THE GAMBIA

NATIONAL BROADBAND POLICY 2020 - 2024

COMMISSIONED BY

MINISTRY FO INFORMATION AND COMMUNICATION INFRASTRUCTURE

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THE BROADBAND POLICY 2020-2024

1. ACRONYMS AND ABBREVIATIONS

2G	Second-generation
3G	Third-generation
4G	Fourth-generation
BP-2024	Broadband Policy 2020-2024
CERT	Computer Emergency Response Team
DSO	Digital Switch Over
ECOWAN	Ecowas Wide Area Network
ECOWAS	Economic Community of West African States
G2C	Government to Citizens
G2G	Government to Government
GBSP 2020-2024	Gambia Broadband Strategic Plan 2020-2024
GDP	Gross domestic product
GSC	Gambia Submarine Cable Company Ltd
GHz	Gigahertz
ICT	Information and Communications Technologies
ICT4D Policy	Information Communications Technology for Development Policy
IFMIS	Integrated Financial Management Information System
IP	Internet Protocol
ISP	Internet service provider
ITU	International Telecommunication Union
Kbps	Kilobits per second
LDC	Least Develop Country
LTE	Long Term Evolution
Mbps	Megabits per second
MHz	MegaHertz
MOICI	Ministry of Information and Communications Infrastructure
OECD	Organization for Economic Cooperation and Development
PC	Personal computer
UNESCO	United Nation Educational Scientific and Cultural Organization
WiMAX	Worldwide Interoperability for Microwave Access
WB	World Bank

2. EXECUTIVE SUMMARY

The Gambia's Broadband Policy 2020 – 2024 lays down the strategic vision for a broadband that is capable of transforming The Gambia into knowledge based economy and an information society. It outlines the national goals concerning broadband while elaborating specific policies to achieve those goals within the overarching context of ICT4 Development Master Plan. Legally, in the broad definitions with the Information Communication Act of 2009 broadband can be considered as part of communications service. In a number of different policies, broadband is clearly considered and valued as a prerequisite and catalyst for any country's economic growth and national competitiveness. The contribution of broadband to a country's GDP especially in terms of job creation has now become an admirable proven fact.

❖ *Justifying a Broadband Ecosystem*

The ITU data indicates that countries with national broadband plans have fixed broadband penetration of about 8.7% higher on average than countries without plans. With prospective impact of considerations like higher average income per capita, market concentration and urbanization there is suggestion that countries with plans benefit from fixed broadband penetration on an average 2.5% higher than countries without plans.

Further, in the plans as elements of a number of broadband policies, the defined economic and social benefits can be realized where there is strong partnership between government and the ICT industry players. This is to be based on a consultative and participatory approach to policy by both the Government and the key stakeholders. Among other issues, the supply and demand sides of broadband are being addressed in the strategic plan. This relate to infrastructure and related costs, network expansions, spectrum, competition, investment, broadband availability, broadband devices, local content, consumer issues, internet bandwidth, regulations, etc.

Looking externally, there is a The World Bank (Qiang et al. 2009) Report that used a cross sectional analysis to examine the impact of various ICTs including fixed broadband on GDP growth during the period 1980-2006 for 120 developing and developed countries. It concluded that:

> *"ICT in general and broadband in particular contribute substantially to growth of GDP and towards poverty elevation by improving access with equity. As per study, 10% increase in broadband penetration accounts for 1.38 percentage increase in the per capita GDP growth in developing economies."*

With its evolutionary relevance in its role as an important economic factor for development, broadband is becoming a critical national policy issue anywhere. Based on the World Bank report, it has been established that for every 10-percentage point increase in broadband penetration in low and middle-income countries, there is an accelerated economic growth by 1.38 percentage points.

With today's potentials of the ICT sector especially in recognising the potentials of broadband, MOICI acting for and on behalf of the Government of The Gambia sets out to elaborate the present National Broadband Policy 2020-2024 also called BP-2024.

❖ *The Basis for the Formulation of the Policy*

This Broadband Policy 2020-2024 (hereinafter called the "BP-2024") is carved out based on a thorough review of ICT for Development Policy 2018-2028 (hereinafter to be referred to as "ICT4D Policy") statements in relation to broadband. The Gambia's Broadband Strategic Plan 2020-2024 (hereinafter to be referred to as "GBSP-2024") and the related action plans are based on the "BP-2024. The policy and strategic plan all promote the outlined objectives of the ICT4D Policy with the ultimate target of fostering the embedded objectives of the National Development Plan (hereinafter to be referred to as "NDP"). This relates to;

> *"good governance and accountability, social cohesion, and national reconciliation and a revitalized and transformed economy for the wellbeing of all Gambians"*

As the policy is to be implemented through a strategic plan, the formulation of this Broadband Policy recognizes both the short-term and long-term objectives within the context of the interesting but challenging kaleidoscopic technical and socio-economic changes conditions in The Gambia. It outlines the overall policy objectives and targets for broadband in The Gambia. Specific are summarily outlined for adoption in the Broadband Strategic Plan. This Policy also outlines an effective methodology for both relevance and effective implementation of broadband plans.

❖ *Objectives of the Policy Formulation*

This Policy recognizes ICTs as critical enablers for the achievement of the objectives of the NDP and broadband is recognized as a key facilitator for the growth and advancement of the entire ICT-sector especially in the creation of information society that breeds a revitalized and transformed modern economy. The Policy is to enhance and improve the following:

a) contribution to Government revenue;
b) employment in the ICT sector;
c) access and usage of ICT Infrastructure;
d) The Gambia's ICT development index;
e) ICT skills development
f) application of ICT services in business and general service delivery;
g) job creation, research and development;
h) National ICT capacity and industry workforce;
i) The country's information security system;
j) legal and regulatory frameworks for certitude and responsiveness;

It is therefore set to create and build a solid information society that generates employment and revenue all through an efficient and securely built ICT infrastructure that is supported and optimally utilized by a people with enhanced ICT capacity in an encouraging legal and regulatory environment.

The areas and issues for providing support to the successful implementation of the broadband policy relate to measures for fostering a broadband ecosystem in the ICT services market, within the essential regulatory framework for broadband. This is expected to trigger an easy adoption of broadband technologies and services in the Gambia for the facilitation of the expected growth.

As the Policy is to serve as guide in the implementation of the ICT4D Policy, it is to facilitate the creation of an enabling environment for efficient, effective and sustainable utilization and exploitation of broadband (service and technologies) in all sectors of The Gambia's economy and communities in the country.

It addresses the gaps pertaining to the need for legislative changes and or legislations (for data processing and protection, licensing regimes, services etc.) and identifies a measure for ensuring its line-management responsibility needs are met together with the necessary guide for consistency and accountability in its further development, implementation and review. Further, the Policy considers and adopted ICTs as "super-infrastructure" if the right ecosystem is to be created for enabling socio-economic development in a number of ways. The defined activities for broadband are to target having a potential reduction in the cost of governance or operations of businesses. There is the target to reduce poverty levels and the societal inequalities. ICTs are to be used and applied in all aspects of governance and the national adoption and utilisation of ICTs in all aspects and spheres of development.

❖ *Key National Developments*

The policy recognizes the significant developments in the country in the form of the government's liberalisation of the international gateway in the face of decline in voice revenue. Generally, this impacts on the licensed operators' plans for further investment and service delivery. The launching of LTE services and mobile money, the possibility for a split of Gamcel from Gamtel when the international network management center (IINMC) opens for facilitating traffic on ACE cable all inform the Policy on the further required measures and regulatory activities. Also critically considered is the launching of the national broadband network project without any strategy. The key pillars of the ICT4D Policy that also inform this Policy are as follows:

a) human capacity development;
b) electronic government development;
c) promoting technology-enabled education and STI development;
d) agricultural development and modernization;
e) private sector development & empowerment;
f) promoting technology-driven social and community services provision;
g) youth & women development and empowerment

❖ *International Best Practices*

This BP-2024 also considers the lessons learnt from the approaches of the ITU and the UNESCO partnership in relation to broadband especially the current works and endeavours of the Broadband Commission that was set up in May 2010 with a view to facilitating the meeting of the Millennium Development Goals (MDGs) through the promotion of broadband rollout and access. The Policy also considers the new UN Development Agenda 2030 through which the Broadband Commission launches new framework that is referred to as Targets 2025. This framework is in support of "Connecting the Other Half" of the world's population. The targets seek to expand broadband infrastructure, its use and Internet access in support of the achievement of the Sustainable Development Goals established by the United Nations.

❖ *The Policy's Link with the NDP*

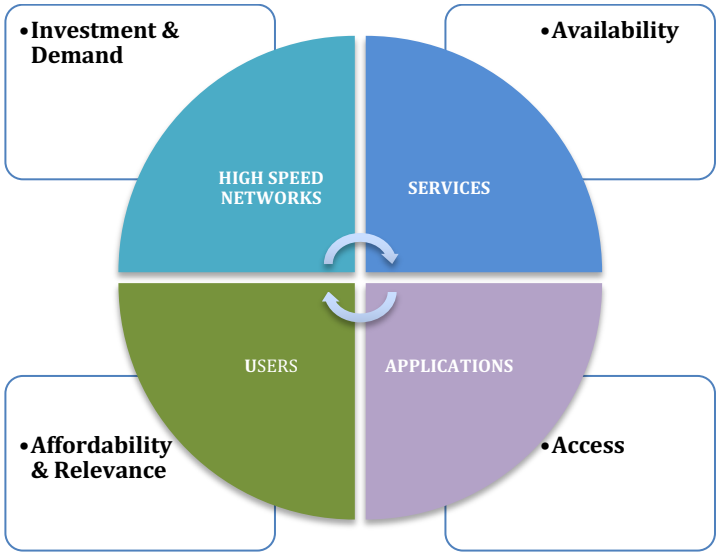
To effectively attain the overall objectives of the ICT4D Policy through broadband, the government of The Gambia got it right to come up with this BP-2024 and a broadband strategic plan with action plans that are informed by the goals set in the NDP. The approach of reviewing the ICT4D Policy before this Policy and its corresponding strategy are drawn up is in line with the need to have consistency with the global trends in broadband development.

With broadband being a significant infrastructure challenge for any country, an affordable and ubiquitous broadband network is critical to The Gambia's social and economic prosperity as those for transport, water and power. It has now become a foundation for economic growth, job creation, global competitiveness and a better way of life. With a well-built broadband network, the country will have the ability:

a) to deliver the best possible education to future generations;
b) to manage healthcare in poor, ageing or isolated populations;
c) to control and use energy more efficiently;
d) to take better care of the environment;
e) to streamline transport networks; and
f) to accelerate progress towards the SDGs;

❖ *The Broadband Ecosystem and its Virtuous Circle*

The broadband network increases the availability of high-quality services to both users and application providers. The applications do access the services to reach users, who respond to the affordability of the services and relevance of the applications. As the users are growing in number and sophistication there is higher demand and motivation for investments in networks, creating the virtuous circle for broadband. The figure below depicts the broadband ecosystem and its virtuous circle.



This BP-2024 also takes into consideration the kaleidoscopic changes this ecosystem goes through. The changes greatly impact on the supply and demand side issues hence the need to have a more flexible broadband policy.

❖ *Universal Access to Broadband*

Cognizant of the potentials within the broadband ecosystem and the recent local and global developments, the BP-2024 attaches special importance to universal access to broadband networks. Locally, the targets of the Government for effective governance at a lesser cost and service delivery for all citizens and the international targets in the Broadband Commissions two reports (Broadband: A 2010 Leadership Imperative and Broadband: A Platform for Progress) all inform the structures identified by this BP-2024 Policy. The identification of the need to put in place specific organisational units to address the issues of broadband are critical. Among others, the two core focus areas is for the broadband to be provided as "always –on-service" without the need for any user to make a new connection to a server each time and the second focus is to be on high-capacity that is capable of carrying lots of data per second, rather than at a particular speed.

❖ *The Gambia's ICT Sector*

The Gambia's ICT Sector as the industry for communications in terms of equipment manufacturing, networks and services includes the policy maker for communications (through MOICI), regulator (PURA), the network infrastructure and service providers (generally the licensed operators) as well as the various consumers in different standings. The sector has been going through the process of 'liberalisation' for some time now. Almost all major players have since been given gateway license for data services and recently they were granted the voice gateway license at a time when voice traffic in terms of minutes is dwindling. In the market, Gamtel being the incumbent communications network and service provider still retains a de facto monopoly on fixed-line telephony services. There are four mobile networks providing effective competition. There was no proper national broadband network except for a linear 622Mbs fiber cable from Banjul to Basse.

Gamtel was exposed to competition in the early stages when others joined the market and today mobile penetration in The Gambia is well above the African average. However, this could be partly explained by reason of the poor condition of the fixed-line infrastructure and the lack of availability of fixed services in many rural areas of the country.

For reasons of the current successes, the Policy also focuses on networks, devices and applications to generate value and economy for broadband. A faster, reliable, secure and widely available network can enable connectivity to numerous powerful and capable devices. The connectivity can also boost the development of exciting applications and contents. The new applications will draw interest amongst end-users in bringing about more new users online hence an increase in the use of broadband services. This growth in the broadband ecosystem further strengthens the broadband ecosystem's cycle that can encourage service providers to enhance the speed, functionality and access to their networks.

