in terms of citizen centricism, restructured government, participatory, measurable and transparency in governance, this Planned Action is aimed at achieving Broad Strategic Goal of intensifying government intervention to improve citizens’ opportunities to access and use of communications services to maximize the uptake of broadband usage.</p> <p>The Action Plan is to create the specific objectives:</p> <ul style="list-style-type: none"> • To create a broadband economy in which the potential users are well informed about the benefits of broadband to drive uptake. • To build awareness of potential users about what broadband is and how it can be useful to them personally. • To increase exposure of potential users to boost take-up rates.

	<ul style="list-style-type: none"> • To nurture penetration to reach a certain critical mass to promote rapid growth in broadband development. <p>The specific goals include:</p> <ul style="list-style-type: none"> • To educate the public on the value of broadband or know how to use a computer and other IT devices to take advantage of the service. • To make available low-cost PCs, and mobile handsets for procurement under installment plan. • To bridge the digital divide between the urban and under-served areas through the deployment of broadband technology fitting the needs of marginalized users. • The development and the evolution of relevant localized content to motivate broadband uptake.
<p>Relevant Achievable National ICT4D Policy Objectives & Goals</p>	<ul style="list-style-type: none"> • To facilitating increased access to communications facilities. • To promote the development, deployment and use of reliable information and communication infrastructure with nationwide coverage. • To facilitate and encourage the use of high speed bandwidth to boost socio-economic development.
<p>Relevant ICT4D Policy Implementation Expectations</p>	<ul style="list-style-type: none"> • Aid the process of informing the public and the target market about broadband and its benefits. • Making effective use of broadband through application and content. • Support the promotion of Geographic Information System (GIS) to aid the utilization of broadband to promote business intelligence and enhance competitive advantage in investment and marketing decision. • Support the increase in the use of broadband to realize the benefits of information from awareness and marketing perspective to complement the delivery of services in: <ul style="list-style-type: none"> h) Health i) Education j) E-Commerce k) Investment l) Communications m) Civic participation n) Safety o) Culture, Arts and Tourism • Initiating government-sponsored promotion campaigns through the highlighting applications, content and benefits through public service announcements. • Promoting Internet research in high bandwidth applications thus building consumers interest and participation in the process.

	<ul style="list-style-type: none"> • Encouraging the private sector to bundle broadband in their service delivery in computer manufacturing, TV service delivery etc to boost the up-take in broadband. • Encouraging service providers to promote shared connections within communities, schools etc. as a way of bringing down broadband price per connection to stimulate demand for individual access later on to promote broadband take-up. • Encouraging email address portability to minimize the incidence of potential users of broadband shying away because of their dislike to change internet service providers. • Promoting the full disclosure by industry of the services they offer, products available and their access prices to enable consumers make informed choice decision. • Educating the populace of the effective use of broadband connections and the applications that it facilitates in addition to technology promotion. • Support R&D funding for content and application creation to help spur growth of young companies. • Supporting the setting up of technology diffusion programs, incubators to help increase the up-take of broadband.
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Type of Planned Action		National Policy Initiative		
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Background to Planned Action	<p>Broadband is a crucial driver of economic recovery, job creation and global competitiveness. As the nation's largest residential broadband provider, cable recognizes that broadband adoption is a critical element to fulfilling broadband's potential.</p> <p>Although supply-side issues in broadband adoption are important, it is widely acknowledged that simply building networks does not guarantee that they will be used or used most effectively. Focusing attention on demand facilitation process to propel and drive demand for Broadband Networks and Services is thus considered as a strategic intervention. This Action Plan is therefore designed to focus on issues of what government, the private sector and consumers can do to spur the use and adoption of broadband networks and services by consumers.</p> <p>It is important therefore that various policies and programmes are considered for implementation to address situations where demand is stifled because:-</p> <ol style="list-style-type: none"> a) consumers are not aware of the benefits of broadband b) broadband is not affordable, c) broadband is not attractive or relevant to them as consumers.
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	<p>In this regard the importance of public-private sector as well as civil society cooperation to facilitate demand and increase broadband access to a wider number of users in Ghana is of immense importance.</p>
<p>Description of Planned Action</p>	<ul style="list-style-type: none"> • Facilitation of broadband demand factors and address affordability concerns. • Facilitating broadband applications that have tremendous impact on adoption because of their capability to provide tools and services that are attractive to both consumers and businesses. • Promote avenues for digital literacy and skills development so many consumers can subscribe to broadband choose not to for a variety of reasons, including a lack of digital training and skills, a lack of perceived relevance to their lives.
<p>Planned Action Implementation Rationale</p>	<p>The Planned Action is to ensure the continuous raising of awareness of the demand side as potentially large segment of the populace of Ghana may not be taking advantage of the benefits offered by broadband.</p> <p>Taking advantage of the high penetration of mobile phone usage in Ghana the rationale behind the broadband demand facilitation process is to among other things ensure accessibility of services to all including marginalized citizens which include persons with disability and those with inadequate levels of digital literacy. Additionally increased availability of broadband-enabled applications in government services, health care, education, finance will undoubtedly boost overall demand for broadband. By so doing Government will have created the opportunity for widespread usage of broadband to enable the private sector expand networks and services to the reach in economically meaningful manner.</p>
<p>Planned Action Specific Goals</p>	<p>To develop for Ghana demand facilitation stimulus that will focus on expanding market through programmes designed to encourage broadband Internet access and adoption to motivate infrastructure providers to make investments needed to spur greater broadband development in a more connected society.</p>

