

DRAFT GREEN PAPER

THE JAMAICA INFORMATION AND COMMUNICATIONS TECHNOLOGY POLICY, 2009

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- (xi) Digital Britain Interim Report, January 2009
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1.0 BACKGROUND

The Government has recognized the importance of the telecommunications sector and its potential for economic and social development. In support of this recognition, Jamaica became a signatory to the World Trade Organization's Basic Agreement on trade in telecommunication services and the Government made a decision in 1999 to liberalize the sector.

The Government adopted a phased approach to the liberalization of the telecommunications sector in order to minimize dislocation and to ensure that the necessary legal and regulatory framework was in place. This involved a consultative and non-adversarial approach to negotiate the termination of the monopoly license held by Cable & Wireless Jamaica Limited (Cable and Wireless), which would have lasted until 2013 renewable to 2038. The culmination was a new Telecommunications Act that was promulgated in 1999. The non-adversarial approach proved to be very effective and was subsequently adopted by other jurisdictions in the region.

The Telecommunications Act 2000 (the Act), became effective on 1st March 2000 and made specific provisions for the liberalization of the telecommunications sector. The liberalization was implemented in three phases. The period for each phase and the key elements of each phase are presented below:

- (i) Phase I (March 1, 2000 – August 31, 2001)**
 - Opened the market to wireless telecommunication.
 - Opened the market for the provision of customers' own equipment.
 - Allowed companies with single entity free zone status to provide their own telecommunications services.
 - Opened the market to the resale of data, international voice and Internet access.
- (ii) Phase II (September 1, 2001 – February 28, 2003)**
 - Competition in domestic facilities and services.
 - Cable TV providers being allowed to become Internet service providers (ISPs).
- (iii) Phase III commenced March 1, 2003**
 - All telecommunications facilities, including international voice and data services, were opened to competition.

The Act also provides for the establishment of an advisory body known as the Jamaica Telecommunications Advisory Council (JTAC). Cable & Wireless enjoyed a right of representation on JTAC. Other appointments to JTAC were made on the recommendations of the other carriers, service providers, corporate business entities and consumers. The mandate of JTAC was to provide advice to the Minister on the reform of the telecommunications sector. The Act provides for the sector to be regulated by the Office of Utilities Regulation (OUR) and the right for companies to appeal to a Telecommunications Appeals Tribunal, against the decisions of the OUR. The Act also makes provisions for the management of the radio frequency spectrum by the Spectrum Management Authority.

It was envisaged that a new Act would have been promulgated either during the three years transitional period (1st March 2000 to 1st March 2003) or shortly thereafter.

3.0 INTRODUCTION

The advancements in information and communications technology (ICT) have resulted in new methods of transmitting voice, audio and video. Traditionally, there were separate types of networks used for the provision of these services; specifically telephone (fixed and mobile), radio and cable television networks. A revolutionary process has transformed these traditional networks into advanced Internet Protocol (IP) based networks capable of providing a full range of products and services that are accessible via a wide range of devices from any location.

These innovative ICT products and services are creating opportunities and threats for established players and new entrants in the telecommunications industry, for industries and public institutions that rely on telecommunications, and for Jamaican consumers and citizens. Thereby challenging the relevance of some aspects of Jamaica's telecommunications policy and regulatory framework; and posing new risks to the international competitiveness of the Jamaican economy.

In early 2001, the then portfolio Ministry commissioned a comprehensive study on Telecommunications Reform which was conducted by local consultants and supervised by JTAC. The report was completed in 2002 and made several recommendations for the reform of the sector. Two other studies were conducted by the Ministry in 2004 and 2006 respectively. The 2004 study, which was conducted by Dr. Peter Stern, reviewed the legal, institutional and regulatory framework of the sector. The 2006 study, which was conducted by the Nordicity Group Limited, analyzed the options for the Single Regulator for Telecommunications in Jamaica. The Cabinet Office commissioned a Regulatory Impact Assessment Study that included telecommunications and was completed in 2006.

The reports recommended the establishment of a single agency responsible for telecommunications regulation and also a new Telecommunications Act. They also recognized a number of pertinent issues, including:

- (i) the convergence of telecommunications services on diverse media;
- (ii) new technologies & the resulting competition issues arising out of the liberalized market;
- (iii) management and potential governance of content;
- (iv) the existence of multiple regulatory agencies (OUR, SMA and BCJ) as a constraint to cost-effective and efficient regulation of the sector; and;
- (v) the need to review the role of JTAC.

This Policy addresses the issues identified from the studies, accommodates technological advancements and establishes a framework for ICTs to enable national development. It is envisioned that this Telecommunications Policy will be supported by a National Information and Communications Technology Strategy. It will also coexist with and complement a Broadcasting and Content Policy. This holistic approach will ensure that all the critical elements are taken into consideration to further develop the telecommunications sector in order to ensure economic and social development.

3.0 ICT AND VISION 2030 JAMAICA

There can be no doubt that the development of the ICT sector has transformed life in Jamaica in many ways over the past two decades, a period which has seen the introduction and spread in use of mobile phones, personal computers and the Internet, dramatic expansion in the number and range of telecommunications and broadcast media providers, and growth of applications of ICTs in businesses, schools and households. The Vision 2030 Jamaica National Development Plan sees the ICT sector as playing a central role in the transformation of Jamaica over the next two decades on the path toward making the transition to becoming a developed country.

Information and Communications Technologies have become engines for social and economic growth globally. The appropriate utilization of ICT can improve the lives of all Jamaicans and the vision is for Jamaica is to utilize Information and Communications Technology (ICT) to attain developed country status by 2030. This will involve growth of the ICT sector and the application of ICT in all sectors and at all levels to achieve rapid and sustained development. The vision for ICT includes the following:

- (ii) The attainment of the Millennium Development Goals
- (iii) The integration of ICT at levels and all processes in the education system, thereby producing a knowledge-based and educated society. This will include the early childhood, primary, secondary, tertiary and life long learning institutions as well as teacher training colleges. The average Jamaican will be ICT literate.
- (iv) Attainment of affordable universal broadband access for all citizens, private sector, government and civil society, thereby eliminating the digital divide. Universal access will extend beyond voice to include internet, computing devices, information literacy and access to telecommunications services.
- (v) The establishment of internationally renowned Technology Parks and Research centres to foster innovation in society.
- (vi) Attraction of international companies to establish software development companies or manufacturing plants in Jamaica.
- (vii) Continued enhancement of the legal and regulatory framework to promote industry development, transparency, true competition, consumer protection and quality standards, based on the dynamic nature of the sector. The enhanced support for competition will attract local and international investors.
- (viii) The establishment of a networked society and economy in which all citizens utilize ICT in all aspects of their lives, including school, work, home and church. The private sector, public sector and civil society will utilize ICT to conduct business and to interact with each other. There will be pervasive availability and use of electronic

commerce, electronic government, electronic procurement and other internet related services.

