Republic of Rwanda

Ministry of ICT and Innovation

The National Broadband Policy and Strategy

October 2022

Acronyms, Abbreviations and Definitions

2G	A second-generation cellular digital mobile telecommunications network technology, which was designed initially to carry voice, and later low-speed data (text), communications, and includes GSM technology
3G	A third-generation cellular digital mobile telecommunications network, which is designed to carry voice, low-speed data (text) and high-speed data (Internet) at speeds ranging up to 384 kbps, including Universal Mobile Telecommunications Service (UMTS) system
4G/LTE	A fourth-generation cellular digital mobile telecommunications network technology, also known as long-term evolution or LTE, which is designed to carry voice, low-speed data (text) and high-speed data (Internet) at speeds ranging from 100 Mbps to 300 Mbps (with LTE Advanced providing 300 Mbps to 1.2 Gbps)
5G/IMT -2020	A fifth-generation technology ecosystem that enables mobile and fixed wireless connectivity and services tailored to use in long-range applications, mission-critical settings, and ultra-high-capacity broadband. Using low, mid-range, and high frequency bands, 5G can provide speeds of 100 Mbps in urban/suburban areas and up to 10 Gbps in hotspot applications.
Broadband	The transmission of wide bandwidth data over a high-speed internet connection.
HSPA+	High speed packet access
IBS	In-Building solutions
IoT	Internet of Things
IXP	Internet Exchange Point
Mbps	Megabits per second, a measure of data transmission speed equivalent to one million binary digits per second
QoE	Quality of Experience
QoS	Quality of Service
WI-FI	Wireless Fidelity

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Policy Summary

The broadband policy vision aims to accelerate Rwanda into a competitive and innovative global digital economy, through accessible and quality broadband services. Policy objectives

Policy objectives

Increase access to affordable and quality broadband services

The policy will facilitate to induce affordability and quality of broadband services through among other things, promotion of smart devices' penetration, opening diverse international traffic routes and implementation of the mobile number portability.

Enhance infrastructure competition

The policy comes to drive competition on services leveraging strategic interventions like inclusion of all Mobile Network Operators to deploy 4G and above technologies, diversify services by introducing Mobile Virtual Network Operators (MVNOs) and promotion of infrastructure sharing on passive and active resources.

Upscale the capacity and reach of broadband networks

In driving this objective, specific interventions will be under-taken like inclusion of fiber networks in electrification and other infrastructure development, purchase of bulk capacities, adoption of alternative broadband technologies like satellite systems and promotion of local internet exchange point.

Promotion of broadband as a catalyst for innovation

The development of broadband industry spurs technology innovation in many ways. Different incentives and adaptive policies will be put in place to support the innovation ecosystem.

Develop skills and increase citizen value-perception for digital services

The policy recommends measures to build the required industrial skills as well as driving digital adoption by citizens. There will be interventions like upskilling the broadband professionals, institutional compliance with cyber standards and targeted awareness to increase the citizen value-perception for digital services.

Regulatory Environment

Given the ever-changing ICT sector, the policy recommends to embrace responsive regulations and reviews of the legal and regulatory frameworks, deployment of intelligent monitoring tools for compliance and enforcement.

Introduction

The vision 2050 lays out the long-term strategic direction for "the Rwanda we want," including economic growth, prosperity, and a high quality of life for Rwandans. It anchors the digital transformation as a central enabler towards achieving its objectives including on access to high-quality broadband and achieving living standards of upper-middle income country by 2035 and high-income country by 2050.

This builds on the progress made through the implementation of the series of National Information Communication Infrastructure policies that evolved into the Smart Rwanda Master Plan (2015-2020), the National Broadband Policy (2013), the National Digital Talent Policy (2016), the National Cyber Security Policy (2015), the National Strategy for Transformation (NST1), and the ICT sector Strategic plan (2017-2024) among others.

These policies and regulations have guided the achievement of significant strides such as the operationalization of the universal access fund, building of the national fiber backbone that reaches all district offices and boarder-posts, establishing international connectivity redundancy, and near-universal broadband coverage.

Today, broadband networks are widely available to most citizens across the country, however, the quality of customers' experience and relatively high prices have led to an adoption rate of approximately 30 percent.

Building on achievements thus far, it is critical that the new Broadband Policy not only maintains efforts to expand broadband availability, but also increases affordability and adoption to position Rwanda as a leading knowledge economy in the African region.

Rationale

The evolving digital landscape, emerging digital technologies, alternative and advanced means of broadband connectivity, all call for a new broadband policy. Improved broadband access serves as a transformative catalyst to enable key sectors to attain socio-economic development.

Broadband adoption and digital transformation have a direct impact on improved citizens welfare,
as the increase of mobile broadband penetration increase the gross domestic product of any country.