Planned Action Implementation Prerequisites and Requirements		
Planned Action Time-Frame	Q4, 2012 to Q2, 2013	
Strategic Goal Impact Assessment		
Anticipated/Envisaged Impact/Contribution to Achieving Strategic Goal	<ul style="list-style-type: none"> • Support the intensification of government intervention to improve citizens' opportunities to access and use of communications services to maximize the uptake of broadband usage. • Government's intervention efforts will spur private sector initiatives in delivery of new model of services to the un-reached and disadvantaged communities in the society and thereby increase broadband deployment. 	
How to Assess Impact/Contribution	<ul style="list-style-type: none"> • Private sector taking leadership advantage to develop a market of on-line users that is not fully in place. • An expanded citizens knowledge of effective mobile application models thus contributing to broadband uptake. • Digital literacy programme backed by increased access to low-cost PCs, and other broadband-based IT devices that can be purchased through installment plan. 	
Planned Action Deliverables and Targets		
Planned Action Deliverables	Time-bound Measurable (TBM) Targets	Candidate Implementation Agencies
The Development of the National programme.	The Ministry Communications to facilitate the development of the national demand plan of action from supply and demand point of view by close of Q4, 2012.	MoC NCA NITA Telecom Operators EndUsers/Citizens/Businesses/MDAs Application Developers Content developers Infrastructure providers

		NGOs and civil society in the communications sector
Launching of National Programme	Q1,2013	
Planned-Action: Outputs, Outcomes and Beneficiaries		
Planned-Action Key Output(s)	A National Broadband Demand Stimulus Plan	
Planned-Action Expected Outcome(s)	A document that will outline governments commitment to promoting adoption factors for broadband technologies such that it will lead to strategic approach to increase take-up of broadband usage and boost demand to enhance competition in supply to also help bring down broadband prices.	
Anticipated Beneficiaries	The entire citizenry	
Resource Mobilization and Costing		
Financial Resource /Cost Implications of Planned Action	The implementation of the initiative will require financial resources for research and consultancy studies.	
Anticipated Funding Sources	Government of Ghana budgetary resources; Donor Community	
Total Anticipated/Estimated Cost of Planned Action (US\$)	USD 100,000 – USD 120,000	
Project Implementation Management, Monitoring and Evaluation		
	<p>The requirements for the project are;</p> <ul style="list-style-type: none"> • Detailed Programme description and implementation objectives and goals, and outcomes, deliverables • Implementation timelines and key deliverables 	

<p>Detailed Project Implementation Document Required (PID)?</p>	<ul style="list-style-type: none"> Detailed programme costing and budget 	
<p>Lead Implementation Organization</p>	<p>Ministry of Communications</p>	
<p>Supporting Implementation Agencies and their Assigned Responsibilities</p>	<p>Supporting Implementation Agency</p>	<p>Assigned Responsibility</p>
	<p>NITA</p>	<p>Provision of data access</p>
	<p>NCA</p>	<p>Provision of data</p>
	<p>ITES/GASSCOM</p>	<p>Sensitize candidates for adoption and supply</p>
<p>Planned Action Critical Success Factors</p>	<ul style="list-style-type: none"> Ability to drive demand aggregation. Ability to drive demand stimulation with appropriate incentives. Financial resources availability to support government’s intervention in demand driven factors. The entry of utility service providers to contribute to broadband delivery to the homes. Ability to attract small and medium sized enterprises to take up broadband usage in addition to government agencies. Ability to impart knowledge and gain the commitment of the less literate in ICT so they take-up broadband usage. The affordability of the price of broadband service by all irrespective of geographic location. The intensification of market competition in broadband infrastructure and service delivery to motivate supply 	
<p>Planned Action Implementation Risk Factors</p>	<ul style="list-style-type: none"> The inability of demand and supply side models to improve commercial viability. The inability of MoC to mobilize the required funds to foster demand promotion. The lack of implementation of plan to enhance broadband uptake. 	

<p style="text-align: center;">Planned Action Implementation/Performance Monitoring and Evaluation Indicators</p>	<ul style="list-style-type: none"> • Indicators of homes in urban and rural areas that have taken advantage of affordable access. • Number of households in Ghana with access to broadband networks with sufficient speed not below the universal average in broadband speeds of at least 2Mbps • Indicators of availability of affordable access to robust broadband service, and the means and skills • Percentage of Ghanaians benefitting from digital literacy skills. • Percentage of Ghanaians to subscribe broadband if they so choose. • Indicators of affordable access to broadband service to anchor institutions such as schools, hospitals and government buildings.
<p style="text-align: center;">Planned Action Implementation Monitoring and Evaluation Responsibility</p>	<p>Ministry of Communications</p>
<p style="text-align: center;">Additional Comments and Remarks</p>	

Appendix – 5

BBS-05	Programme to Promote Sync in Broadband Supply Chain
The Relevant Plan Specific Strategic Objectives and Goals	<p>Under the Enabling Physical Infrastructure Development strategy for Ghana, strategies have been outlined for both the private sector and Government to complement efforts at expanding connectivity for broadband networks.</p> <p>This Planned Action is aimed at achieving the broad strategic objective:</p> <ul style="list-style-type: none"> • To ensure that the four component parts of the Broadband Supply Chain Networks so far developed in Ghana work together for the network to function effectively and efficiently. <p>The goal are:</p> <ul style="list-style-type: none"> • To ensure that the four parts of the broadband supply chain in Ghana namely; international connectivity, the national backbone network, metropolitan access links, and the local access network are in sync to enhance supply.