- (ix) ICT will contribute to the fostering of niche markets in which Jamaica has competitive advantage and the opportunity to be a world leader. These niches will be located within a range of sectors including:

Services

- Financial Services (Offshore Banking, Insurance)
- Hospitality Industry (Travel & Vacation Sectors)
- Business Process Outsourcing
- Offshore Education
- Logistics / Transshipment Points
- Creative Industries (Music, Movies, Fashion, Internet Content)

Manufacturing

- Agro processing
- Light Manufacturing

Mining and Energy

- Limestone and limestone derivatives (cement, lime, GCC & PCC)
- Renewable energy

Agriculture

- Orchard tree crops
- Herbals /nutraceuticals
- Food Processing
- Pharmaceuticals/Wellness industries

Tourism

- High end boutique resorts
- Mixed use developments

Infrastructure

- Housing for the tourism sector
- Sewage and water
- High end shopping centres

- (x) The establishment of i) digital broadcasting networks; and ii) video and audio content delivery on an end-user demand basis.

- (xi) Jamaica will be a main contributor to internet content given our rich heritage and culture. The content will focus on our much strength such as folklore, art, craft, music, history, culture, fashion and success in sport. Jamaican content will be widely

available through all distribution media including the Internet, broadband access devices and cable.

- (xii) There will be wide availability of electronic (e-) services for all the major sectors. This will include the e-health, e-education, e-tourism, e-security, e-agriculture and e-commerce services. Investors and consumers will be able to access information and services readily over the internet. Example: Jamaica's Tourism Industry will utilize ICTs to improve competitiveness through promotion over the Internet and the integration of local tourism providers into Destination Management Systems.
- (xiii) ICTs will have transformed the Trade and Export Sector through computerizing trade logistics and customs systems, making them more efficient and transparent, and increasing trade flows.

4.0 POLICY FRAMEWORK

4.1 Policy Goals

Jamaica has reaped several benefits from ICTs mainly due to the liberalization of the telecommunications sector. These benefits include:

- (i) increased local and international investment;
- (ii) increased voice penetration;
- (iii) increased availability of broadband services;
- (iv) the availability of electronic commerce, electronic banking and electronic government services; and
- (v) broader economic and social benefits derived from the application of Information and Communications Technology (ICT).

The Government considers telecommunications as a significant part of its economic strategy and wishes to leverage the range of telecommunications services to enhance Jamaica's competitiveness.

The three main Policy goals are:

4.1.1 Improved Productivity of the National Economy

ICT has the potential for increasing the overall efficiency of both the public and private sectors. In the case of the public sector, the objective is to augment public access to a wide range of government services and to improve the level of responsiveness to the public. With respect to the private sector, the overriding objective is to utilize ICT to increase productivity, improve efficiency and to effectively compete in the global economy. The underlying component for the proliferated use of ICT is affordable telecommunication services which will enable both public and private enterprises to continuously automate and improve processes resulting in increased national productivity.

4.1.2 Attraction of Local and International Investments

The Government is keen on promoting the establishment of a world-class telecommunications infrastructure and services, so as to attract increased investments in the country, with particular focus on ICT related businesses and services. These include business process outsourcing centres to support global business processes, customer service operations, manufacturing and production enterprises.

ICT will also be utilized to promote and attract investments in the entertainment and culture sectors and also to build local content.

4.1.3 Support for all sectors

The Government is committed to using ICT as a key enabler to develop all sectors including health, education, tourism, security and agriculture. Focus will be given to the creation of an educated and knowledge-based society capable of leveraging the cumulative benefits of ICT to achieve global competitiveness.

4.2 Policy Vision

Knowledge and information have become the most important currency for productivity; competitiveness, and increased wealth and prosperity, nations have placed greater priority on developing their human capital¹.

The vision of the Government is to establish a knowledge-based and educated society thereby increasing Jamaica's global competitiveness and productivity.

4.3 Policy Mission

The mission is to achieve greater social and economic development through increased application of ICT in all sectors facilitated by affordable telecommunication services.

4.4 Policy Mandate

The mandate is to establish and maintain a modern island-wide telecommunications infrastructure and to allow all citizens access to a range of telecommunications services, thereby enhancing the social well-being of Jamaicans and facilitating greater inclusiveness of the Jamaican society.

¹ Ten Lessons for ICT and Education in the Developing World

5.0 MAIN PRINCIPLES

This Telecommunications Policy is anchored on four fundamental principles which are as follows:

- (i) Telecommunications as a developmental instrument
- (ii) Universal Service & Access
- (iii) Neutrality of Technology
- (iv) Competition

5.1 Telecommunications as a Developmental Instrument

Telecommunications is a key enabler for all sectors including ICT, industry, commerce, education, health, security, entertainment and services. This policy is intended to utilize telecommunications as an instrument for national development and to improve the global competitiveness of local industries.

5.2 Universal Service

In 2008, the mobile penetration rate was approximately 102%; fixed penetration rate was approximately 13% and total telephony (mobile and fixed) penetration rate was approximately 100%. Despite the high telephony penetration rate, internet penetration rate still remains low. In 2008, broadband internet penetration was reportedly as 3.46 %.

Many internet services still depend on fixed-line networks for connections to end users. This is changing due to improvements in Broadband Wireless Access (BWA) technologies for example WiMax. New BWA technologies are expanding consumer services and selection, forcing mobile and fixed carriers to either upgrade or pursue a dual network strategy. In particular they are easier to install than fixed networks and allow comparatively affordable access in un-served and underserved areas.

There still exist a digital divide between people who have the resources and access to use ICT tools, such as the Internet, and people who do not. There is also the discrepancy between those who have the skills, knowledge and abilities to use the technologies and others who do not.

The government is therefore revising the policy related to universal service to extend beyond voice and to include internet, access devices, information literacy and access to telecommunications services.

This policy defines Universal service as the minimum telecommunication services that should be provided at affordable prices throughout Jamaica. This includes basic telephony (fixed and mobile) services and broadband services.

For the purposes of this Policy, broadband services are defined as always on, high speed connection to the internet over any network with speed above 256 kbps for upload and 512 kbps for download.

Universal service consists of three main elements as follows:

Availability:	There should be ubiquitous coverage of telecommunications and internet services
Accessibility:	The opportunity for everyone to use the services without discrimination or preferential treatment among any class of users.
Affordability:	Rates should be fixed so that prices are not prohibitive to ordinary users of the services

The main features of accessibility include:

- (a) Physical build-out of the network to cover unserved/ underserved areas in both rural (remote) and urban (inner city) areas
- (b) Ability to utilize the network (knowledge/expertise to use the network effectively)
- (c) Access to the emergency services e.g. Fire Brigade, Police, Air and Sea Rescue
- (d) Access to the network by persons with disabilities and special social needs
- (e) Access to fixed line and wireless networks.

5.3 Neutrality of Technology

This policy will promote neutrality of technology and foster innovation. It will encourage competition so that consumers can benefit from technological innovation and high quality services at the most reasonable and affordable prices. Neutrality of technology also seeks to ensure regulatory even-handedness for relatively homogenous products which are provided within a single market but which use alternative technologies for service delivery. This is to ensure that no particular technological solution is artificially stimulated or penalized through inconsistent regulations.