- *Broadband Definition and Target*

As there is no agreed upon international definition and or standard for broadband, there is the ITU minimum speed of 256 kb/s (in the early days) for its statistical collection. It cannot be stated clearly how strenuously this is enforced. The OECD has defined broadband as not being dial-up and this implies that the speed is not considered as critical but rather the fact that the connection is "always-on" although the speed of a broadband connection has been found to have differing economic impacts. Even in the ICT4D Policy there is no clear adopted definition of broadband and its capacity target and based on benchmarking, we intend to consider it as;

> *"Connectivity that is always-on and that delivers a minimum of 5Mbps to every user, homes and businesses in The Gambia for high-speed access to voice, data, video and applications and through interactive network with secure, quality and affordable services within the next 5 years"*

The available international bandwidth capacity the GSC has on the ACE Cable system is a lot. The country has not even activated more than 30% of the available capacity. So the critical issue to address is how to reduce access cost by ensuring optimal utilisation of the capacity. This would be for the very basic services including emails, social media and music streaming. A target of 5 Mbps can provide a good Internet connection for small businesses as well as households that use their bandwidth for checking email, using social media, and streaming music. It would be challenging for heavy video conferencing or streaming video to be done through 5 Mbps. With a lower population and broad network coverage, this target is not ambitious. The government of Canada and the USA with such vast geographical areas to cover set 5 Mbps and 4 Mbps respectively.

- *The National Backbone – ECOWAN*

With its size and geopolitical positioning, The Gambia's unique set of circumstances and strengths could help the country emerge as a major ICT player among the ECOWAS ICT economies. The Gambia has successfully implemented a national backbone project (The ECOWAN) that has enabled the country to have 947 Kilometers of fiber rings around the country. This national fiber backbone is also connected to the ACE Submarine cable (that has been in operation since 2012) with a capacity of more than 100 Gigabits. This unprecedented density of fibre and submarine cable capacity for the country (a real progress registered in infrastructure) has all been achieved through the country's first 10-year ICT Policy (National Information and Communication Infrastructure NICI-I) Policy that ended in 2015.

It must be said that the ECOWAN as a national backbone was completed in 2013 forming a complete loop around The Gambia on both sides of the river that splits the country into two equal parts. The ECOWAN network has various loops at strategic points to serve as redundancies with self-healing effect in the event of any fiber cut.

The ECOWAN network is deployed along the two highways on the south and north bank of the country. There are some gaps in some major settlements where the ECOWAN is not laid down. Where for those places hard to reach by the ECOWAN fiber and if fiber cannot be laid down for extending the network then a high capacity broadband radio links are considered for possible installation to serve all operators in other to provide access to those areas. A few key challenges in providing this solution will include a determination on:

a) *the technology (additional fiber or radio links) to use in extending the coverage of ECOWAN to those major areas;*

b) *the cost of filling the gap and its source of funding;*

c) *the time for addressing the gaps in order to ensure that all parts of the country begin and take part in the measured digital revolution at the same time;*

d) *the additional work impact on the management and operations of ECOWAN network as the national backbone;*

Within the confines of the current licensing framework, the network access providers are required to deploy a core network, where the network intelligence and management functions are focalized on one hand, and an access network, which provides a direct connection to the end-user for the provision of final services. To continually improve the resilience of the overall networks in the country, the Government has reinforced the investment climate through the open access policy which is typically required at both the core and access levels, with the bottom-line being the provision of increasingly better, faster and more secure services for businesses and the public at large. In fact the GSC that provides the international connectivity and bandwidth is a product of the open access initiative.

After the deployment of the ECOWAN network, more of the operators are busy with changes and modification to their networks especially after the liberalization of the voice gateway. As Gamtel moves with the deployment of the NGN (next generation network) and the attempts of some ISPs for the deployment of fiber there are others who are earmarking a development plan for their networks to ensure that they can continue offering the latest services on a competitive basis.

❖ *International Bandwidth Capacity*

As regards the actual capacity available in terms of outgoing international Internet bandwidth with the GSC, the latter stands at more than 100 Gigabits having experienced more than 100% increase over the period 2012 to 2019, as compared to 6 STM1s before 2012. In this context, Government formulated an open access with the execution of a trust Agreement by the Government and all concerned GSC members (Gamtel-Gamcel, Qcell,Africell, Comium, Netpage and Unique Solutions).

The GSC as a member of the Africa Coast to Europe (ACE Cable) consortium provides the international bandwidth capacity. ACE is the only submarine cable system serving 24 countries on the west coast of Africa and Europe. With 19 members, ACE was launched in Banjul in December 2012. The cable is 17,000 km long connecting more than 400 million people. The ACE submarine cable connects Europe to the west coast of Africa through a high-speed fiber optic system. The ACE cable which provides The Gambia with its first international submarine cable connectivity connecting the country directly to the outside world has a design capacity of 12.8Tbps, a lit capacity of 1.6Tbps and a 100G technology proof since 2016. The on-going upgrades will impact on this capacity with increase. When The Gambia got connected on ACE, the country's capacity has tremendously evolved.

The BP-2024 considers that communication and its related understanding are made possible only through access to ICTs. The effects of globalisation, interdependence and their challenges have been given due importance by this Policy. Hence the Policy's formulation is forward looking and progressive. The Policy's strategic focus is on relevance and real impacts for growth.

❖ *The Policy and the Critical Constraints*

The policy is geared at addressing critical constraints that may be holding back more rapid and sustained expansions for broadband. With the objective of addressing the following specific broadband challenges in detail at a later stage, they are listed as under:

a) *The current government network is not fit for purpose as it is unstable, unreliable and hardly used by ministries and it agencies;*

b) *The existing licencing framework cannot support broadband ecosystem. The proposal is for a converged licensing regime with some unique details as under;*

c) *Two such bottleneck constraints within the context of a smooth change to a broadband networked society are the issues of affordability and coverage, in other words, the prices being charged for accessing broadband services, as well as the infrastructure and equipment options being supplied to end users and other Internet Service Providers and/or competitors;*

A key foundation of the BP-2014 is addressing the issues of affordability of broadband services and the requirement to drive forward broadband infrastructure deployment, as well as ensuring the associated user equipment supply. In this regard there is clear recognition of the need for promotion outlined earlier especially in the short term in relation to the issues outlined. There could be promotion for a year, having oversight measures for another year and optimal utilization for the remaining.

❖ *The Identified Gaps*

Based on the identified challenges and opportunities and comparing those to the achievements at the international level and the best practices for broadband implementation, there are clear gaps and prerequisites that need to be addressed for the successful development of broadband and the realization of its potential. These gaps and prerequisites relate to the following:

a) *The required policy, regulation and institutional frameworks to facilitate broadband uptake and delivery;*
b) *A realistic governance structure for broadband uptake and delivery;*
c) *A recognised PPP framework for broadband uptake and delivery;*

Each of the identified gaps informs the formation of this Policy's strategic agenda and the objectives in the Strategic Plan. The gaps are as under and their details are within the Strategic Plan:

a) *Infrastructure and connectivity*
b) *Service Delivery*
c) *Content and Applications*
d) *Over-the-Top Services*
e) *Broadband Devices*
f) *Privacy and Security*
g) *Capacity building and innovation*
h) *Financing and investment*

❖ *The Identified Prerequisites*

With the country's national backbone (ECOWAN) and its international connectivity via the GSC of the ACE Consortium, the policy measures outlined in this policy are clothed with the following metrics for its success as the prerequisites:

a) *All stakeholders to clearly pursue the broadband target of 5 Mbps;*

b) *Recognised and workable business and investment models for broadband on open access principle;*

c) *A clear and acceptable framework for the management of the national backbone;*

d) *An adopted strategy for implementing the last mile connectivity;*

e) *Regulatory measures for addressing the constraints of both supply and demand side of broadband;*

f) *Measures for relevant digital content and applications;*

g) *A clearer framework for the supporting infrastructure in the forms of access roads, power supply and disparity in requirements by local government authorities e.g. BCC, KMC, BAC, with numerous fees discourage broadband rollout;*

h) *A collaborative framework on broadband delivery;*

❖ *Policy Vision, Mission and Objectives*

The vision is to transform The Gambia into a knowledge-based economy that thrives on accessible, secure and high speed broadband within an open access regime and a balance broadband ecosystem.

As a mission, the Broadband Policy 2020-2024 is premised on creating and establishing an economy and society that thrives on broadband impacting on lives, governance, business processes with unlimited opportunities for all citizens

The policy priority areas include capacity building, private sector development, gender equality and youth empowerment, agricultural development and climate change and its objectives are:

a) *Facilitating socio-economic growth and development of the country by deploying appropriate ICT systems and solutions;*

b) *Achieving good governance and transparent government through ICT;*

c) *To achieve a broadband ecosystem with a robust competition in an environment that promotes innovation and investment;*

d) *Strengthening the country's global competitiveness and the promotion of private sector development;*

e) *Enhancing the ability of citizens to utilize ICT in their conduct of various business activities through new skills under special human capital development. This would be through:*

i. *To come up with measures to facilitate and support universal deployment of broadband in even high-cost areas including measures for the efficient allocation and management of scarce resources and ensure that low-income Gambians can afford broadband;*

ii. *To support efforts to boost adoption and utilization of broadband;*

iii. *To facilitate legislative and other policy reform including the determination of standards and incentives to maximize the benefits of broadband in sectors where government influences significantly, such as public education, health care and government operations;*

❖ *The Targets*

The identified gaps and prerequisites have to be addressed through the Policy measures. To be able to certify and quantify that measurable progress is made in the achievement of the outlined objectives, some key targets are set. There are to serve as the barometer over the next five years in tracking the objectives very closely. They are: -

a) *By January 2021 the national backbone (ECOWAN) shall be placed on efficient management terms where the manager-operator shall only be providing only wholesale services;*

b) *By June 2021, all operators to be connected to the ECOWAN on an open access basis in the provision of last mile solutions;*

c) *By the end of 2021, The Gambia should have another connectivity as alternative to GSC-ACE Cable that is to serve as a reliable back-up for the country;*

d) *By January 2021, there shall be special framework for local content and applications development as well as special regulations for broadband devices;*

e) *By January 2021, the capacity building and innovation agenda shall be developed for implementation;*

f) *By 2022, at least 75% of homes should have affordable access to actual download and upload speeds of at least 5 Mbps; and by 2023, almost 100% of home should have affordable access to actual download of 5 Mbps and an increase access to broadband coverage of 4G to not less than 85% of the population by 2024;*

g) *The Gambia should become a leader and pacesetter in the region in mobile innovation, with the fastest and most extensive communications networks by 2023;*

h) *By 2024, every Gambian should have affordable access to robust broadband service and the means and skills to subscribe thereto if they so choose;*

i) *By 2024, every public institution should have affordable access to at least not less than 5Mbps broadband service to anchor institutions such as schools, hospitals and government buildings and an increase in digital literacy in schools to 75%;*

j) *Expand broadband to all local government areas and districts and to have 75% digital literacy amongst the Government workforce and 65% the total national workforce by 2024;*

k) *To ensure safety of the public at large, every alarm monitoring and security response service provider should, by 2024, have access to a nationwide, wireless, interoperable broadband public safety network.*

❖ *Further Policy Measures*

The policy mechanisms for developing growth include price reductions for the use of infrastructure, unified licensing for service providers, the setting of strict annual broadband penetration targets, content and e-commerce development incentives and the lowering of the price and tax barriers on the broadband terminal equipment.

Other measures are outlined within the context of legislations and regulations for broadband uptake and adoption, the infrastructure needs, adjustments for services and spectrum policy, the factors affecting availability, affordability, accessibility and adoption. There are measures put in place for competition and innovation, public safety and security as well as broadband for improving government services. Some measures are outlined for education, health care and research and development.

An implementation chart for the policy is outlined together with a mechanism for its monitoring and evaluation.

3. BACKGROUND

This Broadband Policy 2020-2024 (hereinafter called the "BP-2024") is carved out based on a thorough review of ICT for Development Policy 2018-2028 (hereinafter to be referred to as "ICT4D Policy") statements in relation to broadband. The Gambia's Broadband Strategic Plan 2020-2024 (hereinafter to be referred to as "GBSP-2024") and the related action plans are based on the "BP-2024. The policy and strategic plan all promote the outlined objectives of the ICT4D Policy with the ultimate target of fostering the embedded objectives of the National Development Plan (hereinafter to be referred to as "NDP").

The NDP is premised on the goal of delivering:

> "good governance and accountability, social cohesion, and national reconciliation and a revitalized and transformed economy for the wellbeing of all Gambians"

By extension, a key focus area of the ICT4D Policy is its outlined broad strategic area titled "Strategic G" which centres on the need for "rapid modernization and deployment of the requisite national ICT backbone infrastructure, addressing the nation's cyber security capability and affordable broadband access". It is a commitment for an ICT infrastructure for universal access, and to quality of service. This is to be done through the creation of an "enabling, facilitating and technology-neutral regulatory environment that runs on an open access regime for the creation of an information economy and society for The Gambia.

This Policy recognizes ICTs as critical enablers for the achievement of the objectives of the NDP and broadband is recognized as a key facilitator for the growth and advancement of the entire ICT-sector especially in the creation of information society that breeds a revitalized and transformed modern economy. The Policy further considers the critical success factors for the achievement of the defined objectives of the NDP and the specific measurable targets for increasing, enhancing and improving the following:

k) contribution to Government revenue;
l) employment in the ICT sector;
m) access and usage of ICT Infrastructure;
n) The Gambia's ICT development index;
o) ICT skills development
p) application of ICT services in business and general service delivery;
q) job creation, research and development;
r) National ICT capacity and industry workforce;
s) The country's information security system;
t) legal and regulatory frameworks for certitude and responsiveness;

It is an accepted reality that broadband enables the creation of a competitive knowledge-based economy. People's lives and the process of governance are being impacted upon because of broadband. The most effective policy and strategic options adopted by nations in further enhancing this impact and

transformations are to encourage collaboration and partnership between the Government and the private sector. Most importantly, this Policy recognizes the challenges that relate to digital divide in accessing broadband services in The Gambia, the infrastructure capacity limitations, inadequate institutional framework, cyber security, privacy and data protection all of which have been partly affecting the uptake of broadband services in The Gambia.

In effect, this Policy is set to create and build a solid information society that generates employment and revenue all through an efficient and securely built ICT infrastructure that is supported and optimally utilized by a people with enhanced ICT capacity in an encouraging legal and regulatory environment. It considers the common measures for accessible and affordable connectivity for digital inclusion through broadband.

At this stage, it is essentially imperative to contextualize the circumstances leading to the setting out of the form and content of this Policy.