	<ul style="list-style-type: none"> To ensure that the four categorized component parts in their hierarchical levels, which together constitute the broadband supply chain are in sync so that maximum benefit can be gained from the deployment of networks: 		
<p>Relevant Achievable National ICT4D Policy Objectives & Goals</p>	<ul style="list-style-type: none"> Ensure the availability of adequate and affordable broadband capacity to support technology deployment in the entire country as a result of high penetration of the country’s existing level of infrastructure. Promote the deployment of ubiquitous broadband networks on technology neutral platform. Set the environment for leveraging of existing networks through upgrade or evolution instead of securing additional financial resources to building completely new networks. 		
<p>Relevant ICT4D Policy Implementation Expectations</p>	<ul style="list-style-type: none"> Set the policy framework to improve collaboration in the management of the four levels of networks to improve the reliance, reliability and availability of broadband for ubiquitous usage. Ensuring that the different levels of the overall broadband network supply chain are in sync. To achieve high speeds in the local access network segment facilitated through a synchronized capacity of high speed national and international network segments complimenting all segments Encourage the private sector to promote innovation to scale up broadband development and deployment. Support the creation of enabling infrastructure backbone to support the uptake of broadband for the exploitation of ICTs within the economy and society. 		
<p>Type of Planned Action</p>		<p>National Policy Initiative</p>	
	<p>Ghana as a country boasts of about 7.3terabites capacity of broadband international undersea cable connectivity landing on its shores. Additionally there exist the national fibre optic backbone infrastructure which is now being upgraded with the Eastern Corridor Rural Fibre optic connectivity. The Private sector telecom service providers also have their</p>		

<p style="text-align: center;">Background to Planned Action</p>	<p>fibre optic lines deployed in many parts of the country. Recently to address regional connectivity concerns and thereby ensure high level of redundancy in Ghana, the fibre optic connection linking Ghana, Burkina Faso and Togo was launched at Cinkasse at northern Togo.</p> <p>Within the country NITA has designed the national connectivity network as well as the Metropolitan Network which NITA is managing.</p> <p>In spite of the availability of all the four levels and components of broadband supply chain in Ghana we cannot say that we have a coordinated and synchronized approach to broadband bandwidth management in the country to bring in the benefit of economies of scale.</p> <p>The need to ensure a strategic approach for developing broadband networks at all the levels discussed above is pertinent so all component parts of the networks work together for the networks to function effectively and efficiently.</p>
<p style="text-align: center;">Description of Planned Action</p>	<p>The Planned Action entails the development of:</p> <ul style="list-style-type: none"> • Policy framework to guide the synchronization of layers of networks to enhance collaboration between the operation of international connectivity networks, national backbones, metropolitan rings and cellular backhuls as well as last mile supplier access. • The definition of policy and institutional arrangements to enhance this process.
<p style="text-align: center;">Planned Action Implementation Rationale</p>	<p>Government involvement in the deployment of broadband networks has important repercussions among which is the need to ensure that private sector network access mainly in the international connectivity domain and that of government in the national backbone are in sync to promote local availability of broadband.</p> <p>In Ghana Government has played many different roles of guaranteeing bilateral or multilateral loans for the construction of backbone networks to complement those developed also by the private sector. Though Ghana can boast of high rate of redundancy there has not been a clear definition of synchronizing roles in service provision offered by Government networks, wholesalers and retail sector service providers.</p> <p>The Action Plan is thus to define a collaborative role on infrastructure usage and maximization as well as upgrading so the private sector can take advantage of Government’s collaborative effort to spur broadband</p>

	uptake mindful that Government itself is a major demand institution for broadband services	
Planned Action Specific Goals	Set out policy guidelines that will promote the following: <ul style="list-style-type: none"> • Ensure access to rights-of-way in a fair and non-discriminatory manner • Encourage and promote the installation of open access to passive infrastructure when public works are undertaken • Allow municipalities or utilities to enter telecommunications markets; where market distortion is a concern, policy makers could limit municipal participation to basic investments (such as the provision of dark fiber networks under open-access rules) • Provide greater access to spectrum (which is a significant market barrier to wireless broadband provision) and adopt more market mechanisms to promote more efficient spectrum use. 	
Planned Action Implementation Prerequisites and Requirements		
Planned Action Time-Frame	Q4, 2012 to Q4, 2013	
Planned Action Deliverables	Time-Bound Measurable Targets	Candidate
National Infrastructure Sync Strategy	Q4, 2012	MoC
Launch Strategy	Q1, 2013	MoC, All sector Players
Setting up Institutional Arrangement	Q1, 2013	NITA

Planned-Action: Outputs, Outcomes and Beneficiaries	
Planned-Action Key Output(s)	The putting in place by Government of the necessary policy measures and regulatory framework to allow and encourage the deployment and financing of broadband networks in a synchronized manner as widely as possible and thus ensure that the benefits of broadband are spread throughout all populations and areas and demand is affordable.
Planned-Action Expected Outcome(s)	Environments where the private sector players have assumed the main role for investment in broadband networks and collaborates with governments who themselves are important users of broadband to ensure maximum utilization of facility to propel investment drive.
Anticipated Beneficiaries	Government Machinery Private Sector Citizenry
Resource Mobilization and Costing	
Financial Resource /Cost Implications of Planned Action	The implementation of the policy initiative will require financial resources for research and consultancy studies.
Anticipated Funding Sources	Government of Ghana budgetary resources; Donor Community/ Private Sector
Total Anticipated/Estimated Cost of Planned Action (US\$)	USD 20 Million – 25 Million
Project Implementation Management, Monitoring and Evaluation	
Detailed Project Implementation Document Required (PID)?	Project Implementation Plan has to be developed.