5.4 Competition within the Telecommunications Sector

The phased liberalization process was a major feature of the earlier policy. Competition now exists in the mobile and fixed segments of the telecommunications sector. Competition is increasing as IP reduces and in some cases almost eliminates economic barriers to entry in selected telecommunications segments. This trend is clearly visible in the marketplace, as cable operators begin to offer triple play (example: Flow's telephone, internet and cable services) and as telecommunications network operators get ready to offer video services (example: Digicel's digiTV) on their broadband mobile infrastructure.

The focus of this new policy is to promote vibrant competition, facilitate innovation and consumer services; within a regulatory framework that balances the value of investment in the next generation of technologies against the benefits for the consumer in the competitive market place. It is expected that competition-enhanced services will emerge based on market demand.

6.0 POLICY ISSUES, OBJECTIVES AND RECOMMENDATIONS

The above considerations now inform the issues, objectives and recommendations outlined and discussed below.

7.0 INSTITUTIONAL FRAMEWORK

In order to promote full competition as well as to facilitate the convergence of telecommunications, information and communications technology and media services associated with the evolution of technologies, a new institutional framework will be implemented for the sector.

7.1 Policy Element – Single Telecommunications Regulator

(a) Policy Issue

- (i) Each aspect of the telecommunications sector is currently regulated by a different regulator. Consequently, the sector consists of a number of regulators. These are the Office of Utilities Regulation (OUR), the Spectrum Management Authority (SMA), the Consumers Affairs Commission (CAC), the Broadcasting Commission of Jamaica (BCJ) and the Fair Trading Commission (FTC). The Ministry of Mining and Telecommunications (MMT) has portfolio responsibility for policy formulation for the ICT sector. The Ministry of Information, Youth, Culture and Sports (MIYCS) has responsibility for policy development in the broadcasting sector, supported by the Broadcasting Commission of Jamaica. The current telecommunications regulator (OUR) reports to Office of the Prime Minister through the Cabinet Office for matters concerning administration, and the Minister of Mining and Telecommunications for policy matters. MMT also has oversight for the SMA and the Post and Telecommunications Department (PTD). The Ministry of Industry, Investment and Commerce (MIIC) has oversight for the FTC and the CAC. With respect to telecommunications, MMT develops and gives policy direction of a general nature regarding the telecommunications sector.
- (ii) Given the advent of convergence, there is overlapping of jurisdictions in the sector which impedes its efficient regulation and increases the regulatory cost. This is evidenced by the shared responsibilities of the OUR, SMA, FTC and CAC. This overlapping of jurisdictions produces a degree of uncertainty in the minds of stakeholders and unnecessary delays in the issuance of approval, rendering of decisions and other actions by the regulators. A useful example, is that applicants are at times required to visit several offices in order to access a right or remedy relating to telecommunication services, and the regulators, in turn, are required to co-ordinate their efforts.

(b) Policy Objective

Improved service delivery through the removal of fragmentation and overlapping jurisdictions caused by the existence of the multiple regulators and to implement a simplified and efficient institutional framework for the regulation of the trading of goods and services within the sectors.

(c) Policy Recommendations

- (i) The creation of a single telecommunications regulator; this would involve the fusion of the telecommunications regulatory functions of the OUR, the radio spectrum technical functions of the BCJ and the spectrum management functions of the SMA. Content matters would remain within its portfolio Ministry.
- (ii) The FTC, which has responsibility for a wider constituent, will remain separate from this converged entity and maintain responsibility for the adjudication or resolution of competition and consumer competition matters that properly falls within its jurisdiction under the Fair Competition Act.
- (iii) The FTC will retain jurisdiction over non-access competition matters such as cartel behavior and merger reviews. It would also be extensively involved in the dominance determination, cases of abuse of dominant position and anti-competitive agreements.
- (iv) The single telecommunications regulator will have primary jurisdiction for access-related matters for example interconnection and bypass.
- (v) The Consumers Affairs Commission (CAC) will continue to have responsibility for matters related to consumer protection that falls within its jurisdiction under the Consumer Protection Act. All matters related to consumer protection should be referred to the CAC. The CAC will provide an improved means for consumers to resolve disputes with telecommunications service providers
- (vi) The role and responsibilities of the BCJ, which is to be designated as the Content regulator, be expanded to include the regulation of content distributed over all existing and emerging technology platforms.
- (vii) A cross-regulatory relationship is institutionalised between the Content regulator, the Competition regulator and the Telecommunications regulator in the form of an *Inter-regulator's Forum and a formal memorandum of cooperation*. This body would be the place for all issues to be addressed between the regulators, including matters such as allocation of fees and the development of rules/procedures.
- (viii) The Single Telecommunications Regulator is responsible for regulating the postal services.
- (ix) A counterpart Broadcasting and Content Policy be developed that will coexist and complement the Telecommunications policy.
- (ix) The single Telecommunications regulator will be financed from regulatory fees which will be determined by an approved formula. The budget will be reviewed by the portfolio Ministry and approved by the Cabinet. The financial operation of the regulator will be subject to independent audit, on an annual basis.

- (x) Annual reports will be submitted to Parliament.
- (xi) Revenues generated from the annual spectrum license fees and ‘one off’ or non-recurring licensing events (such as spectrum auctions, etc.) will be paid into the Consolidated Fund unless the Government prescribes otherwise.
- (xii) There will be an unbundling of accounts of the licensees to ensure that both the Content Regulator and the Telecommunications Regulator are able to determine a formula for the allocation of the fees paid by the regulated entities.
- (xiii) All associated regulators will be funded as prescribed by the Government and their relevant Acts.
- (xiv) A financial and operational analysis will be conducted to determine the most feasible option for the residency and structure of the Single Telecommunications Regulator.

7.2 Policy Element – ICT Council

(a) Policy Issue

The Jamaica Telecommunications Advisory Council (JTAC) was established by the Telecommunications 2000 Act, to function as a transitional body for the phased liberalization of the sector. JTAC also managed consultations with stakeholders on behalf of the portfolio Ministry. In accordance with the provisions of the Act, the five years’ mandate of JTAC has expired and there is now competition in the telecommunications market. Moreover, the government has established a formal protocol for broad consultation on policy issues.

(b) Policy Objective

To establish a Council that focuses on more strategic ICT related issues and activities so that the sector and the country can become more competitive.

(c) Policy Recommendation

It is recommended that a National ICT Advisory Council be established within the portfolio Ministry, to replace JTAC. This Advisory Council will comprise of select leaders from the private sector, public sector, universities, research institutions, consumer groups and communities to provide ongoing advice on the development and implementation of the national ICT policy and adoption of the National ICT strategy, thereby addressing all aspects of ICT.

8.0 MANAGEMENT OF SPECTRUM

8.1 Policy Element – Spectrum Management

(a) Policy Issue

The Radio Frequency Spectrum is critical for any application that requires wireless technologies, including broadcasting, subscriber television, aeronautical and maritime guidance systems and emergency services. This makes it a public resource, an economic asset, that is in ever-increasing demand and which must be effectively managed by the Regulator to ensure that maximum benefits accrue to the Jamaican people. Importantly, licensed users of the radio frequency spectrum must be provided with a high quality of service including reliable emergency support systems. Regulation of the radio spectrum will be an increasingly important determinant of the rate of expansion of advanced ICTs throughout Jamaica.