Considering the importance of mobile broadband as the primary means of delivering Internet connectivity, it is crucial that the new broadband policy puts a focus not only to ensure broadband services availability, but also to maximize affordability, quality, and adoption.

Situation Analysis

The mobile penetration increased by 26 percentage points over the last 10-year period (according to the broadband market study report of July 2022). Unique mobile penetration as a percentage of total adult population is at 84%. Contrary to the mobile penetration, statistics of 2021 show that mobile internet penetration achieved 31% for the adult population.

Improved broadband access can serve as a transformative catalyst for economic and social development which promotes productivity, innovation, efficiency, and job creation. The analysis of the broadband shows favorable market conditions in terms of doing business, innovation, fiscal fairness, transparency, and mobile financial services regulation.

Such favorable conditions are also complemented by market size, individual incomes, cost of capital, electricity access, smart devices ownership, financial inclusion, and adult literacy levels.

Based on the assessment undertaken during the preparation of this policy, the exclusivity models on 4G and future iterations of mobile technologies is not sustainable. The current model makes the broadband market one-sided yet none of the operators are operating effectively and efficiently.

Recommendations in this new policy propose the redesigning of the market structure, shifting from service-based competition, and allowing for the deployment of advanced networks and services. This will go hand-in-hand with the alignment of the spectrum licensing, and regulatory frameworks with investment strategies to attract investments in the broadband market.

Benchmarking & Trends

For modern data communications requiring high speeds, 2G is not adequate. In many countries, 3G technology has become too slow for many applications, particularly as the volume of users and the bandwidth required for user applications grows and slows down the networks. Operators have begun to upgrade their more heavily trafficked network cells to HSPA+ or 4G technology.

4G deployments are also already proven inadequate for handling traffic growth, requiring network operators to upgrade to long-term evolution (LTE) advanced in high-traffic areas or to introduce expensive network densification adding more towers and sites with lower coverage radius.

Voice over long-term evolution (VoLTE) was introduced by operators globally to address the issue of loss of network effects between 4G users and 2G users, who could not make voice calls and send SMS texts to each other unless 4G phones were also operated on legacy 2G networks.

Many mobile operators in Sub-Saharan Africa are retaining their 2G legacy networks for now to support customers without smartphones, to provide telephone services to customers where 4G networks are not VoLTE-enabled and to continue to provide SMS text services. However, mobile operators globally are also beginning to retire their 3G networks and early generation 4G networks to free up space on radio base station towers and enable the repurposing of relevant spectrum as they deploy LTE Advanced 4G networks and 5G networks.

At present, the much higher price for 5G user devices has some operators focused on using the technology to provide fixed access as well as mobile access. But prices for 5G user devices are expected to come down to 4G price levels in due course. However, when a new technology generation is overtaking an earlier one, operators find it more economically efficient to move up to the next technology generation.

Broadband through Geostationary Earth Orbit (GEO) satellites is known to be too expensive for normal broadband users. However, depending on the acquisition model, the cost per Mbps can be reduced to make it attractive to unserved or underserved areas.

Services like very small aperture terminal (VSAT) – WIFI have the potential to contribute to filling the gap of coverage at an affordable cost if there is a proper strategy supporting the same. In addition, the national airline carrier can benefit for services like Inflight connectivity using GEO satellite at a competitive price if the government supports it with a proper strategy to acquire satellite communication capacity at a wholesale rate.

During the development of the policy, public consultations with stakeholders were conducted to understand the challenges from the suppliers' perspectives, including from all network operators, the demand side, as well as a range of relevant government agencies. The result of these consultations, feedback, and analysis highlighted challenges of adoption of broadband and revealed the low adoption and uptake of 4G-LTE in comparison with industry performance.

Policy Orientation

Vision

The vision of this policy is to accelerate Rwanda into the competitive and innovative global digital economy through accessible and quality broadband services.

Mission

The mission of this policy is to promote adoption of broadband services, to empower the citizens to access efficient and quality broadband services, access to digital content and information, to promote digital innovation and business ecosystem, to enable acquisition of digital competences, and to foster job creation.

Objective

The main objective of this policy is to enable the achievement of the short, mid, and long- term digital transformation and development goals.

Guiding Principles

The policy was developed in line with 5 key principles:

- Secure and optimized broadband infrastructure resources management;
- Inclusive access to high-quality, trusted, and competitive broadband services;
- Sustainable and meaningful broadband connectivity driving broadband adoption;
- Digital skills for all and local digital innovation competences;
- National climate resilience promotion.

Policy Areas, Objectives and Directions

The new broadband policy covers five policy areas, with key policy directions and specific objectives:

Policy area-I Broadband Services Adoption

***Policy objective 1:* Access to affordable and quality broadband services:**

The quality and affordability of broadband services has a significant impact on broadband adoption.
this policy will promote the collaboration with the private sector to put in place the strategic policy directions below.