Lead Implementation Organization	Ministry of Communications.	
Supporting Implementation Agencies and their Assigned Responsibilities	Supporting Implementation Agency	Assigned Responsibility
	NCA	Managing the regulatory impact.
	NITA	Ensuring interoperability and managing the commercial and technical aspects of the sync
Planned Action Critical Success Factors	<ul style="list-style-type: none"> • Ability to address technical issues of convergence and interoperability. • Ability to demarcate boundaries between the four layers of network often very blur, as for example domestic internet traffic exchange route verses international exchange route. • Ability to synchronize the layers in a technology neutral policy environment such as Ghana. 	
Planned Action Implementation Risk Factors	<ul style="list-style-type: none"> • The conflicting dual role of government as infrastructure providers and consumers. • Government’s role in spectrum allocation management when Government itself require spectrum for use without going through the competitive market process. 	
Planned Action Implementation/Performance Monitoring and Evaluation Indicators	<ul style="list-style-type: none"> • Indicators to indicate high access to broadband. • Indicators to show high rate of interoperability and interconnection leading to high up-take of broadband. • Measurement of economies of scale in the supply and demand side. 	
Planned Action Implementation	Ministry of Communications	

Monitoring and Evaluation Responsibility	
Additional Comments and Remarks	

Appendix – 6

BBS-06	Improving Legal and Regulatory Environment
The Relevant Plan Specific Strategic Objectives and Goals	<p>The strategic objective of the plan is:-</p> <ul style="list-style-type: none"> • To remove entry barriers to efficient and productive spectrum use to promote the introduction of innovative technologies. • To facilitate the allocation of the appropriate spectrum to significantly alter business case for wireless broadband to expand take off of broadband usage. <p>The strategic goals are:</p> <ul style="list-style-type: none"> • To stimulate the timely expansion of affordable broadband access in national markets. • To support service neutrality to facilitate innovation in services for the benefit of customers to aid broadband uptake.

<p>Relevant Achievable National ICT4D Policy Objectives & Goals</p>		<ul style="list-style-type: none"> • To promote the creation of a flexible and dynamic legal and regulatory framework that supports the development of the nation’s physical and communications infrastructure in a manner that eliminates bottlenecks to competition while ensuring that consumers are offered services that are affordable in rates. • To promote comprehensive review of wholesale competition rules to help ensure competition in fixed and mobile broadband services. • To facilitate the re-assignment of unused and unlicensed spectrum to foster ongoing innovation and competitive entry into the broadband market. • To modify and review rules for wireless backhaul spectrum to increase capacity in urban areas and range in rural areas reviewed to increase broadband penetration. • To take regulatory action on data roaming to determine how best to achieve wide, seamless and competitive coverage to boost broadband uptake. • To take regulatory action to promote the identification and classification of VoIP services as well as the development of transitioning approaches to full IP-based world as supportive measures for broadband deployment and uptake. 		
<p>Relevant ICT4D Policy Implementation Expectations</p>		<ul style="list-style-type: none"> • Aid and encourage the efficient use and shift spectrum from low-value uses to increase broadband delivery. • Facilitating effective and efficient competition between equipment, device, and applications and services vendors to the benefit of customers. • Promoting competition among mobile broadband providers, encourage investment, and increase consumer choice. • Promoting spectrum sharing to help increase wireless broadband availability in both urban and rural areas 		
<p>Type of Planned Action</p>		<p>National Regulatory Initiative</p>		
		<p>With the increase in mobile penetration coupled with voice and data traffic increases in Ghana, there is the need to support operators in the wireless industry to acquire adequate additional spectrum to deliver wireless broadband technology to support the uptake of broadband.</p>		

<p>Background to Planned Action</p>	<p>To meet the requirement for adequate wireless spectrum assets there is the need for regulatory policy reform to promote spectrum sharing, and also support the effective utilization of the 2.6 GHz band to facilitate adequate delivery of broadband access and services to spur broadband take off.</p> <p>The planned action is to review the regulatory ecosystem to support the growth in the delivery of broadband and LTE services allowing technology neutrality in the deployment of the broadband wireless system through the elimination of blockages to growth in broadband capacity improvement.</p>
<p>Description of Planned Action</p>	<p>The initiative is to promote regulatory environment that will be responsive to Industry requirement to aid the development of innovative solutions to increase penetration of broadband services in a manner that promote increases in the level of subscriptions by consumers.</p>
<p>Planned Action Implementation Rationale</p>	<p>The rationale behind this planned action is to support specific measures and flexible policy and regulatory approaches that will be attractive to private sector investors and players in the Broadband Industry so that they will be innovative in using existing spectrum and other additional spectrum to be allocated in evolving new technologies that will increase the uptake of broadband.</p>
<p>Planned Action Specific Goals</p>	<ul style="list-style-type: none"> • To promote the allocation and usage of spectrum to enhance technology and service neutral broadband delivery to support different types of application of broadband services to complement uptake of broadband usage. • To facilitate the creation of regulatory flexibility for operators to use existing spectrum for mobile broadband services to aid expansion of affordable broadband access in national markets. • To remove barriers to mobile roaming to enhance uptake of broadband usage for productive ventures.
<p>Planned Action Implementation Prerequisites and Requirements</p>	<p>The examination of current licenses of operators to ensure if NCA can stay within their legal and contractual limit to develop new guidelines and rules to complement this program.</p>

Planned Action Time-Frame	Q4, 2012- Q4 2013	
Planned Action Deliverables	Time Bound Measurable Targets	Candidates
Review of Licences/Spectrum	Q4, 2012	NCA
Review of Regulations	Q1, 2013 to Q2, 2013	NCA
Issuing of supplementary competitive guidelines	Q3, 2013	NCA
Parliamentary Approval (if any)		MoC
Planned-Action: Outputs, Outcomes and Beneficiaries		
Planned-Action Key Output(s)	The encouragement of the deployment of multiple technologies to enhance increase in Broadband capacity to support delivery of services in an era of technological convergence.	
Planned-Action Expected Outcome(s)	<ul style="list-style-type: none"> • The development of a regulatory environment that is conducive to the identification and classification of VoIP services as well as the development of transitioning approaches to full IP-based world supportive for increased demand for broadband deployment. • Address challenges militating against the stimulation of demand in underserved areas to boost broadband access, affordability and demand 	