The rapid increase in the provision of mobile services and the introduction of new broadband wireless technologies has increased the demand for spectrum dramatically over the last few years. Countries are looking at new ways to manage spectrum use more efficiently. As part of this effort, increasing amounts of spectrum are being allocated to license free use worldwide in order to exploit the potential of technologies such as Wi-Fi and WiMAX to propel the rapid expansion of affordable high-speed access in both rural and urban areas.

Internationally, there has been a trend among spectrum managers to move away from the traditional prescriptive models of spectrum assignment toward more flexible and market-oriented approaches. This has been done in order to promote innovation, competition and the efficient use of spectrum.

(b) Policy Objective

To develop spectrum management and allocation policies, which take into consideration all existing and emerging broadband wireless technologies (including 3Gs, 4Gs, WiMax, WiFi and CDMA) to:

- (i) promote more efficient allocation of the spectrum;
- (ii) provide a world class service to licensed spectrum users;
- (iii) increase the speed of proliferation, and access to the benefits of, new technologies and associated services;
- (iv) derive maximum economic benefit; and
- (v) attract additional investments.

(c) Policy Recommendation

The following are recommended:-

- (i) The efficient allocation and utilization of the spectrum to facilitate the proliferation of new technologies in order to stimulate innovation, investment and competition among available services and technologies, in accordance with international standards and recommendations.
- (ii) Provisions will be made in the new Telecommunications Act to develop and enforce operational rules/ procedures in keeping with best international practices and trends, in order to ensure a modern radio frequency spectrum management framework.

- (iii) Provisions will be made in the new Telecommunications Act for enforcement to prevent the illegal use of spectrum.
- (iv) The allocation of spectrum in accordance with the requirements of both the public and private sector, while ensuring a balance between the two sectors to the ultimate benefit of Jamaica.
- (v) Provisions will be made in the new Telecommunications Act for recovery and “refarming” of previously assigned spectrum that is unused or underutilized in order to accommodate new services,
- (vi) Operators who are required to relocate to another radio frequency spectrum may be provided with some inducements.
- (vii) All spectrum users will be required to be licensed under the new Telecommunications Act and will be required to contribute to the cost of regulation.
- (viii) Radio spectrum allocation will allow for reserved frequency allocations for law enforcement, public safety, emergency and other services of national interest. The power to assign and re-assign radio frequency spectrum will be the responsibility of the Regulator, except in the provision of specified spectrum allocations such as mobile. Further, subject to an ex-parte order from the Supreme Courts, the Government shall have the power to suspend the right of use of any spectrum allocated, in the interest of National Security or defence.
- (ix) The review of current licence fees to correct fee imbalances that may exist among service providers, separating where practical cost-recovery fees from those fees charged for the use of a limited public resource, and applying market-based pricing for non-auction licences.
- (x) Continued use of regulatory mechanisms such as spectrum caps (aggregation limits) where spectrum is scarce in order to provide an opportunity for new entrants to acquire spectrum and for Jamaicans to have an expanded choice of service providers.
- (xi) Provisions in the new Telecommunication Act to facilitate a change in the licensing regime for certain bands of the radio frequency spectrum. It is being proposed that the, internationally classified Industrial, Scientific and Medical (ISM) bands, be declared licence-exempt. This includes the technical and operational rules which will govern the use of licence-exempt spectrum in Jamaica.
- (xii) Formulation and approval of regulations for the examination of amateur radio operators and adjustment in fees.

9.0 REGULATORY FRAMEWORK

In order to facilitate and safeguard procedural efficiencies in the telecommunications sector, now characterized by the convergence of networks, technologies and services, an appropriate regulatory framework is required. This framework will be based on rules that are transparent, responsive to technological change and treat with issues including technical convergence, interconnection, universal access/service, effective competition and increased consumer protection and welfare.

The framework will also provide for the sector to be regulated in a non-discriminatory and transparent manner, including accountability for all its operations and service delivery to consumers and carriers.

9.1 Policy Element - Licensing Regime

(a) Policy Issue

- (i) In a competitive telecommunications market, an appropriate licensing regime is needed to ensure order among competing operators. In awarding licences, consideration should be given to the number of licences, the economic value of the licences, the consumption of finite resources such as radio spectrum and numbering, and the business model, technical and financial capabilities of applicants.

(b) Policy Objective

To administer a licensing arrangement for the telecommunication and communications sectors, which ensures that appropriate standards are maintained, and competition and consumer welfare advanced. Additionally, the licensing regime will ensure the allocation of scarce resources and establish a framework for competition.

(c) Policy Recommendation

- (i) The single telecommunications regulator will be responsible for issuing telecommunications licenses, including the streamlining and standardization of the licensing processes;
- (ii) Simplification of the licensing process by the implementation of a single license form with multiple categories. A licensee will apply for a license in one or more categories.
- (iii) The Government will institute a licensing regime which will effectively regulate the various services offered to the public. This licensing regime will facilitate technology and service neutral licences.
- (iv) The portfolio Ministry will work with other Ministries and portfolio Agencies to ensure that benefits that are accrued from contractual arrangement between the licensees and government Ministries and/or Agencies are consistent with national priorities and plans.
- (v) All companies and/or individuals providing telecommunications services in the local sector will be required to obtain a licence.
- (vi) All licensees will be required to contribute to the cost of regulation.

9.2 Policy Element – Licenses for Underserved Areas

(a) Policy Issue

While telephone penetration is high in Jamaica, broadband penetration to provide internet access remains low. In this regard, there is a need for the regulatory framework to provide a licensing mechanism that will expand access to underserved and marginalized areas.

(b) Policy Objective

To increase broadband penetration by supporting the specific needs of these under-served communities including internet access, e-learning, e-health, e-government, e-commerce, e-security and other electronic services.

(c) Policy Recommendation

It is recommended that the under-served priority regions of the country be identified and special licenses be issued to offer broadband services in these areas. The licensing regime will provide incentives to investors who facilitate access and services in these underserved areas. For example: Obligations to provide services in rural areas may be bundled with licences to provide services in more lucrative markets.

9.3 Policy Element – Infrastructure Sharing

(a) Policy Issue

Operators are currently not sharing premises and other essential facilities. In addition, there are issues with multiple operators who engage in excavating the public roadways to lay equipment and cable. Specifically, there is lack of coordination between operators resulting in increased costs, traffic congestion and undue disturbance to the public. Therefore, there is an urgent need to implement a new infrastructure sharing policy to resolve these issues.

The single biggest reason to adopt sharing is to lower the cost of deployment of broadband networks to achieve widespread and affordable access to ICTs.² This is particularly as it relates to the promotion of market investment in deploying high-capacity infrastructure to unserved or underserved areas.

² ITU Trends in Telecommunication Reform 2008, Six Degrees of Sharing Summary

(b) Policy Objective

The objective is to have cell towers optimally located island-wide, in accordance with the guidelines established by the relevant government Authority, and to promote infrastructure sharing related to non-electrical, civil engineering elements of the telecommunications networks.

Infrastructure sharing will accelerate roll-out, bring down costs in infrastructure, enhance competition, reduce costs to end users, expand coverage and minimize the environmental impact.