3.1 The Foundation for Setting out this Policy Document

It must be said that until late 2007, the Internet in The Gambia was not taken seriously as an important indicator for broadband as well as an enabler for economic activity and growth. It was rather seen and considered as another form of technology for social use. No due attention and priority was given to the planning and development of its infrastructure in the country. All these changed with the kaleidoscopic changes in technology specifically ICTs and globalisation.

With its growing importance to economic and social development, the potential benefits of ICTs are constantly encouraging the government of The Gambia to elaborate comprehensive, forward-looking and sustainable national ICT strategies for each specific area of ITCs as integral parts of the NDP and strategies. In pursuance of this approach this Policy is to serve as guide in the implementation of the ICT4D Policy. It is to facilitate the creation of an enabling environment for efficient, effective and sustainable utilization and exploitation of broadband (service and technologies) in all sectors of The Gambia's economy and communities in the country.

3.2 Guiding Principles in setting the BP-2024 Goals

In the course of its review, an in depth assessment of the existing ICT4D Policy was made to determine if its purposes and goals could be met in relation to the trends broadband needs and its related technologies. The identified gaps and the recommended actions are to improve on the effectiveness or clarity of the ICT4D Policy. This BP-2024 addresses the gaps pertaining to the need for legislative changes and or legislations (for data processing and protection, licensing regimes, services etc.). Further, this Policy strongly identifies a measure for ensuring its line-management responsibility needs are met together with the necessary guide for consistency and accountability in its further development, implementation and review.

This Policy also addresses the need for an executive unit (policy custodian) with the predominant responsibility of identifying and setting the strategic direction of the proposed policy and determining the overall context, in which a policy might be implemented, monitored and reported. This includes the measures for policy audit without much cost unlike the case with the review exercise of the NICI Policy in order to come up with the ICT4D Policy.

The BP-2024 considers and adopted ICTs as "super-infrastructure" if the right ecosystem is to be created for enabling socio-economic development in a number of ways. The defined activities for broadband are to target having a potential reduction in the cost of governance or operations of businesses. There is the target to reduce poverty levels and the societal inequalities. ICTs are to be used and applied in all aspects of governance and the national adoption and utilisation of ICTs in all aspects and spheres of development.

3.3 From the ICT4D Policy to BP-2024 Path

To get to this BP-2024, an initial review of the ICT4D Policy considers the process adopted in the elaboration of strategies. Their assessments of the implementation of the earlier ICT policies (NICI) in relation to the adopted plans, strategies, and programmes geared towards the development of The Gambia's information economy. There was a thorough consideration of the place given to broadband within the ICT4D Policy. In the process, the challenges were identified before the outlining of the strategic objectives.

3.4 The Overall Objectives for Making the BP-2024 Responsive

In today's Gambia, an effective broadband can impact on almost many aspects of the Government and private sector operations. As it has been an effective enabler and enhancer anywhere adopted, the assumption is that all sectors of the economy within the framework of ICT4D Policy and the NDP can benefit from its adoption. Broadband can ensure that the enhancement in the growth continues and a stronger ground could be created for the optimal and effective utilisation of broadband in the country's march towards achieving a knowledge-based economy. The areas of infrastructure, service, content and applications, among others, were considered.

3.5 Some Key local Developments Informing the BP-2014

The government has recently liberalised the international gateway in the face of decline in voice revenue. Generally, this impacts on the licensed operators' plans for further investment and service delivery. The launching of LTE services and mobile money, the possibility for a split of Gamcel from Gamtel when the international network management center (IINMC) opens for facilitating traffic on ACE cable all inform the Policy on the further required measures and regulatory activities. Also critically considered is the

launching of the national broadband network project without any strategy. The key pillars of the ICT4D Policy also inform this Policy. They are as follows:

h) human capacity development;
i) electronic government development;
j) promoting technology-enabled education and STI development;
k) agricultural development and modernization;
l) private sector development & empowerment;
m) promoting technology-driven social and community services provision;
n) youth & women development and empowerment

3.6 The Key International Development - Best Practice Guide

This BP-2024 also considers the lessons of the approaches of the ITU and the UNESCO partnership in relation to broadband especially the current works and endeavours of the Broadband Commission that was set up in May 2010 with a view to facilitating the meeting of the Millennium Development Goals (MDGs) through the promotion of broadband rollout and access. The international policy agenda for expanding broadband access through practical ways in partnerships with the private sector was never missed out in the preparations. The Sustainable Development Goals (SDGs) replaced the Millennium Development Goals (MDGs) in September 2015 as the international policy framework for socio-economic development and poverty reduction. As the MDGs have eight (8) goals with very little reference to technology, broadband or ICT, this Policy is also informed by the SDGs and its seventeen (17) goals with more than 150 targets, more specifically the ICT specific targets in goal 4 of the SDGs. There are about 38 other targets within the SDGs whose achievement will be contingent upon universal and affordable access to ICT and Broadband. These targets are reflected in this Policy.

Equally, the new UN Development Agenda 2030 through which the Broadband Commission launches new framework that is referred to as Targets 2025. This framework is in support of "Connecting the Other Half" of the world's population. The targets seek to expand broadband infrastructure, its use and Internet access in support of the achievement of the Sustainable Development Goals established by the United Nations. Some other significant global events, especially in the year 2019 that the ITU marks as the first full year when more than half of the world has begun to participate online in the global digital economy through broadband, have been considered in the development of this Policy.

4. INTRODUCTION

To effectively attain the overall objectives of the ICT4D Policy through broadband, the Government of The Gambia got it right to come up with this BP-2024 and a broadband strategic plan with action plans that are informed by the goals set in the NDP. The approach of reviewing the ICT4D Policy before this Policy and its corresponding strategy are drawn up is in line with the need to have consistency with the global trends in broadband development.

4.1 The Broadband Concept

Almost three decades ago, broadband being considered as the opposite of a base-band signal to differentiate between narrowband and wideband signals in communication transmission systems has no special significance in The Gambia. Its definition is in terms of capacity in relation to the minimum upstream and/or downstream transmission speeds, or, according to the technology used or the type of service that it can deliver. As at that time, even though countries differ in their definition of broadband, an initial transfer speed of 384 Kbps was used as the benchmark to define broadband services. Advancements in technology lead to more redefinition of the minimum speed. Further, given that the quality of experience of a user is becoming more and more the focus of consideration of broadband.

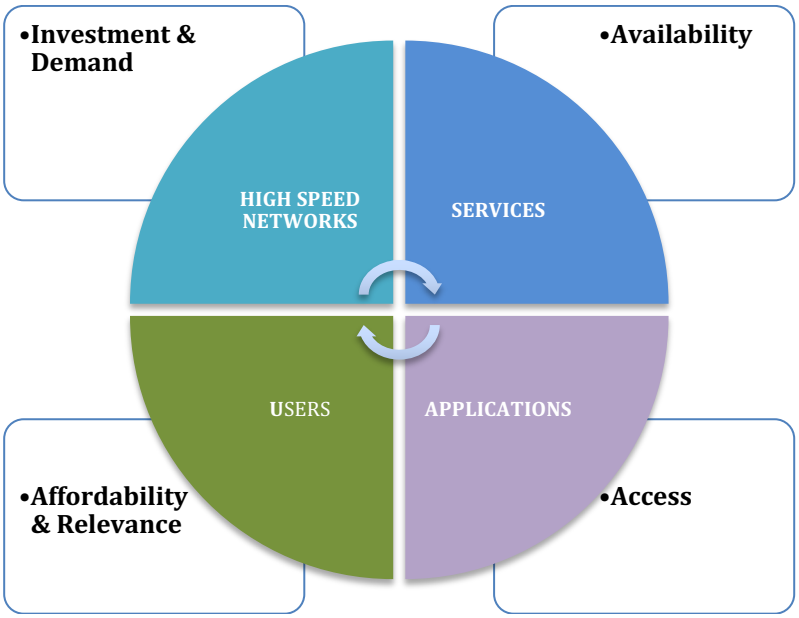
With broadband being a significant infrastructure challenge for any country, an affordable and ubiquitous broadband network is critical to The Gambia's social and economic prosperity as those for transport, water and power. It has now become a foundation for economic growth, job creation, global competitiveness and a better way of life. What is further recognized is that broadband is regarded as much more than just surfing the web because of the significant machine-to-machine communications for a number of applications and e-services. This is in the areas of healthcare, education, energy management, transport systems, emergency services and much more.

With a well-built broadband network, the country will have the ability:

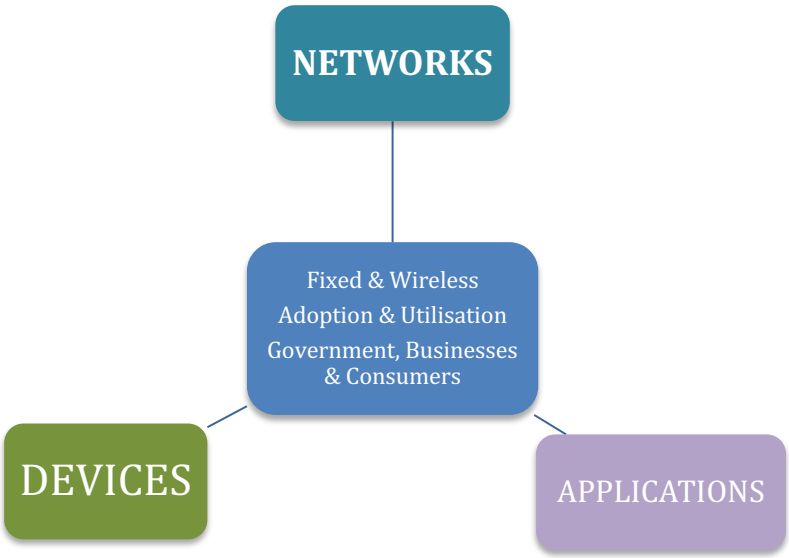
g) to deliver the best possible education to future generations;
h) to manage healthcare in poor, ageing or isolated populations;
i) to control and use energy more efficiently;
j) to take better care of the environment;
k) to streamline transport networks; and
l) to accelerate progress towards the SDGs;

For the above reasons, this policy considers broadband as beyond the traditional notion of a specific type of network connectivity or minimum transmission speed, but an ecosystem of high capacity communications smart networks, services, applications and users for the delivery of enhanced utilities services including communications services.

The broadband network increases the availability of high-quality services to both users and application providers. The applications do access the services to reach users, who respond to the affordability of the services and relevance of the applications. As the users are growing in number and sophistication there is higher demand and motivation for investments in networks, creating the virtuous circle for broadband. The figure below depicts the broadband ecosystem and its virtuous circle.



This BP-2024 also takes into consideration the kaleidoscopic changes this ecosystem goes through. The changes greatly impact on the supply and demand side issues hence the need to have a more flexible broadband policy. This is also depicted in the figure below;



With the above, the Policy measures defined represent a rethinking of approaches to stimulate broadband access and use. This ecosystem also partly informs the outlined measures for the creation of an enabling environment for supply-side growth in terms of access to networks and services and to facilitate demand for and adoption of broadband.

4.2 The Structures for Broadband and Digital Development

Cognizant of the potentials within the broadband ecosystem and the recent local and global developments, the BP-2024 attaches special importance to universal access to broadband networks. Locally, the targets of the Government for effective governance at a lesser cost and service delivery for all citizens and the international targets in the Broadband Commissions two reports (Broadband: A 2010 Leadership Imperative and Broadband: A Platform for Progress) all inform the structures identified by this BP-2024 Policy. The identification of the need to put in place specific organisational units to address the issues of broadband are critical. Among others, the two core focus areas is for the broadband to be provided as "always –on-service" without the need for any user to make a new connection to a server each time and the second focus is to be on high-capacity that is capable of carrying lots of data per second, rather than at a particular speed.

4.3 Consistency the Implementation of Broadband Strategies

With the challenges of its ecosystem and importance attached to broadband, this Policy emphasis on the need for consistency in the implementation of the strategies. The defined strategies set the stage for this Policy and its related programs, projects and other measures in order to deliver the country's vision for broadband. This will provide certitude to the investors and the promotion of public private partnership for broadband development. The consistency will can provide insight about how the legislative and regulatory environment might evolve over time as well as aid in any revision of this Policy.

For the value in measured-consistency and in addition to the focus on both supply and demand side issues for broadband, the defined strategies and their related objectives are to ensure that broadband is both accessible and used widely. With time and where the markets undergo qualitative evolution in the level of broadband services with increased range of applications increases and available contents then the strategies may also evolve. As the Policy is injected with a degree of flexibility, the government will be keen on promoting first-generation broadband services, the higher-quality broadband services also be considered for consistency.

As for example, on the issue of promotion market entry will be facilitated on a level-playing field with a possibility for financial support to reach high-cost areas of the country through universal access funding mechanism in line with the law. There will be a further development of a national broadband backbone network with appropriate demand and an enabling environment for competition and investment. The Government can consider incentives for

boosting broadband access and services by making it more attractive and available to potential subscribers and users.

Since a lot can change within five years (the life of this policy) and to ensure consistency, the policy promotes the need for oversight supports through policies and regulations to facilitate competition, guard against monopolistic and unfair practices, and regulate essential and/or bottleneck facilities. A real re-consideration of legislations regarding ICT, electronic transactions, online safety, data protection and competition to adapt to the new business paradigm are considered as crucial.

As the country's broadband market matures, the government will seek to cover access gaps through service policies that drive broadband networks into rural and remote areas. On the supply side, governments often seek to help reduce the costs of reaching underserved areas. These policies aim at providing broadband to underserved areas and groups that lack access to it.