	<ul style="list-style-type: none"> • Support regionally specific measures and flexible policy and regulatory approaches that will be attractive to private sector investors and players in the Broadband Industry. • Promote and support the increase in the establishment of the number of SME businesses providing broadband services. • Policy complements of provision of suitable taxation regimes, financing mechanisms and government contracts as incentives for SME businesses • Promotion of regulatory flexibility to support the competitiveness of markets through the pricing of services and the types services that can be bundled in underserved areas. • Spur up the approaches for consideration of a convergence of multiple services (e.g., telephony, data and broadband) over IP networks. • Promote integrated regulatory approaches for co-existence of pre-existing services such as telephony and new competing services such as VoIP as well as the evolution from non-IP networks to converged networks. • Stimulate high demand drivers to promote deployment of broadband networks for new services such as VoIP and cost effectiveness of utilizing multiple network topologies and spectrum bands in service delivery of
Anticipated Beneficiaries	Private Sector Players The citizenry
Resource Mobilization and Costing	
Financial Resource /Cost Implications of Planned Action	Financial requirement for research and consultancy services.
Anticipated Funding Sources	NCA Budget
Total Anticipated/Estimated Cost of Planned Action (US\$)	USD50,000.00 to USD70,000.00
Project Implementation Management, Monitoring and Evaluation	

Detailed Project Implementation Document Required (PID)?	NCA has to carry our initial market survey on spectrum utilization.	
Lead Implementation Organization	NCA	
Supporting Implementation Agencies and their Assigned Responsibilities	Supporting Implementation Agency	Assigned Responsibility
	NCA	Regulatory review
Planned Action Critical Success Factors	<ul style="list-style-type: none"> • Ensuring that allocation of frequencies in the band will increase and improve broadband access • The availability of scalable equipment and technologies so that cost escalation is not passed on to consumers. • Ability to determine the right time for licensing • A private sector motivated by regulatory flexibility to support competitive market activities in broadband investment. 	
Planned Action Implementation Risk Factors	<ul style="list-style-type: none"> • Uncooperative stance from industry players • The fear of implementing regulatory strategies that may not promote incremental change and adaptation of broadband by consumers. 	
Planned Action Implementation/Performa	<ul style="list-style-type: none"> • Indicators to measure comprehensive review of wholesale competition rules to help ensure competition in fixed and mobile broadband services. • Indicators to assess unused and unlicensed spectrum that can be re-assigned to foster innovation and competitive entry. 	

<p>nce Monitoring and Evaluation Indicators</p>	<ul style="list-style-type: none"> • Evidence of the promulgation of rules for wireless backhaul spectrum to increase capacity in urban areas and range in rural areas reviewed. • Indicators to demonstrate the economic case for the use of mobile data roaming to determine how best to achieve wide, seamless and competitive coverage, encourage mobile broadband providers to construct and build networks, and promote entry and competition.
<p>Planned Action Implementation Monitoring and Evaluation Responsibility</p>	<p>Ministry of Communications</p>
<p style="text-align: center;">Additional Comments and Remarks</p>	

Appendix – 7

<p>BBS-07</p>	<p>Supporting Private Sector Investment and Market Entry</p> <p>The strategic objectives are:</p> <ul style="list-style-type: none"> • To foster competition with minimal market entry barriers. • Create an enabling environment for intra and inter-modal competition • Promote technology neutrality to aid the rapid development and diffusion of broadband. • To develop an enabling environment through policies and regulations that promote investment and market entry. • To ensure non-discriminatory access
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The Relevant Plan Specific Strategic Objectives and Goals		<ul style="list-style-type: none"> To promote R&D broadband agenda to break new and innovative broadband deployment grounds. <p>The specific goals are;</p> <ul style="list-style-type: none"> To enact policies to foster competition and innovation. To free up more spectrum for allocation to attract investors 		
Relevant Achievable National ICT4D Policy Objectives & Goals		<ul style="list-style-type: none"> To support the development of a competitive high value-added private sector to help them invest in the IT sector. To support IT-based SMEs to grow by supporting them to acquire local content investment capabilities. 		
Relevant ICT4D Policy Implementation Expectations		<ul style="list-style-type: none"> Provide policy complements of provision of suitable taxation regimes, financing mechanisms and government contracts as incentives for SME businesses. Promote regional harmonization of broadband development policies to help reduce uncertainty and attract investment. Facilitate infrastructure sharing. Promote open access policy to passive infrastructure as cost reduction measure to attract new investors in the broadband market. Encourage the development of PPP for deployment of open-access broadband networks. Coordinate access to right of way. Facilitate open access to all international and domestic backbones. 		
Type of Planned Action		National Programme		
Background to Planned Action		<p>For Ghana to promote the development of adequate infrastructure to improve upon the development of broadband from the supply point of view the critical point of broadband policy implementation is to foster competition with minimal market entry barriers.</p> <p>To achieve this broadband infrastructure development policy objective there is the need for effective coordination of infrastructure development between the private sector and the public sector to benefit from economies of scale.</p>		
		<p>To support the development of an enabling environment through policies and regulations that promote investment and market entry to promote the</p>		

Description of Planned Action	development of adequate infrastructure to improve upon the development of broadband from the supply side.	
Planned Action Implementation Rationale	Broadband is a modern necessity of life and ought to be found everywhere to unlock the doors to socio-economic transformation of nations. Government can contribute to the process of making broadband available by proactively supporting the private sector to invest so the private sector can be assured of good return on investment. The Plan is to address the policy measure to support the private sector to invest in the broadband market.	
Planned Action Specific Goals	<ul style="list-style-type: none"> • Promote regional harmonization of broadband development policies to help reduce uncertainty and attract investment. • Facilitate infrastructure sharing. • Promote open access policy to passive infrastructure as cost reduction measure to attract new investors in the broadband market. • Encourage the development of PPP for deployment of open-access broadband networks. • Coordinate access to right of way. • Facilitate open access to all international and domestic backbones. 	
Planned Action Implementation Prerequisites and Requirements		
Planned Action Time-Frame	Q4, 2012 – Q4 2013	
Planned Action Deliverables		
Review market entry guidelines		NCA