(c) Policy Recommendations

The recommendations are:

- (i) Provisions will be made in the new Telecommunications Act for infrastructure sharing related to non-electrical, civil engineering elements of the telecommunications networks. This includes right of way or easements, ducts, pylons, masts, trenches, towers, poles, equipment rooms and related power supplies, air conditioning and security systems.
- (ii) Equipment sited prior to this policy will in accordance with all applicable laws, be shared with the mutual consent of the operators. Consideration will be given to grandfathering certain facilities;
- (iii) The regulator in collaboration with other government agencies, such as NEPA, local Parish Councils and the NWA, will identify prime cell tower locations, cable landing sites, pole locations and right away for laying cables. This information will be used as a criterion for certifying cell towers;
- (iv) The regulator will certify these optimal locations and ensure that the electronic equipment and cables be installed in accordance with technical standards;
- (v) The single regulator will be empowered to regulate and promote facilities sharing used for telecommunications purposes, resolve disputes and enforce regulations in an effective and timely manner.
- (vi) Provisions will be made in the new Telecommunications Act for operators to request physical facility sharing or virtual facility sharing, or both, in another operator's central offices except in those that have space limitations, or where it is not technically feasible to provide a physical collocation arrangement. Central office means an operator's primary switching location;
- (vii) Provision will be made for appropriate mechanisms to be instituted to govern facility sharing arrangements relative to subscriber television operations especially as it relates to underground carriage and incentives will be provided to encourage sharing; and
- (viii) Provisions will be made for the regulator to resolve facility sharing disputes including issues related to rates, conditions of access and access to infrastructure.

9.4 Policy Element - Economic Regulation

(a) Policy Issue

Given the level of competition in the sector, economic regulation should make way for market forces to the maximum extent possible. Competitive markets provide superior incentives to service providers. In a competitive market, service providers can prosper only to the extent that they meet the needs of customers. The barriers to competitive entry have been removed so service providers must innovate and provide services and prices that meet their customers' needs or customers will switch to competitive options. This is evidenced by the aggressive marketing campaign conducted regularly by the various telecom operators.

(b) Policy Objective

To allow market forces to govern the telecommunication sector subject to economic regulatory provisions aimed at promoting competition in the sector, however provisions are to be applied by the regulator, as necessary, to prevent market failure or anti-competitive practices by any dominant provider or supplier of services.

(c) Policy Recommendation

It is recommended that:-

- (i) The regulatory framework for telecommunications sector should rely on competition and market forces rather than on economic regulation, to the maximum extent feasible.
- (ii) Provisions in the new Telecommunications Act should state that, upon application by any party, telecommunications markets subject to economic regulation should be reviewed. Where the review concludes that there is no longer any significant market power in a market, restrictions on price increases should be discontinued.
- (iii) Economic regulation of retail basic transmission services should be retained or instituted only if there is a finding that a service provider has significant market power in the market for such services.
- (iv) It should be open to any party to request a review of the existence of significant market power in any telecommunications market. If the review finds that a service provider has significant market power in the market, the next step should be to examine whether competition law, as adapted to telecommunications services, is sufficient to protect the interests of customers and prevent anti-competitive conduct. If it is not, then the service should be subject to economic regulation. If the review finds no significant market power, the service should be deregulated.
- (v) All forms of economic regulation should be applied symmetrically to all telecommunications service providers having significant market power in any telecommunications market.

- (vi) A price cap framework should be used when economic regulation of retail services is necessary, and enforced on an *ex post* basis by means of an annual filing or in response to a complaint by a customer or a competitor.
- (vii) A mechanism to forecast, to collect information, and analyze the impact of economic regulations on telecommunications businesses, especially the broadcasting sector be implemented in the short-term. The information gathered should be used to formulate and apply economic regulatory measures both *ex ante* and post licensing.

9.5 Policy Element – Regulatory Performance

(a) Policy issue

There will be a need to demonstrate the regulator’s effective performance in relation to the Quality of Service, Performance Standards and other policy elements to be observed by the carriers and service providers.

(b) Policy Objective

To promote a high standard of performance by the regulator in relation to achieving compliance with the Government’s telecommunications policy and attending legislative provisions.

(c) Policy Recommendation

It is recommended that the regulatory framework includes an assessment process for the regulator to plan, execute, promote and communicate its scope, responsibilities and delivered results. This process will include the following:

- (i) The establishment and inclusion of Performance and Quality of Service standards for the regulator in its annual budget and work plan.
- (ii) Mechanism for the operators who pay regulatory fees to comment on the regulator’s draft annual budget and the Regulator may have regard to consider these comments before finalizing and submitting its budget for approval.
- (iii) The development and maintenance of a comprehensive up-to-date set of publication methods, including a web site containing information on all of the Regulator’s current and past regulatory proceedings; comprising decisions, regulations, consultations, Quality of Service Standards, Discussion Papers and other data and statistics for the sector. The Regulator should also maintain a toll free line.
- (iv) Where the Regulator conducts proceedings to adopt new rules or amend existing ones, the public will be allowed the opportunity to participate formally by petitioning the Regulator according to established rules and procedures or informally by submitting copies of comments. This will ensure that the new or amended rules serve the public interest.

- (v) The Regulator should have an office of public affairs which issues public notices, news releases provides copies of decisions, rules and comments at standard reproduction cost to the public. This department should be responsible for all outreach activities of the Regulator including luncheon series on issues, recent policy changes and conducting seminars and workshops designed to keep the public informed.

10.0 LEGAL FRAMEWORK

10.1 Policy Element - The New Telecommunications Act

(a) Policy Issue

The Telecommunications Act 2000 and supporting legislative framework were enacted to achieve certain stated objectives. Whereas some of these objectives have been achieved, the legal framework is in need of revision in order to address current and future developments in the sector.

(b) Policy Objective

To give effect to, support and secure the provisions of this telecommunications policy, with an appropriate and robust legal framework. This framework will reference relevant legislative provisions, regulations and orders outlining the rights, duties and responsibilities of all appropriate portfolio Ministries, Regulatory agencies, licensees, service providers, customers and any other stakeholders.

(c) Policy Recommendation

The creation of a new Telecommunications Act and supporting regulations to mandate and give effect to the several objectives in this policy, including:

- (i) the need for innovative and flexible regulatory governance in an environment where a number of telecommunications services are being transmitted/offered over a single telecommunication medium;
- (ii) the promotion of the development of the telecommunication sector;
- (iii) the promotion of competition among carriers and service providers;
- (iv) the redefining of universal service and access;
- (v) the protection of the rights of, and enforcement of the responsibilities of, carriers, service providers and consumers;
- (vi) provisions for measures to be taken by the State for the protection of the public's interest, in times of emergency, and national defence;
- (vii) provisions for the optimum allocation and utilization of all telecommunications' resources and the protection of the environment;

- (viii) Provisions will be made for timely review and amendments where necessary to the policy framework and the Act to deal with critical changes in the sector; and
- (ix) Existing laws will be reviewed to ensure consistency between the new Telecommunications Act and regulations and other laws.