5. THE ICT4D POLICY & CURRENT STATE OF BROADBAND

With the issues in both the background and the introduction providing the basis and guide for the formulation of this BP-2024, the key fundamental statement within the ICT4D Policy summarises the very basis of the Policy's formation, to wit:

> "Promoting technology-neutral legal, regulatory regime, advanced broadband ICT infrastructure development, universal access and service (UAS), and cyber security capability" (At Page 3)'

This statement is based on the improvements in ICT services and subscription resulting from the broadband infrastructure and services. There is high percentage increase in the mobile broadband subscription per 100 inhabitants recording an impact value of 100% during the ICT4D-2013 Plan implementation period. In a big way, the ICT4D Policy specifically first identified broadband as new thematic area for implementation in addition to cyber security, climate change and environment, green ICT and E-Waste and Geo-Information. This is as per the recommendations on new directions and target areas based on the review of the NICI Policy and the ICT4D-2013 Action Plan in 2010.

The above notwithstanding the ICT4D Policy is neither a specific broadband policy nor a strategy. Even though there are number of policy statements within it, there are no specifically outlined intended benefits for broadband in addressing the question as to why national broadband plans would matter for The Gambia. However, this BP-2024 falls with measures for the development of an ICT master plan, a manifestation of the special recognition of the importance of a broadband plan. It makes The Gambia to now be part of about the 164 countries worldwide that have a broadband policy and plan of some sort.

5.1 The ICT Sector and the Broadband Ecosystem in The Gambia

The ICT Sector as the industry for communications in terms of equipment manufacturing, networks and services includes the policy maker for communications (through MOICI), regulator (PURA), the network infrastructure and service providers (generally the licensed operators) as well as the various consumers in different standings.

The Gambia's ICT sector has been going through the process of 'liberalisation' for some time now. Almost all major players have since been given gateway license for data services and recently they were granted the voice gateway license at a time when voice traffic in terms of minutes is dwindling. In the market, Gamtel being the incumbent communications network and service provider still retains a de facto monopoly on fixed-line telephony services. There are four mobile networks providing effective competition. There was no proper national broadband network except for a linear 622Mbs fiber cable from Banjul to Basse.

Gamtel was exposed to competition in the early stages when, Africell was permitted to commence GSM service provision at the same time with Gamcel, a subsidiary of Gamtel. Africell builds its own wireless national broadband network to be able to provide a wider national coverage compared to Gamtel. Today Africel is the market leader with about 40% market share, QCell comes in a close second followed by Comium and Gamcel. Gamtel's mobile unit Gamcel is by far the smallest operator, with about 10% share. This is interms of service providers. Generally, it is observed that mobile penetration in The Gambia is well above the African average. However, this could be partly explained by reason of the poor condition of the fixed-line infrastructure and the lack of availability of fixed services in many rural areas of the country.

There was a national fiber broadband network program (ECOWAN) aimed at closing the digital divide affecting many parts of the country. Through this Gamtel relatively come up with a well-developed national fibre backbone network that covers almost the whole country.

As outlined earlier, there has been a significant growth in The Gambia's ICT sector in terms of infrastructure and services. This is mainly because of measures of liberalisation through the licensing of many operators, the PPP arrangements as in the form of the formation of the GSC as a special purpose vehicle for international connectivity, the effective deployment of the national backbone network (The ECOWAN) and the regulatory environment with the establishment an 'independent' regulator through a flexible and investor friendly legislation.

This sustained growth of the ICT sector relies heavily on the provision of high-bandwidth (through the GSC of ACE) and secured service applications, geared towards meeting both the mainstream and specialized demands of ICT consumers. The current demand centers on the basic essentials such as access to high quality voice services and Internet access services. There is now a growing trend for even more specialized applications such as e-payment, online banking, etc. To ensure the reliability in the supply of such ICT services with acceptable quality levels the current measure are to attend to bandwidth cost reduction and further investments in network development.

There is also a gradual shift towards Internet Protocol (IP)-based solutions and a demand for access to quality of services in relation to data. There is enough bandwidth capacity but the focus is now on reducing cost for enhancing access as well as addressing the management challenges of the national backbone. In addition to these issues, there are unique forces shaping The Gambia's broadband ecosystem. These include local content, applications including the email system, search, news, maps, sales and marketing applications used by businesses. The growth in the making of user-generated videos in The Gambia's new found "freedom" all pose a challenge that require management and regulation. In any case the ultimate value of broadband can only be realized when there is delivery useful

applications and desirable contents to end-users including the Government within the ecosystem.

With the different types of networks having different capabilities, benefits and costs the policy actions are to create the necessary links of all these with the development of applications and efficient utilization of the right type of devices. This reason for the linkage recognizes the value of being connected to a network by many people and businesses promoting positive externality dimension. Secondly, it is good to factor the consumers' decisions to use broadband service as these are also determined by the affordability of a connection, comfort with the use of the digital technology and the usefulness they associate to broadband.

This Policy also focuses on networks, devices and applications to generate value and economy for broadband. A faster, reliable, secure and widely available network can enable connectivity to numerous powerful and capable devices. The connectivity can also boost the development of exciting applications and contents. The new applications will draw interest amongst end-users in bringing about more new users online hence an increase in the use of broadband services. This growth in the broadband ecosystem further strengthens the broadband ecosystem's cycle that can encourage service providers to enhance the speed, functionality and access to their networks.

With the above state of things and the broadband ecosystem depicted, there are gaps in the form of 'digital divide' in the access to Internet services in the country, gaps between voice service delivery, internet and data service. The biggest of the difference is the number of Internet users as against the number of those users that are broadband. In effect two important issues are to be addressed, to wit:

a) The ECOWAN has its limitations in terms of full national coverage. There would have to be further deployment of additional fiber or wireless broadband network in order to have a full national coverage;

b) Regardless of its monopoly over fixed network, Gamtel's low fixed-line penetration needs to be boosted to enhance fixed Internet usage.

On the issue of connectivity, The Gambia is directly connected to only one international undersea fiber cable (the ACE Cable), which has a limitation in the form of a backup. The Trans-Gambia cable (Sonatel-Gamtel) has limitations because of the operational arrangements that require some adjustments and changes.

5.2 The Approach to a Defined Broadband Capacity Target

As there is no agreed upon international definition and or standard for broadband, there is the ITU minimum speed of 256 kb/s (in the early days) for its statistical collection. It cannot be stated clearly how strenuously this is enforced. The OECD has defined broadband as not being dial-up and this implies that the speed is not considered as critical but rather the fact that the connection is "always-on" although the speed of a broadband connection

has been found to have differing economic impacts. Even in the ICT4D Policy there is no clear adopted definition of broadband and its capacity target and based on benchmarking, we intend to consider it as;

> "Connectivity that is always-on and that delivers a minimum of 5Mbps to every user, homes and businesses in The Gambia for high-speed access to voice, data, video and applications and through interactive network with secure, quality and affordable services within the next 5 years"

The available international bandwidth capacity the GSC has on the ACE Cable system is a lot. The country has not even activated more than 30% of the available capacity. So the critical issue to address is how to reduce access cost by ensuring optimal utilisation of the capacity. This would be for the very basic services including emails, social media and music streaming. A target of 5 Mbps can provide a good Internet connection for small businesses as well as households that use their bandwidth for checking email, using social media, and streaming music. It would be challenging for heavy video conferencing or streaming video to be done through 5 Mbps. With a lower population and broad network coverage, this target is not ambitious. The government of Canada and the USA with such vast geographical areas to cover set 5 Mbps and 4 Mbps respectively.

In as much as the internal dynamics of The Gambia's ICT sector would support such a target, we are also mindful of the 2025 targets set by the ITU Broadband commission. This is barely five years from now and exactly the duration of BP-2024. The ITU global targets clearly stated that by 2025, all countries should have a funded national broadband plan or strategy, or include broadband in their universal access and services definition. By the same time, there shall be:

a) "Affordable entry-level broadband services in developing countries, at less than 2% of monthly gross national income per capita;

b) The broadband-Internet user penetration should reach 75% worldwide, 65% in developing countries and 35% in least developed countries;

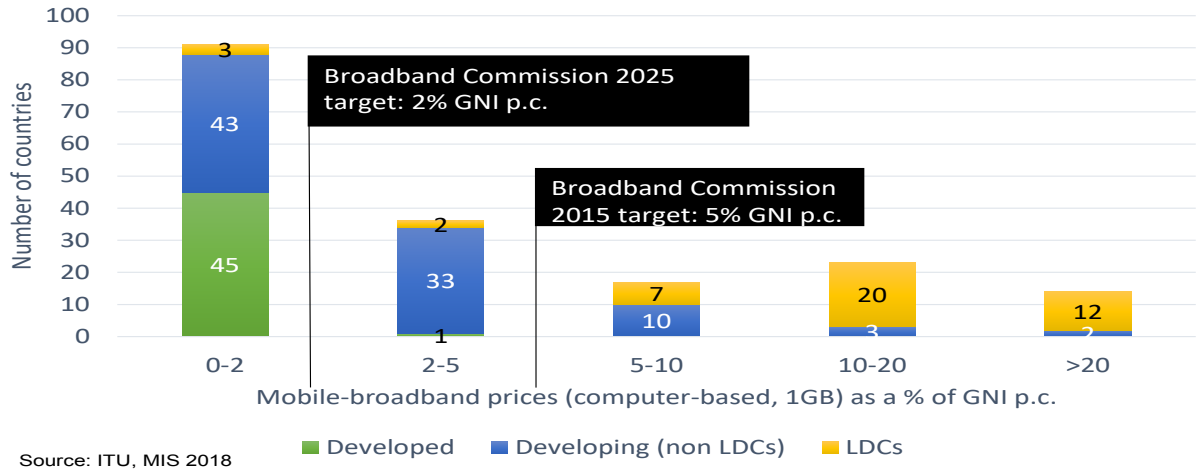
c) That 60% of youth and adults should have achieved at least a minimum level of proficiency in sustainable digital skills;

d) That 40% of the world's population should be using digital financial services;

e) That un-connectedness of Micro-, Small- and medium-sized enterprises should be reduced by 50%, by sector;

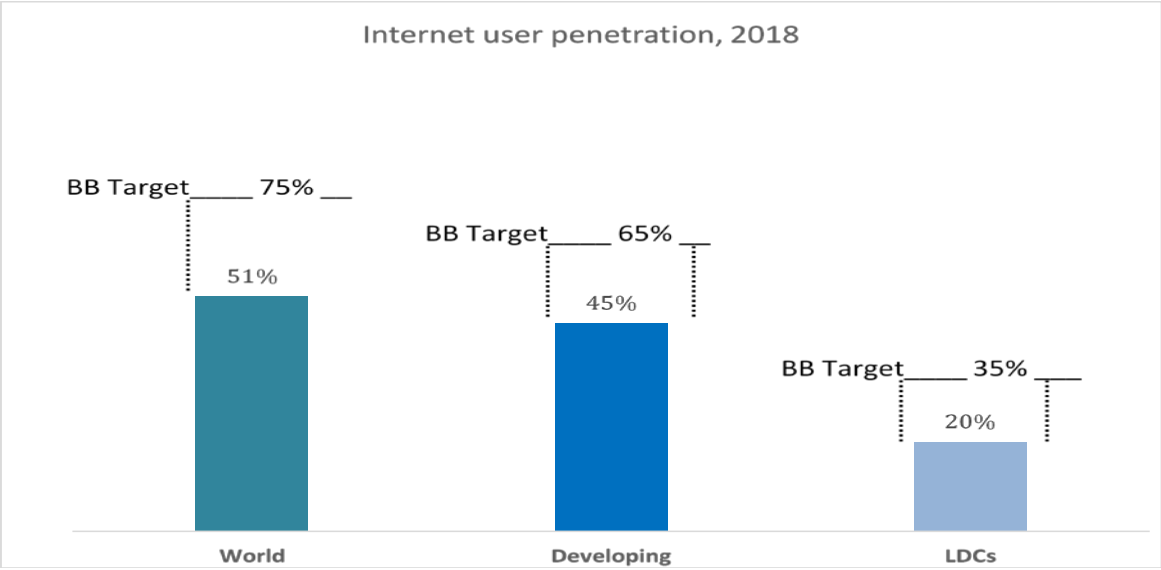
f) That gender equality should be achieved across all targets".

These targets and the progress registered by about ninety (90) countries worldwide all encourage the setting of the 5 Mbps target. These countries have a mobile broadband price (computer- based, 1GB) which is below 2% of monthly GNI per capita. Sixty-Nine (69) countries have entry-level fixed broadband prices below 2% of monthly GNI p.c. The figure below represents this state of achievement.