Planned-Action: Outputs, Outcomes and Beneficiaries		
Planned-Action Key Output(s)	Attraction to the private sector to invest as policy complements of provision of suitable taxation regimes, financing mechanisms and government contracts as incentives are offered to spur competition in investment in the sector.	
Planned-Action Expected Outcome(s)	<ul style="list-style-type: none"> • Promote investment drive • Foster the delivery of broadband supply through electric power lines to take advantage of the 75% penetration rate of electricity to extend affordable broadband to many homes. 	
Anticipated Beneficiaries	All communities especially rural communities.	
Resource Mobilization and Costing		
Financial Resource /Cost Implications of Planned Action		
Anticipated Funding Sources	NCA Budget	
Total Anticipated/Estimated Cost of Planned Action (US\$)	USD50,00.00	
Project Implementation Management, Monitoring and Evaluation		
Detailed Project Implementation Document Required (PID)?		
Lead Implementation Organization	NCA	
Supporting Implementation	Supporting Implementation Agency	Assigned Responsibility

Agencies and their Assigned Responsibilities	ECG	Research and collaboration with private sector to deliver technology of broadband over power lines.
Planned Action Critical Success Factors	<ul style="list-style-type: none"> • Ability to research into the broadband ecosystem in Ghana to develop the enabling through policies and regulations to fill the gap in market entry. • Ability to attract investment and market entry to promote the development of adequate broadband infrastructure. • Indicative improvement in broadband from the supply side. • Ability to ensure net-neutrality environment to encourage new investors into the industry. 	
Planned Action Implementation Risk Factors	<ul style="list-style-type: none"> • Lack of research skills in the sector. • The lack of consensus between regulators and operators on spectrum alteration as well as licences review. 	
Planned Action Implementation/Performance Monitoring and Evaluation Indicators	<ul style="list-style-type: none"> • Degree of regional harmonization of broadband development policies to help reduce uncertainty and attract investment. • The degree of infrastructure sharing. • The number of PPP established for deployment of open-access broadband networks. • Ability to coordinate access to right of way. • The level of facilitation of open access to all international and domestic backbones 	
Planned Action Implementation Monitoring and Evaluation Responsibility	NCA	
Additional Comments and Remarks		



Appendix – 8

BBS-08	Programme to Undertake Government-led Demand Aggregation with Government Agencies and Civil Society as Early Adopters
	This Planned Action is aimed at achieving Broad Strategic objective: <ul style="list-style-type: none">• To intensify government intervention to improve citizens’ opportunities to access and use of communications services to maximize the uptake of broadband usage.• To identify several primary ways for government to influence broadband adoption.

<p>The Relevant Plan Specific Strategic Objectives and Goals</p>		<ul style="list-style-type: none"> • To fuel learning opportunities exponentially as educational materials and course instruction which previously could only be delivered in a classroom environment are obtained online. <p>The goals are:</p> <ul style="list-style-type: none"> • To incentivize broadband availability and adoption • To align public policies and standards with broadband infrastructure goals in key economic sectors where government is a major player, including health care, education, energy, public safety and security • Encourage competition in the marketplace examine the most efficient use of government resources. • Promoting funding for R&D in broad variety of areas such as networking, software, content development etc that will yield benefit to the citizens. 		
<p>Relevant Achievable National ICT4D Policy Objectives & Goals</p>		<ul style="list-style-type: none"> • The deployment of electronic government and governance as well as electronic commerce system. • Use government agencies as anchor points to leverage and share broadband connectivity with the surrounding community, residences and businesses within the range of the anchor tenant agency of government. 		
<p>Relevant ICT4D Policy Implementation Expectations</p>		<ul style="list-style-type: none"> • Making more government services and resources available online for which broadband could prove more valuable to users. • Make government data available online for third-party application developers. By allowing entrepreneurs and startups to build apps with value to consumers, the FCC believes it can drive interest in the Internet 		
<p>Type of Planned Action</p>		<p>National Programme for Adoption</p>		
		<p>Broadband has fuelled many opportunities in the area of governance, health service delivery, education, research and development exponentially. The Action Plan is to respond to the need for government to foster broadband demand so as to encourage the private sector to have value for money in broadband networks and service delivery to balance demand and supply factors as a way of ensuring affordability of the</p>		

<p>Background to Planned Action</p>	<p>facility to promote the development of the Information Society without geographical or financial limitations.</p>
<p>Description of Planned Action</p>	<p>Taking advantage of the key features of Government of Ghana’s e-Government strategy and the on-going public services reform in terms of its focus on citizen centricism, restructured government, participatory, measurable and transparency in governance, this Planned Action is aimed at intensifying government intervention to improve citizens’ opportunities to access and use of communications services to improve upon their status and in the process maximize the uptake of broadband.</p>
<p>Planned Action Implementation Rationale</p>	<p>The Planned Action is to stimulate a nationwide deployment of interoperable public services and other programs on line through cost efficiency measures. To do so, there should be high level of interest in the citizenry capacity to utilize ICT. Government’s intervention is thus to approach this Planned Action implementation from holistic level as all citizens especially public servants with low digital literacy skills are encouraged to relate with the populace on line to utilize broadband bandwidth to boost demand for services. In the process cybersecurity concerns that are critical to be addressed to increase user confidence, trust and adoption of broadband communications would be handled.</p>
<p>Planned Action Specific Goals</p>	<ul style="list-style-type: none"> • The promote public interest in how broadband can facilitate public services transformation in a participatory manner. • To provide an understanding of the choices opened to the public in the delivery of services on broadband communications and media platforms and how they can benefit. • To spur up supply factors as demand is assured.
<p>Planned Action Implementation Prerequisites and Requirements</p>	<p>Developing a PAD and a PIM.</p>
	<p>Q4, 2012.</p>