10.2 Policy Element – Enforcement and Sanctions

(a) Policy Issue

The current legislative framework has, however, proven inadequate and, in some cases, unsuitable to enforce existing sanctions for breaches and in some cases the available sanctions are inappropriate for the proven breach or offence. Hence, in many instances, suspension of the right to provide service (disconnection) or termination of a licence is the only remedy for a breach. In circumstances where such a remedy is not commensurate with the breach, the power of the regulator to impose and enforce a monetary penalty would be a more appropriate and equitable remedy.

(b) Policy Objective

To remedy existing deficiencies and mischief in the legal framework by prescribing appropriate and equitable sanctions and penalties for different breaches and clear and certain procedures for the enforcement of such sanctions and penalties.

(c) Policy Recommendation

The new Telecommunications Act and Regulations should make clear provisions for curtailing breaches by the enforcement of appropriate sanctions. Such provisions are to include:

- (i) the introduction of powers to impose and enforce monetary penalties and other remedies, where appropriate;
- (ii) allows the regulator to adopt and enforce its regulatory decisions;
- (iii) prosecution in the Court for specific breaches under the Act; and
- (iv) limiting the termination of licence or suspension of the right to provide service to material breaches in cases where it is just and equitable to do so.

11.0 COMPETITION

It is generally accepted that competition in any sector is essential to attract investment and facilitate innovation. The telecommunications sector has been transformed from a monopoly into a competitive environment. Rules and regulations are therefore necessary, in so far as, to prohibit behaviour that prevents, restricts or distorts competition. Provisions have to be made to deal with prohibitions against anti-competitive agreements, mergers and acquisitions and abuse of dominant position.

It is accepted that competition is established through sector-specific *ex ante* regulation under the telecommunications law and is preserved through *ex post* enforcement of general competition law

11.1 Policy Element – Competition Regulations

(a) Policy Issue

There continues to be aggressive competition and reported anti-competitive behaviour among operators which has negatively impacted price, service delivery and service quality to the consumers.

(b) Policy Objective

The objective is to reinforce the legal and regulatory framework that to ensure that there are provisions to deal with prohibitions against anti-competitive behavior related to access and non-access matters.

(c) Policy Recommendation

- (i) Provisions are made in the new Telecommunications Act for the FTC to deal with all non-access anti-competitive matters. These will include mergers and acquisitions, abuse of dominance, anti-competitive agreements, misleading advertisement and other deceptive market practices.
- (ii) Provisions are made in the new Telecommunications Act for the telecommunications regulator to enforce decisions related to anticompetitive access matters such as interconnection and by-pass.
- (iii) There will be provisions in the new Telecommunications Act to empower the regulator to intervene in the event that carriers and service providers are not sufficiently responsive to customer complaints. Provisions will be made in the Law for redress.
- (iv) There will be legislative provisions to empower the regulator to intervene in the event of discriminatory conduct on the part of the carriers and service providers.
- (v) The new Telecommunications Act will empower the regulator to approve the terms and conditions pursuant to which a carrier or service provider may discontinue specified services to either party or to consumers; and to enforce compliance with such terms and conditions.
- (vi) Access obligations will be grounded in the “equality of access” principle. Equality of access requires that a dominant operator’s wholesale customers “have access to the same or similar set of wholesale products, at the same prices and using the same or similar transactional processes” as the dominant operator’s retail arm has and does.
- (vii) There will be an extension of the current accounting separation model to enable functional separation which is the “separation of different services into different divisions

of the same firm, possibly with different management”. The functionally separate business will be obliged to strictly maintain the principle of equality of access among all its various wholesale customers.

11.2 Policy Element – Number Administration

(a) Policy Issue

Telephone numbers constitute a finite resource which must be administered in the public interest. With the introduction of deregulation, the regulator is now responsible for number administration. Additionally, there is now a competitive market and new and different means of delivering services. To respond to these developments, there is a need for:

- (i) effective management of the numbering system to ensure equity and fair allocation of numbers to all carriers, services providers and new services, as appropriate;
- (ii) number portability subject to economical viability and the demand for the service; and
- (iii) inclusion of new numbering options.

(b) Policy Objective

To effectively manage telephone numbers to facilitate the optimal allocation of telephone numbers to all existing and new service providers; and to provide for the application of new numbering systems as deemed suitable.

(c) Policy Recommendations

The regulator will have responsibility for number administration and the allocation of numbers to service providers. The key recommendations include:

- (i) a sufficiently flexible numbering system to meet current and future demands for telephone numbers;
- (ii) the allocation of numbers on an equitable and commercially reasonable basis;
- (iii) cost effective management of the numbering plan;
- (iv) The regulator will develop and promulgate standards for the utilization of numbering schemes and minimum take-up levels before applications will be approved for the issuing of new numbering schemes within the defined or prescribed exchange jurisdictions of applicants;
- (v) The regulator will recall previously assigned number schemes from carriers in cases where there has been no service provision within the number scheme upon the expiration of a defined time limit from its assignment;

- (vi) The regulator will recall previously used number schemes from carriers in cases where the number scheme is no longer in use for service provision for a defined elapsed period;
- (vii) The regulator will interact with the appropriate international bodies engaged in telephony management and switching to ensure that local numbering plans are known to the international telecommunications sector; and
- (viii) The regulator will determine whether or not number portability between service providers is practically desirable and economically viable, and if so, to oblige service providers to facilitate this for their customers.

11.3 Policy Element – .jm ccTLD Domain Administration

(a) Policy Issue

The .jm Country Code Top Level Domain (ccTLD) was created in to globalize the use of the Internet beyond the USA to provide a center for the registration of domain names to serve Jamaica and make it available to registrants around the world. It represents a Jamaican address on the Internet and therefore it is a public resource which must be managed in the public interest. The development of the ccTLD policy must be aligned to the national telecommunications policy.

The .jm ccTLD is an integral component of our telecommunications infrastructure and position on the World Wide Web. In this regard, it must be developed in order to usher in a new wave of innovative technologies and products to increase economic development and further encourage an open competitive environment.

(b) Policy Objective

The Government will facilitate proper management of the ccTLD registry to ensure that this economic resource reaps the maximum benefits for all Jamaicans.

(c) Policy Recommendations

- (i) Alignment of the policies and procedures for the registration of Domain Names to the Telecommunications Policy and other national priorities.
- (ii) Promotion of the .jm ccTLD as a unique branding opportunity for all Jamaican entities in the public sector, private sector and civil society.
- (iii) Improvement in administrative and technical arrangements for the management of ccTLD.
- (iv) An automated shared registration system to allow registrars and designated entities such as Internet Service Providers to register .jm names to facilitate local and global distribution of registrations and increase revenues to the registry.

- (v) The development of a Uniform Dispute Resolution Policy to safeguard and protect Jamaican and global trademark holders in order to prevent rampant cyber squatting of the names of Jamaican celebrities, companies, brands and places.
- (vi) The registry will be financed from fees which will be determined by an approved formula granting registration for a specified period.
- (vii) The budget will be reviewed by the portfolio Ministry and approved by the Cabinet. The financial operation of the regulator will be subject to independent audit, on an annual basis.
- (viii) Annual reports will be submitted to Parliament.