Policy direction:

1. Promoting smart devices penetration;
2. Opening diverse international traffic routes;
3. Implementing the Mobile Number Portability to drive competition on service.

Policy area-II Infrastructure and Connectivity

***Policy objective 2:* Enhancing competition on infrastructure**

To accelerate the access and adoption of broadband mobile services for all, this policy will enable 4G, 5G and beyond by liberalizing technology deployments and wireless access spectrum assignments to ensure that all operators have the ability to deploy such advanced broadband services.

This policy will support continued competition in the national fiber backhaul market, ensuring that all providers can continue investing to further extend their networks, including bringing fiber closer to end users.

This policy will also facilitate the review of the applicable regulatory frameworks to require new construction to include passive infrastructure for in-building solutions (IBS) before they are made available for occupancy. This policy will also promote the increase of network coverage in already existing buildings.

Policy direction:

1. Introduction of terrestrial wireless technology neutrality;
2. Reviewing spectrum resources usage;
3. Strengthening measures to facilitate and enforce infrastructure sharing;
4. Strengthening measures to accelerate broadband coverage.

Policy objective 3: Upscale the capacity and reach of broadband networks

To ignite the growth and adoption of broadband and to ensure Rwanda becomes a leading digital economy, this policy will trigger steps to broaden high-speed fiber connections nationwide.

This Broadband Policy charts a path to invest in long-term connectivity needs by maximizing the benefits of expanded fiber access networks. This will ensure that fiber reaches homes, businesses, public institutions, schools, and hospitals, bringing improved quality of service (QoS) and quality of experience (QoE). Additional areas of focus for this policy will be to encourage the adoption of alternative broadband infrastructure technologies, such as satellite connectivity, to be used in rural and remote areas as well as initiatives to grow and diversify data centers and hosting facilities.

In order to expand fiber deployment to as many homes, businesses, and anchor institutions as possible, this policy will leverage economies of scale with expansion of electrification. Further, this policy will continue to increase the benefits of a domestic Internet exchange point (IXP) and in-country content caching in order to improve fair and efficient access to content.

Policy direction:

1. Integrating of broadband targets in national infrastructure investment planning;
2. Promoting bulk broadband capacity purchases to drive cost reduction;
3. Promoting alternative broadband infrastructure technologies;
4. Promoting local Internet Exchange Point (IXP) and local hosting facilities.

Policy area-III Innovation

Policy objective 4: Promote broadband as a catalyst for innovation

Broadband plays a critical role in attracting investment to Rwanda and positioning the country as a test bed for innovation and new technologies. This policy will enable researchers and entrepreneurs to produce high tech solutions for socio-economic development.

Policy direction:

1. Putting in place incentives to promote innovative technology solutions;
2. Developing broadband industry development index.

Policy area-IV Building Local Digital Competencies and Trust

Policy objective 5: Developing skills and increase value perception for broadband services

To bridge the gap of broadband technical experience and expertise, this policy aims at advancing competences in response to specific local broadband expertise. Digital skills are an essential tool for the workforce, the broadband policy will provide a foundation to diversity the acquisition of digital skills through different training channels. Also, the policy will foster the increase of user value perception of broadband services through awareness and building trust.

Policy direction:

1. Continuous capacity development and training for experts in the various areas of the broadband domain
2. Facilitating the citizens to undertake training and acquire relevant digital skills
3. Initiating and promoting programs aimed at building digital trust among the citizens

Policy area-V Strengthening the broadband legal and regulatory environment

Policy objective 6: Adopt Agile Methods of Regulation

In order to achieve the strategic and desired broadband aspirations, the policy aims to put in place the necessary legal and regulatory reforms.

Policy direction:

1. Developing data driven regulatory frameworks and regular market assessment in response to the rapid broadband industrial growth.

Implications of Policy Implementation

Governance Framework

The Ministry of ICT and Innovation will be responsible for providing policy guidance and oversight for implementation of the policy. The implementation framework is composed of representatives of the public sector, private sector, academia, and civil society. The Digital Inclusion Council will be established as the coordination mechanism for the implementation of this broadband policy.

To facilitate systematic monitoring of activities outlined in relevant policies, strategies, and guidelines, including progress toward targets and compliance with relevant laws and regulations, the Digital Inclusion Council will leverage its working group structure. The Council's working groups will take on key areas of responsibility related to the Broadband Policy areas and the activities and targets to be evaluated.

The Digital Inclusion Council working groups are chaired by a representative of the lead government institution and co-chaired by either a representative of the private sector or lead development partner where relevant.