Planned Action Time-Frame		
Planned Action Deliverables	Time Bound Measurable Targets	Candidate Implementation Agency
Digital Literacy Corps established	Corps in place by Q1, to commence mobilization person who will serve as Trainer of Trainers to go through orientation in basic digital literacy classes provision.	NSS
Digital literacy syllabus designed and launched for implementation.	Commence the offering of personnel of government agencies, private companies and non-profit, grass-roots organizations lessons to expand digital literacy so as to promote G2G, G2C, G2B in both e-Government and M-Government by Q2, 2013.	KACE
Defined sets of on-line services.	Q4, 2012 to Q4 2013, Time frame for on-line service delivery programme for transactional and informative activities defined.	NITA/PSR Sect.
M&E	Progress in Govt-led adoption promotion.	MOC/NITA
Planned-Action: Outputs, Outcomes and Beneficiaries		
Planned-Action Key Output(s)		
Planned-Action Expected Outcome(s)	<ul style="list-style-type: none"> • Launching of marketing campaigns that focus on groups with low adoption rates. • All schools and public offices connected and also to serve as anchor-tenants for the communities where they are located. • Local champions including chiefs and Civil Society leaders identified to champion the promotion of the benefits of broadband. • Cost incentives such as waived installment fees, discount computers, or stratified tiers of speed and service provided to attract up-take. 	

	<ul style="list-style-type: none"> • More public services provided as online service to propel the adoption of broadband: • Through R&D the needs of those who are not interested in broadband studied and uncovered to make it most attractive to them. • Digital literacy schemes instituted to expand capacity of usage. • Programmes established to improve computer and smart IT equipment ownership and Internet access in unserved and underserved areas. 	
Anticipated Beneficiaries	The entire citizenry	
Resource Mobilization and Costing		
Financial Resource /Cost Implications of Planned Action	Mobilization of financial resources will be required	
Anticipated Funding Sources	GoG Budgetary allocation and donor support	
Total Anticipated/Estimated Cost of Planned Action (US\$)	USD30,000,000.00	
Project Implementation Management, Monitoring and Evaluation		
Detailed Project Implementation Document Required (PID)?	Detailed PAD and PIM will have to be developed	
Lead Implementation Organization	Ministry of Communications	
Supporting Implementation Agencies and their Assigned Responsibilities	Supporting Implementation Agency	Assigned Responsibility
	Public Sector Reform Secretariat	Define on-line service delivery guidelines and performance

		timeframe for all MDAs and MMDAs
	NITA	Creating on line Digital literacy portal and coordinating infrastructure support
	National Service Secretariat	Supporting the creation of a pool of digital literacy corps
	GIFEC	Increasing the capacity of community partners
	KACE	Design and offer training in Digital Literacy
	OHCS	Sensitizing civil servants on e-government
	Local Government Secretariat	Sensitizing local government staff on new approach to service delivery
	GES and GHS	Major players in content and application development on-line.
	IIR	Research in Networks, Application, Devices and Users.
		<ul style="list-style-type: none"> • Ability to undertake gap analysis of broadband availability, adoption and the existing capacity of local support organizations. • Availability of technical expertise to local institutions, non-profits and governments to develop deployment and adoption related initiatives. • Ability to team up with the private sector to create public-private partnerships to access infrastructure, technical expertise, training and program funding. • Ability to accelerate broadband application usage in key areas like government, education and health care etc. • Ability to respond to security concerns of public over broadband and Internet usage. • Many youth committed to the process to help sustain and transfer digital knowledge to the aged and the adult population.
	Planned Action Critical Success Factors	

<p align="center">Planned Action Implementation Risk Factors</p>	<ul style="list-style-type: none"> • Inability to coordinate the implementation of the Strategy. • The lack of technical expertise to support digital literacy drive. • Inability to provide incentives and motivation schemes to encourage equipment ownership to enhance broadband usage. • Resistance to change management in e-governance and m-governance models. • Inability to back programme with research indicators.
<p align="center">Planned Action Implementation/Performance Monitoring and Evaluation Indicators</p>	<ul style="list-style-type: none"> • Percentage government and allied institutions covered by Gov 2.0 services. • Percentage of population with sufficient digital literacy skills. • Percentage of services delivered on-line and the utilization of the on-line channels by the citizenry. • Percentage of digital content creation innovation • Percentage of local content creation and utilization • Percentage reduction in PC and other Smart IT Devices and the increase in usage. • Assurance of on-line security assurance maintenance measured by user satisfaction to secured networks and the reduction rate of intrusion and hacking. • Percentage of rise in institutional activities on M&E
<p align="center">Planned Action Implementation Monitoring and Evaluation Responsibility</p>	<p>Ministry of Communications.</p>
<p align="center">Additional Comments and Remarks</p>	

Appendix -9

BBS-09	Programme to Promote Broadband Adoption By Industry
	<p>The strategic objective of this Action Plan are:</p> <ul style="list-style-type: none">• To support broadband-related industries to increase demand for supply-side components• To support Industry to enhance infrastructure investment. <p>The strategic goals are:</p> <ul style="list-style-type: none">• To help create long-term sustainable demand for broadband services.