12.0 UNIVERSAL SERVICE

12.1 Policy Element – Universal Service Obligations

(a) Policy Issue

It is inevitably that there will be segments of the population that will be inadequately served by market forces, regardless of the sector reform. In these situations, the government intervenes directly to promote universal access, usually in the form of funding or mandatory obligations. The goal is to promote the availability, affordability and accessibility to broadband and other ICT related services.

Prior to the de-monopolization of the local telecommunications sector, the sole telecommunication provider had responsibility for meeting the universal service obligations (USO). Subsequent to liberalization, there is shared responsibility for financing the USO, with no single carrier or service provider bearing this responsibility.

While voice telephony, through wire line and wireless transport, penetrates extensive areas of the island, the availability and access to broadband networks for Internet access remains a major challenge. This has adversely impacted on ICT based education, access to information and the deployment of electronic services (E-Services) beyond urban and other densely populated geographical regions. There is therefore a need to deploy broadband networks to underserved areas.

Currently, there is a risk that carriers and service providers favour geographical areas that are densely populated and where the cost of delivering service per customer is relatively low. The policy seeks to guard against this risk and promote universal service for all Jamaicans.

(b) Policy Objective

The policy seeks to guard against “cherry picking” of certain geographical areas and to promote universal service for all Jamaicans.

(c) Policy Recommendations

- (i) Zoning underserved areas and provide incentives to maximize access to broadband services.
- (ii) Support programmes that specifically target certain groups such as low-income households, the elderly and the disabled.
- (iii) Establish a micro-financing fund which will provide loans, grants, equity in projects run by small local entrepreneurs, local authorities and non-profit organizations to encourage the expansion of ICT access.
- (iv) Offer incentives to promote the deployment of services to underserved areas and the provision of Access Points and multi-function telecentres or internet cafes by the carriers, smaller rural service providers or other providers.
- (v) The continuation of funding connectivity services to all public institutions including educational institutions, libraries, and other public facilities in urban and rural communities.
- (vi) The provision of internet access devices and applications for the training of students in the use of the internet and other ICT services will also be funded through the Universal Access Fund Company to support the Government's vision of information and knowledge based society, with the capacity to develop the telecommunications sector and to compete globally.
- (vi) Facilitate the achievement of lifelong learning and a knowledge-based society by providing ubiquitous access to information which supports improved education, skill acquisition and innovations.
- (vii) The provision of incentives to operators offering services in underserved communities.
- (viii) The promotion of information literacy programmes and the development of local content.

12.2 Policy Element – Funding of Universal Service Obligations

(a) Policy Issue

The funding base for universal access programmes has been under constant pressure over recent years due to a number of factors that have eroded traditional sources of revenue. Revenues from international and domestic long-distance services have been declining rapidly over the past few years as a result of a combination of factors, such as increased competition, the circumvention of the international accounting rate system and an increase in the use of cheaper VoIP services.³

There is the need to retain a financing methodology capable of generating a sustainable source of funds to meet the universal service obligations across the country.

(b) Policy Objective

To continue with the requirements for telecommunications service obligations to fund universal service obligations.

(c) Policy Recommendations

- (i) The Telecommunications Act will make specific provision for the Universal Access Fund to be empowered to collect and administer the universal service obligations.
- (ii) The Telecommunications Act will make specific provisions for the obligations to be used to finance the universal service programmes set out in this policy or determined necessary for the fulfillment of the policy objectives.
- (iii) Emphasis will be placed on using the obligations to finance broadband access. This includes appropriate hardware, software and electronic educational content (web-based applications).
- (iv) Universal Service obligations shall be as agreed between the government and stakeholders or as prescribed by government from time to time.

³ ITU Trends in Telecommunication Reform 2007, The Road to Next-generation Networks

13.0 CONSUMER PROTECTION AND STANDARDS

13.1 Policy Element - Quality of Service

(a) Policy Issues

The implementation of Next-Generation Networks (NGNs) using Internet Protocol (IP) connectivity to provide fixed and mobile voice, video, data, and broadcast services, provides new opportunities to increase consumer choice. It also raises new challenges concerning Quality of Service (QoS) and consumer protection.

(b) Policy Objective

To have an efficient and reliable communication services that conforms to international technical and quality of service standards.

(c) Policy Recommendation

- (i) The regulator will promulgate minimum service level standards to be met by service providers as conditions of their operating licences including a requirement for all providers of voice public electronic communication services to offer access to emergency service;
- (ii) The regulator will consult with the industry and develop these minimum service level standards to cover the fundamental precepts of telecommunications operations, including but not limited to, service provision, connectivity and access, transmission quality, customer relations management, query and complaint resolution.
- (iii) The regulator will engage in periodic consultations with service providers, international regulatory bodies and domestic and international industry associations to ensure that the standards being observed conform to generally accepted conventions and current industry practice.
- (iv) The regulator will amend such standards, as and where appropriate, with the provision of a minimum lead time notification to operating companies prior to the coming into effect of any new/amended standard(s).
- (v) The regulator will impose sanctions on service providers who breach minimum service level standards, ranging from refunds to customers, to fines and/or suspension or revocation of operating licences depending on the severity of the breach.
- (vi) The regulator will ensure that consumers have access to transparent, comparable, reliable, and up-to-date price and QoS information that helps them to make increasingly complex service and supplier choices.

13.2 Policy Element - Privacy of Customer information

(a) Policy Issues

Customer privacy can be compromised by virtue of unauthorized access via certain services. Possible violations include archiving of personally identifiable customer information for marketing and sales purposes without prior written or electronic consent, and failure to disclose policy regarding usage of information, unauthorized recording of communication and installation of rogue programmes.

In the majority of instances users are also unaware about the installation of software (spyware) on their computer or other access devices which covertly transmits information about the user's activities to a remote host. This creates potential privacy issues as personal data about the user is being collected and distributed without their knowledge.

(b) Policy Objective

To minimize the incidents of invasion of customers' privacy and the unauthorized usage of customers' information

(c) Recommendation

Where no legal provision or insufficient legal provision exists, legislation will be enacted to protect the privacy of customers and prevent the misuse of or unauthorized usage of information. Provisions will be made in the Law for persons whose privacy have been violated to seek redress.

14.0 TELECOMMUNICATIONS INFRASTRUCTURE

14.1 Policy Element – Strategic Broadband

(a) Policy Issue

Broadband is increasingly being seen as a catalyst for economic success in the information economy. More and more economies are focused on ensuring that access to broadband is both available and affordable to their populations.⁴

Broadband can effectively facilitate the provision of public and private services; such as e-learning, e-health, e-government, e-commerce and e-banking. For particularly small and medium sized enterprises, broadband brings the advantages of access to high-speed

⁴ ITU Internet Reports – Birth of Broadband, Executive Summary, September 2003

communications, and the ability to participate in a worldwide market that was previously only available to larger companies. Broadband also adds flexibility to the workplace through tele-working and remote network access at fast speeds.

Given the low broadband penetration, it is important for Jamaica to develop a national strategy for broadband promotion, and for bringing broadband to regions, or to communities, that would not be among the first to be served through the operation of market forces.