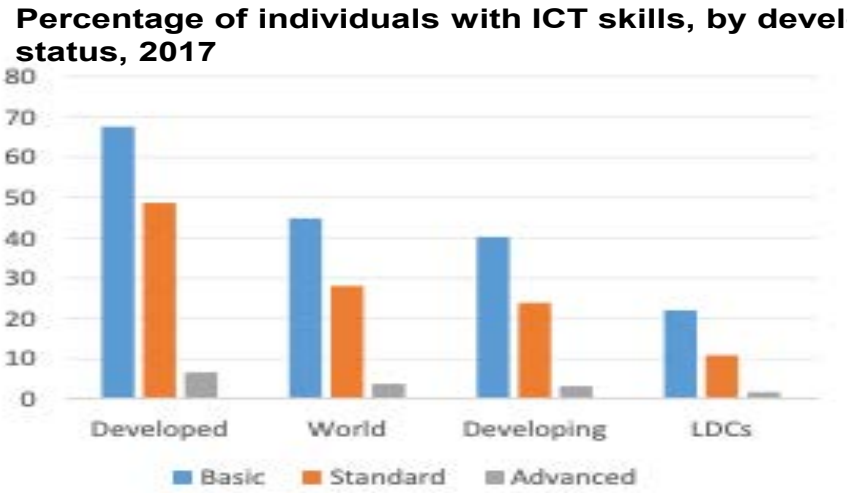
Source: ITU, MIS 2018

To get people online as one way of stimulating broadband growth, the global Internet user penetration is currently at 51%, and this is still below the target. Internet user penetration is 45% in developing countries, below the 65% target, and in LDCs, Internet adoption is at 20%, below the 35% target. The global achievements are reinforced in this Policy through the commitment to implement the strategic actions without delay and or limitation. The Gambia as an LDC, the Internet penetration target cannot be below 35%. The figure below represents the global achievement;



Source ITU

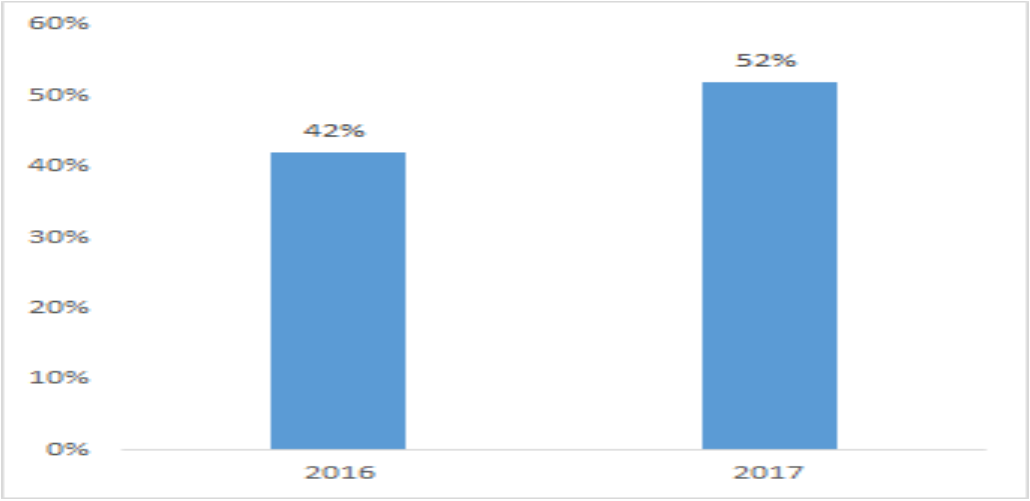
For acquiring minimum digital skills and literacy (that is the general capacity) must target not less than 50%. The figure below represents the percentage of individuals with ICT skills by development status as of 2017.



Source ITU

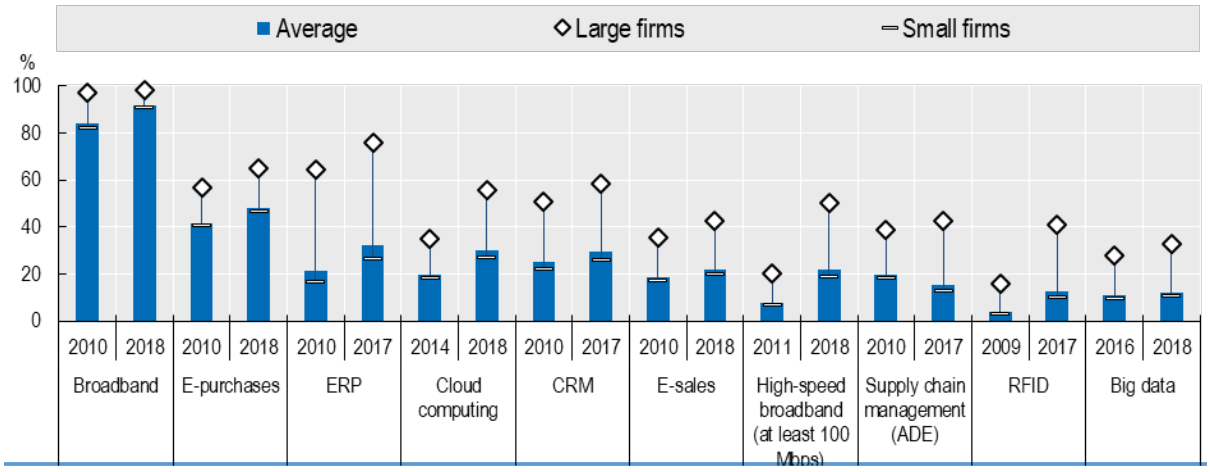
This Policy considered the fact that The Gambia as an LDC has to have a more progressive policy and strategic plan for implementation in addressing the literacy gap.

Using digital financial services about 52 per cent of the global population had made or received digital payments in the past year (% age 15+). This baseline too represents the basis for the target drawn.



Source: World Bank Global Findex Database

For the target of getting businesses online with improve connectedness of micro, small and medium-sized enterprises by 50%, by sector. The same tools and activities are broadly covered in the policy measures provided. The table below is a diffusion of selected ICT tools and activities in large and small businesses for OECD from 2010 and 2018



Source: OECD, ICT Access and Usage by Businesses Database

In fact to achieve these international targets for a minimum international minimum speed, the 5 Mbps target in the definition is even rather conservative. However, it must be said that the rationale for the above definition is embedded in the very nature and specific characteristics of the ICT Sector in The Gambia. Therefore the outlined statistical data of the ITU all serve as pointers for this Policy and the broadband targets with measured timelines.

5.3 Broadband – Technologies & Services in The Gambia -

Based on the ICT4D Policy and the supporting statistics, the Policy gives special attention to broadband technologies and services. The issues of access to, use of and benefit from broadband services as well as the security of broadband from both the supply and demand sides are addressed. There are measures for gaps in institutional framework for the delivery of broadband to be addressed through legislations or special regulations. The technology gaps are to be addressed by the laying down of the right broadband infrastructure for The Gambia.

In summary, the available technologies whose deployment methods vary are as under;

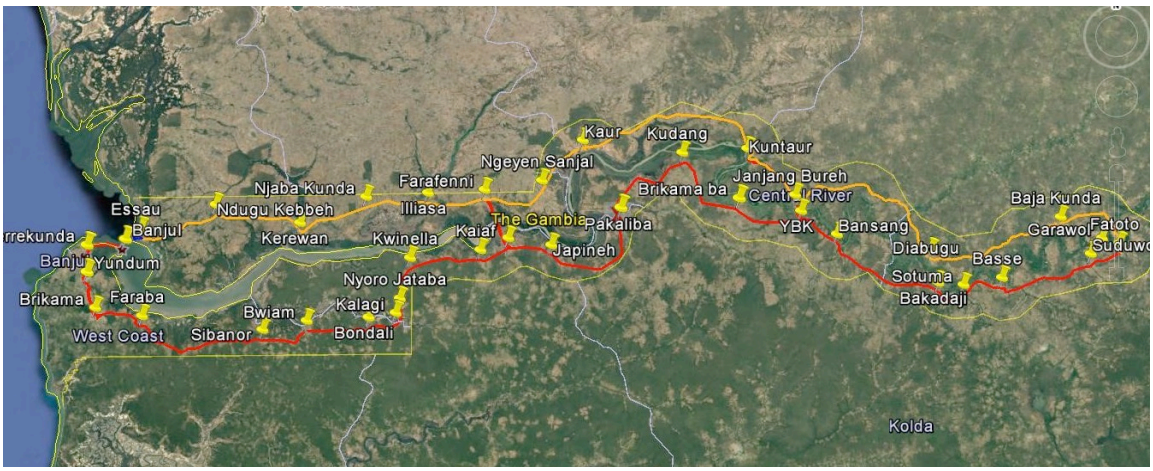
a) Fixed Broadband
b) Wireless Broadband
c) Satellite
d) 4G/LTE
e) 5G

5.4 The Physical Network Infrastructure

With its size and geopolitical positioning, The Gambia's unique set of circumstances and strengths could help the country emerge as a major ICT player among the ECOWAS ICT economies. The Gambia has successfully implemented a national backbone project (The ECOWAN) that has enabled the country to have 947 Kilometres of fiber rings around the country. This national fiber backbone is also connected to the ACE Submarine cable (that

has been in operation since 2012) with a capacity of more than 100 Gigabits. This unprecedented density of fibre and submarine cable capacity for the country (a real progress registered in infrastructure) has all been achieved through the country's first 10-year ICT Policy (National Information and Communication Infrastructure NICI-I) Policy that ended in 2015.

It must be said that the ECOWAN as a national backbone was completed in 2013 forming a complete loop around The Gambia on both sides of the river that splits the country into two equal parts. The ECOWAN network has various loops at strategic points to serve as redundancies with self-healing effect in the event of any fiber cut. The diagram below is the ECOWAN network. A greater part of the money used in building this network is a grant to the government. So the approaches to outlining a business model for its operations and running are not expected to be cumbersome in any business sense.



------- *South bank fiber*
-------- *North bank fiber network*

The ECOWAN network is deployed along the two highways on the south and north bank of the country. There are some gaps in some major settlements where the ECOWAN is not laid down. Where for those places hard to reach by the ECOWAN fiber and if fiber cannot be laid down for extending the network then a high capacity broadband radio links are considered for possible installation to serve all operators in other to provide access to those areas. A few key challenges in providing this solution will include a determination on:

e) the technology (additional fiber or radio links) to use in extending the coverage of ECOWAN to those major areas;

f) the cost of filling the gap and its source of funding;

g) the time for addressing the gaps in order to ensure that all parts of the country begin and take part in the measured digital revolution at the same time;

h) the additional work impact on the management and operations of ECOWAN network as the national backbone;

The policy has considered measures for ECOWAN and the related challenges of the network's ownership, utilisation, management, operations and risks addressed. This ECOWAN is a 947 kilometers long fiber network with 24 pairs of fiber optic cable. It is in five (5) rings. There is also the national broadband network of 420 kilometers. The ECOWAN and NBN combined represent investment cost of US$58 Million.

With the indicators, this BP-2024 further recognizes the following concerning infrastructure:

a) There will be an informed physical national network infrastructure master plan that determines and informs all infrastructure deployment especially in terms of the investment benefits and the avoidance of duplicity and superfluous networks;

b) A proper coordination framework for network infrastructure deployment with the consideration of the future needs of the sector and other operators;

c) The putting in place of proper regulations for infrastructure access and sharing as well as proper colocation on the part of all service providers;

d) There will be the redefining of the licensing framework in The Gambia by having a converged or unified licensing regime. The current licenses by the names GSM License, Fixed network licenses, ISP licenses etc. are technologies based. This licensing regime is rather contrary to the needs of an "enabling, facilitating and technology-neutral regulatory environment". Further, under the part of the Policy dealing with broadband rollout in the ICT4D Policy, the Government is to "actively promote and facilitate mobile broadband coverage in urban and rural settings". This activity is technology specific as it relates to "wireless broadband" and not "fixed broadband". The converged licensing framework would reflect license categories in terms of infrastructure, service and applications;

e) Ensuring the prevalence of an open access regime for the creation of an information economy and society for The Gambia, by placing the management of the national backbone infrastructure in an entity that does not play any role in retail service provision. The ICT4D Policy intends to facilitate broadband rollout by developing and promoting "special investment incentive packages to encourage and facilitate private sector participation in the development of the nation's broadband and advanced communications infrastructure". This can be achieved with the full adoption of an open access regime where infrastructure and service provision go through careful and clear

unbundling with the separation of retail and wholesale service provision;

f) This Policy specifically addresses the exact related priorities and infrastructure for broadband with focus on the national backbone infrastructure, the submarine cable infrastructure and the back up for international connectivity. The rationale is that it would be rather difficult to encourage and facilitate "speedy and timely migration from broadband infrastructure-based competition to broadband service-based competition focusing on quality of service" without a reconsideration of the management of the existing national backbone infrastructure;

g) The guidelines for planning, development and deployment, by both government and private sector in addressing the challenges of deployment of fiber Broadband infrastructure across the country would be developed;

h) The flexibility in the BP-2024 is to encourage special investments in broadband infrastructure and broadband-enabled applications and services. The measured investment would be premised on the need for transitioning the country from the resource-intensive physical infrastructure of the 20th century to the more efficient information infrastructure of the 21st century.

i) Lastly, for the optimal utilisation of the network infrastructure, there will be special focus on local content and its development. To make sense of rollout and deployment of broadband networks, new develop services, personalized applications and fully multilingual content are to be put in place to ensure that everyone in country finds his or her place online.

5.5 Access – Local and International Bandwidth Capacity

Within the confines of the current licensing framework, the network access providers are required to deploy a core network, where the network intelligence and management functions are focalized on one hand, and an access network, which provides a direct connection to the end-user for the provision of final services. To continually improve the resilience of the overall networks in the country, the Government has reinforced the investment climate through the open access policy which is typically required at both the core and access levels, with the bottom-line being the provision of increasingly better, faster and more secure services for businesses and the public at large. In fact the GSC that provide the international connectivity and bandwidth is a product of the open access initiative.

After the deployment of the ECOWAN network, more of the operators are busy with changes and modification to their networks especially after the liberalization of the voice gateway. As Gamtel moves with the deployment of the NGN (next generation network) and the attempts of some ISPs for the

deployment of fiber there are others who are earmarking a development plan for their networks to ensure that they can continue offering the latest services on a competitive basis.

As regards the actual capacity available in terms of outgoing international Internet bandwidth with the GSC, the latter stands at more than 100 Gigabits having experienced more than 100% increase over the period 2012 to 2019, as compared to 6 STM1s before 2012. In this context, Government formulated an open access with the execution of a trust Agreement by the Government and all concerned GSC members (Gamtel-Gamcel, Qcell,Africell, Comium, Netpage and Unique Solutions).