<p>The Relevant Plan Specific Strategic Objectives and Goals</p>	<ul style="list-style-type: none"> • To offer training and incentives for SMA’s to increase their uptake of broadband to improve productivity. • To widen market opportunities for broadband suppliers. • To widen demand though support for innovators. 			
<p>Relevant Achievable National ICT4D Policy Objectives & Goals</p>	<p>To support the private sector, including SMAs and IT-Enabled sector players to grow through the deployment of broadband technology to enhance accelerated economic growth.</p>			
<p>Relevant ICT4D Policy Implementation Expectations</p>	<ul style="list-style-type: none"> • Promote ubiquitous broadband deployment in Ghana to link up with the rest of the globe. • Advocate for minimal regulation of broadband networks. • Work for removal of barriers to broadband deployment including right-of way impediments, franchise fees and excessive taxes. • Support fiscal incentives, such as tax credits, grants, pilot-project funding and matching-funds/low-interest loans. • Assist organizations to realize the economic and social benefits of broadband. • Encourage global deployment of all broadband access technologies. • Support Industry research into requirement for globally harmonized spectrum allocations. 			
<p>Type of Planned Action</p>		<p>National Initiative</p>		
<p>Background to Planned Action</p>	<p>The shift to broadband requires massive investments in terms of new networks and infrastructure along with the development of new content, services, applications and business models in order for investors to achieve a return on investment. To support the realization of this goal, one of the strategic focus of government in the IT-Enabled sector is to encourage small and medium enterprises to utilize the capacity of broadband technology to innovate and transform their businesses so that productivity improvement would be recorded and their market opportunities widened.</p> <p>The planned action is intended to support the boosting and the supply of broadband access, promote private sector production of technology and uptake and thereby increase the demand for long-term sustainable demand for broadband.</p>			

Description of Planned Action	General support to broadband-related industries through offering connectivity to IT Parks to promote broadband demand affordability and the development of basic incubation facilities. Additionally industries will be supported to have access to soft funds to enable them support their innovative ventures as secured tenants.		
Planned Action Implementation Rationale	Without the support for the promotion of broadband adoption by Industry, Ghana will not be in a position to access the high potential in revenue generation and job-creation from the BPO ventures. The rationale is therefore to position Industry in Ghana to better utilize adequate broadband capacity for economic ventures, improve productivity and widen market and thus provide sustainable demand for broadband.		
Planned Action Specific Goals	To make broadband a critical prerequisite to support innovators and entrepreneurs to re-assert their productive and market capabilities in the local and global IT-Enabled sector.		
Planned Action Implementation Prerequisites and Requirements			
Planned Action Time-Frame	Q4, 2012 –Q4, 2013		
Planned Action Deliverables	Time-Bound Measurable Targets		Candidate Implementation Agency
Prepare Project Proposal	End Q4, 2012		ITES
Launch Project			

Planned-Action: Outputs, Outcomes and Beneficiaries	
Planned-Action Key Output(s)	Broadband made a critical prerequisite to support innovators and entrepreneurs to re-assert their productive and market capabilities in the local industry and global IT-Enabled sector
Planned-Action Expected Outcome(s)	<ul style="list-style-type: none"> • Ubiquitous broadband deployment in Ghana by Industry to link up with the rest of the globe. • Regulations amended to support Industry to promote the development of broadband networks. • Barriers to broadband deployment including right-of way impediments, franchise fees and excessive taxes reduced to the barest minimum. • Scheme for fiscal incentives, such as tax credits, grants, pilot-project funding and matching-funds/low-interest loans introduced. • Private sector and Industry supported to realize the economic and social benefits of broadband. • Research and development (R&D) to support Industry innovation initiated.
Anticipated Beneficiaries	The private sector, Government in terms of job creation avenues.
Resource Mobilization and Costing	
Financial Resource /Cost Implications of Planned Action	
Anticipated Funding Sources	GoG and Donor Community, Private Sector Capital
Total Anticipated/Estimated Cost of Planned Action (US\$)	USD\$1,000,000.00
Project Implementation Management, Monitoring and Evaluation	
Detailed Project Implementation Document Required (PID)?	<ul style="list-style-type: none"> • Project Appraisal and Implementation Manual need to be prepared.

Lead Implementation Organization	Ministry of Communications/IT-Enabled Secretariat.	
Supporting Implementation Agencies and their Assigned Responsibilities	Supporting Implementation Agency	Assigned Responsibility
	GASSCOM	Intensify education for private sector to be active players in innovation and deployment
	ITES	Coordinate private sector interest and nurture their interest and uptake.
	NITA	Coordinate with private sector to ensure effective connectivity
	Telcos	Support connectivity
	ISPs	Support market driven education as they engage a number of SMAs
	KACE	Offer digital literacy skills development
	Ministry of Trade and Industry	Promote sector awareness of broadband and its importance for SMAs
	Institute of Industrial Research (IIR)	Promote R&D
	GIPC	Collaborating with ITES to work on incentives.
Planned Action Critical Success Factors	<ul style="list-style-type: none"> • Faster access to broadband Internet whether mobile or fixed • Always-on access to the broadband connectivity with sufficient speed and affordable price. 	

<p align="center">Planned Action Implementation Risk Factors</p>	<ul style="list-style-type: none"> • High cost of purchasing/upgrading the computer • High monthly cost of broadband subscription • Lack of content/applications with broadband • Lack of knowledge about broadband • Lack of knowledge about broadband usage and benefits • Lack of need to subscribe the broadband • Lack of skills to use computer and Internet
<p align="center">Planned Action Implementation/Performance Monitoring and Evaluation Indicators</p>	<ul style="list-style-type: none"> • Percentage of industry that subscribe to varying forms of broadband • Percentage of industries with access to broadband networks with sufficient speed. • Percentage of private sector players with sufficient digital literacy skills. • Deployment of networks with sufficient speed.
<p align="center">Planned Action Implementation Monitoring and Evaluation Responsibility</p>	<p>Ministry of Communications</p>
<p align="center">Additional Comments and Remarks</p>	