(b) Policy Objective

- (i) To provide support for the deployment of an island-wide broadband backhaul and backbone infrastructure to support greater last-mile access.
- (ii) To implement a comprehensive and integrated telecommunications system that will connect all government entities in order to enable efficient and cost-effective communications across the public sector.

(c) Policy Recommendations

- (i) Legislative provisions will be enacted to facilitate the establishment of a public high capacity backbone network to efficiently convey, across Jamaica, multi-media traffic which originates from all the access technologies. Access to the public rights-of-way will also be regulated in companion legislation.
- (ii) The Government will harmonize the ICT system across the public sector so that it is fully integrated, compatible, efficient and cost-effective. The Government will also establish common ICT standards and protocols for use in the public sector, and require all ministries and agencies to conform to such standards as they develop their respective systems.
- (iii) With respect to network infrastructure, this should comprise the inter-connection of infrastructure owned by the different entities of Government to privately owned networks where it is economical to do so.
- (iv) Private companies/carriers should be encouraged to enter into agreement with Government for the implementation of existing and emerging infrastructure technologies along roadways, such as fiber optic networks.
- (v) Provisions will be made to facilitate the entry of new broadband providers, ensure fair competition in the sector and promote the provision of near-universal broadband service.

15.0 TECHNOLOGY

15.1 Policy Element - Technology Neutrality

(a) Policy Issue

There is a growing range of technological options for delivering ICT services. Some traditional options are more accepted and protected; resulting in the tendency to resist and restrict new and emerging alternatives.

(b) Policy Objectives

The objective is to create a policy environment whereby all existing and emerging technologies can compete so that there is continuous technological innovation and development thereby benefiting the consumers.

(c) Policy Recommendations

This policy is technologically neutral and is intended to encourage innovation and new investments for the introduction of new technologies and services for the benefit of the sector and consumers.

16.0 THE ENVIRONMENT

16.1 Policy Element – Disposal of ICT Waste

(a) Policy Issues

There is lack of guidelines for the disposal of telecommunications and ICT equipment which may cause potential environmental and health risk to the population. Retailers/suppliers are currently not responsible for ensuring that their customers are aware and safely dispose of their materials and equipment.

(b) Policy Objective

To ensure safe disposal of hazardous ICT materials.

(c) Policy Recommendation

- (i) The Government will mandate that the relevant Authority develops a comprehensive policy for the disposal of wastes that adequately covers the telecommunications and ICT sector.
- (ii) Retailers/suppliers are to advise consumers of the manufacturers' safety recommendations and provide instruction and facilities for the safe disposal of ICT waste.

16.2 Policy Element – Monitoring Levels of Emission

(a) Policy Issue

ICT equipment and materials have the potential to emit harmful radiation.

(b) Policy Objective

To determine the levels for safe emission and to ensure that emissions do not exceed a limit beyond which exposure becomes harmful to the population.

(c) Policy Recommendation

- (i) The Government will mandate that the relevant Authority develops a comprehensive policy for safe levels of emission in accordance with recognized international standards or best practices.
- (ii) Provisions will be made for the relevant Authority to enforce compliance with the prescribed emission standards and allow for redress for persons affected by breaches.

16.3 Policy Element – Policy Review

(a) Policy Issue

Given the dynamic nature of the information and communications technology sector, it is important to ensure that the Policy framework remains relevant and adequately addresses all issues.

(b) Policy Objective

To provide a mechanism to support the review of the Information and Communications Technology Policy.

(c) Policy Recommendation

- (i) The portfolio Ministry will establish a mechanism for the collection of relevant information from operators, collect statistical/indicator data and to conduct comprehensive research to identify relevant issues, trends and other matters that may affect the sector.
- (ii) The portfolio Ministry will establish a formal mechanism for periodic reviews of the Policy, taking into consideration the information collected, research done and feedback from key stakeholders.

APPENDIX 1 – DEFINITIONS

A Next Generation Network is defined by the ITU as “a packet-based network able to provide telecommunication services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports generalized mobility that will allow consistent and ubiquitous provision of services to users.”

Source: ITU-T Recommendation Y.2001

Wi-Fi (wireless fidelity) refers to wireless local area networks that use one of several standards in the same “family” of 802.11 standards. The WiFi/802.11 wireless local area network standard is limited in most cases to only 100 - 300 feet (30 - 100m).

Due to its affordability, scalability and versatility, its popularity has spread to rural and urban areas in developed and developing countries alike. Using mesh network architecture³, Wi-Fi networks can be scaled to match coverage area and the terrain of the target population. Coupled with solar powered generators, such networks have proven to be sufficiently robust to withstand deployment in the most isolated areas of the world.

Power Line Communications (PLC) or Broadband over Power Lines (BPL) is a term describing several different systems for using electrical power distribution wires for the simultaneous distribution of data. Plugging in a PLC modem into any power outlet in an equipped building will allow high-speed Internet access. While not a wireless technology, PLC offers a number of benefits relative to regular fixed line connections such as cable or DSL. In many countries, electrical infrastructure is usually more extensive than fixed line telecommunications infrastructure, making it suitable for expanding coverage. Moreover, PLC offers higher speeds over its networks than what is now commonly available through cable or DSL.

Broadband wireless access (BWA) is a technology aimed at providing high-speed wireless access over a wide area. It typically supports data rates faster than 1.5 Mbps at ranges that can go up to 30km. Currently, the most widely used technologies are Local Multipoint Distribution Service (LMDS) and Multichannel Multipoint Distribution Service (MMDS). WiMAX technology, built on the IEEE 802.16 standard, is expected to be the eventual BWA platform of choice as deployments pick up speed over the next few years.

WiMAX, meaning *Worldwide Interoperability for Microwave Access*, is a telecommunications technology that provides wireless transmission of data using a variety of transmission modes, from point-to-multipoint links to portable and fully mobile internet access. The technology provides up to 72 Mbit/s symmetric broadband speed without the need for cables. The technology is based on the IEEE 802.16 standard (also called Broadband Wireless Access). WiMAX can provide broadband wireless access (BWA) up to 30 miles (50 km) for fixed stations, and 3 - 10 miles (5 - 15 km) for mobile stations. In contrast, the WiFi/802.11 wireless local area network standard is limited in most cases to only 100 - 300 feet (30 - 100m).

Providing Licence-free Spectrum Use

Not all countries have embraced the idea of allocating spectrum to licence free uses for a variety of reasons such as fear of revenue loss or potential congestion. These fears, however, do not appear significant when compared against the potential of these technologies to provide cheaper and more accessible broadband access. Potential revenue loss from forgoing licensing fees would be offset by substantial savings in terms of disbursements of subsidies for universal access. Alternatives such as the levying of a small fee attached to the cost of purchasing equipment that are used in unlicensed spectrum, such as Wi-Fi routers, could obviate the need for a licence to operate in a particular frequency band while still providing revenue to the government.

Passive infrastructure sharing allows operators to share the non-electrical, civil engineering elements, ducts, pylons, masts, trenches, towers, poles, equipment rooms and related power supplies, air conditioning and security systems.

Active infrastructure sharing involves sharing the active electronic elements – the intelligence in the networks – embodied in base stations and other equipment for mobile networks and access node switches and management systems for fibre networks.