The GSC as a member of the Africa Coast to Europe (ACE Cable) consortium provides the international bandwidth capacity. ACE is the only submarine cable system serving 24 countries on the west coast of Africa and Europe. With 19 members, ACE was launched in Banjul in December 2012. The cable is 17,000 km long connecting more than 400 million people. The ACE submarine cable connects Europe to the west coast of Africa through a high-speed fiber optic system. The ACE cable which provides The Gambia with its first international submarine cable connectivity connecting the country directly to the outside world has a design capacity of 12.8Tbps, a lit capacity of 1.6Tbps and a 100G technology proof since 2016. The on-going upgrades will impact on this capacity with increase. When The Gambia got connected on ACE, the country's capacity has tremendously evolved. This is captured in the diagram below;

THE GAMBIA GSC CAPACITY & EQUIVALENT STM1s ON ACE CABLE			
		Equivalent STM 1s	In Megabytes
1	Pre ACE	6	900
2	ACE Launch	62	9300
3	Current capacity	660	99000
4	Current activated	217	32,550
5	Capacity to Paris	93	13,950
6	Capacity to Telvent	122	18,300
7	Total capacity in MIUs is 2,028,871		

This capacity that the GSC has on the cable system will be available up to the retirement of the ACE Cable System. The cost of its operations and maintenance (O&M) are pure costs without unnecessary overhead and margins. Further it is correct to say that unless there is a high degree of competition among all GSC co-owners to sell within the market, each co-owner has the same interest to the commercial success of the GSC as a consortium.

There is an increase in the terrestrial infrastructure with almost a doubling by the deployment of ECOWAN network. As the operators are yet to make the most of this capacity, the Policy is addressing the issues of needed investment in national backbone, cross-border connectivity and the status

of the management of the ECOWAN network. The complimenting issues of local content and applications development are central for the Policy.

The ICT4D Policy also puts emphasis on the need to put in place a national broadband rollout strategy for facilitating access by Gambia businesses and households at an internationally comparable minimum speed. This Policy recognizes the use of broadband services for electronic transactions and for e-Government services accessible to citizens and businesses. The following are to be addressed through the implementation of the defined policy measures:

a) There will be a defined or a limit set for a minimum broadband speed capacity for a given period. There is reference to an internationally comparable minimum speed but this "minimum speed' regularly keeps changing. This would inform the determination of specific strategic goals especially deployment and coverage;

b) The many activities for broadband roll out will be in terms of priority with timely relevance and expected impact. This relates to the broadband needs of schools, universities, hospitals, agriculture, the security forces, the foreign service, tourism;

c) The further protection to be accorded to electronic transactions and e-Government services in the forms of special data protection legislation, legislations on electronic transactions and the changes to Government service code etc.;

d) There will be a special treatment to spectrum and its use for broadband service which special treatment shall be proposed by PURA and be approved by MOICI. This could be addressed in any new special legislation for broadband and or special regulations for broadband infrastructure and service delivery;

5.6 International Bandwidth Tariffs, Domestic Connectivity & Access

The UNDP in 1997 launched the Internet Initiative for Africa (IIA), a 3-year regional project to establish or enhance current Internet services and build capacity in Sub-Saharan African countries, with the objective of strengthening economic and social development reforms. By building on local expertise and encouraging universal access, the project was funded on a 50-50 basis by the UNDP Regional Bureau for Africa (RBA) and the government through Gamtel. Consequently, The Gambia became one of the first countries to join the global movement for information superhighway under IIA. Gamtel provided US$1 million (50%) for implementation on behalf of the government. By September 1998 an Internet backbone and gateway was launched. It covers the entire country on a 2 Megabit per second platform, with nodes in 12 major cities, and a 512 Kilobits per second direct access to the rest of the world via Teleglobe in Canada. Internet service provision started in October 1998.

QuantumNET became the first private company to also offer Internet services in November 1998 with a high-speed connection to the Internet backbone. Medical Research Council (MRC), a health research institution also established high-speed access in November 1998 and operates as a non-commercial Internet Service Provider (ISP).

By 2008 and based on a survey, about 66.2% of institutions on the average owned / accessed more than one computer whilst 12.0% owned only one PC. There is only one (1) fixed line operator in the country, four (4) GSM mobile operators and five (5) ISPs operating. The mobile broadband subscription per 100 inhabitants was 0.24 in 2009. By 2012 there was a fixed (wired) broadband subscription per 100 inhabitants at 0.03 and the estimated Internet users per 100 inhabitants was 12.45. The fixed line subscription of 64,196 as in 2012 dropped to 50,334 in 2013 and to 47,540 in 2014. This is still on a decreasing trend. By 2014 there was a mobile subscription of 2,159,099 and a fixed Internet subscription of 3,200. The mobile Internet subscription increased from 127,809 in 2012 to 308,393 in 2014. By 2017, the population coverage for 2G & 3G Mobile Services is about 96% with over 2.5 million connections. With a market penetration of 120%[1] higher than the African Average of 72% there was an annual growth rate of 22%.

Much has been accomplished in terms of falling prices for international connectivity, especially over the period 2012 to 2019. The trend in the increase of the activated STM1 capacity from 6 to 62 when The Gambia got connected to ACE in 2012, it has now increased to 217 STM1s even though the total available capacity stands at 660 including the un-activated one. The over 300% increase in activated capacity is reflected by a sharp reduction of the tariff by over 10 times the earlier cost.

By making a simple baseline comparison, the cost of one (1) Meg residential connection before the launching of ACE was about D5000 (five thousand Dalasis) and now is it between the ranges of D2300 to D2500. This represents a 50% reduction.

The licensed operators are under constant pressure to continuously improve both the capacity and efficiency of their national networks, with the objective of achieving sustained revenue growth, through customer retention and the supply of innovative solutions, in line with global trends. But there are challenges in terms of physical network upgrades and the need for investment in new technologies. The costs of the international bandwidth capacity in the form of the quarterly payments for ACE Cable's operations and maintenance impact on a number of the operators' network upgrade activities.

The number of Internet subscribers in terms of broadband now stands at 5000. The subscribers for 3G and 4G are about 1 Million. There are 42 subscribers per 100 inhabitants representing 42% of the population.

There is still growth in the ICT sector and the sector's contribution to overall GDP will maintain a better ascendancy. To sustain the growth there will a

need for a continuous investment in broadband networks and the boosting of the value-chain by the licensed operators by making optimum use of the available bandwidth capacity. There must be innovative and efficient end user solutions in order to facilitate both private sector and government interactions, in terms of business-to-business transactions, or customer to business transactions respectively. Lastly, for the same continuous sustainability, the demand for such broadband services is to be allowed to grow seamlessly to be supported by actual access by the masses, which is conditional on the affordability of ICTs in general. The measures outlined above for the network infrastructure cannot be left unattended and consequently debased.

6. THE BROADBAND CHALLENGE & OPPORTUNITIES

The BP-2024 considers that communication and its related understanding are made possible only through access to ICTs. The effects of globalisation, interdependence and their challenges have been given due importance by this Policy. Hence the Policy's formulation is forward looking and progressive. The Policy's strategic focus is on relevance and real impacts for growth.

As this Policy is both measured and innovative the business models and financing arrangements are clear and all can facilitate growth in access to broadband. This is where there is emphasis on infrastructure as crucial for Internet in order to have efficient management and service delivery.

Secondly, this Policy considers urgent need to stimulate local content production in local languages and enhance local capacity to benefit from and contribute to the digital revolution. This could be easily realized as the government considers measures for broadband market entry and the issue of tax incentives for ICT networks and services.

There will be the promotion of coordinated international standards for interoperability and to address the availability of adequate radio frequency spectrum all supported by reviewed legislative and regulatory frameworks.

6.1 Identifying Key Constraints

The policy is geared at addressing critical constraints that may be holding back more rapid and sustained expansions for broadband. With the objective of addressing the following specific broadband challenges in detail at a later stage, they are listed as under:

d) The current government network is not fit for purpose as it is unstable, unreliable and hardly used by ministries and it agencies. For e-Government to be fully realized, government must first put in place plans for making the network reliable with adequate capacity and redundancies. As of today, only the IFMIS has been rolled out to a limited ministries and agencies using broadband;

e) The existing licencing framework cannot support broadband ecosystem. The proposal is for a converged licensing regime with some unique details as under;

f) Two such bottleneck constraints within the context of a smooth change to a broadband networked society are the issues of affordability and coverage, in other words, the prices being charged for accessing broadband services, as well as the infrastructure and equipment options being supplied to end users and other Internet Service Providers and/or competitors;

The Policy direction is made clear and concise with regards to the above constraints, and are translated into pre-determined undertakings to make

broadband more affordable, while making a commitment for broadband infrastructure development and sharing. The open access regime being pioneered by the Government through the GSC Trust Agreement is a clear manifestation.

6.2 Basis for The Gambia's Broadband Ecosystem

A key foundation of the BP-2014 is addressing the issues of affordability of broadband services and the requirement to drive forward broadband infrastructure deployment, as well as ensuring the associated user equipment supply. In this regard there is clear recognition of the need for promotion outlined earlier especially in the short term in relation to the issues outlined. There could be promotion for a year, having oversight measures for another year and optimal utilization for the remaining.

6.3 The Required Institutional Framework for Policy Implementation

Reference is made to the required institutional framework that is needed to implement the various programs and policies either in a prescriptive or descriptive manner for purposes of broadband development. MOICI or through some select committees on ICT can implement specific Broadband programs. The Government, through MOICI, may when considered necessary, endeavour for having a special committee at the level of the National Assembly to facilitate the implementation of Broadband programs.

MOICI is to spearhead policy development and implementation together with any such other committees as may be established when considered necessary. The considered legislations and regulations are to be put in place for consistency the implementation of broadband vision and policies.

7. THE GAPS & PREREQUISITES FOR BUILDING THE BROADBAND ECOSYSTEM

Based on the identified challenges and opportunities and comparing those to the achievements at the international level and the best practices for broadband implementation, there are clear gaps and prerequisites that need to be addressed for the successful development of broadband and the realization of its potential. These gaps and prerequisites relate to the following:

a) The required policy, regulation and institutional frameworks to facilitate broadband uptake and delivery;

b) A realistic governance structure for broadband uptake and delivery;

c) A recognised PPP framework for broadband uptake and delivery;

7.1 Gaps and Prerequisites

Each of the identified gaps informs the formation of this Policy's strategic agenda and the objectives in the Strategic Plan. The gaps are as under and their details are within the Strategic Plan:

i) Infrastructure and connectivity;
j) Service Delivery;
k) Content and Applications;
l) Over-the-Top Services;
m) Broadband Devices;
n) Privacy and Security;
o) Capacity building and innovation;
p) Financing and investment;

With the country's national backbone (ECOWAN) and its international connectivity via the GSC of the ACE Consortium, the policy measures outlined in this policy are clothed with the following metrics for its success as the prerequisites:

a) All stakeholders to clearly pursue the broadband target of 5 Mbps;

b) Recognised and workable business and investment models for broadband on open access principle;

c) A clear and acceptable framework for the management of the national backbone;

d) An adopted strategy for implementing the last mile connectivity;

e) Regulatory measures for addressing the constraints of both supply and demand side of broadband;

f) Measures for relevant digital content and applications;

g) A clearer framework for the supporting infrastructure in the forms of access roads, power supply and disparity in requirements by local government authorities e.g. BCC, KMC, BAC, with numerous fees discourage broadband rollout;

h) A collaborative framework on broadband delivery;

7.2 Applications

All ICT users can benefit directly from the software applications and content they access through broadband networks. These applications support people in the purchase of products, interact with government and its agencies in their utilization of government services. One of the target areas is to encourage home Internet broadband use by making sure that consumers find more valuable applications and local content online. A number of the broadband applications can directly help businesses improve internal productivity and reach customers with ease. These productivity gains benefit the entire economy. It is therefore an area that is given special due consideration by this Policy.

7.3 Devices

There is a plethora of devices and they continue to grow in number and variety with more computers, phones and other machines getting connected to the Internet. The smart phones are changing the market dynamics with more than 70% of the population owning mobile phones. This policy recognizes the emergence and adoption of new technologies such as radiofrequency identification and networked micro-electromechanical sensors, among others, as that can give rise to an effective ecosystem for Internet of Things‖

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As already seen in other economies with developed broadband ecosystem, the Internet of Things has in fact created whole new classes of devices that connect to broadband, and has the potential to generate fundamentally different requirements on the fixed and mobile networks. This includes the need for more IP addresses with new traffic patterns and pressure on the need for more spectrum for wireless communications. The strategic path in the Strategic plan will consider these challenges and needs.

7.4 Networks – Broadband Adoption and Utilisation

As the largest tax payers and influencers of the economic activities in The Gambia, the licensed network operators and service providers are an important part of the Gambian economy. The current drive is for those operators to upgrade their networks to offer higher speeds and greater capacities. The affordability and actual performance of these networks will

depend on many factors such as usage patterns, investment in infrastructure, and service take-up rates. This too requires careful planning in order to avoid duplicity and operational challenges.

The demand for broadband is likely going to increase in The Gambian growing economy across different demographic groups and age groups. Broadband adoption among businesses is also quite strong especially in the banking sector of the economy. There is a need for a continuous careful assessment and planning for this aspect of development and growth.