Financial implications

To achieve the objectives and targets identified in this new policy, budget estimates of RFW 200 Billion will be invested, mainly by the private sector with a catalytic seed funding by the government.

Internet access has increasingly become a necessity for growth across all sectors of the economy such as e-services, education, healthcare, employment, MSMEs, arts, and entertainment. A strong support system of updated and relevant legal and regulatory frameworks will be key to enable the effective implementation of this policy.

The implementation of this new broadband policy will create opportunities for broadband access expansion, unlock the potential for smart city implementations, reduce carbon emission, enable the adoption of new technologies and use cases, enable cross-border data flows increase, and enable the attraction of investment to the local broadband market.

Policy Areas, Objectives and Directions

The implementation of this policy is based on twelve key objectives, and 20 key activities to be implemented over a five-year period, as follows:

N°	Activity	Target	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	Responsible
	Policy Objective-1: Access to affordable and quality broadband services							
1	Promote schemes and models to boost smart device affordability	Achieve 85% of smart devices in the adult population	■	■				MINICT, RISA, RURA, Private sector
2	Promote creation and consumption of relevant content to increase the user device value perception	Achieve 90% of smart device penetration for households	■	■				MINICT, RISA, RURA, Private sector
3	Establish more international traffic routes	Minimum of 3 new routes opened	■	■	■	■		MINICT, RISA, RURA, Private sector
4	Put in place a regulatory framework for mobile number portability	Fully implemented number portability scheme	■	■				MINICT, RISA, RURA, Private sector
	Policy Objective-2: Enhance competition on infrastructure							
5	Facilitate inclusivity of Mobile Network Operators in the deployment of 4G networks and Next Generation Technologies	Broadband penetration increased to 80% of adult population. Remove Mobile Network Operator monopoly or dominance	■	■				MINICT, RURA, RISA, RURA
6	Diversification of broadband services	Put in place MVNO regulatory framework	■	■				
7	Establishment of a National Spectrum Working Group	Develop a national spectrum planning and management roadmap	■					MINICT, RURA, RSA, RCAA, MoD
8	Revise regulatory framework to facilitate operator's ability to share passive and active infrastructure	Optimized infrastructure resource usage	■	■				MINICT, MININFRA, MINALOC, RURA, RHA, RISA

N°	Activity	Target	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	Responsible
	Policy Objective-3: Upscale the capacity and reach of broadband networks							
9	Include fiber networks in electrification and other utilities infrastructure (existing and new) rollout	Full coverage of fiber connectivity achieved leveraging national electrification deployment plans	■	■	■			MINICT, MININFRA, REG, RISA, RURA
10	Develop strategies to leverage aggregate demand on broadband across segments of the economy.	Broadband cost of services reduced by at least 40%	■	■				MINICT, RISA, Private Sector
11	Periodic research and consultation to address market entry challenges for the various broadband technologies	Facilitate ease of market entry requirements for various broadband technologies including satellite technologies and services	■	■				MINICT, RURA, RISA, RSA, Private sector
12	Develop a strategy to enhance local IXP adoption and local hosting.	Improved reliability of local traffic adoption.	■	■				MINICT, RURA,RICTA, Private Sector
	Policy Objective-4: Broadband as catalyst for innovation							
13	Put in place incentives to promote innovative technologies	Increased number of innovators supported (support 40 innovations every year)	■	■				MINICT, RURA, RDB, RISA
14	Put in place a national broadband development index.	Produce a national broadband development index report every 2 years.	■	■				MINICT, RURA, RISA, RDB

N°	Activity	Target	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	Responsible
	Policy Objective-5: Developing skills and increasing value perception for broadband services							
15	Initiate programs to upscale digital skills and competencies in the broadband domain	Annual 20% of Broadband engineering professionals trained in advanced skills in emerging broadband technologies	■	■				MINICT, RURA, RISA
16	Develop initiatives that leverage broadband to train citizens in digital literacy	Achieve 85% digital literate penetration of adult population	■	■				MINICT, MINEDUC, RISA
17	Put in place a national cyber information management standard	80% of targeted entities are compliant with standards	■	■				MINICT, RURA, NCSA, RISA, RSA
18	Develop a digital trust measurement index	80% of digital trust among the population	■	■				MINICT, RGB, MINALOC
	Policy Objective-6: Adopt Agile Methods of Regulation							
19	Review and put in place responsive laws, regulations and guidelines for better sector performance.	Conduct review of the legal and regulatory instruments every 2 years	■	■				MINICT, RURA, RISA
20	Deploy the required monitoring systems to enforce compliance with policies, laws and regulations.	Compliance rate of 95% for all licensed entities.	■	■				MINICT, RURA, RISA

****The timelines in the matrix reflect the completion period of the main activities.***