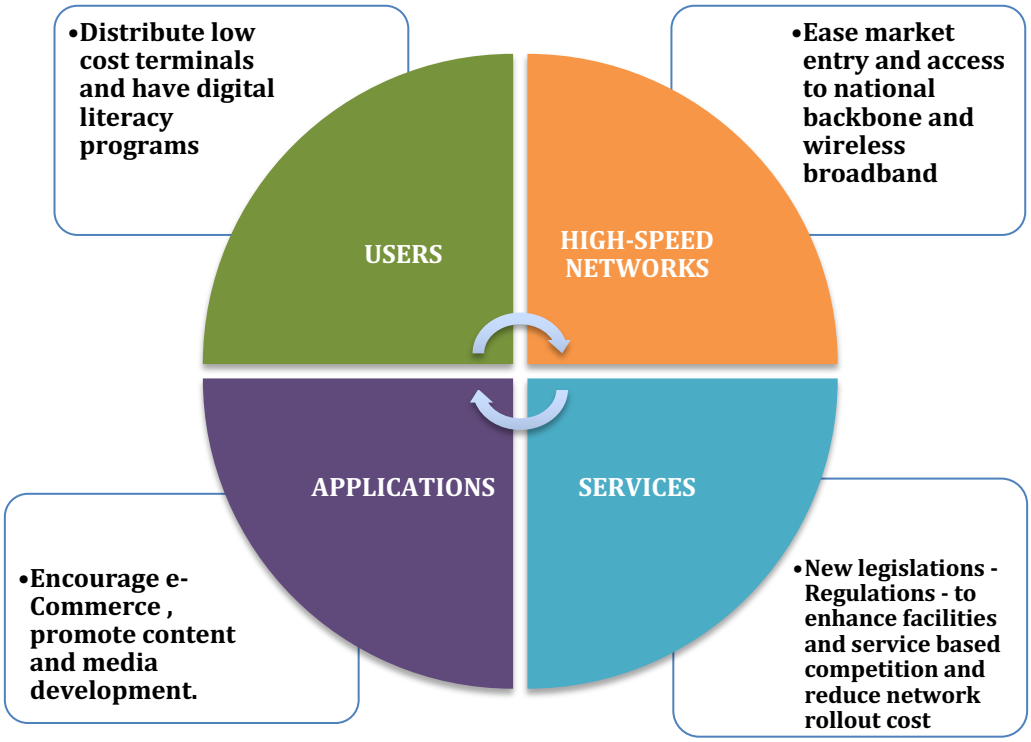
7.5 Policies and Programs to build The Gambia's Broadband

Globally, all broadband development strategies are implemented by the use of policies, legislations, regulations, and programs. This Policy is also a reflection of a benchmark approach especially the measures recommended by the ITU. The ITU recommendations for broadband (through the broadband Commission) and the policymaking model recommended by the World Bank have both been adopted in developing the broadband ecosystem model and policy orientations for The Gambia. In times of implementation, the international standards could be used for reference purposes where there is the practical need to do so.

7.6 Objectives the Gambia's Broadband Ecosystem

The central objective is to create an information society in the Gambia with knowledge based economy through broadband innovation and investment. All appropriate steps, through the defined policy measures, have to be taken to ensure that all Gambians have affordable access to high-performance broadband with potential benefits fore the economy. The broadband ecosystem being developed is to help ensuring that the ICT sector continues to remain a crucial pillar of The Gambian economy.

In the ecosystem, the service providers are to be facilitated to invest in upgrades of fixed and mobile networks. More policy initiatives are to be implemented to foster competition. There would be further measures to free up more spectrum as it plays an important role in the economics of broadband networks. In the public private partnership arrangements, measures would be considered to lower infrastructure costs. Above all, with the country's own uniqueness, there would be investment through research and development. The diagram below represents this ecosystem.


•Distribute low cost terminals and have digital literacy programs
•Ease market entry and access to national backbone and wireless broadband
USERS
HIGH-SPEED NETWORKS
APPLICATIONS
SERVICES
•Encourage e-Commerce , promote content and media development.
•New legislations - Regulations - to enhance facilities and service based competition and reduce network rollout cost

8. THE POLICY VISION AND MISSION

8.1 Vision

To transform The Gambia into a knowledge-based economy that thrives on accessible, secure and high speed broadband within an open access regime and a balance broadband ecosystem.

8.2 Mission

The Broadband Policy 2020-2024 is premised on creating and establishing an economy and society that thrives on broadband impacting on lives, governance, business processes with unlimited opportunities for all citizens

9. THE POLICY OBJECTIVES

Broadly there are eight policy priority areas for each of which there will be developed 5-Year Strategic Plan to guide successful implementation. These areas include capacity building, private sector development, gender equality and youth empowerment, agricultural development and climate change. The policy objectives of this BP-2024 are:

f) Facilitating socio-economic growth and development of the country by deploying appropriate ICT systems and solutions;

g) Achieving good governance and transparent government through ICT;

h) To achieve a broadband ecosystem with a robust competition in an environment that promotes innovation and investment;

i) Strengthening the country's global competitiveness and the promotion of private sector development;

j) Enhancing the ability of citizens to utilize ICT in their conduct of various business activities through new skills under special human capital development. This would be through:

    i. To come up with measures to facilitate and support universal deployment of broadband in even high-cost areas including measures for the efficient allocation and management of scarce resources and ensure that low-income Gambians can afford broadband;

ii. To support efforts to boost adoption and utilization of broadband;

iii. To facilitate legislative and other policy reform including the determination of standards and incentives to maximize the benefits of broadband in sectors where government influences significantly, such as public education, health care and government operations;

The policy measures and programs are informed by the need to create a holistic framework upon which The Gambia can leverage on new technologies, to wit the Internet of Things (IoT), data analytics (DA), artificial intelligence (AI), and other measures to actively partake in the transforming global economy. It is to stimulate and satisfy the demand for high-speed broadband and data services.

The envisioned strategic objectives reinforce the NDP vision, more specifically in the government's attempts for The Gambia, to be a globally competitive knowledge-based economy enabled by broadband. It is informed by both the trends in the domestic needs as well as the requirements set at the ITU of which The Gambia is a party. These standard requirements relate to the African Union Agenda 2063, the Sustainable Development Goals (SDGs), the targets for the ECOWAS region etc. The implementation path is clothed with the need to identify measured partnerships and collaboration of all stakeholders.

In order to achieve the above policy objectives, it will be necessary to consolidate mechanisms and build upon market-oriented policies to create an enabling framework for the development of the broadband ecosystem in terms of each of the objectives set.

10. THE POLICY TARGETS

The identified gaps and prerequisites have to be addressed through the Policy measures. To be able to certify and quantify that measurable progress is made in the achievement of the outlined objectives, some key targets are set. There are to serve as the barometer over the next five years in tracking the objectives very closely. They are: -

l) By January 2021 the national backbone (ECOWAN) shall be placed on efficient management terms where the manager-operator shall only be providing only wholesale services;

m) By June 2021, all operators to be connected to the ECOWAN on an open access basis in the provision of last mile solutions;

n) By the end of 2021, The Gambia should have another connectivity as alternative to GSC-ACE Cable that is to serve as a reliable back-up for the country;

o) By January 2021, there shall be special framework for local content and applications development as well as special regulations for broadband devices;

p) By January 2021, the capacity building and innovation agenda shall be developed for implementation;

q) By 2022, at least 75% of homes should have affordable access to actual download and upload speeds of at least 5 Mbps; and by 2023, almost 100% of home should have affordable access to actual download of 5 Mbps and an increase access to broadband coverage of 4G to not less than 85% of the population by 2024;

r) The Gambia should become a leader and pacesetter in the region in mobile innovation, with the fastest and most extensive communications networks by 2023;

s) By 2024, every Gambian should have affordable access to robust broadband service and the means and skills to subscribe thereto if they so choose;

t) By 2024, every public institution should have affordable access to at least not less than 5Mbps broadband service to anchor institutions such as schools, hospitals and government buildings and an increase in digital literacy in schools to 75%;

u) Expand broadband to all local government areas and districts and to have 75% digital literacy amongst the Government workforce and 65% the total national workforce by 2024;

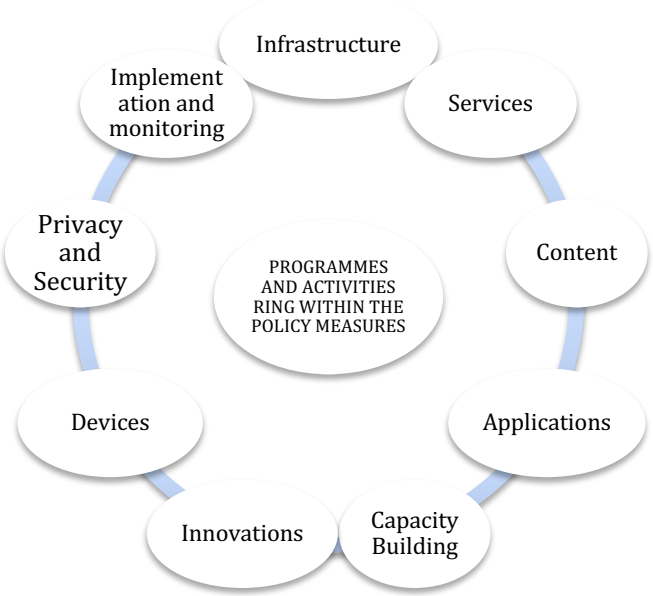
v) To ensure safety of the public at large, every alarm monitoring and security response service provider should, by 2024, have access to a nationwide, wireless, interoperable broadband public safety network.

11. POLICY MEASURES

These measures relate to actions and programs for the successful implementation of this BP-2024. They are activities that are to ensure safety and high quality of service, encourage maximum broadband coverage, facilitate content and applications development as well as affordability of broadband and continuous digital literacy programs. Their successful implementation would aid in the realisation of a number of the targets sets. Ultimately it is to address the needs stakeholders for broadband service utilization. The specific measures are underlined hereunder;

11.1 Policy Focus Areas Informing the design of the Strategic Plan

Based on the identified gaps, prerequisites and targets, the programmes would address the following:



The specific focus of each subject area is identified in the table below.

NO	SUBJECT AREA	THE FOCUS AREAS
1	INFRASTRUCTURE	Coverage
		Affordability
		Critical infrastructure (for Broadband)
		Spectrum Management
		Broadband Infrastructure in Underserved Areas
2	SERVICES & SPECTRUM	Competition
		Quality of Service
		Availability
		Affordability
		Consumer Protection
		Disruptive technologies
		Net neutrality
3	CONTENT	Data Protection
		Electronic Transactions
		Protection of Children online
		Intellectual Property Rights
4	APPLICATIONS	Language
		Digitization of curriculum
		Public key fields
5	CAPACITY BUILDING	Certification of local professionals
6	INNOVATION	Services
		Technologies
7	DEVICES FOR BROADBAND	Quality
		Accessibility
8	PRIVACY AND SECURITY	Infrastructure
		Detection
		Enforcement
9	IMPLEMENTATION AND MONITORING	Development of integrated broadband infrastructure
		Partnerships through special purpose vehicles
		Design and implementation
		Sales
		Operation and maintenance
		Institutionalize & multi-stakeholder approach to broadband development

The subject areas and focus areas are intended to also promote the concept of "meaningful universal connectivity" which now emerges as the focus of efforts to promote the benefits of online participation while mitigating the potential downsides of digital connectivity. It certainly encompasses broadband adoption in terms of availability, accessibility, relevance and affordability as well as ensuring that there are safe, trusted, empowering users of the broadband networks and services that can breed positive impacts. There are targets that are to address the barriers to access at local and regional levels. The non-technology and non-economic issues play a central role in decisions to participate online or not, such as lack of digital skills, linguistic and literacy barriers, social norms, and cultural attitudes.

Additional strategic actions for addressing capacities, tax incentives that encourage infrastructure building in underserved areas, universal service programs through fund, local loop unbundling, broadband service delivery and applicable standards, promoting community access and usage of Internet, facilitation of content and service development, increased PC penetration and Internet literacy program and determining regulatory incentives are to be considered in the implementation through the strategic plan.

The policy mechanisms for developing growth include;

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;

Generally, as an infrastructure for knowledge economy, there will be a revitalization of demand for the products and services of the telecommunication sector. Being aware that there is ECOWAN infrastructure, the determined activities are to address the issues of cost which must be made affordable and stimulate demand for broadband. Looking at e-mail and instant messaging as the most successful Internet applications they offer users almost the same experience whether on a 56 Kbit dial-up modem or on a 1.5 Mbit/s broadband connection. The policy measures reflect news ways to broadband promotion techniques that can work from both a demand and supply perspective. The focus is not to promote broadband networks per se, but rather to promote the availability of high-speed Internet access as a platform for developing a range of new and innovative applications and services.

The measures all lead to the promotion of broadband. It will breed the exchange of richer content, facilitates improved, expanded and more rapid communication, and allows the sharing of a connection with multiple users. Broadband connectivity helps to establish an "information society" that encourages innovation, stimulates growth in an economy, and attracts

foreign investment. With new applications and services users can be attracted and help recover infrastructure development costs.

11.2 Legislations and Regulations for Consideration

For ensuring the realisation of the BP-2024 policy objectives and the uptake of broadband especially in areas of content, applications, devices, privacy and security the following legislations or legislative amendments are to be considered:

NO	LEGISLATION / REGULATION	SCOPE
1	A new Legislation for Broadband	Sanctions / enforceability
2	A review of the IC Act of 2009	Flexibility for new areas
3	Regulations on a new converged licensing regime	For efficient and effective broadband network and service delivery
4	A review of legislation on intellectual property and copy rights	Enhancing electronic commerce and e-Services
5	A new legislation for data processing and protection	A clear regime for electronic data processing and protection
6	Adopting new Spectrum Management Regulations	Proper resource allocation and nent
7	Infrastructure sharing and colocation regulations	To have efficient and cost effective service delivery that takes on board the needs for environment protection
8	A review of legislation for consumer protection	A conducive ecosystem for consumers of the digital economy
9	A legislation determining access to information	The determination of access and access rights pertaining to information
10	A legislation on electronic equipment (computer) misuse and cyber crimes	Ensure security for the use of electronic equipment for the purposes of communication
11	An revised legislation on electronic transactions	Facilitation of the needs of the digital economy
12	Specific regulations for broadband networks and services etc.	To bring about clarity on the dos and dons of broadband network and service provision
13	Network neutrality and the regulation of broadband content	This to ensure efficient content regulation especially where there is no special legislation enacted for broadband.
14	Market determination	This will facilitate and ensure compliance with any determined and agreed roll-out targets.

11.3 Infrastructure

The wireless networks use publicly owned spectrum, wireless and wired networks rely on cables and conduits attached to poles and along public roads. Based on the experiences of the operators, securing rights to this infrastructure is often viewed by many licensed operators as a difficult and time-consuming process that discourages initiatives for them to invest in upgrading their network performance. The local authorities issue permits to the operators and the Government too influence the regulation of how broadband providers can use existing private infrastructure like utility poles and conduits. Local authorities also have their say to encourage and facilitate fibre conduit deployment as part of public works projects like road construction.

As a policy, the Government is to ensure that the costs incurred by operators when using public infrastructure are at a minimal so that the operators may offer their services at affordable prices. There is the recognition that this may be achieved in two ways, to wit:

a) Government will take steps to improve utilization of existing infrastructure to ensure that network providers have easier access to poles, conduits, ducts and rights-of-way;

b) Government will foster further infrastructure deployment by facilitating the placement of communications infrastructure on landed properties;

The policy measures in that regard are as follows:-

i. To use the legislative approach by coming up with specific legislations for broadband with clearly defined obligations and sanctions. The is one used in a number of countries especially in the Eastern Africa;

ii. Specific regulations under relevant legislations for broadband to be put in place that can provide special incentives and exceptions to the needs of technology neutral approach and the control for proper domain name management, outline infrastructure access terms, disputes, standards for rental rates for poles in any local government area;

iii. PURA will after consultation with local authorities devise means to collect and make available information regarding the location and availability of poles, ducts, conduits and rights- of-way in any given district subject to the regulations to be issued;

iv. With both approaches clear frameworks for the operationalization of universal access regimes (paying into a fund) through “pay” and “play” strategies are to be adopted and the fund is used to facilitate broadband deployment and access;

11.4 Services and Spectrum Policy

The partly band-by-band and or service-by-service approach to allocating spectrum has the limitation of being ad hoc, overly prescriptive and unresponsive to changing market needs. Today wireless broadband is a key platform for innovation and the use of wireless broadband is growing rapidly, primarily in the area of mobile connectivity. This is simply because of the evolution of third-generation (3G) wireless network services, the development of smart-phones and other mobile computing devices, the emergence of broad new classes of connected devices and the rollout of fourth-generation (4G) wireless technologies such as Long Term Evolution (LTE) and WiMAX.

The progression to 4G technologies require appropriately sized bands and the rollout of advanced 4G networks using new versions of LTE and WiMAX technologies will greatly impact on mobile broadband networks. In sum, the growth of wireless broadband will be constrained if there is no spectrum available to enable network expansion and technology upgrades. In the absence of sufficient spectrum, network providers may turn to costly alternatives, such as cell splitting, often with diminishing returns.

For this reason, the spectrum policy requires reform to accommodate the new ways the industry is delivering wireless services. These reforms include making more spectrum available on a flexible basis, including for unlicensed and opportunistic uses.

The specific measures will include;

a) A review of the current mode of spectrum allocation and create methods (through regulation) for measuring of spectrum utilization;

b) To have a strategic spectrum plan for broadband with incentive options;

c) To have rules, based on any applicable law, for the promotion of access to unused and underutilized spectrum;

d) A consideration for feasibility of making 500 MHz available for broadband use within the next 4 years, of which, if feasible, 300 megahertz between 2.3 GHz and 3.7 GHz would be made available for mobile use within 2 years;

e) To have measures for complete re-farming of the 2.3 and 2.6 GHz band to allow deployment of broadband services thereon;

f) To plan for the digital dividend resulting from the DSO migration with a view to reallocating some 150 MHz from the analogue broadcast television (TV) bands to broadband deployment;

g) To consider domesticating the ITU's innovative and flexible approaches to global spectrum allocation with emphasis on convergence (radio communication services and broadband services);

11.5 Availability

As the target is that every Gambian should have access to broadband services supporting a basic set of applications that include sending and receiving e-mail, downloading Web pages, photos and video, and using simple video conferencing.

A target of 5 Mbps of actual download and upload speed with an acceptable quality of service for interactive applications, would ensure universal access. This represents a reasonable speed that the typical broadband subscribers should receive and what many consumers are likely to use in the future, given past growth rates. As there need is for higher speeds, the licensed operators will have to consider more investment toward meeting this initial target. The policy measures for this include:

a) The universal access regime as established by the law will be implemented by setting up the fund and its management team;

b) A number of new universal access projects will be sanctioned;

c) For universal access;

11.6 Affordability, accessibility and Adoption

With the cost of bandwidth declining and the issues of accessibility being addressed, a greater number of the population are adopting the use of ICT services more specifically broadband. This part adoption refers to whether a person can afford accessing the use of broadband service at home or not to communicate with others, conduct business and pursue online activities.

In this area, cost is the leading barrier to access and adoption. The other reasons that may keep potential users from getting broadband at home may include the lack of digital skills, irrelevance of online content and inaccessible hardware and software.

For non-adopters to find broadband valuable enough to subscribe, they need a basic knowledge of how to find and use trustworthy, substantive content. Similarly, if broadband costs fall because of lower prices or subsidies, consumers might be more willing to try it, in spite of doubts about its relevance or their own abilities to use it.

The primary incentive for broadband adoption is communication — two-way communication through e-mail, social networking platforms, instant messaging or video chatting. Getting people online is a critical first step and they are to be online through sustainable efforts that promote utilization and help each user derive value from the Internet.

The government has a role in providing support to people with low incomes, ensuring accessibility, funding sustainable community efforts, convening key stakeholders and measuring progress. The other measures will include:

a) To make broadband more affordable for low-income households;

b) There will be considerations for free or very low-cost wireless broadband as a means to address the affordability barrier to adoption through universal access measures;

c) The launching of national digital literacy programme;

d) Encouraging and enhancing public private partnerships;

e) Exploring the potential of mobile broadband access as a gateway to social inclusion;

f) Enhancing the capacity of any select committee on broadband for broadband development;

11.7 Competition and Innovation Policy

In the area of innovation, services and technologies are key. Broadband often drives the creation of a wide variety of products and services. The competitive forces that sparked these breakthroughs need to be nurtured so that The Gambia may reap the benefits of an established culture of innovation in relation to the services and technologies. The key enabler for this is encouraging effective competition. The policy measures will include:

a) More radiofrequency spectrum can be made available for existing and new wireless broadband providers in order to foster additional wireless and fixed line competition;

b) Data could be collected on actual availability, penetration, prices, churn and bundles offered by broadband service providers to consumers and businesses, for analysis and redirection;

c) There will be broadband measurement standards with a clear procedure for updating them.

d) Regulations to be developed for broadband can lay down, among others, reasonable broadband performance standards for mobile services and small business users;

11.8 Public Safety and Security

The issues of safety and security relate to more of the devices, privacy and the security of the networks and these are critical for any growing broadband nation especially in times of emergency. The emergency services and the other forms of threats for all online services would need some measures for ensuring confidence. The policy measures in this area include:

a) The promotion of public safety wireless broadband communications ;

b) To put in place a public safety broadband network with a maritime safety information system;

c) To put in place an administrative system to enable access to sufficient capacity on a day-to- day and emergency basis;
d) To put in place a mechanism in place to promote interoperability, operability of the network and standards for especially broadband wireless mobile infrastructure and devices;

e) Ensuring broadband communications during emergencies and improving national cyber security and protecting critical information infrastructure;

f) Regulations to ensure CERT has a role on broadband in times of emergency with a cyber security roadmap as well as outage reporting requirements to broadband service providers;

11.9 Broadband for Improving Government Services

With the e-Government initiative, the Government can use broadband for more efficiency in its service delivery to the people, businesses and other Governments. It can even help local authorities and communities deploy more broadband capability. Integrating and streamlining processes can help citizens especially at the lower level of the social ladder. The cost of governance can reduce significantly and government services will operate more efficiently with the paperwork reduction that broadband technology allows. Further, as the global borderless nature of the Internet results in the appearance of new categories of threats that can come from anyone, anywhere in the world and at any time. As outlined earlier, protecting the Internet and providing for cyber security is both an economic and national security challenge and collectively, one of the most serious challenges of this information age. The policy measures include:

a) Improve Government connectivity and online presence;

b) To ensure that Government agencies and departments are to serve as broadband anchor tenants for un- served and underserved communities;

c) Government to develop a vision and strategy to guide its agencies on cloud computing;

d) An annual competition to recognize internal efforts to transform government using broadband-enabled technologies to be spearheaded by MOICI;

e) Developing key strategies and guidelines for an efficient online service delivery for Government-to-Government (G2G) and G2C applications;

f) Promoting online service delivery with a review of the business process in Ministries that should aim to reduce paper-work in government thus enabling government to improve government services;

g) To have a benchmark of government websites against the private sector for making improvements on an annual basis together with Web standards and templates to make the Web presence easier to navigate, easier to recognize and accessible to people with disabilities;

h) To develop developing public-private cyber security partnerships;

11.10Education

The Gambia is way behind in terms of education for the new information technology-based economy. There is a widening gap between the skills of graduates and modern workforce demands. As the study of mathematics and science is on a declining trend at secondary level The Gambia must change for better if the country is to take advantage of the digital economy.

Real learning is on a decline in the midst of the paucity of the right standards and assessments for measuring learning effectively. There is almost no best practice sharing between the teachers and principals in relation to content and strategies to improve achievement. Above all the ever-increasing cost of tertiary education measured against overall results all call for a concern. Among others, the policy measures include:

a) support and promotion framework for online learning with establish standards to be adopted for locating, sharing and licensing digital educational content;

b) To have legislative action to encourage copyright holders to grant educational digital rights of use, without prejudicing their other rights;

c) To put in place standards for electronic educational records and set goals for minimum broadband connectivity for schools and libraries with the right funds accordingly;

d) To increase the supply of digital educational content available online that is compatible with standards established;

e) To have re-examination of the digital data and interoperability standards to ensure that they are consistent with the needs and practices of the educational community;

f) To support and funding for research and development of online learning systems;

g) To have open licensed and public domain software alongside traditionally licensed solutions for online learning solutions, while taking into account the long-term effects on the marketplace;

h) Having a program to fund the development of innovative broadband-enabled online learning solutions;

i) Provide support for Internet connections to more schools and libraries through the universal access fund;

11.11Health Care

Health is key to development and reducing the cost of health service delivery can have significant impacts. The youths constitute a greater percentage of the population and the health delivery services need serious improvements. E-Health can have great impact on the delivery systems and the patients. The fact of video consultation can be beneficial for extending the reach of under-staffed specialties to patients residing in rural areas. The remote monitoring of patients can enable early detection of health problems and this can reduce cost on Government and patients. The transformations provided by broadband also relate to innovations in mobile medicine, which includes new modalities of non-invasive sensors and body sensor networks. Mobile sensors in the form of disposable bandages and ingestible pills relay real-time health data including vital signs, glucose levels and medication compliance over wireless connections.

It is common knowledge that data are becoming the world‘s most valuable commodity and the advanced use of data in health care offers immense promise in the forms of better treatment evaluations, personalized medicine, enhanced public health and empowered consumers all moderated by improved policy decisions. Broadband can be used for improving care quality, safety, efficiency and reducing disparities as well as the management of the health of patients and families. The care coordination can be enhanced and public can be improved with adequate privacy and security of health information. The objectives include:

a) a strategy for e-care technologies, their use and widespread adoption;

b) Reducing regulatory barriers that inhibit adoption of e-health solutions as well as standards for converged communications and e-health care devices;

c) The utilization of the universal access fund for e-health projects;

d) Establishing broadband infrastructure for health with the appropriate funding mechanism to deliver service at locations where existing networks are insufficient;

11.12Research and Development

It is a known fact that research and development impacts on innovation and productivity and this can lead to economic growth. The university of The Gambia and the private sector has important roles to play in spreading a research culture in the new broadband ecosystem. The development of research networks through a clear research and development funding agenda that is focused on broadband networks, equipment, services and applications with a local context will allow new entrepreneurs and innovators to be born with a view to advancing domestic e-Applications that go a long way in improving the lives of citizens in all spheres of the economy. The area of research and development is rather neglected. The policy measures include:

a) Government to create a clear agenda and priorities for broadband-related research and development funding;

b) Regulatory policies would be drawn for allowing increase use of government resources for research and development;

c) There will be focus on broadband research and development funding on projects with varied risk- return profiles, including a mix of short-term and long-term projects;

d) Developing a research road map to guide national broadband research and development funding priorities.

12. IMPLEMENTATION AND BENCHMARKS

The Government recognizes the challenges and costs of creating a broadband ecosystem, its process and related challenges in formulating the implementation framework and the identification of the key roles of each stakeholder. The implementation of this BP-2024 therefore entails a long-term commitment to measuring progress and adjusting programs and policies to improve performance. It requires periodic assessments of the broadband ecosystem being developed for The Gambia especially in terms of deployment, adoption and utilization. Actions and their results matter most to capturing the opportunities broadband presents.

This policy was developed through a consultative process. It has set forth significant actions to be taken by various parties; a strong partnership among all broadband stakeholders is required to ensure that the objectives outlined are actually met. With a view to assisting in the implementation of this policy it is provided as under:

The Policy provides for establishing or enhancing the works of special committees under the ICT Agency for broadband. The membership of this committee shall be determined by the ICT Agency.

It is recognized that different stakeholders will be involved in the implementation of the broadband ecosystem and the specific stakeholders and their roles are outlined in the Strategic Plan for broadband implementation. This notwithstanding the ICT Agency is to oversee the implementation of this BP-2024.

In the event that a consideration is made for the establishment of a special dedicated committee of the National Assembly for broadband, then it shall cater for and promote the required legislations and regulations pertaining to broadband adoption.

MOICI will publish a performance dashboard for broadband with metrics designed to track broadband policy goals in line with the broadband strategic plan. Furthermore, with regards to organisational responsibility PURA is assigned all the regulatory functions while the ICT Agency will be given full responsibility for the promotional functions. MOICI will be responsible to link up with other line Ministries to ensure adequate policy coordination subject to the nature of the programme and projects under consideration in the implementation of the BP-2014.

13. MONITORING AND EVALUATION

In monitoring and evaluation, the issues identified in the area of gaps and prerequisites that are treated in the area of policy measures are central for the success of the BP-2024.

The monitoring and evaluation of this Policy shall be done through MOICI in conjunction with the ICT Agency and other stakeholders. There shall be a special report on broadband to be submitted to the National Assembly every year to assess the effectiveness of the delivery of the Policy targets and for redirection.

A monitoring framework will be developed to monitor attainment of the implementation of the broadband ecosystem.